



Government of South Australia

Primary Industries and Resources SA

South East of South Australia Regional Profile

October 2010

PIRSA's Disclaimer

Although PIRSA has taken all reasonable care in preparing this advice, neither PIRSA nor its officers accept any liability resulting from the interpretation or use of the information set out in this document or associated models. Information contained in this document is subject to change without notice.

Contact:

Andrew Manson

Manager

Policy and Economic Analysis, Corporate Strategy and Policy Branch

Primary Industries and Resources South Australia

Phone: 08 8226 0533

Mobile: 0423 025 536

email: andrew.manson@sa.gov.au

Web: <http://www.pir.sa.gov.au>

The models and report were prepared by:
Melissa Bright and Adam Chambers

With expert assistance from:
Michael Moore, Policy Project Officer – Intensive Industries
Denise Little, Manager – Horticulture Industry Development
Samantha Hellams, Director – Grape and Wine;
Mandy Wallace, Principal Policy Adviser – Forestry; and
Joel Vanderpeer, Water Policy Unit.

TABLE OF CONTENTS

1. INTRODUCTION	1
2. KEY CHARACTERISTICS OF THE SOUTH EAST REGION.....	2
2.1. Demographics	2
2.2. Employment	4
2.3. Contribution of Regional Economy	5
3. PRIMARY INDUSTRY PROFILES	7
3.1. Land Use	7
3.2. Water Use	8
3.3. Broadacre	11
3.4. Dairy	13
3.5. Winegrapes	14
3.6. Forestry	15
4. FUTURE SCENARIOS	17
4.1. Winegrapes	17
4.2. Horticulture	18
4.3. Broadacre	19
4.4. Forestry	20
4.5. Land and Water Use Implications.....	21
REFERENCES	23
APPENDIX A: LAND USE IN THE SOUTH EAST 2003 & 2008.....	25

1. INTRODUCTION

The challenge for government is to balance the sometimes competing commercial, social and environmental interests and enhance the general well being or living standards of the South Australian community using the most efficient intervention possible. This task is particularly apparent when considering management of the water resources in the South East (SE) of South Australia (SA). To manage the process an interagency Taskforce has been established to prepare a framework and investigations necessary to enable the preparation of a draft Water Allocation Plan (WAP) for the Lower Limestone Coast.

To assist in the understanding of the environmental aspects of land and water use in the South East a Science Review was undertaken for the Taskforce. The review, conducted by the Environment Institute at Adelaide University, reviewed the hydrological science, hydrogeological science, ecological science and aspects of the geographic information systems behind decision-making in the SE. It also commissioned hydrogeological modelling, conducted land capability assessment and a review of water available in the drainage system.

The information provided in this report is intended to supplement this knowledge by providing details and information on the current structure of the region's economy and the significant sectors within it. Understanding the SE economy and key linkages with land and water usage and management may be useful in providing a context against which future changes can be measured. It is recognised, however, that this context is not static due to a range of external factors affecting industries in the region including exchange rate movements and market demand changes. The report therefore attempts to also describe some of the other important factors likely to influence the impact of change and the capacity of an industry to adapt.

Together with the Science Review this information will be useful in understanding the significance of some of the potential trade offs between commercial and environmental attributes associated with future policy formation to manage water allocation in the region.

The following sections of the report are structured as follows:

- Section 2 – provides regional demographics and estimates of the industry contribution to the regional economy;
- Section 3 – describes the major primary industries in the region; and
- Section 4 - comments on possible forward projections for selected primary industry activities in the region.

2. KEY CHARACTERISTICS OF THE SOUTH EAST REGION

The SE region of SA, as defined for the purposes of this study (unless otherwise stated), is the region comprised of the district councils of Lacedpede, Naracoorte, Lucindale, Robe, Wattle Range, Mount Gambier and Grant. These boundaries correspond to the SE statistical division as defined by the Australian Bureau of Statistics (ABS). For a map of the region, see figure 1 over the page.

The SE region covers an area of approximately 2.2% of the State and has a resident population in 2006 of just over 62,000 people (see table 1), more than 4% of the State total. Unlike many other regions in the State, the SE has largely maintained its share of the State's population over the last decade (see table 2).

2.1. Demographics

Table 1 details some key demographics from the last two population census, 2001 and 2006. Note of interest from the data is that population growth between the two years appears to be largely driven by the 55 years and over age group.

Table 1: South East Demographics

	2001 Census	2006 Census
Population	59,963	62,215
Male	30,251 (50.4%)	31,217 (50.2%)
Female	29,712 (49.6%)	30,998 (49.8%)
0-14 years	13,494	13,274
15-24 years	7,439	7,445
25-54 years	26,029	25,849
55 years and over	13,001	15,646
Total Labour Force	30,213	31,431
Unemployed	5.1%	4.9%

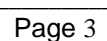
Source: ABS 2001 and 2006 Census

Table 2: Population Growth 2001-2008

	SE	SA	SE share of SA
2001	62,588	1,511,728	4.14%
2002	62,873	1,521,127	4.13%
2003	63,128	1,531,278	4.12%
2004	63,381	1,540,434	4.11%
2005	63,991	1,552,514	4.12%
2006	64,715	1,567,888	4.13%
2007	65,413	1,585,794	4.12%
2008	65,932	1,603,361	4.11%
Growth	5.30%	6.10%	

Source: EasyData

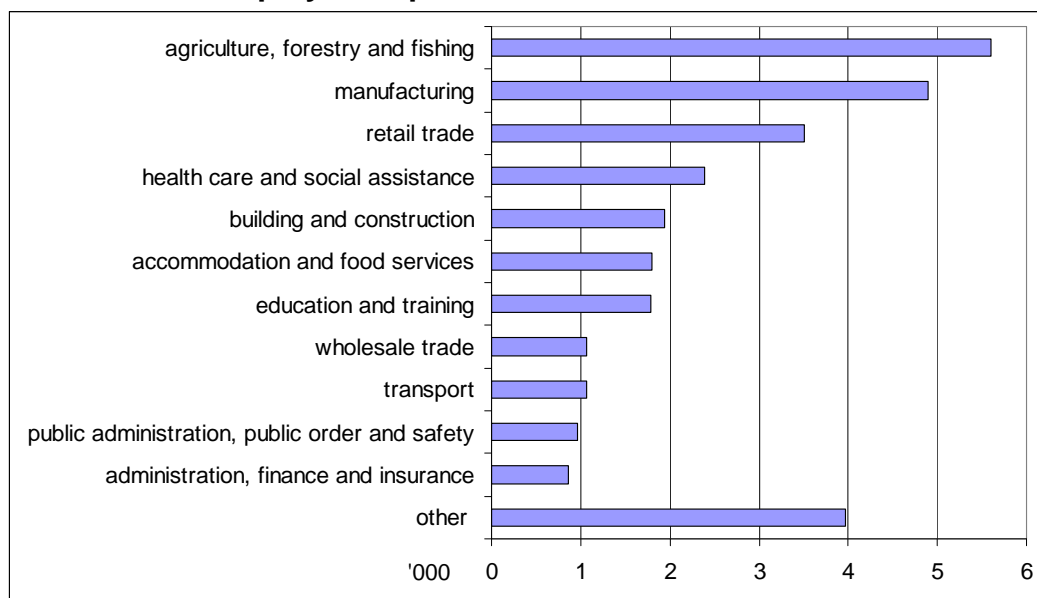
South East of South Australia Regional Profile



2.2. Employment

Based on ABS 2006 Census data almost 31,500 people were employed in SE with the agricultural, forestry and fishing sector employing the largest number of people, accounting for approximately 19% of total employment (see figure 2). The manufacturing sector accounted for a further 16% and the retail sector 12%.

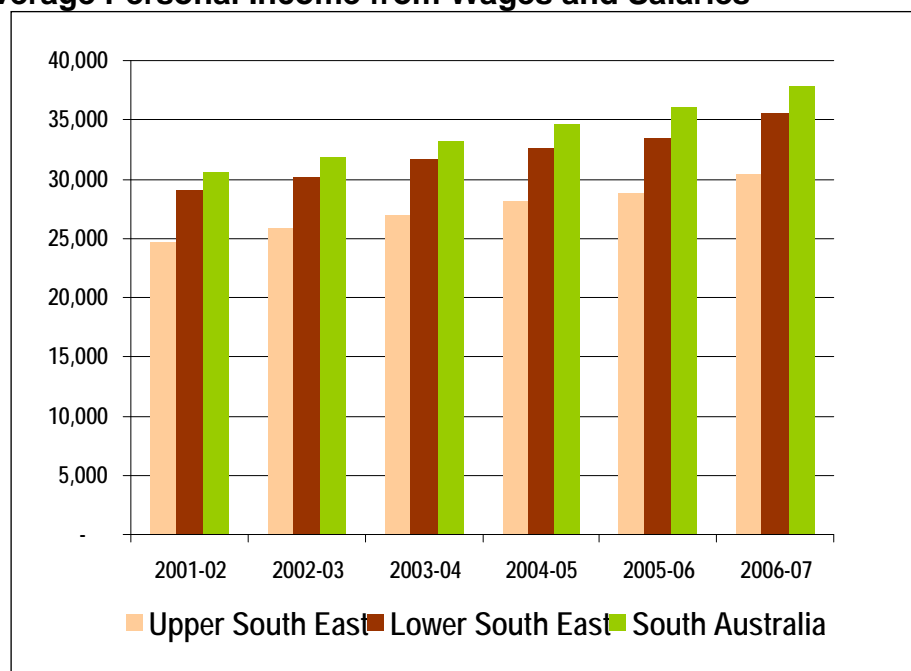
Figure 2: South East Employment profile



Source: ABS 2006 Census

Although there is a shortfall in average personal income from wages and salaries between the SE region (particularly in the upper SE) and SA (see figure 3); the difference in income growth between 2000-01 and 2006-07 was relatively similar.

Figure 3: Average Personal Income from Wages and Salaries



Source: ABS, 6524.0, 2001-2007

2.3. Contribution of Regional Economy

In 2006-07 EconSearch (2009) estimated that the SE regional economy generated a Gross Regional Product (GRP) of \$2,681 million (table 3 below). Although a significant regional economy in SA, in terms of regional economic contribution it is dwarfed by the size of metropolitan Adelaide which dominates the State. In 2006-07 the SE region contributed 3.9% to SA's Gross State Product (GSP) of \$68.3 billion.

As shown in table 3 the components of GRP can be depicted as follows:

- the **income** approach, which involves summing net factor incomes, consumption of fixed capital (depreciation) and taxes less subsidies on production and imports; and
- the **expenditure** approach, which involves summing all final expenditures, changes in inventories and exports less imports of goods and services.

Table 3: Components of Gross Regional Product 2006-07

Expenditure (\$m)		Income (\$m)	
Household Consumption	1,477	Household Income	1,422
Other Final Demand	1,218	Other Value Added	1,044
<i>Gross Regional Expenditure</i>	2,695		
<i>plus Exports</i>	2,216		
<i>less Imports</i>	-2,230		
<i>Gross Regional Product</i>	2,681		2,681

Source: EconSearch 2009

Table 4 over the page depicts the gross value of production (GVP) by industry for the SE region in 2006-07. In 2006-07 the estimated GVP of agriculture and fisheries at the farm gate in the SE region was approximately \$755 million and for forestry and logging it was an additional \$80 million.

Total value of output however, is not a useful indicator of the contribution of a sector to the regional economy as it can include elements of double counting in some sectors. For example, the gross value of cheese production includes the farm gate gross value of milk production.

GRP is a commonly used measure of the net contribution of an industry to the regional economy and provides a measure analogous to commonly reported Gross State Product and Gross Domestic Product. GRP avoids the problem of double counting by measuring the value of output less the cost of goods and services used in producing the output; this also equates to the sum of household income and other value added. In 2006-07 the estimated GRP contribution of agriculture and fisheries at the farm gate from the SE region was approximately \$432 million (16% of GRP) and for forestry and logging it was an additional \$45 million (1.5% of GRP). It should be noted that the contribution to regional economic activity by agriculture in 2006-07 may have been influenced by drought conditions during this time.

Table 4 also depicts the contribution to GRP by industry in the SE region. For example, in 2006-07 the dairy industry generated \$74 million worth of output, contributed around \$42 million or 1.6% to the SE regional economy and generated \$17 million in household income.

Table 4: Contribution to Gross Regional Product by Industry, South East Region 2006-07

Sector	Gross Value of Output (\$m)	Household Income (\$m)	Other Value Added (\$m)	Gross Regional Product (\$m)	% of SE GRP
Sheep	179	58	43	101	3.8%
Grains	38	10	12	21	0.8%
Beef	114	57	14	71	2.7%
Dairy	74	17	25	42	1.6%
Pigs	23	1	10	12	0.4%
Poultry (meat)	3	0	1	1	0.1%
Winegrapes ¹	136	14	63	77	2.9%
Vegetables	88	5	42	47	1.8%
Fruit & Nuts	7	1	3	5	0.2%
Other Agriculture	36	4	17	21	0.8%
Services to Agriculture	56	16	18	34	1.3%
Forestry	80	25	20	45	1.7%
Fishing	86	25	18	43	1.6%
Aquaculture	3	1	1	1	0.0%
Non-Ferrous Metal Ores	3	0	1	1	0.0%
Other Mining	17	3	7	10	0.4%
Services to Mining	5	1	1	3	0.1%
Food Products	378	61	24	85	3.2%
Wine	266	44	58	101	3.8%
Other Beverages	2	0.2	0.3	0.5	0.0%
Textiles, Clothing & F'wear	14	4	1	5	0.2%
Sawmill & Oth Wood Prdcts	330	93	41	134	5.0%
Pulp Paper & Paper Prdcts	232	48	33	81	3.0%
Printing & Services to Printing	11	3	2	5	0.2%
Publishing & Recorded Media	17	8	3	10	0.4%
Petroleum & Chemicals	27	5	3	8	0.3%
Non-Metallic Min Prdcts	26	7	2	9	0.3%
Iron & Steel	30	6	3	9	0.3%
Basic Non-Ferrous Metals	24	2	2	5	0.2%
Metal Products	25	7	2	9	0.3%
Machinery & Equipment	55	15	4	19	0.7%
Other Manufacturing	29	8	1	9	0.3%
Electricity Supply	50	7	17	24	0.9%
Water	23	6	8	14	0.5%
Residential Building	252	40	29	69	2.6%
Other Construction	63	5	9	14	0.5%
Construction Trade Services	237	84	13	97	3.6%
TOTAL		1,422	1,044	2,681	100%

Source: EconSearch 2009

Note:

1. The value of output estimate for the winegrape sub sector is a 5 year average for the period 2003/04 to 2007/08 in constant 2006/07 dollars. It was based on PGBSA (2008 and previous issues). The vintage of 2006/07 was severely impacted by a range of factors (e.g. drought, frost and water restrictions).

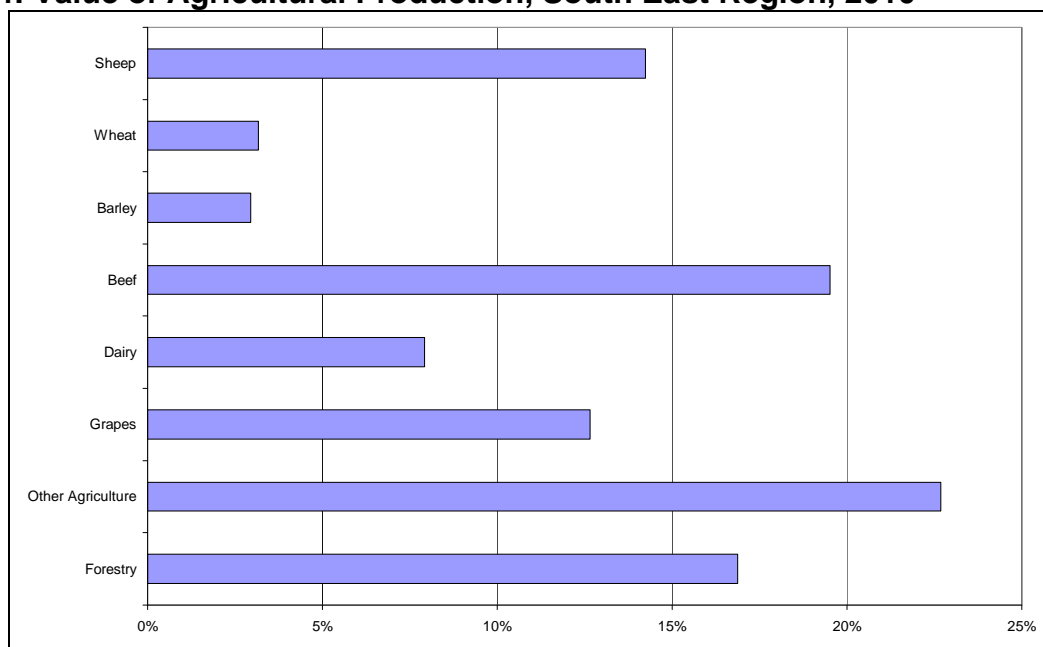
3. PRIMARY INDUSTRY PROFILES

Due to the dated nature of the estimates of direct, farm-gate regional industry economic contributions (table 4 above), PIRSA has estimated the value of production for 2010 using industry knowledge and where possible published data where possible.

In dollar value terms, beef cattle is the most significant agricultural and forestry product in the SE of SA, accounting for nearly 20%, or around \$185 million of the \$950 million total estimated value of agricultural and forestry production in the region in 2010 (see figure 4). Forestry was the second largest accounting for 17% (\$160 million).

Sheep and lambs accounted for a further 14% (around \$135 million) of the total value of agricultural and forestry production in the region, while wine grapes accounted for 13% (nearly \$120 million) and milk production 8% (around \$75 million).

Figure 4: Value of Agricultural Production, South East Region, 2010



Source: PIRSA Estimates 2010

3.1. Land Use

The Limestone coast region of the state-wide land use data collected and collated by Department for Water, Land and Biodiversity (DWLBC) is presented in table 5 for 2003 and 2008 (see Appendix A for maps and GIS methodology). The total area in the Limestone Coast region is 2,346,937 hectares and is a larger area than the Lower Limestone Coast (LLC) Prescribed Wells Area (PWA) area as it extends beyond Keith.

It should be noted that the estimation process (detailed in appendix A) is likely to result in an over estimate of the area attributed to forestry. Other land uses such as tracks and wetlands located within forestry are included in the forestry area estimate.

Table 5: Limestone Coast Land Use, 2003 and 2008¹

	2003		2008		Change between 2003 and 2008
	Total Area (Ha)	Share of Total Area	Total Area (Ha)	Share of Total Area	
Cropping	128,841	5.5%	180,468	7.7%	40%
Irrigated cropping	27,087	1.2%	30,966	1.3%	14%
Grazing modified pastures	1,390,977	59.3%	1,282,163	54.6%	-8%
Irrigated modified pastures	20,802	0.9%	29,287	1.2%	41%
Grazing natural vegetation	136,364	5.8%			
Intensive animal production	113	0.0%	588	0.0%	422%
Intensive horticulture	9	0.0%	76	0.0%	724%
Irrigated seasonal horticulture	2,282	0.1%	3,352	0.1%	47%
Irrigated perennial horticulture	17,635	0.8%	19,692	0.8%	12%
Perennial horticulture	15	0.0%	45	0.0%	194%
Seasonal horticulture			2,887	0.1%	
Irrigated land in transition			295	0.0%	
Farm forestry	685	0.0%			
Plantation forestry	143,424	6.1%	162,452	6.9%	13%
	1,868,233	80%	1,712,272	73%	100.0%

Source: DWLBC

Based on land use, livestock grazing of modified pastures is by far the predominant agricultural activity in the SE (58% of land use in 2008), followed by cropping (9%) and forestry (7%). A comparison of land uses in 2003 and 2008 shows several key developments in the region:

1. A notable move toward cropping (36% growth in area between 2003 and 2008) of cereals, legumes, hay and silage predominantly in the general region east of Lucindale and south of Kingston.
2. Groundwater irrigation has increased substantially in the same area. Most of this land use involves fodder production under centre pivot irrigators, with vegetables also grown in the lower SE.
3. Hardwood plantation forestry has expanded considerably (13% growth across the region) predominantly located in the Hundreds of Coles and Short and to a lesser extent in the adjoining Hundreds of Joyce, Spence, Killanoola and Monbullla. Over the same period the area planted to softwoods has not changed significantly.

3.2. Water Use

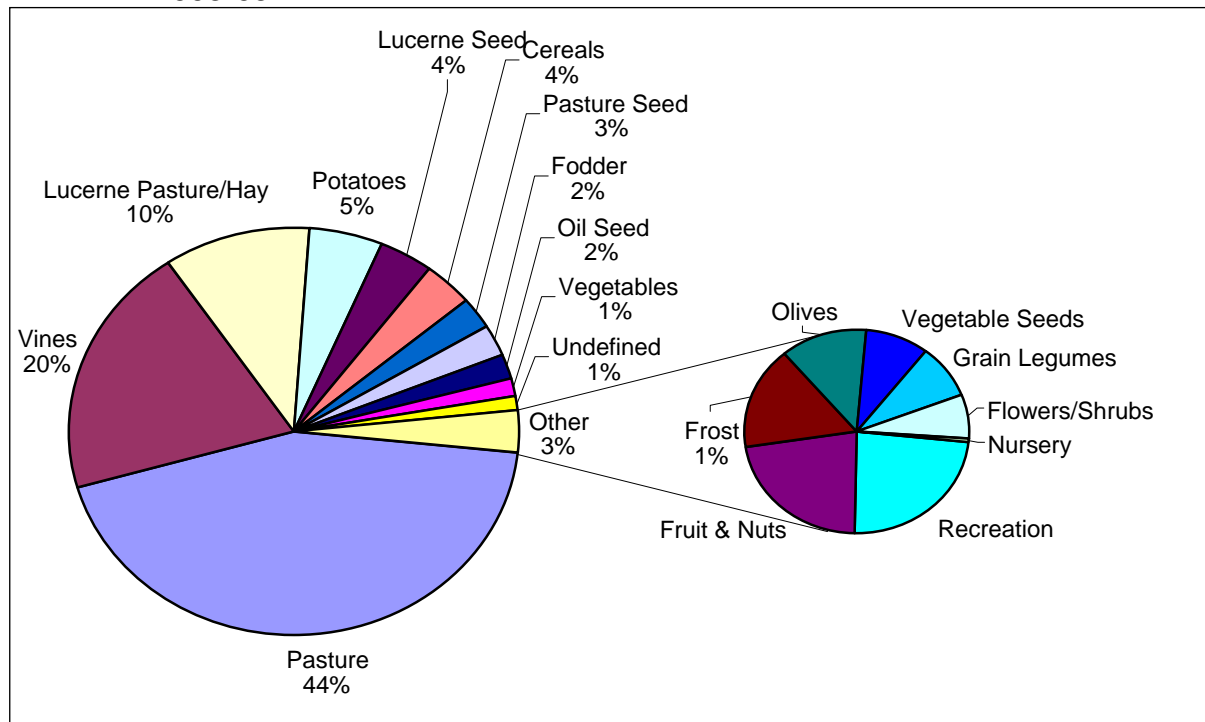
Using data collated from the annual water use returns for the LLC PWA, a total of 55,450 ha of crops were irrigated in 2008-09 water use year, representing 4% of the total land area.

As shown in figures 5 and 6 pasture for grazing and hay/silage production was the predominant irrigated crop type and accounted for over 50% of the land area irrigated (30,220 ha) and 69% of total irrigated water use (191 GL). Vines were the second largest

¹ All land use areas that were not classified as agriculture/horticulture (e.g. residential, mining) were removed. It should also be noted that the land use classifications vary slightly between 2003 and 2008 datasets.

crop type irrigated accounting for 20% of the total land area irrigated (11,000 ha) and 8.7% of total irrigated water use (24 GL). Potatoes were the third largest crop accounting for 5.2% of total irrigated land use and 7% of total irrigated water use. The remaining 25% of irrigated land area is made up of a variety of crops including fodder, cereals and vegetables.

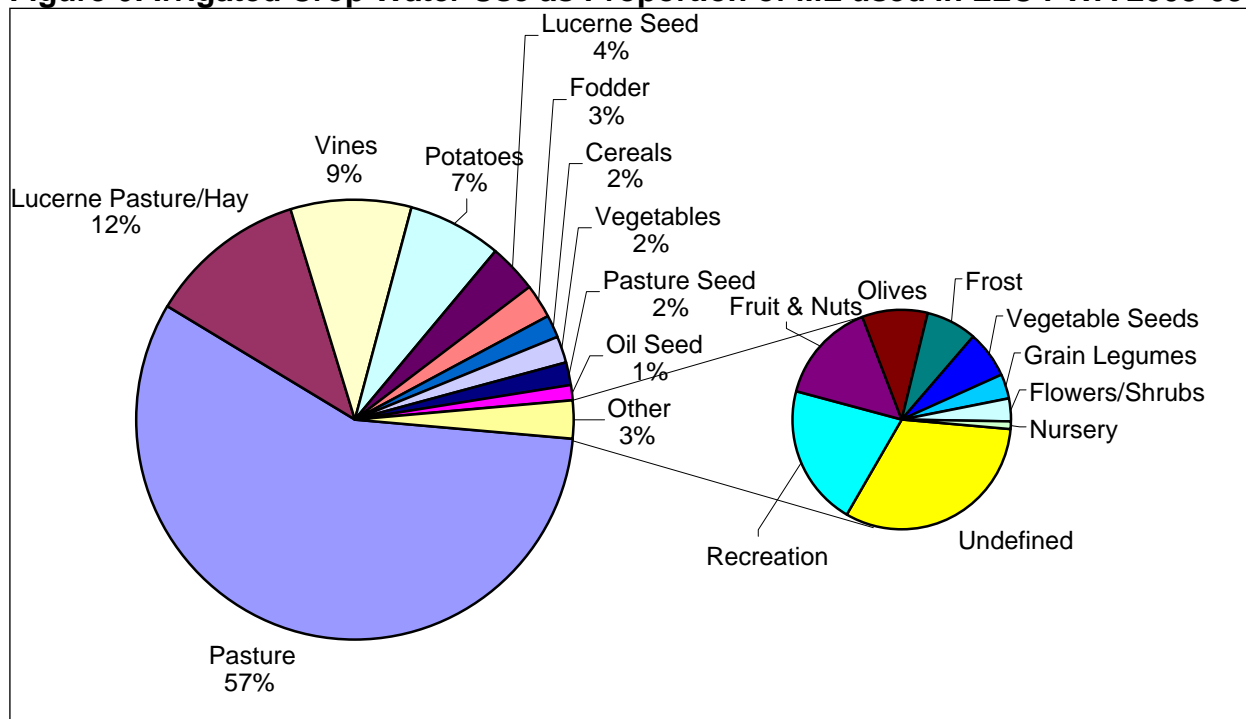
Figure 5: Irrigated Crop Area as Proportion of Irrigated Land Use in LLC PWA 2008-09



Source: (DWLBC, 2010)

The volume of water utilised for irrigation in the LLC PWA was 277GL, with an average use of 5ML/ha across all crop types.

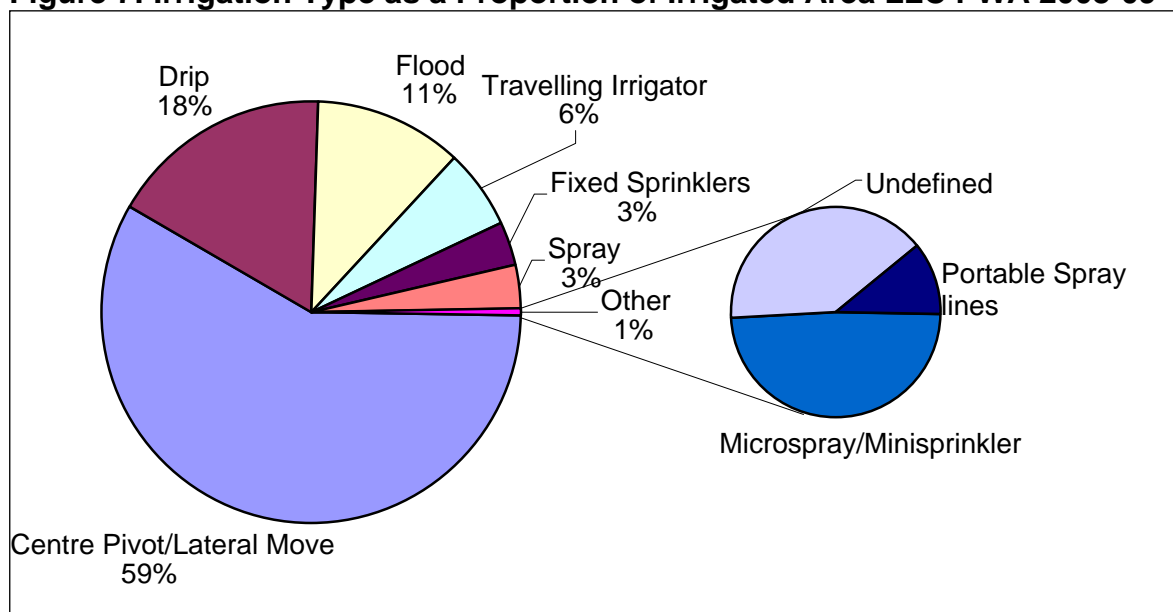
Figure 6: Irrigated Crop Water Use as Proportion of ML used in LLC PWA 2008-09



Source: (DWLBC, 2010)

A range of irrigation systems are utilised in the LLC PWA, often determined by the crop type being grown, soils, land parcel size and the location of any obstacles (remnant vegetation, power poles etc.). As shown in figure 7 the predominant irrigation systems utilised in 2008-09 were centre pivot and lateral move covering 58% of the total irrigated area (32,000ha). Drip was the second most utilised system covering 17% of total irrigated land area (9,600ha), with flood irrigation coming in third at 11% of total irrigated land (6,300ha). The remaining 14% of total irrigated land area utilises fixed sprinklers, travelling irrigators and micro systems to irrigate crops.

Figure 7: Irrigation Type as a Proportion of Irrigated Area LLC PWA 2008-09



Source: (DWLBC, 2010)

3.3. Broadacre

In 2010 GVP terms, beef cattle and calves are the most significant agricultural product in the SE of SA (see figure 4 above). In the 2005-06 census period the SE was home to 52% of the state's beef cattle (see table 7), or about 2% of Australia's herd. This share rose during the 2007-08 drought, but not to the extent of national significance.

Table 7: Head of Stock in SE

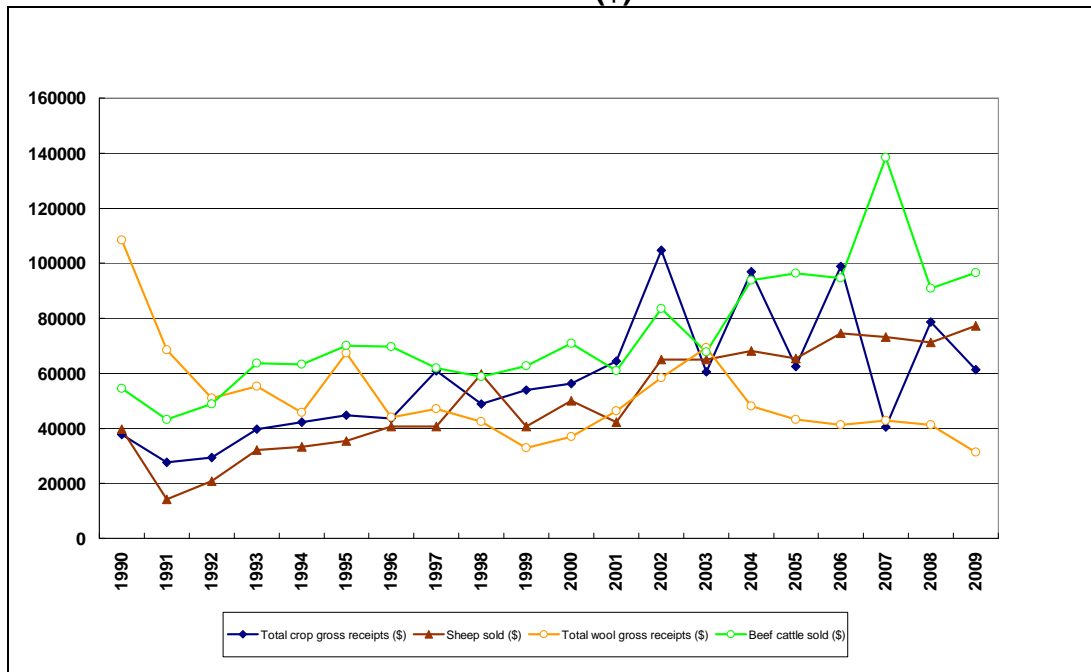
	Cattle & calves, total		Meat cattle	
	No	% of SA	No	% of SA
2005-06	669,576	50%	607,253	52%
2007-08	652,148	58%	590,106	61%
2008-09	708,197	59%	633,128	61%

Source: ABS 7121.0, Agricultural commodities, State and NRM, 2007-08, 2008-09

The figure below indicates the change in sources of farm cash income for broadacre farming since 1990. As depicted beef cattle sales has continued to grow in real terms since 1990 and has become the largest contributor to broadacre farm cash incomes.

It should be noted that for the analysis of broadacre farm performance estimates due to sample size limitations ABARE data are drawn from a larger area that encompasses the high rainfall zone up to and around Adelaide.

Figure 8: Sources of Farm Cash Incomes SE (\$)



In the 2005-06 census year the SE produced about one sixth of the state's merino-based lambs and almost half of the short-wool meat-bred lambs, but this share of SA production has risen during the drought as sheep have been removed or transferred from regions further north. Drought-driven high lamb prices and better general conditions have

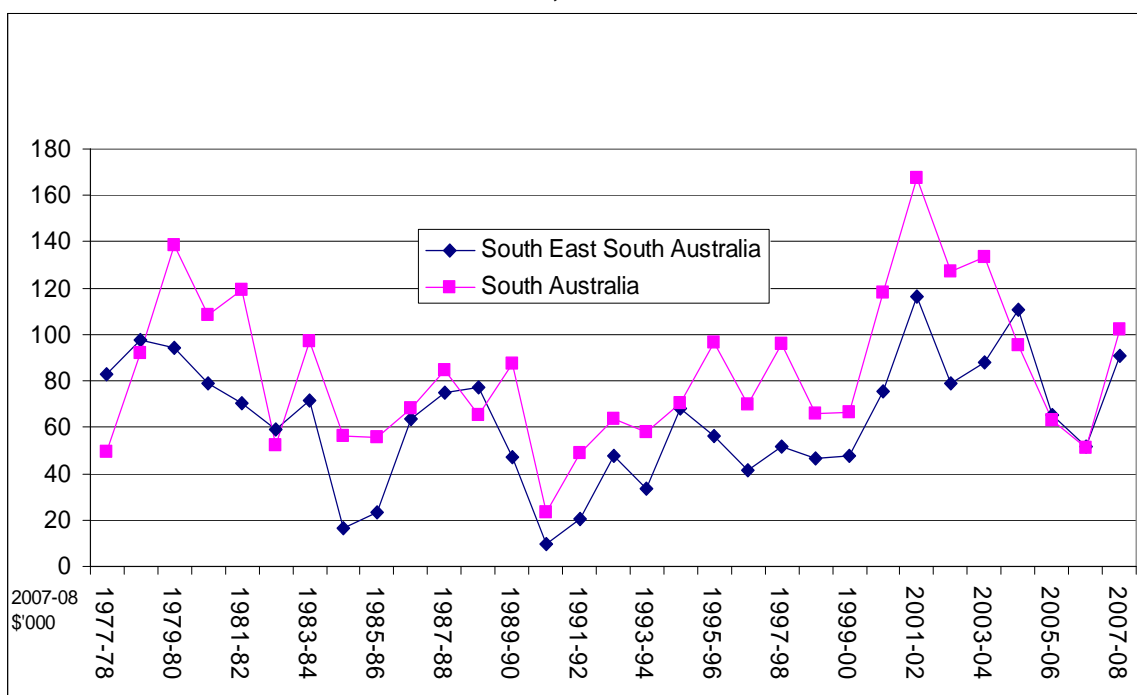
encouraged other regions of the state to re-enter the industry but it will take time for the state flock size to meet producer demand.

Wool production in the SE has been declining over the past two decades and is expected to continue doing so. In 1990 wool production was the largest contributor to broadacre farm cash incomes, since the early 2000s it has become the smallest (see figure 8 above). In the future it is expected that fine wool will move away from grazing and towards intensive production and coarser wools will be produced in the more pastoral districts.

Over the past decade there has been an increase in crop production by broadacre farmers in the SE. Cereal and fodder prices were very high due to drought and world demand from mid 2006 until mid 2008, and this may have encouraged the expansion in the contribution of grain cropping to farm cash incomes (figure 8 above) in the SE. In some areas it's likely that cropping has occurred because drought conditions and greater watertable depths have made new land available that was previously too wet for crops.

As depicted in figure 9 below, for most of the past 30 years, average farm cash incomes for broadacre farms in ABARE's survey area of the SE of SA have been below the South Australian average (ABARE, 2008).

Figure 9: Farm Cash Incomes Broadacre, SE and SA



Source: (ABARE, 2008)

In 2006-07 almost a quarter of broadacre producers in the SE recorded a negative farm cash income (see table 8 over the page). Lower farm receipts and higher costs, particularly expenditure on fodder and interest payments, contributed to the result. In 2007-08, crop receipts accounted for 20% of broadacre farm cash receipts and improved farm cash income in 2007-08 reflected the higher grain yields resulting from the improved seasonal conditions and the reduced need for additional fodder purchases.

Table 8: Financial performance, South East South Australian broadacre farms

		Average per farm			
		2005-06	2006-07		2007-08p
Receipts:					
	Total crop receipts	\$ 90,100	42,500	(28)	67,000
	Sheep and lamb sales	\$ 72,750	74,500	(16)	70,000
	Wool sales	\$ 40,310	46,600	(16)	48,000
	Beef cattle sales	\$ 92,370	105,700	(19)	104,000
	Total cash receipts	\$ 321,300	301,100	(11)	322,000
Costs:					
	Sheep and lamb purchases	\$ 17,530	13,400	(40)	8,000
	Beef cattle purchases	\$ 16,230	17,900	(29)	15,000
	Fodder	\$ 9,400	18,500	(38)	5,000
	Fertilizer	\$ 25,550	19,700	(11)	24,000
	Fuel, oil and lubricants	\$ 19,770	20,000	(12)	20,000
	Repairs and maintenance	\$ 22,560	23,700	(13)	25,000
	Interest payments	\$ 25,950	32,000	(14)	35,000
	Total cash costs	\$ 255,770	249,200	(11)	231,000
Financial performance:					
	Farm cash income	\$ 65,530	51,900	(28)	91,000
	Farms with negative farm cash income	% 35	24	(28)	20
	Farm business profit	\$ -2,570	-51,900	(47)	22,000
	Farms with negative farm business profit	% 65	66	(10)	41
Farm debt and equity					
	Farm capital at 30 June a	\$ 3,956,010	3,980,600	(9)	na
	Farm debt at 30 June bc	\$ 388,910	469,000	(14)	309,000
	Equity ratio at 30 June bd	% 90.2	87.9	(2)	na
Rate of return e					
	- excluding capital appreciation	% 0.9	-0.5	(150)	1.8
	- including capital appreciation	% 3.8	7.5	(42)	na
Total number of farms		no	2,407		
Farms surveyed		no	67		

Source: (ABARE, 2008)

Figures in parentheses are standard errors expressed as a percentage of the estimate provided

a Excludes leased plant and equipment.**b** Average per responding farm.**c** Harvest loans are not included in farm debt.**d** Equity expressed as a percentage of farm capital.**e** Rate of return to farm capital at 1 July calculated as farm business profit plus interest paid expressed as a percentage of total farm capital.**p** Preliminary estimates. **s** Provisional estimates. na Not Available

3.4. Dairy

According to Dairy SA data depicted in table 9, 38% of SA's dairy cows were in the SE in 2005, but since then the contraction of dairying on the Murray River and Lower Lakes has seen this proportion rise to 50% in 2009. Deregulation and structural adjustment in the industry has also contracted the number of dairy farms in the SE with a decline of more than 35% since 1995. However on farm efficiencies and larger scale operations have seen significant growth in milk production in the region.

Table 9: SE Dairy Statistics

	Farms	% of SA farms	Cow no.	% of SA cows	Estimated milk production (million litres)²
1995	180	22%	19,978	21%	104
1996	179	23%	22,242	23%	120
1997	181	24%	23,522	24%	131
1998	190	25%	29,075	28%	169
1999	185	26%	31,985	30%	196
2000	178	27%	34,498	31%	218
2001	163	28%	36,168	33%	229
2002	153	28%	41,749	35%	259
2003	151	29%	41,399	35%	252
2004	136	30%	42,057	38%	255
2005	n/a		43,500	38%	258
2006	121	32%	42,395	41%	264
2007	117	33%	45,359	45%	291
2008	116	35%	47,815	48%	295
2009	115	36%	49,278	50%	313

Source: Dairy SA

3.5. Winegrapes

As depicted in table 10, winegrape production is very seasonally dependent and as such the Limestone coast wine region's share of total state crush has varied between 8% and 20% over the last 8 years. The region's share of area planted in the State however has remained relatively stable at around 20%. Due to the current structural oversupply it is unlikely that there will be any new net plantings after 2009.

ABARE Australian Wine Grape Projections to 2010-11 comment that wine grape prices are expected to remain subdued for medium term due to continual increase in the stocks to sales ratio as wine sales continue to fall in both domestic and export markets. This national trend is also expected in the SE wine regions although wine prices for the region are traditionally higher than the national average.

Table 10: SE Winegrape Statistics

	Total crush, tonnes	% of SA	Area planted, ha	% of SA	Average Yield t/ha	Estimated value, \$m	% of SA
2002	59,236	8%	13,052	21%	4.9	\$89.7	13%
2003	79,757	12%	13,878	21%	6.2	\$118.8	19%
2004	172,415	19%	14,042	20%	12.5	\$188.6	23%
2005	109,472	12%	14,842	20%	7.6	\$110.1	16%
2006	131,485	15%	14,993	20%	8.8	\$118.1	19%
2007	65,716	11%	15,686	21%	5.0	\$73.0	17%
2008	160,801	20%	16,008	20%	9.1	\$158.7	21%
2009	104,634	14%	17,518	22%	7.7	\$118.2	24%

Source: Phylloxera Board and ABS Vineyards Survey

² PIRSA calculation based on State average milk production per cow; milk production is not reported at the regional level.

Much of the wine produced from the region is exported and continued competition in export markets suggest that export prices are unlikely to increase in the short term. Table 11 below depicts the trend in purchase prices and average export prices over the last 9 years.

Table 11: SE Winegrape Purchase and Wine Export Price

	Limestone Coast Winegrape Weighted Average Purchase Price (\$/t)	Limestone Coast Average Export Price (A\$/litre FOB)
1998-99	1,555	
1999-00	1,548	
2000-01	1,585	8.68
2001-02	1,514	9.94
2002-03	1,489	11.24
2003-04	1,094	10.74
2004-05	1,005	8.01
2005-06	898	7.12
2006-07	1,111	8.20
2007-08	1,168	7.84
2008-09	1,019	7.48

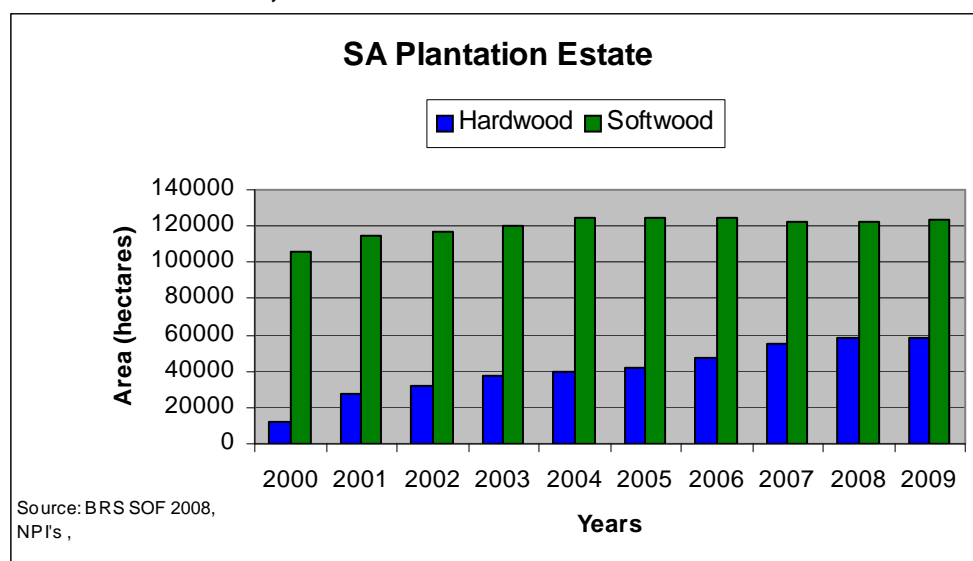
Source: NUP and Winegrape Purchases Price Dispersion Report and AWBC Export Approval Database based on GI label claim

3.6. Forestry

The Green Triangle region, overlapping the border of south east South Australia and south west Victoria, has been a major softwood plantation region since the early 20th century and is the second largest plantation forestry region in Australia. SA's share of the region is around 61% of the softwood plantations and around 24% of the hardwood plantations (Green Triangle Regional Plantations Committee 2010).

The majority of South Australian plantations are in the south east. In 2009, these plantations totalled 149,980 ha in area with 42,154 ha being hardwood (predominately eucalyptus) and 107,826 ha being softwood (predominately radiata pine). South Australia has seen a steady increase in softwood and hardwood plantations as illustrated in figure 10 over the page.

Figure 10: Plantations Area, SA



Most of the hardwood plantations were established in the last 10 years with only 249 ha established in 2009 (National Plantations Inventory). This recent reduction in the planting rate may be a response to reduced Managed Investment Scheme activity and/or lack of certainty regarding water allocation.

In the south east radiata pine plantations are harvested to produce sawlogs and pulpwood for large scale integrated processing industries located in Mount Gambier, Nangwarry, Tarpeena, and Millicent. Over 2 million cubic metres of softwood logs are harvested each year (see Table 12). Hardwood logs are currently processed into woodchips for the export market.

Table 12: SE Volume of Softwood and Hardwood

	Logs Production (cubic metres)		Logs and woodchips exported via Portland (Vic) (tonnes)	
	Softwood	Hardwood	Softwood	Hardwood
2004-05	2,064	0		
2005-06	2,099	80		
2006-07	2,153	0	380	10
2007-08	2,213	1	383	50
2008-09	na	0	295	53

¹ PIRSA calculation based on ABARE data and plantation areas as log production and trade is not reported at the regional level.

Due to some under-reporting, ABARE is currently reviewing its 2008-09 data (personal communication). Nevertheless an indication of the trend can be gauged from the 6% fall in harvesting volumes for 2008-09 reported by ForestrySA in its annual report. With the maturing of the hardwood plantations, future harvesting volumes are expected to increase,

4. FUTURE SCENARIOS

Future demand for land and water resources in the region will depend on a whole range of unpredictable or uncontrollable variable such as drought, Australian dollar value, EU and US export subsidies, dairy substitutes, cheap South American red meat and the list goes on. Despite this uncertainty the following sections outline some of the key variables and possibilities available to some of the primary industries in the SE under key macroeconomic assumptions as stated in the table 13 below.

Table 13: Macroeconomic Assumptions

		2010	2011	2015	2025
Australian Economic Growth	% pa	3	4	4	4
Interest Rates	% pa	6.5	6.8	6.8	6.8
Nominal Exchange Rate	\$US	0.88	0.86	0.8	0.8
Trade Weighted Index	index	69	67	62	62
Australian population	million	21.6		22.8	24.9

Source: ABARE Outlook 2010, Intergenerational Report 2010

The sections below also comment on the relationship between the estimated growth scenarios and the demand for land and water. The final section summarises the land and water use estimates under each of the scenarios described.

4.1. Winegrapes

In recent years the rapid growth in demand for Australian wine has slowed, as competition in export markets has increased. Strong competition in both the export and domestic markets is expected to place pressure on regions where the grape prices are lower relative to the costs of production.

Key assumptions in the analysis include:

- No net plantings from 2009 due to current structural oversupply. Given that it takes approximately 4 years for newly planted cool climate vines to reach commercial bearing the total planted area in 2009 will not be in full production until 2013.
- Average yield in the Lower Limestone Coast (7.6 tonnes/hectare) is estimated by the 5 year average between 2004-05 and 2008-09 (see Table 9 above)
- ABARE Australian Wine Grape Projections to 2010-11 comment that wine grape prices are expected to remain subdued in the medium term due to continual increase in the stocks to sales ratio as wine sales continue to fall in both domestic and export markets. The Limestone Coast Winegrape Weighted Average Purchase Price in 2008-09 of \$1,019 per tonne has been assumed to continue.
- Continual competition in accessing export markets suggest that prices is unlikely to increase in the short term. The Limestone Coast Average Export Price in 2008-09 of A\$7.48 per litre FOB has been assumed to continue.
- Domestic consumption of wine was 28.9 litres per person in 2008 (ABS cat 4307.0.55.001).
- All grapes are processed into wine and all wine is sold – there is no addition to stocks of wine held and sales move in line with grape production.

Table 14: Potential Winegrape Production by 2025

	Low	Expected (= 2010 value)	High
Volume of Production (tonnes)	97,670	114,900	155,115
Change between 2010-2025	-15%	0	35%
Value of Production (\$m)	\$85	\$117	\$180
Change between 2010-2025	-15%	0	15%

While the scenario for winegrape production is expected to remain unchanged in real terms, the long term annual growth in SE winegrape production could range between -2 and 3% per annum.

For winegrapes, it has been assumed that a linear relationship exists between output and demand for land and water resources. That is, for a 100% change in output, 100% more land and water resources will be required.

4.2. Horticulture

While potatoes and onions are currently the main vegetables produced in the region, the general outlook for further expansion of other horticulture in the SE over both the short term and longer term is very positive. Increasing water constraints in SA and other parts of the country suggests that the SE may become viewed as a viable location for future horticulture enterprises. Some horticulture crops require little additional infrastructure investments and may provide options for diversity in current enterprise mixes in the region.

In developing the future scenarios recent observations such as increasing horticulture services, such as Grow SA, and relocation of producers from other regions into the SE (particularly relevant for brassicas and lettuce growth scenarios) have been accounted for. Further key assumptions in the analysis include:

- consumption growth (assumed to be between 0% and 5%) supported by population growth and growth in domestic per capita consumption of fruit and vegetables to that of similar levels in other developed nations;
- change in taste toward less traditional vegetables, impacting more as lower growth in onions and potatoes; and
- prices assumed to remain unchanged.

As depicted in table 15 growth expectations are dependent on the variety of horticulture but on average the sector is expected to grow between 0% (low scenario) and 3% (high scenario) per annum.

It has been assumed that for key large-scale enterprises, such as potato and onion production, the demand for land and water resources per unit of output will decline at a rate of 1% per annum between now and 2025 through on-farm productivity improvements and increases in the scale of operations. For new and niche crops in the South East, this figure was estimated to be 0.5% per annum.

Table 15: Potential Horticulture Production by 2025

	Low (= 2010 Value)		Expected		High	
	'000kg	\$'000	'000kg	\$'000	'000kg	\$'000
Potatoes	132,780	43,815	146,055	48,200	159,335	52,580
Onions	11,625	5,230	12,785	5,755	13,950	6,275
Brassicas	72	90	6,860	8,320	8,220	9,965
Carrots	7,200	2,160	9,360	2,810	10,800	3,240
Beetroot	1.5	1.8	1.7	2.0	1.8	2.2
Lettuce	11	8.3	1,035	790	1,240	945
Apples	3,136	4,705	3,450	5,175	3,765	5,645
Silverbeet and Spinach	0.2	0.3	0.2	0.3	0.2	0.4

4.3. Broadacre

If the SE continues to have drier winters and lower water tables, cropping could become a dominant activity. The extra fodder and grain, together with the current strong demand for red meat from the US, Japan and Korea, may further support local animal production. Add to this the potential for increased meat demand from China and other Asian markets and dairy powder/cheese/butter oil exports to Asia and the Middle East, and the result could be more sheep, beef cattle and milking cows in the area, with more feedlotting for meat and milk taking place.

Important observations considered in the livestock and cropping analysis include:

- Wool production in the SE has been declining over the past two decades.
- Extensive beef grazing is expected to continue in the SE.
- Due to the seasonality of cropping and the uncertainty with respect to continuing dryness in the region no further expansion in cropping production in the region is forecast at this stage.
- Recovery in export markets and the unlikely return to the same levels of production in the regions reliant upon River water, any future expansion of the South Australian dairy industry is very likely to be centred in the SE.

Table 16 over the page highlights the resulting low, expected and high scenario estimates of the value of production for both the livestock and cropping sectors in 2025.

This expansion is likely to involve an increasing degree of intensification or the improvement of pastures and feed-cropping through irrigation, such that stocking densities are increased. This will mean that extra land area required will be very little if any. Irrigation and drinking water requirements however will rise. For an industry growth rate of 2-3%, extra water requirement may be 1–1.5% (i.e. half).

Dairy expansion is likely to involve an increasing degree of intensification, with cows fed and watered in purpose-built facilities as well as on traditional pastures. This will mean that extra land area required will not be in proportion to industry output; for an industry growth rate of 2-3%, extra land required may be 1-1.5% (i.e. half) and extra drinking, irrigation and cleaning water requirement may be 1.7–2% (i.e. two thirds). For an industry growth rate of 4-5%, extra land and water requirements may be 2-2.5% and 2.7-3.4% respectively.

Wheat and Barley are not expected to increase production over the forecast period and hence no assumptions have been made with regards to the change in demand for land and water resources into the future.

Table 16: Potential Livestock and Cropping Production by 2025

	Value 2010	Low	Expected	High
	(\$m)	(\$m)	(\$m)	(\$m)
Lamb	77	77	100	111
(% change)		0%	30%	45%
Beef	183	183	210	238
(% change)		0%	15%	30%
Wool	56	48	56	64
(% change)		-15%	0%	15%
Dairy	74	74	119	130
(% change)		0%	60%	75%
Cropping	58	58	58	58
(% change)		0%	0%	0%

4.4. Forestry

To estimate a 2025 low, expected and high growth scenario for primary and secondary forestry production in the South East, a number of relevant considerations have been made. These include any new developments that have been announced publicly and industry projections by forecasting organisations with any constraints on log resources taken into account.

In determining the low, expected and high scenarios, the four key developments that are expected to significantly influence the future outlook for the forestry sector in the SE include:

1. the volume of broadleaved pulpwood harvesting. This is expected to increase rapidly in the Green Triangle region over the next few years, and is forecast to reach a long-term sustainable supply level of around 3.7 million cubic metres per year in the next 5-10 years (BRS 2007);
2. the establishment of the Penola Pulp Mill;
3. the wood pellet mill which would sell output into overseas export markets; and
4. Improvement in efficiency and returns from increasing processor economies of scale (proposal presented to the Forest Industry Development Board 2009).

For the low scenario the developments mentioned above, except the hardwood harvesting, are not expected to occur before 2025. It has also been assumed that harvesting volumes might fall by 20% for hardwoods and 10% for softwoods compared to the expected scenario

Other relevant assumptions in the analysis include:

- the forecasted increase in log supply between 2015 and 2025 by the Bureau of Rural Sciences BRS (2007);

- a forecasted 2% per annum increase in woodchip prices to 2014/15 by IBIS (IBISWorld, 2009). It is assumed that this trend could continue to 2025; and
- a 1.5% price increase per annum is assumed to apply to the value of processed forestry production from 2010-11 to 2024-25 for both the expected and high growth scenarios. This is based on half the rate of the 3% projected increase in revenue for the value of the sawmilling and timber resawing and dressing industry in IBISWorld's projections to 2014-15. It is assumed that this trend could continue to 2025.

Table 17 below highlights the resulting low, expected and high scenario estimates of the value of production for both the forestry and forest products sectors in 2025.

Table 17: Forestry Sector 2025 Outlook for South East of South Australia (\$bn)

Sector	Value 2010	Low	Expected	High
Primary	0.16	0.3	0.4	0.4
Manufactured/Processing	1.6	1.7	2.8	2.8

Sources: ABARE (2008), BRS (2007), IBISWorld (2009), GTRPC (2009), KPMG (2009), Premier of South Australia Media release 18 October 2007, Adelaidenews.com.au 6 May 2009.

Taking account of all these variables and uncertainties, the value of annual plantation growth between 2010 and 2025 is expected to be in the range of 3% to 6% per annum and processing 0% to 4% per annum.

As described above, the growth forecasts to 2025 are based on supplies from existing plantations and replanting of existing areas, with an increase in the value of output coming from price changes rather than quantities of output. Hence, it has been assumed that the growth scenarios for forestry do not impact on regional land and water resources.

It is worth noting here however that in 2004 the South East Forestry sector was granted provisions in the regional water budget for an upper bound or 'threshold' on the limit of additional land that can be planted to forestry (~59,000 ha). Currently about 40,000 hectares remains unplanted with 6,000 hectares currently quarantined by the Minister for Environment and Conservation. Due to market conditions the uptake of this area has slowed in recent years and it has been assumed that it will not affect the 2025 Outlook (see table 17 above)

4.5. Land and Water Use Implications

Each of the industry growth scenarios described above has the potential to increase the demand for land and water resources in the SE. Tables 18 and 19 quantify the changes to land and water use by industry estimated for each of the low, expected and high growth scenarios based on the assumptions for land and water outlined in each of the sections above.

Table 18: Growth Scenario Impacts on Land Use

	Base Case	Updated 2025 Land Use		
	(ha)	Low	Expected	High
Sheep and Beef Pasture	1,282,163	1,282,163	1,282,163	1,282,163
Cropping (inc wheat and barley)	211,434	211,434	211,434	211,434
Irrigated Dairy Pasture	29,287	29,287	38,073	52,351
Grapes	17,518	12,657	12,657	19,650
Other Agriculture	9,122	9,122	10,072	11,651
Forestry	162,452	162,452	162,452	162,452

Table 19: Growth Scenario Impacts on Water Use

	Base Case	Updated 2025 Water Use		
	(ML)	Low	Expected	High
Sheep and Beef Pasture	0	0	0	0
Cropping (inc wheat and barley)	1,874	1,874	1,874	1,874
Irrigated Dairy Pasture	158,597	158,597	221,401	330,995
Grapes	6,673	4,821	4,821	7,485
Other Agriculture	67,549	67,549	74,581	86,276
Forestry		0	0	0

REFERENCES

- ABARE (2004), e-report 04.14 Engineered Wood Products;
- ABARE (2008), Regional Outlook Conference Mt. Gambier;
- ABARE (2009), Australian Commodities, March 2009;
- ABARE (2009), Australian forest and wood products statistics (2007-08), Canberra;
- ABARE (2009), Australian Wine Grape Projections to 2010-11;
- ABARE (2010) Issues & Insights 10.5 Adapting to water scarcity, March 2010;
- ABARE (2010) 'Australian forest and wood products statistics Sept & Dec quarters 2009' - http://www.abare.gov.au/publications_html/afwps/afwps_10/afwps_may10.pdf;
- ABS (2009), Consumer Price Index Cat. No.6401.0 Adelaide;
- ABS data category no. 4307 – Australian Consumption of Alcohol;
- ABS data category no. 1329 – Australian Grape Crush & Wine Production;
- ABS (2009), International Trade, cat. No. 5465.0, Canberra;
- ABS (2009) Manufacturing Industry South Australia, Industry Class by State and Region, Additional Datacube 82210DO010 2006-07, Canberra;
- Adelaidenow.com.au, Wood pallet plant in Mount Gambier, 5 May 2009;
- BRS (2006), 'Australia's Plantations 2006' (BRS) - http://adl.brs.gov.au/mapserv/plant/report/plan_au/Plantations_100dpi.pdf;
- BRS (2007), 'Australia's Plantation Log Supply 2005-2049' (BRS) - http://adl.brs.gov.au/data/warehouse/pe_brs90000003693/logSupply.pdf;
- BRS (2009), Plantation Log Supply 2005-2049, Canberra
Department of Energy, Trade and Infrastructure (2008-09) Maritrade database, sourced from ABS data;
- BRS (2010), 'Australia's Plantations 2010 Inventory Update' (BRS) - http://adl.brs.gov.au/data/warehouse/pe_brs90000004201/NPIupdate2010_20100525_ap14.pdf;
- Econsearch (2008), 'The Timber Industry and Lower Limestone Coast Water Allocation Planning: Socio-Economic Aspects' (EconSeach) - http://www.pir.sa.gov.au/data/assets/pdf_file/0020/95213/EconSearch_final_Dec_2008_2.pdf;

FIDB (2010) 'A Conceptual Framework for the development of the South Australian Forest Industry' -

http://www.pir.sa.gov.au/__data/assets/pdf_file/0003/128154/Conceptual_Framework_March_2010.pdf;

<http://sj.farmonline.com.au/news/state/horticulture/vegetables/se-can-be-austs-future-salad-bowl/1780860.aspx>;

<http://www.gtplantations.org/>;

GTRPC (2009), Future Wood Flows Across the Green Triangle Region, Green Triangle Regional Plantation Committee, Mount Gambier;

<http://www.horticulturelimestonecoast.com/>;

IBISWorld (2008), IBISWorld Outlook 2014/15, Publications: C2311 Log Sawmilling in Australia (2009); C2313 Timber Resawing and Dressing (2008), C2334 Paper Bag and Sack Manufacturing in Australia;

KPMG (2009), Australian Pine Log Price Index;

PGIBSA (2008) South Australian Winegrape Utilisation and Pricing Survey, Phylloxera and Grape Industry Board of SA (and previous issues);

Premier of South Australia, Parliament gives go ahead for Penola Pulp Mill (18/10/2007)

SA Food Centre, SA Fruit, Vegetables and Nuts Market Overview;

http://www.virginiahc.com.au/web-content/pages/About_us/welcome.html

APPENDIX A: LAND USE IN THE SOUTH EAST 2003 & 2008.

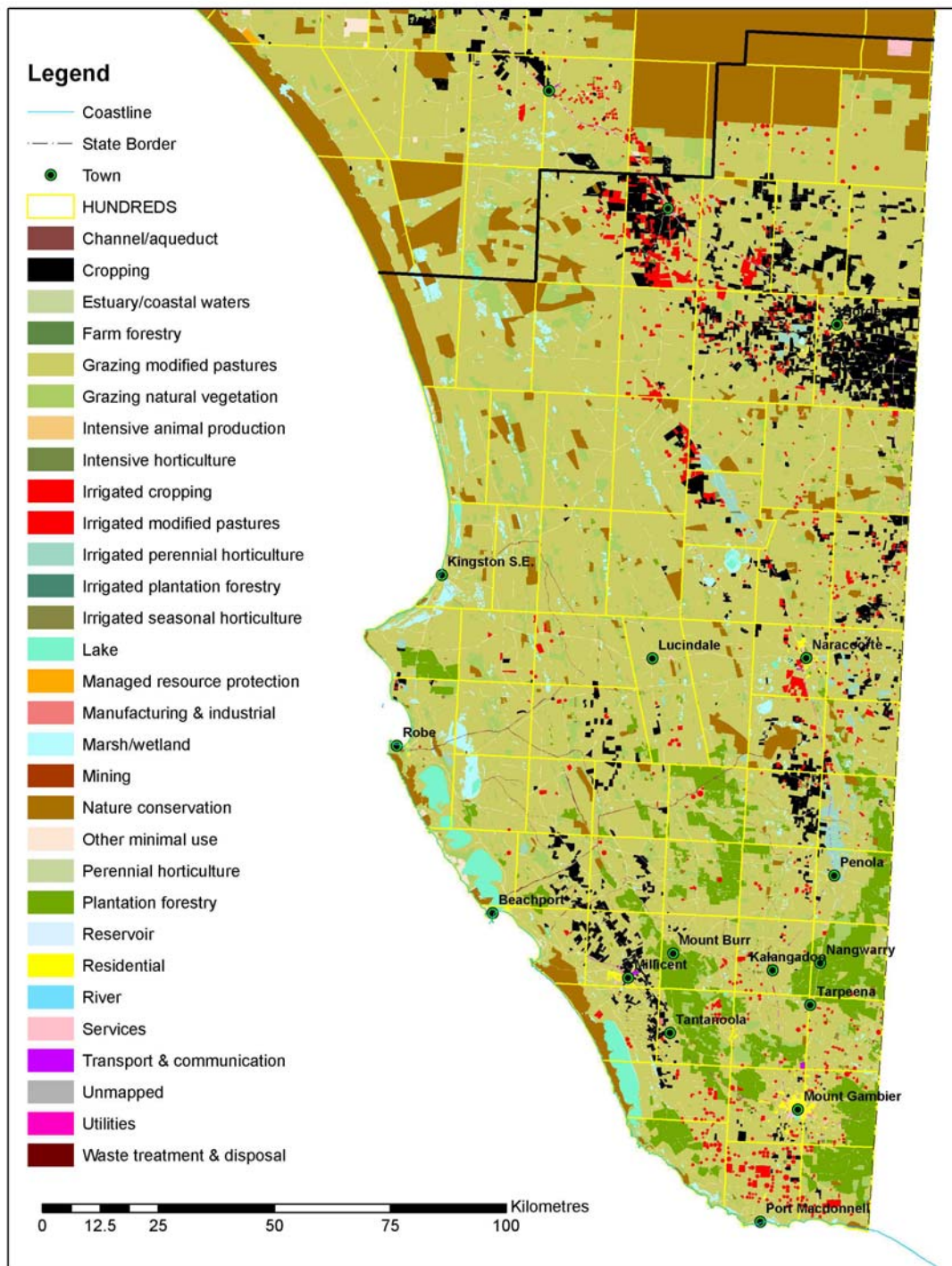
This dataset contains the combined datasets of the South Australian NRM Regions mapped in 2007 and 2008. The land uses (LU_TER_V6) were collected in the Australian Land Use and Management (ALUM) classification version 6.

The most recently acquired land use mapping for the state, ranging in capture dates from 1999 to 2003, were clipped to each of the NRM Region boundaries. The DCDB was overlaid onto the land use to show property boundaries that had previously been dissolved out. Additional data was overlaid to help define protected areas, native vegetation, planted vegetation and farm dams. Extensive field work updated those land uses that had changed since the previous survey. Aerial photography and satellite imagery helped to define any new boundaries.

Desktop editing included checking each land parcel against the most recent imagery available, using the imagery, land use descriptions in the DCDB and any other supporting evidence to assign a land use code. Field verification involved taking a digital copy of the data into the field, traversing all roads in the region and editing errors and adding new land uses. Due to the size of the project area and cost constraints involved, field verification was not carried out in the SA Arid Lands and Alinytjara Wilurara NRM Regions. An accuracy assessment was carried out in the Adelaide and Mount Lofty NRM Region, resulting in an average accuracy of 88%. Due to time and cost constraints, the accuracy assessment was not carried out in the other Regions, but as the same methodology and some of the same staff were involved in all Regions, it provides a certain level of confidence that a similar level of accuracy was achieved.

For a detailed explanation of Australian Land Use and Management (ALUM) classification, refer to the following website: <http://adl.brs.gov.au/mapserv/landuse/> ANZ Metadata Tool: To view or edit this metadata in ArcCatalog, download the ANZMeta metadata tool from <http://www.esriaustralia.com.au/services/pages/support>

Limestone Coast Land Use, South Australia 2003



Limestone Coast Land Use, South Australia 2008

