

GREAT AUSTRALIAN BIGHT RESEARCH PROGRAM

RESEARCH REPORT SERIES

Economic Baseline and Model Report

Project 6.2

Economic Profile of Eyre and Western Region

Report prepared by

The SA Centre for Economic Studies

The University of Adelaide

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GREAT AUSTRALIAN BIGHT RESEARCH PROGRAM

The Great Australian Bight Research Program is a collaboration between BP, CSIRO, the South Australian Research and Development Institute (SARDI), the University of Adelaide, and Flinders University. The Program aims to provide a whole-of-system understanding of the environmental, economic and social values of the region; providing an information source for all to use.

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Glossary of Terms

ABS	Australian Bureau of Statistics
AC	Aboriginal Council
ANZSIC	Australia and New Zealand Standard Industry Classification
AW NRM	Alinytjara Wilurara Natural Resources Management
CAGR	Compound average growth rate
CDEP	Community Development Employment Projects
CGE	Computable General Equilibrium (model)
ChAFTA	China-Australia Free Trade Agreement
CoPS	Centre of Policy Studies
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DofE	Department of Employment
DPLG	Department of Planning and Local Government
EPMA	Eyre Peninsula Mining Alliance
ERP	Estimated Resident Population
FIFO	Fly-in-fly-out
FTA	Free Trade Agreement
FTE	Full-time equivalent
GAB	Great Australia Bight
GABRP	Great Australia Bight Research Program
GDP	Gross Domestic Product
GP	General Practitioner
GRP	Gross Regional Product
GSP	Gross State Product
INGP	Indigenous status
I-O	Input-Output (model)
JAEPa	Japan-Australia Economic Partnership Agreement
KAFTA	Korea-Australia Free Trade Agreement
LGA	Local Government Association of South Australia
LGASA	Local Government Association of South Australia
NAPLAN	National Assessment Program - Literacy and Numeracy
NIEIR	National Institute of Economic and Industry Research
NOM	Net overseas migration
PC	Provincial Cities
PHIDU	Public Health Information Development Unit
PIRSA	Primary Industries and Regions SA
R-12	Reception to year 12
RDAF	Regional Development Australia Fund
REACS	Rural Environment and Agricultural Commodities Survey
RESA	Resources and Engineering Skills Alliance
RJCP	Remote Jobs and Communities Program
RSE	Relative standard errors
SACES	South Australian Centre for Economic Studies
SLA	Statistical Local Area
TRA	Tourism Research Australia
VET	Vocational Education and Training
VU-TERM	Victoria University's The Enormous Regional Model
WEP	Whyalla and Eyre Peninsula

Executive Summary

The South Australian Centre for Economic Studies (SACES), other researchers at the University of Adelaide, and researchers at Victoria University have prepared an Economic Baseline of the Eyre Peninsula and West Coast region of South Australia to provide background as to the structure of the economy and labour market as part of the Great Australian Bight Research Program. The Baseline draws together existing data from the ABS Census/catalogues, various government departments, previous studies in the region and consultations with key regional stakeholders in Port Lincoln, Whyalla to set out a socio-economic profile for the region.

This data has been used to improve the existing model of regional economies embedded within Victoria University's The Enormous Regional Model (VU-TERM) developed by the Centre of Policy Studies (CoPS) which can be used to model the potential economic impacts of offshore oil and gas development in the Great Australia Bight (GAB).

Chapter 2 sets out the economic baseline, presenting data and analysis covering demography, economy, employment, education, health, Yalata Aboriginal Reserve. Data for each section is presented in table format, bar charts and line graphs. Analysis also covers the region's capacity to support future development needed to support the oil and gas industry including future growth/demand for labour, infrastructure, capital inputs and government funding. Additional data on direct input requirements for Agriculture Forestry and Fishing, Fishing Hunting and Trapping, Aquaculture, Oil and Gas Extraction and Exploration and Mining Support industries, industry of employment by council and qualifications can be found in the appendices. A case study of Bass Strait, using a similar model, is included for illustrative purposes.

Key findings from the data and analysis in this report reveals that the region:

- is large (comprising 23.6 per cent of South Australia) and sparsely populated, and there is a concentration of residents in towns along coastal Eyre Peninsula;
- contains two Provincial Cities, Whyalla and Port Lincoln, together accounting for 65 per cent of Eyre Peninsula and West Coast's estimated resident population (ERP);
- has a slower than state average population growth, an older age profile, an aging population, and a small, rapidly increasing, Indigenous population;
- has an unemployment rate of 5.8 per cent as at December 2013, below South Australia's unemployment rate of 6.3 per cent;
- key industries include agriculture, fishing, aquaculture, mining and tourism;
- has a gross regional product (GRP) of \$2.6 billion, accounting for 3 per cent of South Australia's gross state product (GSP) in 2012/13;
- is a major exporter of cereals, sheep, fish, iron ore, and other minerals; and
- employment is dependent on primary production, i.e., cereal cropping and sheep livestock, mining, construction and tourism;

Key challenges

Discussion with industry leaders and local government representatives conducted in mid- to late-2014, as well as earlier consultations with local councils in the Eyre Peninsula identified a wide array of challenges that can be grouped as follows:

Education

- school performances and Year 12 completion rates are below state average, higher rates of truancy and difficulties retaining top students; and
- strong local participation in the VET sector, with an above average proportion of the working age population holding a Certificate III or IV qualification, but significantly below average rates of higher level qualifications.

Skills shortages

- out-migration of Year 12 leavers, professionals, qualified tradespersons has been occurring and as a result, some skilled labour requires sourcing outside the Eyre Peninsula and West Coast, e.g., professional, scientific and technical services for mining exploration.

Infrastructure construction/upgrades required

- rail network, small regional airports, ports, remote Indigenous communities and power generation; and
- potential airport upgrade at Ceduna;

Indigenous challenges

- high rates of unemployment and labour force participation is low compared with non-Indigenous groups;
- income support dependence is high and, education outcomes are below the state average;
- skills training and development is low; and
- Indigenous labour is generally at a disadvantage.

Out-migration of younger residents

- the long term trend across the region is one of significant out-migration.

Councils

- nine of the 12 councils are relatively small; and
- there is increased demand for services, including education, health, social and law enforcement due to mining led population growth.

Cooperation between business and government

- there appears to be cooperation between the exploration companies whether mining or oil and gas with Commonwealth, State and Local Government, (i.e., agreed protocols).

Chapter Three outlines the theory underpinning the VU-TERM model and its application to the development of the model. For this project, the VU-TERM database is aggregated so as to concentrate on regions straddling the Great Australian Bight. The model has dynamic capability, enabling a comparison year-by-year between a forecast baseline and policy scenarios. In the context of exploration and oil field development the model enables these distinct phases (i.e., exploration, construction and operations) to be assessed year by year.

Chapter Four briefly considers the need to keep the baseline information current (some of which will come as the project expands), the benefit of running different scenarios using the model and the importance of both collecting additional information from councils as well as providing information back to councils with each stage of development.

CHAPTER ONE

Introduction

Four exploration permits were awarded to BP in 2011 to undertake exploration for oil and gas in the Great Australian Bight (GAB), approximately 300 km south west of Ceduna. The Great Australian Bight Research Program (GABRP) literature review (Rogers et al. 2012) highlighted that existing knowledge about the economic structure of the economy of the Eyre Peninsula and the West Coast region was insufficient to accurately model the impacts of exploration and production activity in the Great Australian Bight.

As part of the involvement of the University of Adelaide in the GABRP, researchers from the South Australian Centre for Economic Studies (SACES), Global Food Studies, and from Victoria University's Centre of Policy Studies committed to developing a socio-economic baseline of the Eyre Peninsula and West Coast region.

There are also two related studies funded under the GABRP, developing a social profile of the Great Australian Bight communities, and developing a baseline for the economic value of the fishing industry in the GAB. Unfortunately differences in the timing of the research have meant that this study has only been able to draw on very preliminary findings of the social research, and has not been able to draw on the study into the economics of the fishing sector at all.

The objectives the GABRP is seeking to achieve through undertaking this study are:

1. Develop a baseline understanding and description of the Eyre Peninsula and West Coast economy and the processes currently driving development of this region;
2. Build a capacity to identify the potential impact of BP's activities on the region with a focus on the contribution that BP could make to social and economic development;
3. Develop an understanding of the region's socio-economic capabilities and capacity, which can support future work to ensure that potential benefits to the region are maximised.

This study addresses the objectives set for it in two ways, through establishing a baseline understanding of the socio-economic structures and challenges of the region; and by developing a tailored economic modelling capability focussed on the region.

Socio-economic baseline

The socio-economic baseline is set out in Chapter Two and examines the Eyre Peninsula and West Coast's strengths, capabilities and capacity for further development which addresses key issues in relation to:

- the nature of structural adjustment and development that has been occurring and can be reasonably expected to occur over the next 10 years;
- the capacity of the labour market to supply workers needed, availability of training and impacts on other industries;
- identifying declining sector(s) undergoing structural adjustment and the potential to shift labour from declining sector(s) into employment related to off-shore oil and gas production; and
- identifying infrastructure requirements (housing and land availability, electricity, water, sewerage treatment, schools, hospitals, etc.) associated with development necessary to support expected additional population growth.

Drawing on Australian Bureau of Statistics (ABS) data both from the Census and from other collections; previous SACES studies; Regional Development Australia studies; data collated in other research studies; and consultations with selected stakeholders in local government and industry, this report sets out a range of economic and social indicators. Analysis is structured under themes of demography, economy, employment, education and health. Current infrastructure and required new investment is described for roads, rail, ports, airports and power supply. A separate analysis of Yalata Aboriginal Reserve is included using Census data describing labour market and income indicators. The study was also able to draw in some very preliminary findings as to issues that were emerging as part of the social research.

In Appendix A, a case study of Bass Strait is presented as a current example of the nature and scale of potential long term economic impacts on local communities, governments, states and Australia, associated with oil and gas exploration and production. Appendix B contains additional industry employment data by Local Government Area (LGA). Appendix C contains direct requirement coefficients for Australia and the Eyre Peninsula and West Coast region (based upon Regional Development Australia boundaries) for oil and gas extraction, exploration and mining support services, aquaculture, fishing, hunting and trapping and agriculture, forestry and fishing support services sectors. Appendix D provides the detailed data on the level of education/ qualifications by council area.

Regional model

In addition, it was determined that a more detailed understanding of the structure and linkages within the local economies of the Eyre Peninsula and West Coast was required. This information on the structure and linkages also allowed the development of a modelling capability that will allow the impact of BP's activities, and the region's capacity to realise benefits from any oil and gas related activity to be quantified. Chapter Three provides a description and analysis of the economy of the Eyre Peninsula and West Coast as it is now, embedded in the framework of a Computable General Equilibrium (CGE) model called The Enormous Regional Model (VU-TERM) developed by the Centre of Policy Studies (CoPS) at Victoria University. VU-TERM contains significant detail on regional economies and inter-regional trade within Australia.

Future developments

The final chapter (Chapter Four) provides some thoughts on how the research results can contribute to understanding the region and to policy formation.

CHAPTER TWO

Eyre Peninsula and West Coast

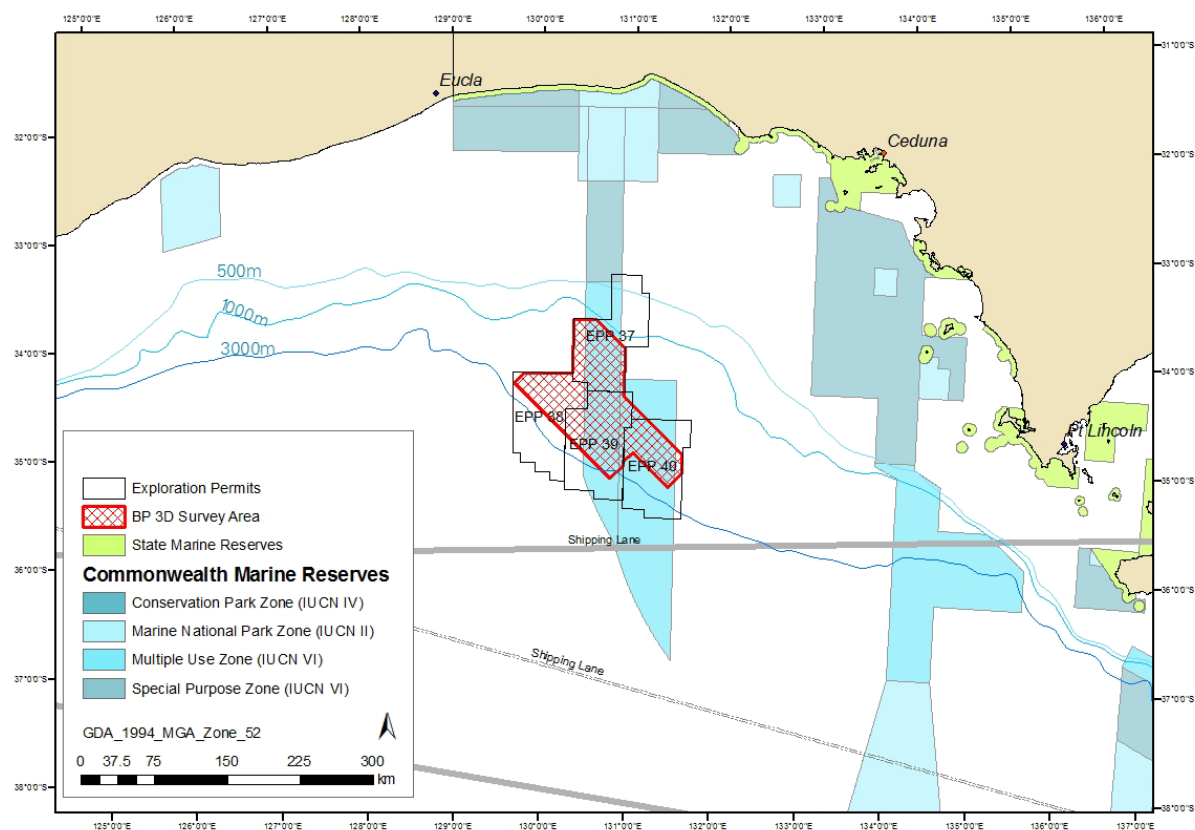
2.1 About the region

The Eyre Peninsula and West Coast stretches from the Upper Spencer Gulf to the Western Australian border, incorporating one third of South Australia's coastline (2,000kms). Two Provincial Cities, Whyalla and Port Lincoln, lie within the region. Fertile farmland is located in southern Eyre Peninsula, whereas the Far West Coast incorporates part of the Great Victoria Desert. The Eyre Peninsula contains mineral rich deposits – the Gawler Craton and Eucla Basin - containing significant reserves of high grade deposits of hematite and magnetite iron ore. Key industries include agriculture, tourism, fishing, aquaculture and mining.

Great Australian Bight

The Great Australian Bight is a bend in the coast (forming an open bay) on the southern edge of the Australian continent. Starting at Port Lincoln on the Eyre Peninsula's southern tip the GAB stretches westwards along coastal Eyre Peninsula through Streaky Bay, Ceduna and Yalata in South Australia, finishing at Esperance in Western Australia. Map 2.1 shows the majority of the Bight, together with the location of BP's exploration permits in the GAB.

Map 2.2: Great Australia Bight – BP's exploration permits as at 2014



Source: Primary Industries and Regions South Australia (PIRSA).

However for the purposes of this socio-economic baseline, the regional boundaries are drawn slightly differently, as they are based on the Eyre Peninsula and West Coast regions of South Australia. This excludes those Western Australian regions on the GAB (although these are included as one of the regions in the regional CGE model developed as part of the project and described in Chapter 3) but including the eastern side of the Eyre Peninsula.

2.2 Local government areas

There are eleven local councils and one Aboriginal Council (AC) – Yalata Aboriginal Reserve, covering 48,341 sq/kms – approximately 4.9 per cent of the State. Areas and population density for each council area of Eyre Peninsula and West Coast and for South Australia are shown in Table 2.1, with council boundaries illustrated in Map 2.2.

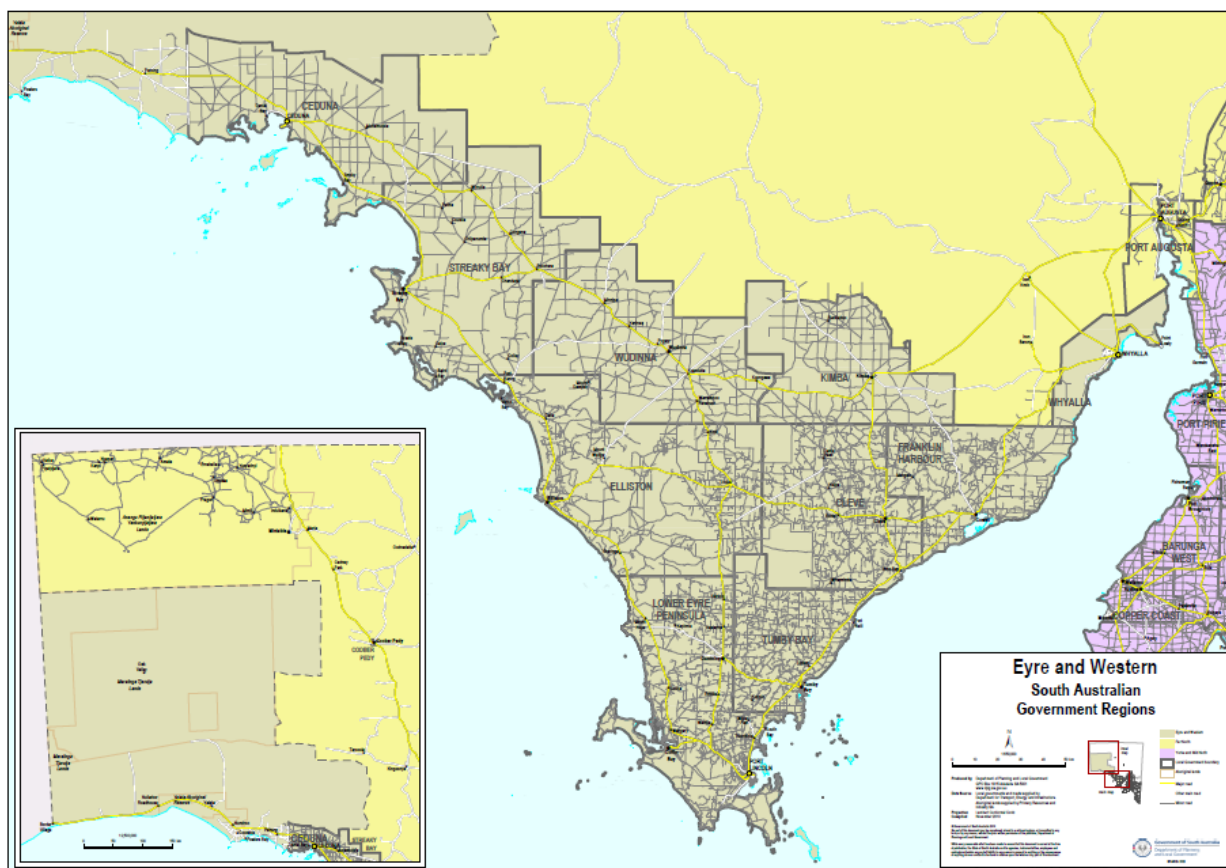
Table 2.1: Areas and population density, councils, Yalata - Eyre Peninsula and West Coast, 2013

Councils	Area sq/kms	Persons sq/km
Ceduna	5,427.1	0.68
Cleve	4,506.7	0.39
Elliston	6,500.0	0.16
Franklin Harbour	3,283.0	0.40
Kimba	3,986.2	0.28
Wudinna	5,393.8	0.24
Lower Eyre Peninsula	4,771.0	1.05
Port Lincoln	30.4	484.61
Streaky Bay	6,232.0	0.36
Tumby Bay	2,615.9	1.03
Whyalla	1,032.5	21.85
Yalata Aboriginal Reserve – AC	4,563.0	0.15
Eyre Peninsula and West Coast	48,341.6	1.20
South Australia	984,179.3	1.70

Note: (a) Based upon 2013 Estimated Resident Population (ERP) ABS, Regional Population Growth, Australia, Cat No. 3218.0. AC = Aboriginal Council.

Source: RDA Whyalla and Eyre Peninsula, 2013

Map 2.2: Local Government Regions in the Eyre Peninsula and West Coast of SA



Source: <https://www.sa.gov.au/topics/housing-property-and-land/building-and-development/land-supply-and-planning-system/south-australian-government-regions>

2.3 Demography

2.3.1 Population

The region's estimated resident population¹ (ERP) as at 2013 is 57,707 persons (Table 2.2). Sixty-five per cent of the resident population reside in the two Provincial Cities of Whyalla (22,562 persons) and Port Lincoln (14,732 persons). The remaining residents are distributed across the nine other councils comprising smaller coastal towns, notably, Tumby Bay, Elliston, Streaky Bay and Ceduna and inland towns, e.g., Cleve, Wudinna, Kimba and Lock. Two centres of Indigenous population are Oak Valley in the Maralinga Tjarutja Lands and Yalata in the Yalata Aboriginal Reserve.

In 2013 the region's share of South Australia's population was 3.5 per cent, down from 3.7 per cent in 2003. Between 2006 and 2013 annual population growth in the region averaged approximately half the South Australian total, i.e., the cumulative annual growth rate (CAGR) for Eyre Peninsula and West Coast of 0.47 per cent compared with a state CAGR of 1.05 per cent.

Table 2.2: Estimated Resident Population, councils, Yalata – Eyre Peninsula and West Coast, South Australia, Census 2006 and 2011, 2013

Councils	2006	2011	2013p
Ceduna	3,702	3,595	3,670
Cleve	1,947	1,757	1,751
Elliston	1,164	1,066	1,068
Franklin Harbour	1,298	1,295	1,297
Kimba	1,147	1,105	1,103
Wudinna	1,346	1,280	1,283
Lower Eyre Peninsula	4,537	5,013	4,997
Port Lincoln	14,060	14,462	14,732
Streaky Bay	2,067	2,175	2,245
Tumby Bay	2,609	2,616	2,706
Whyalla	21,989	22,561	22,562
Yalata Aboriginal Reserve (AC)	100	293	n.a
Eyre Peninsula and West Coast	55,966	57,218	57,707
South Australia	1,552,529	1,639,614	1,670,827

Note: (a): r=revised estimate; p=preliminary estimate; n.a. not available.

Source: ABS (2011) QuickStats database, ABS, Regional Population Growth, 2014a.

2.3.2 Population growth

Natural increase, i.e., the excess of births over deaths in a given year added 306 persons to the region's population in 2012, continuing the trend shown in Table 2.3 since 2007.

Birth rates in the Eyre Peninsula and West Coast are above the state average. In 2012 the region had 13.6 births per 1,000 people, compared with the state average of 12.3 births per 1,000 people for the same period. The longer term trend of higher than state average birth rates in the Eyre Peninsula and West Coast likely reflects differences in socio-economic conditions influencing decisions regarding family size.

¹ The official measure of Australia's population is the estimated resident population. It is based on the concept of a person's usual residence which is the dwelling at which a person spends six months or more during the census year. The ERP is compiled at the 30th of June each census year and updated quarterly for Australian states and territories. Intercensal estimates are produced using demographic statistics (births, deaths, overseas and interstate migration as well as other sources which trace population changes e.g., Medicare registrations). Population estimates are first released as preliminary estimates available five to six months after the reference period. Revised estimates are published twenty-one months after the end of the financial year as additional data becomes available. Final estimates are published for the previous intercensal period after each period. See ABS, Population Concepts, Cat No. 3107.0.55.006, (Chapter 2) for further explanation of measuring the estimated resident population.

Table 2.3: Births, deaths and natural increase – Eyre Peninsula and West Coast and South Australia, 2007-2012

Year	Eyre Peninsula and West Coast				South Australia			
	Births (persons)	Deaths (persons)	Natural increase (persons)	Births per 1,000 people	Births (persons)	Deaths (persons)	Natural increase (persons)	Births per 1,000 people
2007	760	441	+319	13.5	19,584	11,957	+7,627	12.5
2008	789	455	+334	14.0	20,160	11,904	+8,256	12.7
2009	814	452	+362	14.4	19,689	12,326	+7,363	12.3
2010	770	475	+295	13.5	20,017	12,606	+7,411	12.3
2011	792	421	+371	13.9	19,837	11,448	+8,389	12.1
2012	777	471	+306	13.6	19,837	13,132	+6,705	12.3

Source: ABS, Births Australia 2012, and ABS, Deaths, Australia 2012

Population change is comprised of the sum of natural increase, plus net migration from intrastate, interstate and overseas sources. Natural increase is the primary growth component of the Eyre Peninsula and West Coast's population, providing a smooth and consistent annual population increase. Inward and outward intrastate and interstate migration is more volatile year on year.

Over the period 2003-2013 population in the Eyre Peninsula and West Coast increased by 3.3 per cent or 1,909 persons (CAGR: 0.3 per cent), a significantly lower growth rate when compared to overall population growth for South Australia over the same period of 9.9 per cent or 150,428 persons (CAGR: 0.9 per cent). Population growth is concentrated across five councils. In order of most significant these were, Port Lincoln, increasing by 740 persons, followed by the Lower Eyre Peninsula (up 716 persons), Whyalla (up 592 persons), Streaky Bay (up 243 persons) and Tumby Bay (up 114 persons). Councils of Cleve, Wudinna, Elliston and Kimba experienced population decline over the same period (Table 2.4).

Table 2.4: Population growth, councils – Eyre Peninsula and West Coast region, 2003-2013

Councils	Increase	Growth	CAGR
Ceduna	5	0.1	0.0
Cleve	-166	-8.7	-0.9
Elliston	-102	-8.7	-0.9
Franklin Harbour	-2	-0.2	0.0
Kimba	-97	-8.1	-0.8
Wudinna	-134	-9.5	-1.0
Lower Eyre Peninsula	716	16.7	1.6
Port Lincoln	740	5.3	0.5
Streaky Bay	243	12.1	1.2
Tumby Bay	114	4.4	0.4
Whyalla	592	2.7	0.3
Eyre Peninsula and West Coast	1,909	3.3	0.3
South Australia	150,428	9.9	0.9

Source: ABS, Regional Population Growth 2014a

Skilled labour moves to locations providing employment opportunities where specialised labour skills are demanded. Out-migration flows are more likely to be experienced in cities and towns not able to generate sufficient employment opportunities either within the town or immediate surrounds, as residents relocate.

Using Port Lincoln as an example, the success of the fishing and aquaculture industry, especially the Southern Blue Fin Tuna industry provides long-term employment opportunities and a reliable source of income, which in turn supports employment in the manufacturing and food processing, retail, construction, health and education sectors. Port Lincoln recorded the largest aggregate population increase over the 2003-2013 period and experienced positive net migration over the five year period between 2007 and 2012. Tumby Bay and Streaky Bay also recorded strong population increases and positive net migration over the same period based on the success of their agriculture, fishing, aquaculture and tourist sectors.

2.3.3 Population projections

Projections prepared by the Department of Planning and Local Government (DPLG), South Australia (DPLG),² estimate that the Eyre Peninsula and West Coast's resident population will be 60,771 persons by 2026 (Table 2.5), a net gain of 3,064 persons on the 2013 ERP of 57,707.

As a share of state population the DPLG projects the Eyre Peninsula and West Coast's population share will decline to 3.1 per cent of the State's resident population by 2026, down from 3.5 per cent in 2013. Projections for each council out to 2026 suggest increases in the Lower Eyre Peninsula (up 8.1 per cent) and Port Lincoln (up 5.3 per cent). Population declines are projected to occur (in order of largest decline) in Wudinna (down 6.9 per cent) and Kimba (down 2.4 per cent), with small declines in Streaky Bay, Cleve and Elliston.

Table 2.5: Projected population, councils – Eyre Peninsula and West Coast, and South Australia, 2016 to 2026

Councils	Projected resident population at 30 June (persons):			Growth 2016-2026; Per cent
	2016	2021	2026	
Ceduna	3,891	3,927	3,961	1.8
Cleve	1,975	1,962	1,946	-1.5
Elliston	1,190	1,187	1,177	-1.1
Franklin Harbour	1,355	1,364	1,374	1.4
Kimba	1,153	1,141	1,125	-2.4
Wudinna	1,299	1,255	1,210	-6.9
Lower Eyre Peninsula	5,091	5,299	5,502	8.1
Port Lincoln	15,312	15,738	16,131	5.3
Streaky Bay	2,095	2,079	2,061	-1.6
Tumby Bay	2,752	2,791	2,819	2.4
Whyalla	23,138	23,351	23,465	1.4
Eyre Peninsula and West Coast	59,251	60,094	60,771	2.6
South Australia	1,770,644	1,856,435	1,935,161	9.3

Source: Department of Planning and Local Government, 2011.

² For assumptions see explanatory notes see - Local government area projections 2006-2026, available at: <https://www.sa.gov.au/topics/housing-property-and-land/building-and-development/land-supply-and-planning-system/planning-data-for-research-and-mapping/population-and-demographics/population-projections>

The DPLG projections use fixed assumptions regarding natural increase (i.e., births minus deaths) and net migration flows based on historical population trends to produce estimates of what the population will look like in the future. As a caveat for readers the accuracy of population projections declines over longer time spans due to factors such as unforeseen policies and economic and societal changes which may cause deviations from assumptions. Natural increase is more predictable than migration as trends in birth and deaths, for the Eyre Peninsula and West Coast (and Australia), are more consistent and stable over the short term, trending up or down over the longer term. On the other hand, economic conditions (both domestic and international) can change in the short term, which in-turn affects employment opportunities and labour demand, causing volatility in net migration flows. Recent iron ore exploration and discoveries on the Eyre Peninsula and associated skilled labour demand in exploration, mine construction and operation will affect the estimates if mines move to the construction and operation phase (e.g., Iron Road mine at Warramboo/Wudinna).

In a 2013 study commissioned by the Local Government Association of South Australia (LGA SA) SACES analysed the impact of mining development on the Eyre Peninsula. The purpose of the study was to provide councils with a planning tool which could be used to estimate demand for services and new infrastructure requirements. As part of the study, SACES projected future population growth and settlement patterns in response to mining development to predict future infrastructure and service demands for each council up to 2026 under three potential mining development scenarios, (Table 2.6).³ The extent to which any of these scenarios are realised will depend on the international prices of the minerals in question, and the estimated production costs at each of the developments.

Table 2.6: Estimated mining related population increase, councils – Eyre Peninsula and West Coast, by 2026

Councils	Projected increase by 2026			
	Baseline	Scenario 1	Scenario 2	Scenario 3
Ceduna	200	200	263	326
Cleve	0	0	0	0
Elliston	0	137	137	137
Franklin Harbour	0	1,148	1,148	1,148
Kimba	0	173	308	308
Wudinna	0	1,034	1,034	1,034
Lower Eyre Peninsula	0	0	0	0
Port Lincoln ^(a)	0	0	0	0
Streaky Bay	0	2	6	6
Tumby Bay	0	1,017	1,017	1,017
Whyalla	727	727	727	843
Eyre Peninsula and West Coast	927	4,438	4,640	4,819

Note: (a) Employment numbers are not available for developing projects in the Port Lincoln area.

Source: SA Centre for Economic Studies (2013)

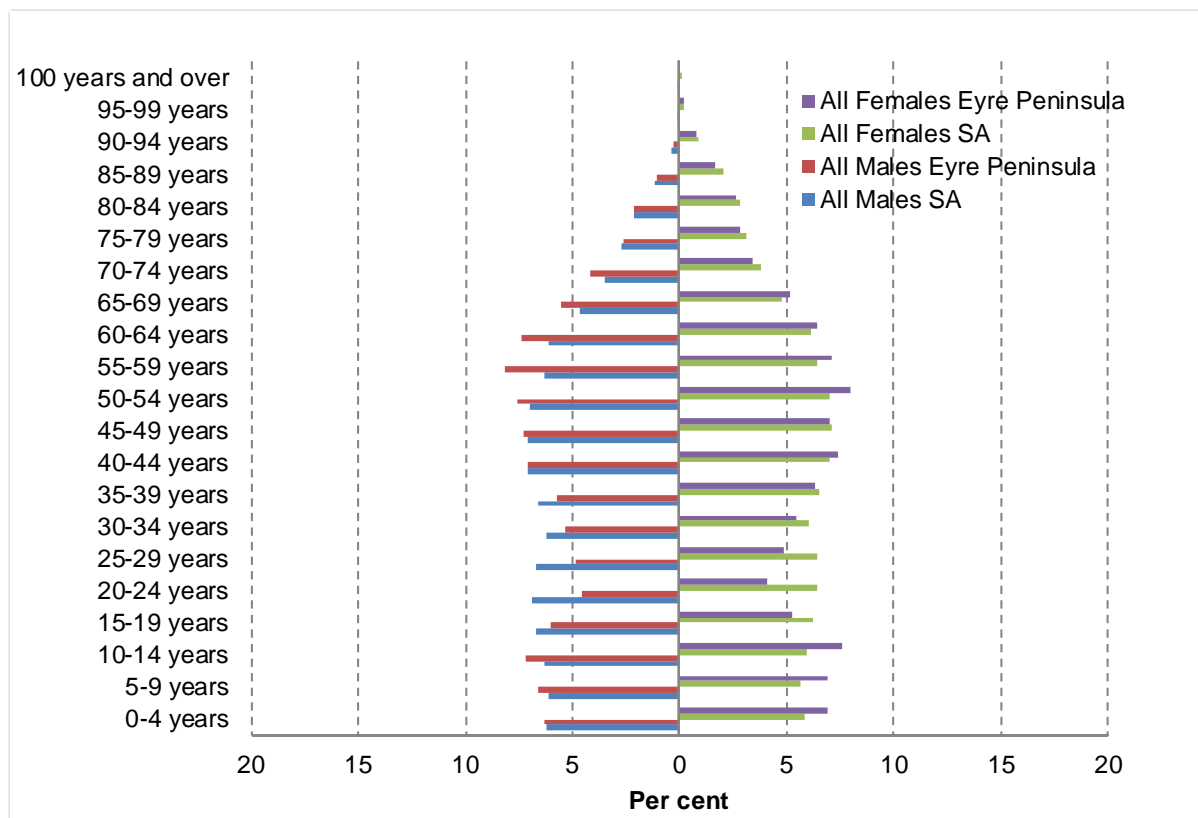
Under the three scenarios mining development in the Eyre Peninsula and West Coast is estimated to add between 4,438 to 4,819 additional persons to the region by 2026, in addition to the increase estimated by the DPLG based on existing trends.

³ Baseline population growth based on mines operating at the beginning of 2011. Scenario one models impacts from ten mines operating (i.e., mines currently operating plus mines "most likely" to enter into operation). Scenario two models impacts from 17 mines (i.e., mines from scenario one plus mines determined "likely" to commence operation). Scenario three models impacts from 20 mines commencing operation (i.e., all mines listed in the South Australian Major Developments Directory 2012/13, plus information gathered from surveys and websites). For further information re: modelling of various scenarios see: Impact of Mining and Resource Development: A Case Study for Eyre Peninsula Councils commissioned by the Local Government Association of South Australia, July 2013. pp. 47-51. Weblink: http://www.adelaide.edu.au/saces/publications/reports/consultancy/Impact_of_mining_on_local_government_Eyre_Peninsula.pdf

2.3.4 Age profile

Eyre Peninsula's older age structure (compared to South Australia), contains a lower proportion of persons in the 20-24, 25-29 and 30-34 age brackets and a larger proportion of over 55 year olds, (Figure 2.1). A similar, but less marked, age structure is found in Whyalla and Port Lincoln.

Figure 2.1: Age Structure – Eyre Peninsula, 2011



Note: Eyre Peninsula refers to the LGA's of: Ceduna, Cleve, Elliston, Franklin Harbour, Kimba, Lower Eyre Peninsula, Streaky Bay, Tumby Bay and Wudinna. Councils of Whyalla and Port Lincoln are excluded. Data is from the 2011 Census

Source: ABS Tablebuilder database.

2.3.5 Indigenous population

In the 2011 Census, the Eyre Peninsula and West Coast (inclusive of Yalata Indigenous Reserve) had 3,164 Indigenous residents; representing 5.5 per cent of the region's population, (Table 2.7)⁴, and 10.4 per cent of the total South Australian Indigenous population.

Table 2.7: Indigenous population – Eyre Peninsula and West Coast, Census 2006, 2011

Indigenous Status (INGP)	Census 2006	Census 2011	Change 2006-2011	
			Persons	Per cent
Aboriginal	2,580	3,090	+510	19.8
Torres Strait Islander	39	44	+5	12.8
Both Aboriginal and Torres Strait Islander	11	30	+19	172.7
Eyre Peninsula and West Coast	2,730 ^(a)	3,164	+434	15.9
Total Indigenous persons South Australia	25,554	30,432	4,878	19.1

Note: (a) Includes 100 Indigenous persons living in Yalata Aboriginal Reserve, for whom no breakdown by status available for 2006.

Source: ABS (2011) QuickStats database, ABS (2011) Yalata Aboriginal and Torres Strait Islander Peoples, Census 2011, ABS (2011) Yalata Basic Community Profile series.

⁴ Indigenous status (INGP) can be classified according to origin, i.e., Aboriginal, Torres Strait Islander or both Aboriginal and Torres Strait Islander.

Between Census 2006 and 2011 the region's Indigenous population increased by 15.9 per cent, compared with an overall 5.6 per cent population increase for South Australia. Faster population increase in the Indigenous community within the region (and the state, for which the growth rate is even higher than in the Eyre Peninsula and West Coast) is attributed to Indigenous age structure and fertility rate.

2.4. Economy

2.4.1 Gross regional product

Gross regional product (GRP) is a measure of the net contribution of a region to the State's economy, measured as the value of output less the cost of goods and services (including imports) used in producing the output. In 2012/13 the Eyre Peninsula and West Coast's GRP was valued at \$2.6 billion, accounting for approximately 3 per cent of South Australia's total output (valued at \$88.7 billion, 2012/13), (Table 2.8). Based on modelling by the National Institute of Economic and Industry Research (reported in .id the population experts, no date) GRP for the Eyre Peninsula and West Coast declined by 4.2 per cent between 2010/11 and 2011/12, and declined by 2.8 per cent between 2011/12 and 2012/13.

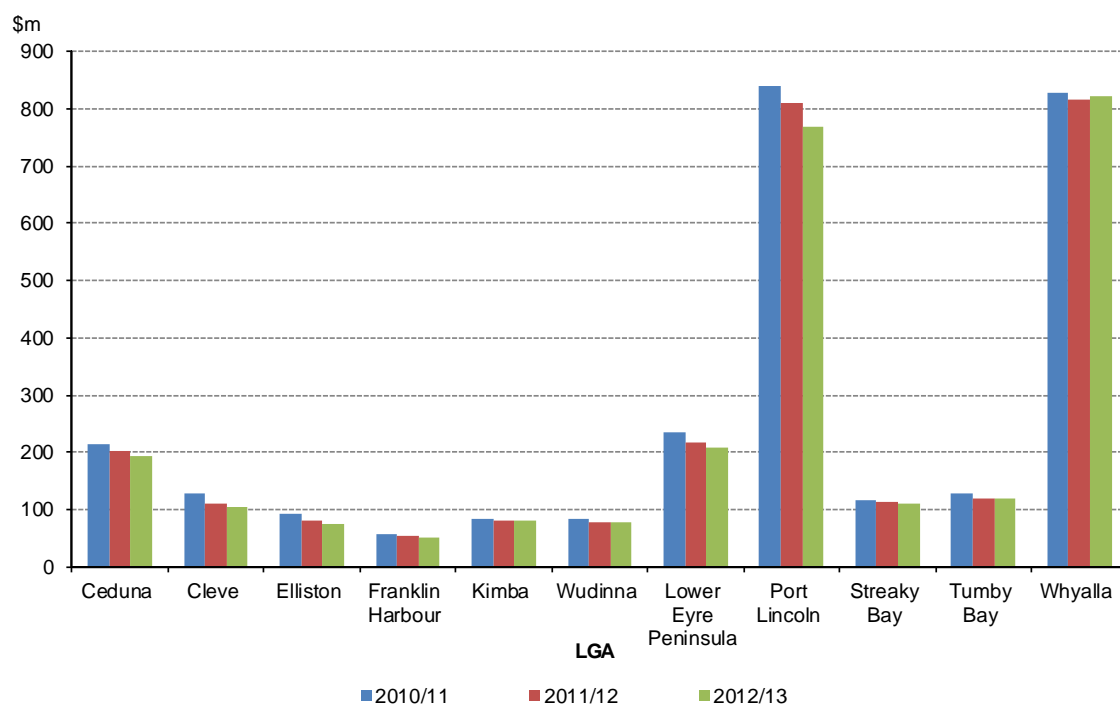
Table 2.8: Gross Regional Product, councils – Eyre Peninsula and West Coast, South Australia, 2010/11 – 2012/13, \$ million

Council	2010/11	2011/12	2012/13
Ceduna	215	204	195
Cleve	128	110	104
Elliston	93	82	76
Franklin Harbour	56	53	50
Kimba	83	80	80
Wudinna	84	79	77
Lower Eyre Peninsula	235	217	209
Port Lincoln	840	810	768
Streaky Bay	118	114	111
Tumby Bay	127	121	119
Whyalla	827	817	823
Eyre Peninsula and West Coast	2,806	2,687	2,612
South Australia (excludes unincorp. areas)	85,601	87,417	88,701

Source: National Economics, quoted in .id the population experts (no date).

Sixty per cent of the Eyre Peninsula and West Coast's total GRP is produced in the two most populous councils of Port Lincoln (\$768 million) and Whyalla (\$823 million), see Figure 2.2. Whyalla and Port Lincoln are commercial centres serving as regional hubs - providing services and facilities for residents in smaller outlying towns. Both cities operate a commercial port for loading and unloading raw materials and agricultural products produced within the region and exported by container ship. Whyalla and Port Lincoln provide a significant source of the region's economic activity supporting smaller sub-regions in the Eyre Peninsula which are rich in natural resources (i.e., farmland and minerals) through established manufacturing, processing and transport infrastructure used to transform resources for export. Such linkages highlight the importance of maintaining existing infrastructure as well as investing in new infrastructure to ensure long-term economic growth of the region (see Section 2.4.8 on Infrastructure challenges).

Figure 2.2: Gross Regional Product by Council – Eyre Peninsula and West Coast, 2010/11, 2011/12 and 2012/13



Source: National Economics, quoted in .id the population experts (no date).

2.4.2 Gross regional product by industry

Table 2.9 shows the GRP by industry sector in the region.⁵ Grains industry value of output of \$406 million accounted for 13.0 per cent of GRP in 2011/12, the most significant industry in the region. Grain production primarily consists of wheat, barley and legumes; most recent grain production volume is estimated at 2.2 million tonnes (Regional Development Australia Whyalla and Eyre Peninsula, 2014). Approximately 37 per cent of South Australia's wheat crop production and 22 per cent of barley crop production occurred within the region, providing a significant source of income for rural farmers and a major net contributor to state export earnings. On average grain export volumes account for 97 per cent of the region's annual wheat, barley and legume production (Regional Development Australia Whyalla and Eyre Peninsula, 2014).

Mining's value of output amounted to \$282.9 million or 8.2 per cent of the region's GRP in 2011/12, comprising (in order of significance); Iron and Non-ferrous Ores, Oil and Gas Extraction, Exploration and Mining Services, Non-metallic Mineral Products, Basic Non-ferrous Metals and Non Metallic Mineral Mining. Regional mining industry projections indicate mining related sectors will provide a substantial contribution to regional growth increasing their share of GRP over the medium term (i.e., next 10-15 years) if at least some of the mining prospects currently undergoing feasibility studies enter production (SACES 2013). Wholesale Trade, Finance, Construction, Transport and mining related services sectors will benefit from providing inputs/services to sustain mining activity. With four of the six approved mines in the region involved in iron ore mining (for list of approved mines see Mining section 2.4.5), additional opportunities for regional growth exist through the potential to develop iron ore processing, iron ore related manufacturing and expert services.

⁵ Industry sector shares for GRP for the Eyre Peninsula and West Coast have been estimated by EconSearch using the RISE Version 4.0 Standard input/output model. Assumptions within the model vary from those used by National Economics, .id the population experts, for their national economic indicator series which accounts for the difference in total GRP in Table 4.2 compared with Table 4.1.

Table 2.9: Gross regional product by industry sector – Eyre Peninsula and West Coast, 2011/12^a

Industry	\$ million	Per cent	Industry	\$ million	Per cent
Grains	405.9	13.0	Metal Products	7.0	0.2
Health and Community Services	182.9	5.9	Pharmaceutical and Other Chemical Products	6.9	0.2
Iron and Steel	182.6	5.8	Waste Management Services	6.2	0.2
Iron and Non-ferrous Ore Mining	173.7	5.6	Water, Pipeline and Other Transport	5.7	0.2
Retail Trade	154.5	5.0	Non Metallic Mineral Mining	5.4	0.2
Net Taxes in Final Demand	152.2	4.9	Cultural and Recreational Services	5.1	0.2
Education and Training	148.7	4.8	Beef Cattle	4.2	0.1
Ownership of Dwellings	145.0	4.6	Other Wood Products	3.5	0.1
Wholesale Trade	132.5	4.2	Forestry and Logging	3.4	0.1
Finance	119.4	3.8	Fruit and Vegetable Products	2.0	0.1
Construction Services	111.1	3.6	Furniture Manufacturing	1.8	0.1
Road Transport	95.6	3.1	Textiles, Clothing and Footwear	1.8	0.1
Sheep	91.7	2.9	Wine and Spirits	1.6	0.1
Transport Support and Storage	84.2	2.7	Meat and Meat Products	0.7	0.0
Residential Building Construction	80.0	2.6	Vegetables	0.6	0.0
Aquaculture	79.3	2.5	Printing (including Recordings)	0.5	0.0
Public Administration and Regulatory Services	66.7	2.1	Fruit and Nuts	0.4	0.0
Professional Scientific Technical Services	63.3	2.0	Dairy Cattle	0.0	0.0
Administration Support Services	60.6	1.9	Poultry	0.0	0.0
Oil and gas extraction	60.6	1.9	Pigs	0.0	0.0
Personal and Other Services	56.7	1.8	Other Livestock	0.0	0.0
Food and Beverage Services	50.1	1.6	Wine grapes	0.0	0.0
Fishing, Hunting & Trapping	49.4	1.6	Other Agriculture	0.0	0.0
Accommodation	38.0	1.2	Coal Mining	0.0	0.0
Rental Hiring Real Estate	29.9	1.0	Dairy Products	0.0	0.0
Exploration and Mining Services	27.0	0.9	Oils and Fats Manufacturing	0.0	0.0
Other Construction	26.8	0.9	Grain Mill and Cereal Products	0.0	0.0
Processed Seafood Products	25.8	0.8	Other Beverages	0.0	0.0
Public Order and Safety	25.0	0.8	Beer	0.0	0.0
Insurance and Other Financial Services	19.0	0.6	Sawmill Products	0.0	0.0
Electricity Supply	18.8	0.6	Pulp, Paper and Paperboard	0.0	0.0
Communication Services	17.3	0.6	Paper Products	0.0	0.0
Agriculture Forestry & Fishing Services	17.3	0.6	Petroleum and Coal Products	0.0	0.0
Water Supply, Sewerage and Drainage	14.2	0.5	Motor Vehicles and Parts	0.0	0.0
Rail Transport	13.6	0.4	Other Manufactured Products	0.0	0.0
Other Food Products	10.1	0.3	Electricity Generation	0.0	0.0
Publishing (excluding Web, Music)	9.6	0.3	Gas Supply	0.0	0.0
Other Machinery and Equipment	9.0	0.3	Air and Space Transport	0.0	0.0
Non-metallic Mineral Products	8.6	0.3	Defence	0.0	0.0
Basic Non-Ferrous Metals	7.6	0.2	Gross Regional Product	3,121.0	100.0

Note: (a) Includes Maralinga Tjarutja and unincorporated West Coast

Source: Econsearch (2013a) - Rise Version 4.0 standard Impact model.

2.4.3 Agriculture

The Rural Environment and Agricultural Commodities Survey 2012/13 (REACS) is undertaken annually by the ABS to estimate land use, industry activity, crop and horticultural area/production and livestock numbers across states and regions.⁶ Comparisons between production of agricultural commodities on the Eyre Peninsula and across South Australia show the relative importance of the Eyre Peninsula for cereals, (i.e., wheat, canola, oats and barley) and livestock, (i.e., sheep and lambs), the region's two primary agricultural industries.⁷

As of 2012/13 Eyre Peninsula has 1,804,474 hectares of land used for cropping (mostly cereal and grains) accounting for 36.2 per cent of total crop land in South Australia, (Table 2.10). Total area of land used for any type of agricultural production on Eyre Peninsula is 2,933,547 hectares or 6.2 per cent of the state total, highlighting the importance of cereal and grains in the Eyre Peninsula, and the importance of the Eyre Peninsula for the South Australian crop sector.

Table 2.10: – Land use^a - Eyre Peninsula and West Coast, 2012/13

Usage	Area (ha)	Per cent of SA total
Conservation purposes	216,971 [^]	26.8
Not used for agricultural production	93,848 [^]	16.2
Total not used for agricultural production	310,820	22.4
Mainly used for:		
Cropping:		
Crops	1,804,474	36.2
Total used for cropping	1,804,474	36.2
Grazing:		
On improved pastures	499,726 [^]	16.2
Other land	628,617 [^]	1.6
Total used for grazing	1,128,344	2.7
Forestry and other:		
Forestry production	111 [*]	1.5
Other agricultural purposes	617 [*]	9.5
Total used for forestry and other	728	5.2
Total used for agricultural production	2,933,547	6.2

Note: (a) During reference period:
[^] RSE of 10-25 per cent
^{*} RSE of 25-50 per cent, use estimate with caution.

Source: ABS (2014b) Agricultural Commodities, Australia

In 2012/13 Eyre Peninsula produced 1,374,306 tonnes of wheat for grain accounting for 37.4 per cent of South Australia's total wheat for grain production and 46.2 per cent of South Australia's total wheat for grain crop area, (Table 2.11). Eyre Peninsula also produces a large quantity of South Australia's (in order of significance to state total) canola, oats and barley.

⁶ See Explanatory notes of ABS Cat No. 7121.0 - Agricultural Commodities, Australia, 2012-13, for scope, coverage, response, sampling variability and explanation, measurement and categorising relative standard errors (RSE).

⁷ Based upon ABS boundaries (i.e., Eyre Peninsula - ABS region code: 402), which differ slightly from Eyre Peninsula and West Coast boundaries.

Table 2.11: Broadacre Crops - Eyre Peninsula and West Coast, 2012/13

Crop	Area (ha)	Per cent of SA total	Production (t)	Per cent of SA total	Yield (t/ha) - Eyre Peninsula and West Coast	Yield (t/ha) - SA
Barley ^a	205,783	23.9	394,922 [^]	22.0	1.9	2.1
Canola	113,651 [^]	33.8	152,534 [^]	36.8	1.3	1.2
Oats ^a	28,119 [^]	41.4	22,999 [^]	26.0	0.8 [^]	1.3
Oilseeds	**	-	**	-	2.3	1.0 [^]
Pulses	40,514 [^]	15.5	44,975 [^]	12.3	1.1 [^]	1.4
Triticale ^a	1,061 [*]	3.7	568 [*]	1.5	0.5 [^]	1.3
Wheat ^a	977,937	46.2	1,374,306	37.4	1.4	1.7
All other cereals for grain or seed ^b	1,774 [*]	4.7	788 [*]	1.4	0.4 [^]	1.5
All other crops n.e.c.	**	-	n.a.	-	n.a.	n.a.

Note: (a) For grain;
 (b) Includes estimates for maize and sorghum for grain (RSE >50 per cent).
 ^ RSE of 10-25 per cent.
 * RSE of 25-50 per cent, use estimate with caution.
 ** RSE of >50 per cent, unreliable for general use.
 n.e.c. not elsewhere classified.
 n.a. not available.

Source: ABS (2014b) Agricultural Commodities, Australia

In 2012/13 Eyre Peninsula's sheep and lamb flock was estimated at 1.66 million head (comprised largely of Merino sheep and lambs), or approximately 15.3 per cent of South Australia's total, (Table 2.12).

Table 2.12: Sheep and lambs - Eyre Peninsula and West Coast, 2012/13

Livestock	South Australia Estimate (No.)	Eyre Peninsula and West Coast Estimate (No.)	Per cent of SA Total
Total sheep and lambs	10,821,479	1,660,068	15.3
Marked lambs under 1 year	3,757,123	550,727	14.7
<i>Breeding ewes 1 year and over</i>			
Merinos	4,082,317	735,997	18.0
Other n.e.c.	1,636,886	120,312 [^]	7.4
All other sheep ^a	1,345,152	253,032	18.8
Total sheep	7,064,356	989,029	15.7
<i>Lambs marked</i>			
All other breeds	2,544,413	232,797	9.1
Merino lambs	1,953,182	422,683	21.6
Total	4,497,595	655,480	14.6
<i>Ewes mated to</i>			
Merino rams	2,398,143	442,635	18.5
Other rams	2,524,840	245,687	9.7
Total lambs produced	4,922,982	688,322	14.0

Note: (a) Includes rams, wethers, hoggets and non-breeding ewes.
[^] RSE of 10-25 per cent.
 n.e.c. not elsewhere classified

Source: ABS (2014b) Agricultural Commodities, Australia

Meat and cattle livestock is less significant to Eyre Peninsula having 21,159 head in 2012/13, approximately 1.8 per cent of South Australia's total, (Table 2.13). Pigs and poultry production accounted for approximately 0.1 per cent of South Australia's total.

Other agricultural activities on Eyre Peninsula include small scale nurseries involved in flower cultivation, fruit and nuts orchards/production e.g., olives, grapes for wine production and consumption, vegetables e.g., carrots, lettuces and tomatoes and hay and silage production especially cereal cut for hay.

Enhanced export competitiveness/trade of the region over the next ten years is achievable through recent Free Trade Agreements (FTA) with South Korea, Japan and China - Australia's three largest trading partners in terms of two-way trade in Asia.⁸ Terms and conditions vary by country and agreement but the agreements seek similar goals of removing or reducing a significant number of tariff and non-tariff barriers across traded goods and services. For example upon coming into force the Korea-Australia Free Trade Agreement (KAFTA) eliminates tariffs on entry for raw sugar, wheat, wine and some horticulture, for all other agricultural products tariffs of up to 550 per cent are eliminated over short-time frames. The Japan-Australia Economic Partnership Agreement (JAEPA) provides duty-free and quota free access for wheat for feed and barley for feed. The China-Australia Free Trade Agreement (ChAFTA) secures removal of tariffs on live animal exports of 10 per cent within four years, tariffs on sheep meat of 12 to 23 per cent over eight years, tariffs on barley of 3 per cent immediately and an Australia-only duty free quota for wool in addition to continued access to China's World Trade Organisation wool quota. Under the terms of the FTA prices of Australian exports fall in the export destination country following removal of trade barriers

⁸ Korea-Australia Free Trade Agreement (KAFTA) entered into force on 12th December 2014, Japan-Australia Economic Partnership Agreement (JAEPA) enters into force on January 15th 2015 and China-Australia Free Trade Agreement (ChAFTA) negotiations concluded on 17th November 2014 - Reached declaration of intent to work toward an agreement. For more information on Australia's FTA's and arrangements, see: <http://www.dfat.gov.au/fta/>.

improving market access and export competitiveness – potentially contributing to growth of the Eyre Peninsula and West Coast's GRP.

Table 2.13: Meat cattle, pigs and live poultry - Eyre Peninsula and West Coast, 2012/13

Livestock	South Australia Estimate (No.)	Eyre Peninsula and West Coast Estimate (No.)	Per cent of SA Total
Meat cattle			
Meat calves under 1 year	369,233	6,753 [^]	1.8
Meat cows and heifers 1 year and over	603,067	11,582 [^]	1.9
All other meat cattle ^a	221,150	2,824 [^]	1.3
Total meat cattle	1,193,450	21,159 [^]	1.8
Pigs			
Breeding sows	32,112	65 [*]	0.2
All other pigs ^b	282,789	321 [*]	0.1
Total pigs	314,902	386 [*]	0.1
Other All other livestock ^c	30,022 [*]	381 [*]	1.3
Live Poultry			
Layers	680,159 [^]	516 [^]	0.1
Meat chickens	12,221,832	**	-
All other poultry	551,287	63 [^]	0.01

Note: (a) Includes bulls and steers.
 (b) Includes boars, gilts, suckers, weaners, growers and finishers
 (c) E.g. horses, goats, domesticated buffaloes
[^] RSE of 10-25 per cent.
^{*} RSE of 25-50 per cent, use estimate with caution.
^{**} RSE of >50 per cent, unreliable for general use.

Source: ABS (2014b) Agricultural Commodities, Australia

2.4.4 Aquaculture and fishing

Coastal regions along the Eyre Peninsula are ideally suited to aquaculture. Aquaculture operations are involved in commercial production, processing and sale of seafood. Operations on the Eyre Peninsula harvest Southern Bluefin Tuna, Marine Finfish, Oysters, Mussels, Abalone, Freshwater Finfish, Marron and Yabbies as well as other niche seafood products with specialised markets. Aquaculture producers include those in Port Lincoln, Smokey Bay, Boston Bay, Arno Bay, Kellidie Bay and Coffin Bay, providing employment opportunities and other direct economic benefits. Input requirements by aquaculture producers' further supports local economies and employment with flow-on effects in food product manufacturing i.e., Seafood Processing, Wholesale Trade, Finance, Retail Trade and Transport.

The total value of aquaculture production in Eyre Peninsula was \$222 million as at 2012/13, 91 per cent of the state's total, with the West Coast producing output valued at \$10 million (see Table 2.14). Southern Bluefin Tuna accounted for the bulk of aquaculture output in the two regions, \$153 million, followed by Oysters (\$36 million) and other seafood (\$25 million) ((Econsearch, 2013b). Direct employment in aquaculture is estimated at 513 full time equivalent positions in the Eyre Peninsula in 2012/13 and a further 100 in the West Coast, accounting for 73 per cent and 10 per cent of all aquaculture employment in South Australia respectively, Table 2.16 (Econsearch, 2013b),

Table 2.14: Value of aquaculture production, \$'000s – Regions of South Australia, 2012/13

Sector	West Coast	Eyre Peninsula	Yorke Peninsula	Kangaroo Island	Adelaide and Hills ^b	Murraylands and South East	All regions
Southern Bluefin Tuna	0	153,500	0	0	0	0	153,500
Marine Finfish	0	11,262	0	0	0	0	11,262
Oysters ^a	9,832	25,108	60	290	10	0	35,300
Mussels	0	2,953	0	0	0	0	2,935
Abalone ^a	381	3,849	0	4,369	0	0	8,600
Freshwater Finfish ^a	0	2	4	23	2,334	3,023	5,386
Marron and Yabbies	0	9	35	314	21	4	383
Other	0	25,449	0	0	222	2	25,673
Total	10,214	222,116	99	4,996	2,586	3,028	243,040

Note: (a) Includes the value of local spat and fingerling sales but excludes on-grown sales.

(b) Includes Adelaide metropolitan area.

Source: Primary Industries and Regions SA (PIRSA) Fisheries and Aquaculture 2012/13 Production Returns, quoted in Econsearch (2013b).

Table 2.15: Direct aquaculture employment by species, FTEs and share of total – Regions of South Australia, 2012/13

Sector	West Coast		Eyre Peninsula		Yorke Peninsula		Kangaroo Island		Adelaide and Hills		Murraylands and South East		SA Total	
	FTE	% of total	FTE	% of total	FTE	% of total	FTE	% of total	FTE	% of total	FTE	% of total	FTE	% of total
Southern Bluefin Tuna	0	0.0	287	100.0	0	0.0	0	0.0	0	0.0	0	0.0	287	100.0
Marine Finfish	0	0.0	31	100.0	0	0.0	0	0.0	0	0.0	0	0.0	31	100.0
Oysters	90	35.0	150	59.0	6	3.0	6	2.0	2	1.0	0	0.0	254	100.0
Mussels	0	0.0	21	100.0	0	0.0	0	0.0	0	0.0	0	0.0	21	100.0
Abalone	10	23.0	16	37.0	0	0.0	17	40.0	0	0.0	0	0.0	43	100.0
Freshwater Finfish	0	0.0	1	3.0	5	11.0	1	1.0	18	46.0	15	38.0	40	100.0
Marron and Yabbies	0	0.0	3	13.0	1	3.0	7	36.0	8	42.0	1	6.0	19	100.0
Other	0	0.0	4	35.0	0	0.0	0	0.0	7	60.0	1	5.0	12	100.0
Total	100	14.0	513	73.0	12	2.0	30	4.0	36	5.0	17	2.0	707	100.0

Source: PIRSA Fisheries and Aquaculture 2012/13 Production Returns, quoted in Econsearch (2013b).

Fishing including marine scalefish, rock lobster and abalone in SA waters and the sardine fishery in Commonwealth waters also make a significant contribution to the regional economy, however as the value of catch by port of landing data collected by the SA government is not publicly available it has not been possible to report data on fishing in this section. The VU-TERM model developed as part of this project (see Chapter 3) does incorporate significant data on the fishing sector based out of ports located in the Eyre Peninsula and West Coast. The fishing sector is also the focus of a specific research project funded under the GABRP, which had yet to report when this report was being finalised.

2.4.5 Mining

Eyre Peninsula and West Coast region contains the mineral rich regions of the Gawler Craton and Eucla Basin. Existing mining operations are largely centred on iron ore extraction and a heavy mineral sands mining operation at Jacinth-Ambrosia. New opportunities exist for development of mining for iron ore, gold, nickel, silver and uranium and deep sea exploration for oil and gas in the GAB.

Mining currently comprises a small share of economic activity in the region but the scale of the identified resources in the region means that significant potential for growth exists over the medium term depending on commodity prices and extraction costs. Six of South Australia's 21 mines operating as at 2014 are located in the Eyre Peninsula and West Coast (see Table 2.17). Mining in the Eyre Peninsula and West Coast contributed \$266.6 million to Gross State Product for 2011/12, 8.5 per cent of the region's GRP and generated annual exports worth \$333.6 million (EconSearch, 2013a).

Fifteen of the 33 minerals projects in development in the state in 2014 were located in the Eyre Peninsula and West Coast (see Table 2.18). The Eyre Peninsula is rich in iron ore with high grade deposits of hematite and magnetite. Mineral exploration as of 2013 has identified up to one billion tonnes of proven iron ore resource with an estimated value of between \$100 billion and \$140 billion based on the prevailing prices in 2014 (Regional Development Australia, Whyalla and Eyre Peninsula). Exploration companies believe the total unexploited iron ore resource on the Eyre Peninsula to be well in excess of the already discovered one billion tonnes. The extent to which these projects in development will become operating mines will depend on the construction of supporting infrastructure in the region, e.g., construction of deep sea ports capable of handling panamax size ships (Regional Development Australia, Whyalla and Eyre Peninsula, as well as commodity prices and production costs.

Research conducted by Resources and Engineering Skills Alliance (reported in RDA Whyalla and Eyre Peninsula, 2013) examined future skills requirements of the mining industry and identified occupations most in demand in the Eyre Peninsula and West Coast (Table 2.16). Occupations identified cover a broad spectrum of professional and technical roles requiring formal qualifications i.e., bachelor degree, diploma, certificate level qualifications. Over the medium term they suggest that mining will remain a continued source of economic activity across the region, and, should further development occur, creating new employment opportunities and demand for skilled labour, increased levels of housing construction, retail trade, school enrolments and council revenue.

Table 2.16: Mining industry occupations most in demand – Eyre Peninsula and West Coast, 2013/14

Accountant	Electrical Engineer	Production or Plant Engineer
Surveyor	Mechanical Engineers	Mining Engineer
Environmental Scientist	Geologist	Metallurgist
OH&S Professional	Metallurgic Technician	Motor Mechanic - Diesel
Laboratory Technician	Electrical Technician	Mechanical Technician
Welder	Metal Fabricator/Boilermaker	Fitter
Electrician	Driller	Miner
Stationary Plant Operator	Truck Driver	Mining Support Worker

Source: RDA Whyalla and Eyre Peninsula 2013

Table 2.17: **Approved mines – Eyre Peninsula and West Coast, 2014**

Mine	Resources	Company	Location
Iron Chieftain	Iron ore	Arrium Limited	Middleback Ranges, north western Eyre Peninsula
Jacinth-Ambrosia Mineral Sand Project	Heavy mineral (HM) sands	Iluka Pty Ltd	Approximately 200km northwest of Ceduna
Middleback Range: Project Magnet	Iron ore	Arrium Limited	Middleback Ranges, north western Eyre Peninsula
Wilcherry Hill project	Iron ore	Ironclad Mining Limited	30km north of Kimba, northern Eyre Peninsula
Wilgerup	Iron ore	Centrex Metals Ltd	30km SE of Lock, central Eyre Peninsula
Uley Graphite Project	Graphite	Valence Industries Ltd	South Eyre Peninsula, approximately 23km W and SW from Port Lincoln

Source: DMITRE (2014), list of approved mines, available at: <http://minerals.statedevelopment.sa.gov.au/mining>, accessed: November 2014

Table 2.18: **Developing mines – Eyre Peninsula and West Coast, 2014**

Mine	Resources	Company	Location
Atacama	Heavy minerals	Iluka Resources Ltd	200km NW of Ceduna
Bungalow	Iron ore	Centrex Metals Ltd (joint venture with Baogang)	9km North of Cowell
Campoona	Graphite	Archer Exploration Ltd	15km north of Cleve on Eyre Peninsula
Fusion Iron Magnetite Project	Iron ore	Centrex Metals Ltd (joint venture with WISCO)	South Eastern Eyre Peninsula
Gum Flat	Iron ore	Lincoln Minerals Ltd	Southern Eyre Peninsula within 20km of Port Lincoln
Hematite Extension Project	Iron ore	Arrium Limited	Middleback Ranges, north western Eyre Peninsula
Kookaburra Gully	Graphite	Lincoln Minerals Ltd	North of Port Lincoln, Eyre Peninsula
Menninnie Dam	Lead, Zinc and Silver	Terramin Australia Ltd	Northern Eyre Peninsula, 160km WNW of the Port Pirie lead smelter
Paris	Silver	Investigator Resources Ltd	Northern Eyre Peninsula, approximately 500km NW of Adelaide
Poochera	Kaolin	Minotaur Exploration Ltd	100km SE of Ceduna on Eyre Peninsula
Samphire Project	Uranium	Uranium SA	Approximately 20km south-west of Whyalla on Eyre Peninsula
Sonoran	Heavy minerals	Iluka Resources Ltd	Approximately 200km NW of Ceduna
Tripitaka	Heavy minerals	Iluka Resources Ltd	Approximately 100km NW of Ceduna
Typhoon	Heavy minerals	Iluka Resources Ltd	Approximately 200km NW of Ceduna
Warrambo	Iron ore	Iron Road Ltd	Central Eyre Peninsula

Source: DMITRE 2014, list of developing mines, available at: <http://minerals.statedevelopment.sa.gov.au/mining>, accessed: November 2014

2.4.6 Tourism

Tourism is a significant industry in the Eyre Peninsula and West Coast. Tourists are drawn by natural attractions including, beaches, sea life, wildlife, marine parks and national parks. It is these natural assets which have been capitalised on to provide visitor experiences, i.e., sightseeing, wine tasting, dining, fishing, swimming, shark diving, boating, whale watching and other leisure tours.

Tourism Research Australia (2014) compiles a Regional Tourism Profile for the Eyre Peninsula using a national and international visitor survey.⁹ Responses from domestic day, domestic overnight and international visitors are sought regarding; destination, purpose of travel, transportation, travel package, information sources, activities, expenditure, accommodation, travel party and demographics. Aggregated survey responses are used to create a Regional Tourism profile for the Eyre Peninsula.¹⁰

In 2012/13 the Eyre Peninsula attracted 683,000 visitors with expenditure of \$255 million (Table 2.19) and of these the majority were domestic overnight and day visitors.

The Eyre Peninsula received the highest proportionate share of domestic overnight visitors; 6.7 per cent of visitors and 6.5 per cent of expenditure. The share of domestic day visitors and international visitors were much lower at 2.8 per cent and 3.6 per cent respectively.

Table 2.19: Visitors – Eyre Peninsula and South Australia, 2012/13

Visitor	Eyre Peninsula			South Australia		
	Expenditure (\$ million)	Visitors '000	Nights '000	Expenditure (\$ million)	Visitors '000	Nights '000
Domestic day	52	320	np	1,153	11,403	np
Domestic overnight	203	350	1,384	3,146	5,220	18,962
International	np	13	164	684	361	10,087

Note: (1) np = Not published due to reliability concerns.
(2) All visitors aged 15 years and over.

Source: Tourism Research Australia (2014).

Domestic overnight visitors to the Eyre Peninsula stayed on average four nights and spent \$580 over the trip. For South Australia the comparable figures are an average stay of four nights and trip expenditure of \$603 (Table 2.20).¹¹

Table 2.20: Average stay and expenditure – Eyre Peninsula and South Australia, 2012/13

Visitor	Eyre Peninsula			South Australia		
	Average stay (nights)	Average trip expenditure (\$)	Average nightly expenditure (\$)	Average stay (nights)	Average trip expenditure (\$)	Average nightly expenditure (\$)
Domestic day	np	163	np	np	101	np
Domestic overnight	4	580	147	4	603	166
International	12	np	np	28	1,895	68

Note: (1) np = Not published due to reliability concerns.
(2) All visitors aged 15 years and over.

Source: Tourism Research Australia (2014)

A typical domestic overnight visitor travelled to the Eyre Peninsula by car usually as an adult couple or family group, primarily for a holiday or to visit friends and/or relatives in 2012/13 (Table 2.21).

⁹ Boundaries for the Eyre Peninsula region of the Regional Tourism profile differ slightly from Eyre Peninsula and West Coast region boundaries.

¹⁰ See <http://www.tra.gov.au/aboutus/national-visitor-survey.html> for details regarding survey methodology and reliability.

¹¹ Excludes expenditure by international visitors.

Table 2.21: Domestic overnight visitor profile – Eyre Peninsula and South Australia, 2012/13

	Eyre Peninsula					South Australia				
	Visitors '000	Nights '000	Share of visits per cent	Share of nights per cent	Average stay nights	Visitors '000	Nights '000	Share of visits per cent	Share of nights per cent	Average stay nights
Purpose of visit										
Holiday	144	769	41	56	5	2,384	8,904	46	47	4
Visiting friends/relatives	102	380	29	27	4	1,666	5,999	32	32	4
Business	64	113	18	8	2	915	2,671	18	14	3
Other	np	np	np	np	np	320	1,031	6	5	3
Transport										
Air	33	153	9	11	5	1,158	4,526	22	24	4
Drive	271	1,039	78	75	4	3,826	12,463	73	66	3
Other	np	np	np	np	np	319	1,501	6	8	5
Experiences										
Culture and heritage	np	np	np	np	np	754	np	14	np	np
Nature based	67	np	19	np	np	909	np	17	np	np
Indigenous	np	np	np	np	np	31	np	1	np	np
Food and wine	157	np	45	np	np	2,989	np	57	np	np
Top 3 information sources										
Internet	136	510	39	37	4	1,843	7,132	35	38	4
Previous visit	91	353	26	25	4	1,364	5,214	26	27	4
Friends or relatives	50	144	14	10	3	664	2,515	13	13	4
Travel party type										
Travelling alone	60	160	17	12	3	1,242	4,088	24	22	3
Adult couple	127	606	36	44	5	1,491	5,878	29	31	4
Family group	84	366	24	26	4	1,091	4,271	21	23	4
Friends or relatives	54	197	16	14	4	1,047	3,575	20	19	3
Business associates	np	np	np	np	np	261	803	5	4	3
Other	np	np	np	np	np	87	347	2	2	4

Note: (1) np = Not published due to reliability concerns.

(2) All visitors aged 15 years and over.

Source: Tourism Research Australia (2014)

Table 2.22: International visitor profile – Eyre Peninsula and South Australia, 2012/13

	Eyre Peninsula					South Australia				
	Visitors '000	Nights '000	Share of visits per cent	Share of nights per cent	Average stay nights	Visitors '000	Nights '000	Share of visits per cent	Share of nights per cent	Average stay nights
Purpose of visit										
Holiday	11	33	79	20	3	197	2,442	54	24	12
Visiting friends/relatives	np	np	np	np	np	107	2,507	30	25	23
Business	np	np	np	np	np	43	501	12	5	12
Education	np	np	np	np	np	19	2,918	5	29	153
Other	np	np	np	np	np	24	1,719	7	17	71
Transport										
Air	3	53	23	32	15	185	4,021	51	40	22
Drive	9	106	69	65	12	143	3,995	40	40	28
Other	np	np	np	np	np	98	2,072	27	21	21
Experiences										
Culture and heritage	11	np	5	np	np	242	np	29	np	np
Nature based	12	np	6	np	np	281	np	29	np	np
Indigenous	7	np	5	np	np	115	np	20	np	np
Food and wine	12	np	7	np	np	328	np	27	np	np
Top 3 information sources										
Internet	7	203	54	78	28	161	3,452	48	37	21
Previous visit	4	24	31	9	6	98	2,540	30	27	26
Friends or relatives	3	14	25	5	4	63	652	19	7	10
Travel party type										
Travelling alone	7	63	54	38	9	196	6,624	54	66	34
Adult couple	3	87	23	53	28	94	1,810	26	18	19
Family group	np	np	np	np	np	23	765	6	8	34
Friends or relatives	2	6	15	4	2	33	750	9	7	23
Business associates	np	np	np	np	np	16	92	4	1	6

Note: (1) np = Not published due to reliability concerns.
(2) All visitors aged 15 years and over.

Source: Tourism Research Australia (2014)

A typical international visitor travelled to the Eyre Peninsula alone by car for a holiday primarily to enjoy cultural and heritage, nature based, Indigenous and food and wine experiences in 2012/13 (Table 2.22).

In 2012/13, expenditure by a typical domestic day visitor to the Eyre Peninsula in order of significance was on shopping and fuel, while across South Australia expenditure was typically on food and drink and shopping (Table 2.23).

Table 2.23: Domestic day visitors – Expenditure, Eyre Peninsula and South Australia, 2012/13

Item	Eyre Peninsula \$ million	South Australia \$ million	Eyre Peninsula Per cent	South Australia Per cent
Food and drink	11	372	21.0	32.3
Transport fares and packages	5	72	8.9	6.2
Fuel	12	285	23.5	24.7
Shopping	21	324	41.2	28.1
Entertainment	1	48	1.3	4.2
Other	2	51	3.4	4.4
Total expenditure	52	1,153	100.0	100.0

Note: All visitors aged 15 years and over.

Source: Tourism Research Australia (2014).

Expenditure by a typical domestic overnight visitor to Eyre Peninsula was on food and drink, fuel and accommodation in 2012/13, while across South Australia expenditure was typically on food and drink, accommodation and airfares (Table 2.24).

Table 2.24: Domestic overnight visitors – Expenditure, Eyre Peninsula and South Australia, 2012/13

Item	Eyre Peninsula \$ million	South Australia \$ million	Eyre Peninsula Per cent	South Australia Per cent
Accommodation	38	717	18.9	22.8
Food and drink	55	854	27.0	27.1
Airfares	19	474	9.1	15.1
Other transport fares	8	148	3.8	4.7
Fuel	39	372	19.1	11.8
Shopping	15	257	7.6	8.2
Entertainment	8	119	4.1	3.8
Other	4	35	1.7	1.1
Packages	1	46	0.5	1.5
Total expenditure	203	3,146	100.0	100.0

Note: All visitors aged 15 years and over.

Source: Tourism Research Australia (2014).

By purpose of visit for domestic overnight visitors holiday/leisure accounts for the largest share of total expenditure in 2012/13. Interstate visitors on average have higher trip expenditure than intrastate visitors during their trip (Table 2.25).

Table 2.25: Domestic overnight visitors – Destination expenditure, Eyre Peninsula, 2012/13

Destination expenditure	Expenditure \$ million	Share of expenditure per cent	Visitors '000	Visitor nights '000	Expenditure per visitor \$	Expenditure per night \$
Eyre Peninsula						
<i>By Purpose of visit</i>						
Holiday/leisure	102	62	165	856	619	120
Visiting friends and relatives	35	21	104	384	335	91
Business	24	14	64	113	374	213
Other	np	np	np	np	np	np
<i>By origin (intrastate/interstate)</i>						
Intrastate	97	58	248	866	390	112
Interstate	69	42	101	518	683	134
Total destination expenditure	166	100	350	1,384	475	120
South Australia						
<i>By Purpose of visit</i>						
Holiday/leisure	1,292	53	2,412	9,216	536	140
Visiting friends and relatives	577	24	1,668	6,020	346	96
Business	427	18	915	2,671	466	160
Other	120	5	328	1,055	366	114
<i>By origin (intrastate/interstate)</i>						
Intrastate	1,127	47	3,449	10,293	327	109
Interstate	1,290	53	1,771	8,669	728	149
Total destination expenditure	2,416	100	5,220	18,962	463	127

Note: All visitors aged 15 years and over.
Source: Tourism Research Australia (2014).

There were 582 tourism businesses operating in the Eyre Peninsula in 2012/13, most employing businesses being either Micro (1-4 employees) or Small (5-19 employees) (Table 2.26).

Table 2.26: Tourism businesses – Eyre Peninsula and South Australia, 2011/12

	Eyre Peninsula	South Australia
Employing businesses		
Micro (1-4 employees)	117	4,378
Small (5-19 employees)	155	4,030
Medium (20-199 employees)	77	1,833
Large (200+ employees)	0	39
Total employing	349	10,280
Non-employing businesses		
(includes owner/ manager)	233	7,800
Total non-employing businesses	233	7,800
Total businesses	582	18,080

Source: Tourism Research Australia (2014).

2.4.7 Businesses

Industry and employment structure is reflected in business counts across LGAs. In 2012 5,337 trading businesses operated across eleven LGAs in the Eyre Peninsula and West Coast (Table 2.28). No trading businesses operate in Yalata Aboriginal Reserve. Agriculture, forestry and fishing businesses comprise 36 per cent (1,925 businesses) of total trading businesses across the Eyre Peninsula and West Coast, compared with 12.6 per cent for South Australia. Agricultural businesses involved in cereal crop farming and sheep grazing/breeding/production predominates across the region. Aquaculture activities, i.e., controlled breeding, raising or farming of fish, molluscs and crustaceans is centred in and near to Port Lincoln and Streaky Bay.

Businesses providing services, i.e., Financial and Insurance, Rental, Hiring and Real Estate, Professional Scientific and Technical and Administrative and Support account for 32.9 per cent of businesses across South Australian, compared with 19.3 per cent across the Eyre Peninsula and West Coast.

In 2012 515 business entries and 547 exits were recorded in the Eyre Peninsula and West Coast (Table 2.27). The majority of business entries and exits were non-employing businesses.

Table 2.27: Employing and non-employing businesses, number, entries, exits – Eyre Peninsula and West Coast, 2008-2012

Number of businesses	2008	2009	2010	2011	2012
Non-employing businesses	2,989	2,969	3,051	3,034	3,028
Employing 1-4 employees	1,253	1,194	1,225	1,202	1,189
Employing 5 or more employees	1,160	1,139	1,076	1,099	1,098
Total businesses	5,402	5,302	5,352	5,335	5,315
Business entries					
Non-employing	386	373	414	349	354
Employing 1-4 employees	122	121	115	124	112
Employing 5 or more employees	68	51	32	42	49
Total business entries	576	545	561	515	515
Business exits					
Non-employing	496	492	392	422	414
Employing 1-4 employees	109	97	68	72	92
Employing 5 or more employees	64	55	53	46	41
Total business exits	669	644	513	540	547

Source: ABS (2014c) National Regional Profile, Economy

Table 2.28: Number of businesses by industry, councils – Eyre Peninsula and West Coast, 2012

Industry	Ceduna	Cleve	Elliston	Franklin Harbour	Kimba	Lower Eyre Peninsula	Port Lincoln	Streaky Bay	Tumby Bay	Whyalla	Wudinna	Total	South Australia
Agriculture, Forestry and Fishing	173	178	141	130	111	281	384	155	171	34	167	1,925	18,360
Mining	4	3	-	0	0	3	6	3	0	3	0	22	597
Manufacturing	12	9	0	7	6	17	67	9	8	31	3	169	6,485
Electricity, Gas, Water & Waste Services	4	3	0	3	3	0	3	0	-	0	3	19	567
Construction	54	19	11	14	12	72	254	27	35	142	13	653	21,650
Wholesale trade	6	6	0	4	4	10	35	6	5	16	3	95	5,019
Retail trade	29	13	12	10	8	32	131	14	15	94	14	372	9,537
Accommodation & Food Services	23	8	7	6	5	18	44	12	10	39	8	180	5,280
Transport, Postal and Warehousing	22	11	6	8	7	30	83	11	16	89	7	290	8,425
Information Media & Telecommunications	-	-	0	-	-	0	3	0	-	-	0	3	926
Financial & Insurance Services	13	12	6	9	7	37	151	8	17	57	7	324	13,827
Rental, Hiring, & Real Estate Services	20	17	10	12	10	46	172	17	22	66	12	404	15,773
Professional Scientific & Technical Services	12	5	0	4	3	18	85	9	7	49	0	192	13,385
Administrative & Support Services	12	4	0	0	0	10	41	3	4	34	3	111	5,021
Public Administration & Safety	0	-	-	-	-	0	6	3	-	3	-	12	506
Education & Training	-	-	0	-	-	3	8	0	0	8	0	19	1,365
Health Care & Social Assistance	11	4	0	0	0	11	50	5	4	69	0	154	7,514
Arts & Recreation Services	3	-	-	-	-	4	8	-	0	9	-	24	1,507
Other services	22	10	5	7	6	21	75	9	11	60	6	232	6,166
Total	429	304	214	222	190	623	1,646	295	335	825	254	5,337	145,998

Note: Yalata Aboriginal Reserve excluded.

Source: ABS (2014c) National Regional Profile, Economy.

2.4.8 Infrastructure

Descriptions of infrastructure in the Eyre Peninsula and West Coast and current issues and challenges are drawn from the RDA WEP Regional plan 2013/14 supplemented by stakeholder consultations undertaken by SACES, and preliminary results from the social study funded under the GABRP..

Roads

The Eyre Peninsula and West Coast is serviced by the National Highway 1 Network, maintained by the State Government and comprised of the Eyre Highway, Lincoln Highway and Flinders Highway. Local governments are responsible for maintaining most local roads, totalling 12,742 kilometres, of which 95 per cent are unsealed.

Issues and challenges identified

- *accommodation of triple road trains, negotiation of routes, road upgrades and maintenance arrangements between local government, state government and mining companies;*
- *additional overtaking lanes required to improve road safety for road trains and tourist recreation vehicles on highways; and*
- *upgrade of the Kingoonya to Wirrulla Road required to enhance travel between the Flinders Ranges, Outback and Eyre Peninsula tourist regions.*

Rail

An aging narrow gauge railway operates across the Eyre Peninsula independent of the national standard gauge network. LGA of Whyalla connects to the national standard gauge network via the Arrium steelworks but has no standard gauge line connections to the Eyre Peninsula.

Issues and challenges

- *upgrade Eyre Peninsula railway to a standard gauge railway network; and*
- *establish a standard gauge railway link to one of the Eyre Peninsula's commercial ports with cape class vessel capacity and the national standard gauge network.*

Ports

Four commercial ports operate in the Eyre Peninsula and West Coast at four locations:

- **Whyalla** – single use, iron ore and steel export, owned and operated by Arrium;
- **Point Lowly (Upper Spencer Gulf, 30km East of Whyalla)** – single use, gas and petroleum export, operated by Santos;
- **Port Lincoln** - multiple use, bulk grain, fishing, owned by Glencore, operated by Flinders Ports; and
- **Thevenard (Ceduna)** – multiple use, bulk grain mineral sands, gypsum and salt, operated by Flinders Ports.

Issues and challenges

- *upgrade and expansion of Thevenard Port capacity to increase competitiveness and exports in the Western part of the Eyre Peninsula;*
- *construction of purpose-built offloading facilities at Port Lincoln and Thevenard to improve efficiency in the loading and transport of seafood products; and*
- *bulk commodities export facilities capable of handling cape sized vessels required on the east coast of Eyre Peninsula to support mining operations in the region and northern Australia.*

Proposed bulk handling ports

New bulk handling ports are proposed for:

- **Cape Hardy (between Port Neill and Tumby Bay)** - deep water, bulk export facility, capable of loading various size bulk carriers and capsized vessels (infrastructure development proposed as part of Iron Road's Central Eyre Iron Project - requires environmental impact statement)¹²; and
- **Port Spencer (previously known as Sheep Hill, 65km north of Port Lincoln)** - Initial port design encompasses a 515m jetty, cape class loading capability of vessels on any tide and panamax berthing and loading facilities for exporting grain. Location is not subject to extreme weather events, no dredging is required and port capacity can be doubled with minor design changes.¹³

Airports

Three airports with regular passenger transport services operate in the Eyre Peninsula and West Coast:

- **Port Lincoln** – 14km, north of Port Lincoln, owned and operated by District Council of Lower Eyre Peninsula;
- **Whyalla** – owned and operated by the City of Whyalla; and
- **Ceduna** – owned and operated by the District Council of Ceduna.

Facilities are multi-use providing additional airport services for freight transport, charters, defence aircraft, medical retrieval plus other general aviation operations.

By passenger volume Port Lincoln is the region's busiest airport (and South Australia's busiest regional airport) recording 187,702 inbound and outbound passenger movements in 2013/14, an increase of 70 per cent over ten years, (CAGR: 2.6 per cent 1985/86-2013/14), (Figure 2.3), although passenger volumes were down somewhat from their 2010/11 peak of 200,000 passenger movements. Flights between Adelaide and Port Lincoln Airport have a journey travel time of approximately 40 minutes compared with a road journey travel time of approximately 7 to 7.5 hours, a distance of 650 kilometres (RDA Whyalla and Eyre Peninsula, 2011). Primary reasons for travel to Port Lincoln by plane are business, holiday or fly-in fly-out (FIFO) mine work, a segment which is likely to expand if new mines are approved and developed and minerals exploration continues. The Port Lincoln Airport Development Assessment (Airbiz Report & Tourism Futures, 2005) projected that passenger movements will increase to 280,000 per annum by 2025. Refurbishment and upgrades to the terminal, taxiways, aprons and car park to support expected future demand were completed in 2014, costing \$12.7 million, of which Regional Development Australia Fund (RDAF) provided \$4.5 million.

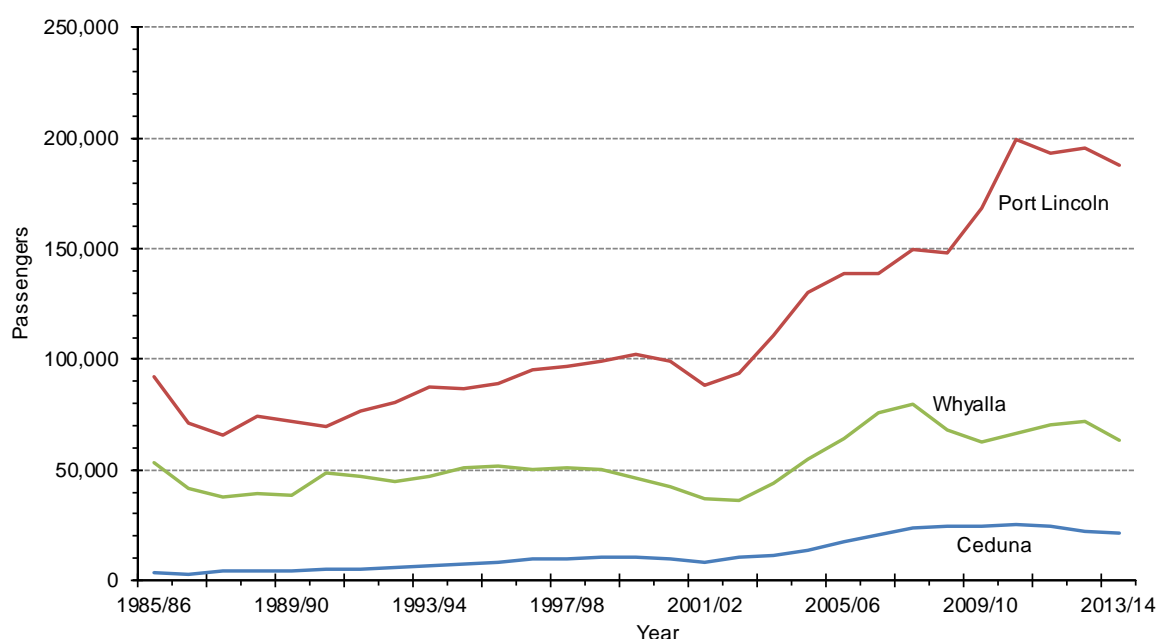
Whyalla Airport had 63,229 inbound and outbound passenger movements in 2013/14, an increase of 44 per cent over ten years, (CAGR: 0.6 per cent 1985/86-2013/14). Ceduna Airport had 21,258 inbound and outbound passenger movements in 2013/14, an increase of 87 per cent over ten years, (CAGR: 6.8 per cent 1985/86-2013/14). BP plans to develop an aviation base at Ceduna Airport, investing \$138 million in a new helipad, passenger terminal, hangars and supporting office blocks to support initial exploration activities¹⁴. Further mineral exploration and potential mine development by Iluka Resources 200km northwest of the township of Ceduna is likely to require FIFO workers and tradespeople for site construction which would lead to further increased passenger volumes through Ceduna Airport.

¹² For more information on Cape Hardy proposal and location see: <http://www.ironroadlimited.com.au/central-eyre-iron-project/infrastructure.html>

¹³ For more information on Port Spencer proposal see: <http://centrexmetals.com.au/port-spencer/>

¹⁴ New aviation base to deliver jobs, economic activity for Ceduna, 24th November 2012.

Figure 2.3: Regional airports passengers (Inbound + outbound) – Ceduna, Whyalla and Port Lincoln, 1985/86 to 2013/14



Source: Department of Infrastructure and Regional Development, Airport Traffic Data 1985/86 to 2013/14.

Small local airports are located in Wudinna, Streaky Bay, Tumby Bay, Kimba, Cleve, Elliston, Cowell, Cummins, Lock and Minnipa, owned and operated by their respective local governments. Small airport infrastructure is limited, e.g., some runways are unsealed. Airport upgrades are cost prohibitive, such that government support towards capital costs is the only means by which redevelopment could be undertaken. Refurbishments or improvements to airport facilities underpin long term economic and social community benefits, improving accessibility to towns by air for FIFO workers, tourists and local residents.

Issues and challenges

- upgrades of Whyalla and Ceduna Airports required to accommodate projected increases in passenger movements; and
- upgrades of smaller airports required.

Power supply

ElectraNet supplies power to Whyalla via 275/132kV substations located at Davenport and Cultana. A 132KV transmission line connects the Lower Eyre Peninsula to Whyalla, wind turbines at Cathedral Rocks and Mount Miller provides additional power. Western Eyre Peninsula sources power via a 66KV transmission line linking Wudinna, Ceduna and Penong. Three single phase 11kV lines from Lipson provide power to Port Neill. Fowlers Bay is not connected to the network and sources power from diesel generators.

Issues and challenges

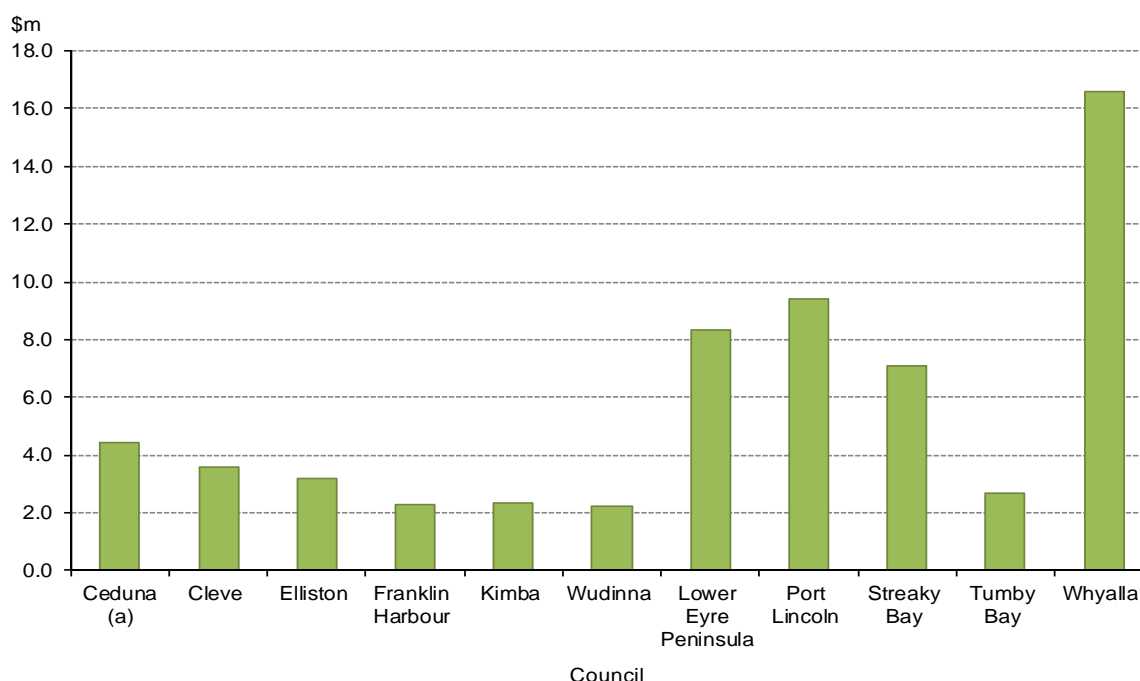
- aging transmission network requires replacement or upgrading.

2.4.9 Local government: procurement expenditure

Eyre Peninsula and West Coast's total combined council procurement expenditure on inputs and materials for 2012/13 amounted to \$62.1 million.¹⁵ Councils with larger populations to service and maintain, i.e., Whyalla and Port Lincoln comprise larger shares of total spending (\$16.61 million) and (\$9.42 million) respectively (Figure 2.4). However per capita expenditures tend to be much larger in the smaller councils, e.g., in Lower Eyre Peninsula expenditure is \$1,666/head compared to \$715/head in Whyalla and \$639/head in Port Lincoln. This pattern reflects the greater financial burdens faced by small councils when compared with the more populous, higher population density, Provincial City councils which can achieve economies of scale in delivering some types of services.

Rapid development from mining on the Eyre Peninsula has tended to disproportionately affect sparsely populated councils with small rate bases and therefore low capacity to fund new infrastructure construction or provide existing services over a larger area. New mines result in increased in-migration of workers with greater demand for houses, roads, services etc., placing strain on council budgets. The Lower Eyre Peninsula which has undergone recent mining development has the second largest expenditure for construction and operations and largest expenditure on professional services of all Eyre Peninsula and West Coast's councils with a population of just 4,997 persons (2013). This is an issue councils have addressed through cooperation/planning/funding from mining companies (privately funded development) and government – Local, State and Federal (publically funded development).

Figure 2.4: Total council expenditure by council– Eyre Peninsula and West Coast, 2012/13 (\$million)^(b)



Note: (a) Expenses for Materials, contracts and other expenses - from District Council of Ceduna Financial Report for year ended 30th June 2013.

(b) Council spend for Yalata Aboriginal Reserve excluded.

Source: LGA SA (2014).

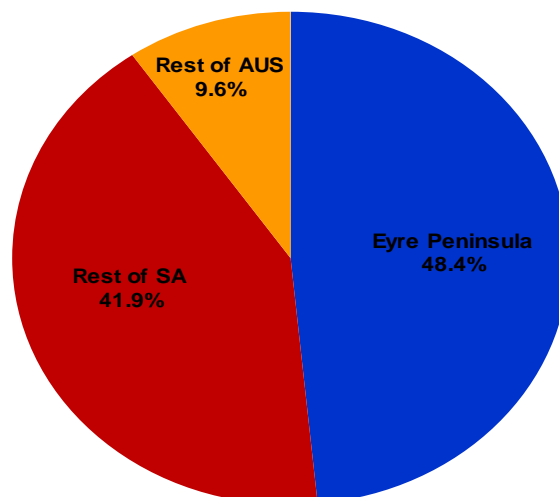
Across all councils the five largest categories of expenditure in 2013 were:

- construction and operations (\$16.01 million);
- repairs and maintenance (\$6.22 million);
- professional services (\$5.28 million);
- waste management and landfill (\$5.05 million);
- utilities (\$4.35 million).

¹⁵ See Eyre Peninsula Regional Procurement Roadmap Program - Final Report, November 2014, for spend analysis across all categories by LGA.

Approximately 90 per cent of council inputs in the Eyre Peninsula and West Coast are procured from within South Australia, the remaining 10 per cent procured from other states (Figure 2.5). Approximately 48 per cent of inputs are sourced within the Eyre Peninsula and West Coast. Councils face potential price pressures and costs burden in response to mining development caused by increasing demand for inputs (goods or services) by mining companies, especially if the majority of inputs are to be sourced within the Eyre Peninsula and West Coast.

Figure 2.5: Source of council expenditure – Eyre Peninsula and West Coast, 2012/13



Source: LGA SA (2014).

2.5 Employment

2.5.1 Labour force

Labour force data for councils compiled by the Department of Employment indicates an unemployment rate of 5.8 per cent in the December quarter of 2013 for the Eyre Peninsula and West Coast (Table 2.29). By comparison the unemployment rate for South Australia at the same time stood 0.5 per cent higher, at 6.3 per cent. Unemployment rates across all councils in the region are significantly below the average for South Australia (except Ceduna and Whyalla), however as for the state as a whole they have trended upwards since the December quarter of 2011.

The region's reliance on several key industries for income, notably, agriculture, aquaculture, tourism and mining, creates susceptibility to seasonal factors, fluctuations in overseas demand and international prices compared with other selected industries, e.g., services. Figure 2.6 shows employment volatility in the Eyre Peninsula and West Coast exceeds that for the state as a whole. South Australia's broader industry mix, service based economy and larger domestic market provides a degree of insulation from external international factors, providing a higher degree of employment stability.

Table 2.29: Unemployment rate councils – Eyre Peninsula and West Coast, South Australia, December quarter, 2008-2013

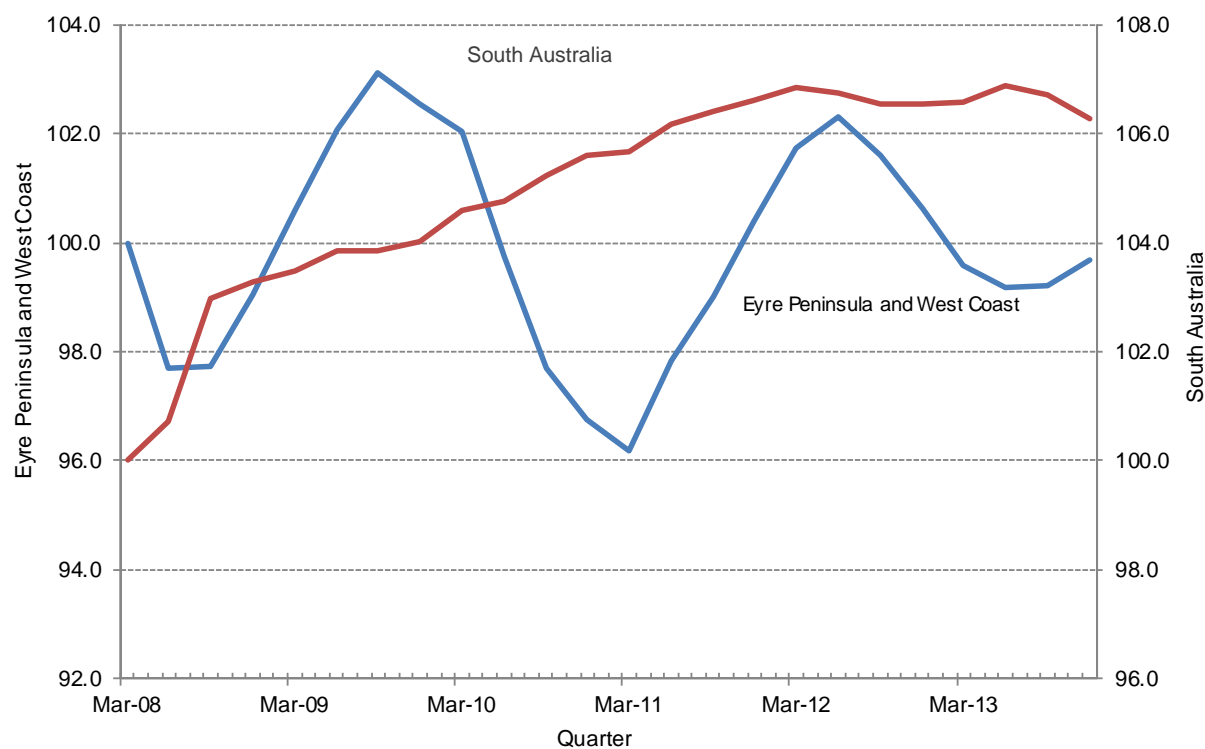
Council	2008	2009	2010	2011	2012	2013
Ceduna	8.8	7.0	8.1	8.6	8.5	9.9
Cleve	1.3	1.5	1.5	1.0	1.2	1.1
Elliston	4.0	3.9	3.2	2.7	3.4	4.3
Franklin Harbour	2.8	2.2	2.2	2.2	2.3	2.8
Kimba	1.0	0.3	0.6	0.6	0.6	0.8
Wudinna	1.8	1.4	1.1	1.0	1.3	2.0
Lower Eyre Peninsula	3.5	3.1	3.1	2.9	3.4	4.2
Port Lincoln	5.7	4.5	4.6	4.9	5.3	6.0
Streaky Bay	3.8	3.1	2.6	2.3	2.8	3.0
Tumby Bay	3.1	2.3	2.2	2.3	2.6	2.7
Whyalla	7.2	5.5	5.6	5.9	6.9	7.5
Eyre Peninsula and West Coast ^a	5.6	4.4	4.5	4.6	5.2	5.8
South Australia (excludes unincorp. areas)	4.9	5.6	5.3	5.4	5.5	6.3

Note: (a) Excludes Yalata Aboriginal Reserve

Source: Department of Employment Education and Workplace Relations (2013).

A higher proportion of persons are in receipt of various forms of income support payments in the Eyre Peninsula and West Coast relative to South Australia (Table 2.30).

Figure 2.6: Aggregate Employment – Eyre Peninsula and West Coast, South Australia, Index (Base: March 2008 = 100)



Note: (a) Excludes Yalata Aboriginal Reserve

Source: Department of Employment Education and Workplace Relations (2013).

Table 2.30: Income support recipients – Eyre Peninsula and West Coast, South Australia, 2012, per cent

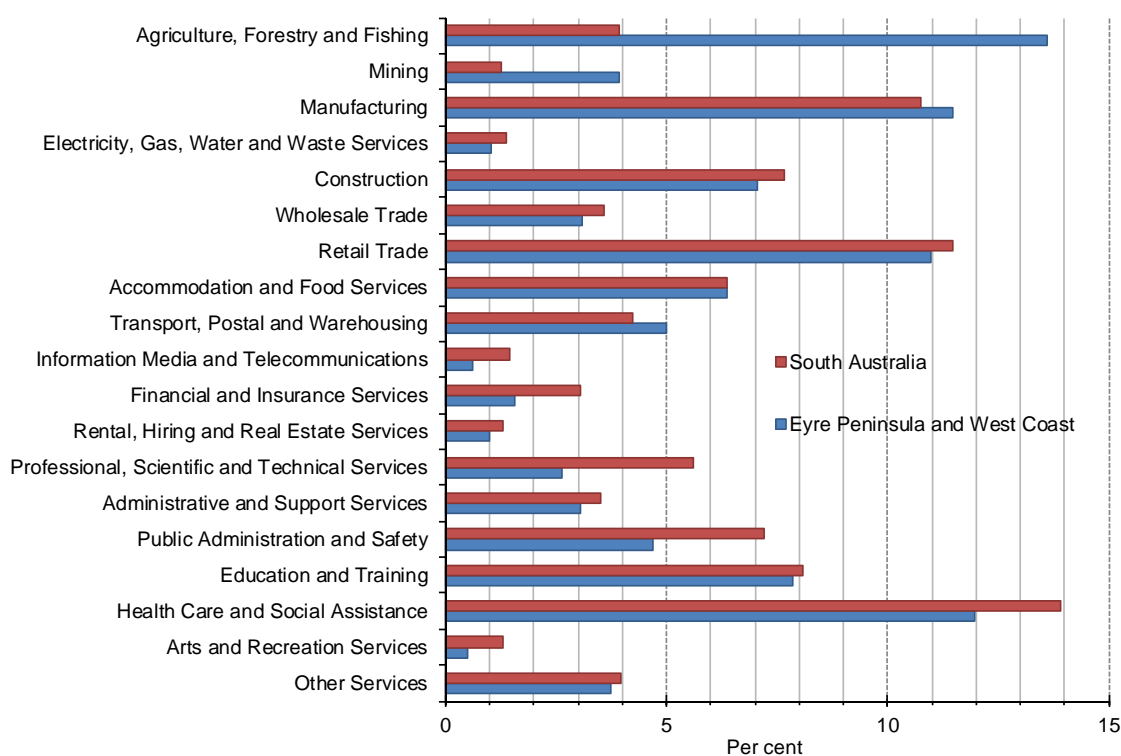
Income support recipients	Eyre Peninsula and West Coast	South Australia (excludes unincorp. areas)
Aged Pensioners (share of persons aged 65 years and over)	77.7	75.3
Disability support pensioners (share of persons aged 16 – 64 years)	8.2	7.2
Female sole parent pensioners (share of females aged 15-54 years)	8.4	5.4
Receiving unemployment benefits (share of persons aged 16 – 64 years)	7.3	5.3
Receiving an unemployment benefits (longer than 6 months) (share of persons aged 16 – 64 years)	6.2	4.2
Receiving unemployment benefits (aged 15-24 years)	12.0	7.0
Low income, welfare-dependent families (share of total family households)	13.5	10.0
Children in low income, welfare-dependent families (share of persons aged < 16 years)	29.3	24.7
Health care card holders (share of persons aged 0 – 64 years)	9.0	8.4
Pensioner concession card holders (share of persons aged 15 years and over)	26.9	24.3
Centrelink concession card holders (share of total persons)	29.2	27.0

Note: (a) Excludes Yalata Aboriginal Reserve
Source: Public Health Information Development Unit (2014).

2.5.2 Employment by industry

As at the 2011 Census the Eyre Peninsula and West Coast's most significant industries of employment were: Agriculture, Forestry and Fishing (including Aquaculture) (13.6 per cent), Health Care and Social Assistance (12.0 per cent), Manufacturing (11.5 per cent) and Retail Trade (11.0 per cent) (Figure 2.7).

Figure 2.7: Employment by industry – Eyre Peninsula and West Coast, South Australia, Census 2011



Note: (a) Excludes Yalata Aboriginal Reserve
Source: ABS (2013) TableBuilder database, SACES calculations.

Table 2.31: **Employment by industry – Eyre Peninsula and West Coast, South Australia, Census 2006 and 2011**

Industry (INDP - 1 digit level) - 2011; (ANZSIC06) (IND06P) - 2006	Eyre Peninsula and West Coast ^a Employment (by industry per cent)			South Australia Employment (by industry per cent)		
	2006	2011	Difference	2006	2011	Difference
Agriculture, Forestry and Fishing	15.6	13.6	-2.0	4.6	3.9	-0.7
Mining	1.4	3.9	2.5	0.5	1.2	0.7
Manufacturing	12.3	11.5	-0.8	13.5	10.8	-2.7
Electricity, Gas, Water and Waste Services	0.9	1.0	0.1	1.1	1.4	0.3
Construction	6.1	7.1	1.0	5.0	7.7	2.7
Wholesale Trade	2.6	3.1	0.5	3.9	3.6	-0.3
Retail Trade	12.5	11.0	-1.5	12.6	11.5	-1.1
Accommodation and Food Services	6.2	6.3	0.1	6.1	6.4	0.3
Transport, Postal and Warehousing	4.2	5.0	0.8	4.1	4.2	0.1
Information Media and Telecommunications	0.7	0.6	-0.1	1.6	1.5	-0.1
Financial and Insurance Services	1.8	1.6	-0.2	3.5	3.1	-0.4
Rental, Hiring and Real Estate Services	1.2	1.0	-0.2	1.5	1.3	-0.2
Professional, Scientific and Technical Services	2.8	2.6	-0.2	5.6	5.6	0.0
Administrative and Support Services	2.6	3.0	0.4	3.0	3.5	0.5
Public Administration and Safety	4.6	4.7	0.1	7.0	7.2	0.2
Education and Training	8.8	7.9	-0.9	8.1	8.1	0.0
Health Care and Social Assistance	11.3	12.0	0.7	13.2	13.9	0.7
Arts and Recreation Services	0.5	0.5	0.0	1.2	1.3	0.1
Other Services	3.7	3.7	0.0	3.9	4.0	0.1
Total	100.0	100.0	-	100.0	100.0	-

Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

Table 2.32: Employment by industry – Eyre Peninsula and West Coast, South Australia, Census 2006 and 2011

Industry (INDP - 1 digit level) - 2011; (ANZSIC06) (IND06P) - 2006	Eyre Peninsula and West Coast ^a Employment (number)				South Australia Employment (number)			
	2006	2011	Change in no. employed	Per cent change in employment	2006	2011	Change in no. employed	Per cent change in employment
Agriculture, Forestry and Fishing	3,309	3,340	31	0.9	27,931	28,302	371	1.3
Mining	301	961	660	219.3	3,070	9,008	5,938	193.4
Manufacturing	2,610	2,817	207	7.9	82,956	77,716	-5,240	-6.3
Electricity, Gas, Water and Waste Services	180	257	77	42.8	6,688	9,878	3,190	47.7
Construction	1,290	1,735	445	34.5	30,682	55,370	24,688	80.5
Wholesale Trade	559	757	198	35.4	24,161	25,802	1,641	6.8
Retail Trade	2,643	2,693	50	1.9	77,045	82,913	5,868	7.6
Accommodation and Food Services	1,317	1,559	242	18.4	37,483	45,913	8,430	22.5
Transport, Postal and Warehousing	887	1,222	335	37.8	25,064	30,564	5,500	21.9
Information Media and Telecommunications	147	148	1	0.7	10,016	10,571	555	5.5
Financial and Insurance Services	376	386	10	2.7	21,341	22,032	691	3.2
Rental, Hiring and Real Estate Services	264	240	-24	-9.1	9,238	9,438	200	2.2
Professional, Scientific and Technical Services	590	644	54	9.2	34,382	40,478	6,096	17.7
Administrative and Support Services	556	746	190	34.2	18,415	25,304	6,889	37.4
Public Administration and Safety	977	1,147	170	17.4	42,893	52,139	9,246	21.6
Education and Training	1,872	1,932	60	3.2	49,865	58,475	8,610	17.3
Health Care and Social Assistance	2,381	2,942	561	23.6	80,980	100,418	19,438	24.0
Arts and Recreation Services	106	124	18	17.0	7,265	9,275	2,010	27.7
Other Services	788	913	125	15.9	24,142	28,752	4,610	19.1
Total	21,153	24,563	3,410	16.1	613,617	722,348	108,731	17.7

Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

As a result of recent discoveries of iron ore, gold, nickel, silver and uranium in the mineral rich regions of the Gawler Craton and Eucla Basin and commission of new mines, mining's employment share increased to 3.9 per cent (up from 1.4 per cent in 2006). Across South Australia Mining accounted for 1.2 per cent of employment as at the 2006 Census.

Total employment across all industries grew by 16.1 per cent between Census years 2006 and 2011 in the Eyre Peninsula and West Coast, or an additional 3,410 jobs in aggregate terms. Over the same period across South Australia employment grew by 17.7 per cent, representing the creation of an additional 108,731 jobs (Table 2.31). The largest increases were in Mining, Construction and Transport Postal and Warehousing. New job creation by industry throughout the Eyre Peninsula and West Coast between Census 2006 and 2011 in aggregate terms and in order of significance occurred in Mining (660 new jobs), Health Care and Social Assistance (561 new jobs) and Construction (445 new jobs) (Table 2.32). Agriculture, Forestry and Fishing, Retail Trade and Education and Training industry employment shares in the Eyre Peninsula and West Coast experienced larger declines than any other industry between Census 2006 and 2011.

2.5.3 Indigenous employment

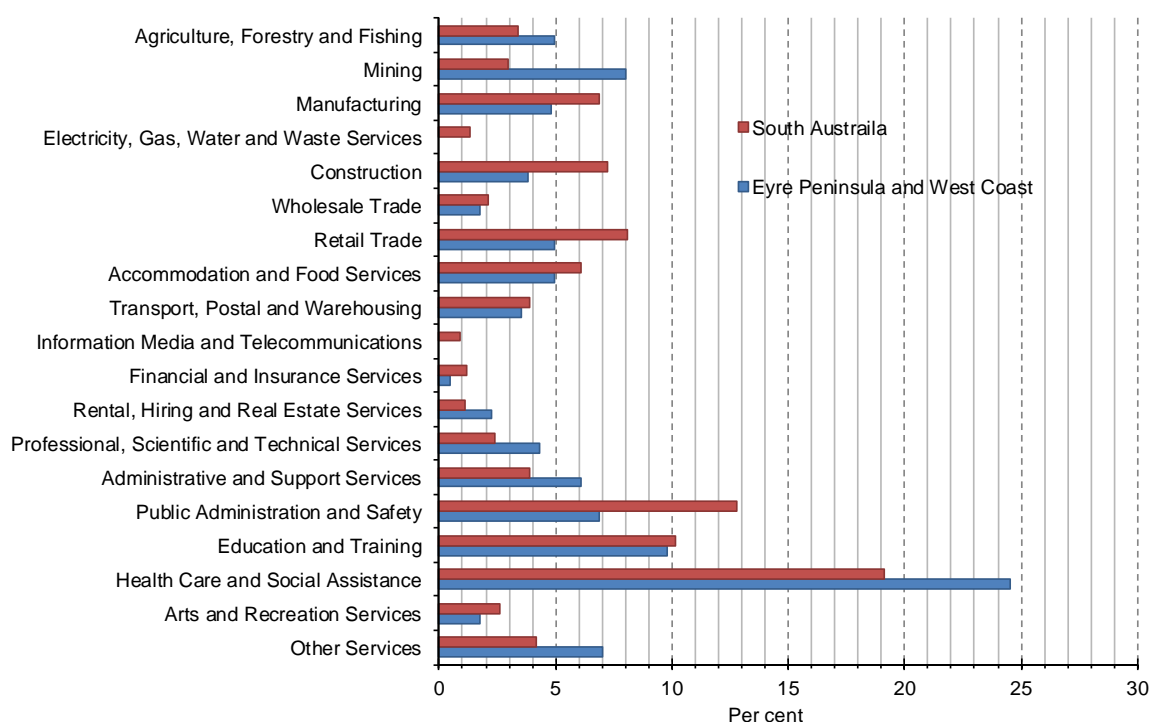
Indigenous employment in the Eyre Peninsula and West Coast is concentrated in public service industries of Health Care and Social Assistance (24.5 per cent), Education and Training (9.8 per cent) and Public Administration and Safety (6.9 per cent) (Figure 2.8). Mining's share of employment for Indigenous persons of 8.0 per cent as at the 2011 Census (up from 3.3 per cent in 2006) increased in line with new employment opportunities in recently opened mines (i.e., over the past 5 years) across the region.

Mining companies cooperate and support Indigenous communities providing Indigenous education and training programs which upon successful completion provide participants with a certificate qualification and permanent position within the mine. Cooperative training programs provide both benefits to miners through filling skills gaps and also to the local community offering long-term employment outcomes and the opportunity of a stable income. Between the 2006 and 2011 Census 147 new jobs were created within the Indigenous community, of which 32 were in Mining, a significant source of new employment for the Indigenous community. The other key sectors for Indigenous jobs growth were Other Services (24 new jobs) and Healthcare and Social Assistance (20 new jobs) (Table 2.33).

Public service industries and Mining in the Eyre Peninsula and West Coast are of greater relative importance in supporting Indigenous employment compared with the Agriculture, Forestry and Fisheries, Manufacturing and Retail Trade industries traditionally relied on for employment by non-Indigenous persons (Figure 2.9).

Industries experiencing the largest increases in Indigenous employment shares across the Eyre Peninsula and West Coast between Census 2006 and 2011 were Mining, Other Services and Transport Postal and Warehousing, (Table 2.34). Public Administration and Safety, Accommodation and Food Services and Education and Training experienced the largest declines.

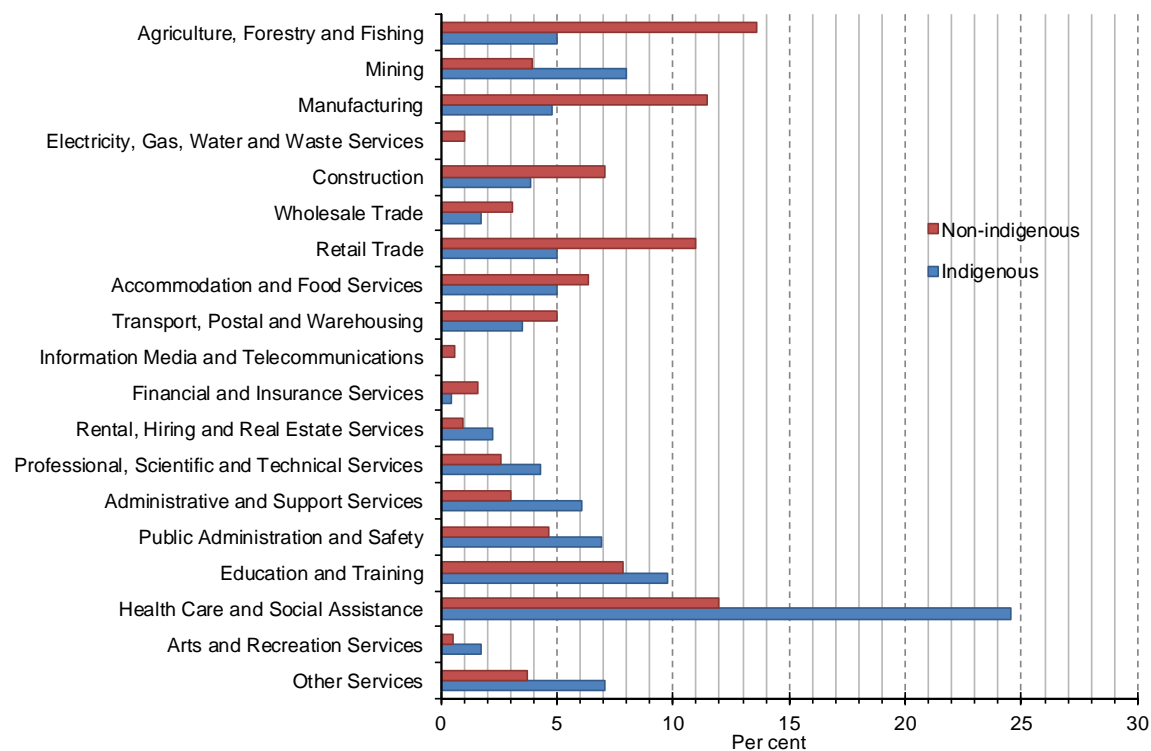
Figure 2.8: Indigenous employment by industry – Eyre Peninsula and West Coast and South Australia, Census 2011



Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

Figure 2.9: Employment by industry and Indigenous status – Eyre Peninsula and West Coast, Census 2011



Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

Table 2.33: Indigenous employment by industry – Eyre Peninsula and West Coast, South Australia, Census 2006 and 2011, numbers

Industry (INDP - 1 digit level) - 2011; (ANZSIC06) (IND06P) - 2006	Eyre Peninsula and West Coast Employment (number)				South Australia Employment (number)			
	2006	2011	Change (No.)	Change (Per cent)	2006	2011	Change (No.)	Change (Per cent)
Agriculture, Forestry and Fishing	33	31	-2	-6.1	206	238	32	15.5
Mining	18	50	32	177.8	59	206	147	249.2
Manufacturing	23	30	7	30.4	539	486	-53	-9.8
Electricity, Gas, Water and Waste Services	7	0	-7	-100.0	42	91	49	116.7
Construction	28	24	-4	-14.3	325	509	184	56.6
Wholesale Trade	10	11	1	10.0	139	148	9	6.5
Retail Trade	31	31	0	0.0	453	568	115	25.4
Accommodation and Food Services	38	31	-7	-18.4	349	427	78	22.3
Transport, Postal and Warehousing	6	22	16	266.7	201	272	71	35.3
Information Media and Telecommunications	0	0	0	-	63	63	0	0.0
Financial and Insurance Services	0	3	3	-	52	84	32	61.5
Rental, Hiring and Real Estate Services	7	14	7	100.0	60	77	17	28.3
Professional, Scientific and Technical Services	12	27	15	125.0	132	166	34	25.8
Administrative and Support Services	23	38	15	65.2	264	274	10	3.8
Public Administration and Safety	89	43	-46	-51.7	1,007	898	-109	-10.8
Education and Training	63	61	-2	-3.2	624	715	91	14.6
Health Care and Social Assistance	133	153	20	15.0	1,078	1,344	266	24.7
Arts and Recreation Services	4	11	7	175.0	92	183	91	98.9
Other Services	20	44	24	120.0	163	292	129	79.1
Total	545	624	79	14.5	5,848	7,041	1,193	20.4

Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

Table 2.34: Indigenous employment by industry – Eyre Peninsula and West Coast, South Australia, Census 2006 and 2011, share of total

Industry (INDP - 1 digit level) - 2011; (ANZSIC06) (IND06P) - 2006	Eyre Peninsula and West Coast Employment (by industry per cent)			South Australia Employment (by industry per cent)		
	2006	2011	Difference	2006	2011	Difference
Agriculture, Forestry and Fishing	6.1	5.0	-1.1	3.5	3.4	-0.1
Mining	3.3	8.0	4.7	1.0	2.9	1.9
Manufacturing	4.2	4.8	0.4	9.2	6.9	-2.3
Electricity, Gas, Water and Waste Services	1.3	0.0	-1.3	0.7	1.3	0.6
Construction	5.1	3.8	-1.3	5.6	7.2	1.6
Wholesale Trade	1.8	1.8	0.0	2.4	2.1	-0.3
Retail Trade	5.7	5.0	-0.7	7.7	8.1	0.4
Accommodation and Food Services	7.0	5.0	-2.0	6.0	6.1	0.1
Transport, Postal and Warehousing	1.1	3.5	2.4	3.4	3.9	0.5
Information Media and Telecommunications	0.0	0.0	0.0	1.1	0.9	-0.2
Financial and Insurance Services	0.0	0.5	0.5	0.9	1.2	0.3
Rental, Hiring and Real Estate Services	1.3	2.2	0.9	1.0	1.1	0.1
Professional, Scientific and Technical Services	2.2	4.3	2.1	2.3	2.4	0.1
Administrative and Support Services	4.2	6.1	1.9	4.5	3.9	-0.6
Public Administration and Safety	16.3	6.9	-9.4	17.2	12.8	-4.5
Education and Training	11.6	9.8	-1.8	10.7	10.2	-0.5
Health Care and Social Assistance	24.4	24.5	0.1	18.4	19.1	0.7
Arts and Recreation Services	0.7	1.8	1.1	1.6	2.6	1.0
Other Services	3.7	7.1	3.4	2.8	4.1	1.3
Total	100.0	100.0	-	100.0	100.0	-

Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

2.5.4 Skills shortages/opportunities

Growth Industries experiencing highest employment growth and demand for skilled labour across the Eyre Peninsula and West Coast between Census 2006 and 2011 were:

- **mining** – see Section 2, Table 2.18 for mining occupations in demand;
- **electricity, gas, water and waste services**;
- **construction** – housing, mines, community infrastructure (roads, paths, libraries, parks, sports grounds, etc.), public infrastructure (hospitals, schools, utilities and police stations); and
- **wholesale trade industries**.

Traditional industries experiencing low employment growth and labour demand between Census 2006 and 2011, included:

- **manufacturing**; and
- **agriculture, forestry and fishing** – reflecting low pay rates, difficulty attracting workers, some types of farming businesses moving to more capital intensive production resulting in a decreased demand for farm workers.

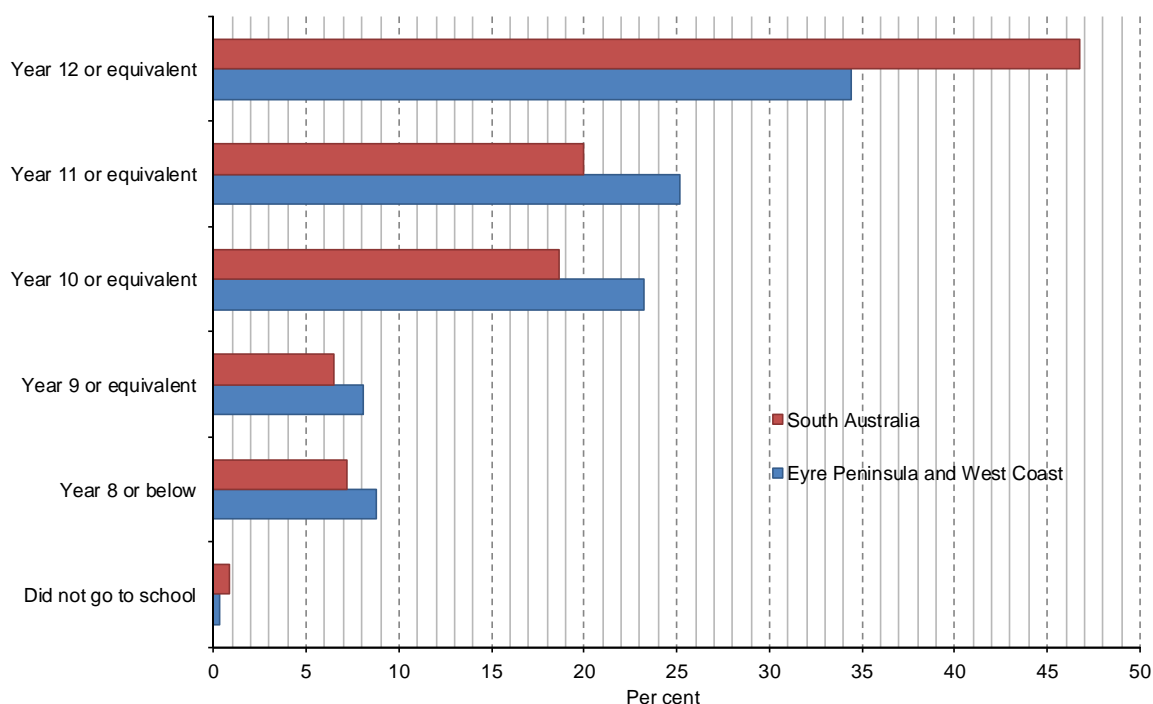
Nevertheless, both industries remain important in terms of total employment and as a source of export income.

2.6. Education

2.6.1 Highest year of schooling

Adults resident in the Eyre Peninsula and West Coast region are much less likely to have completed school than the South Australian average, with 34 per cent holding a Year 12 or equivalent school certificate is held by 34.4 per cent, compared with 47 per cent of all South Australian adults.

Figure 2.10: Highest year of schooling completed – Eyre Peninsula and West Coast, South Australia, Census 2011, per cent of total population, proportion of those no longer in school system



Note: (a) Excludes Yalata Aboriginal Reserve.

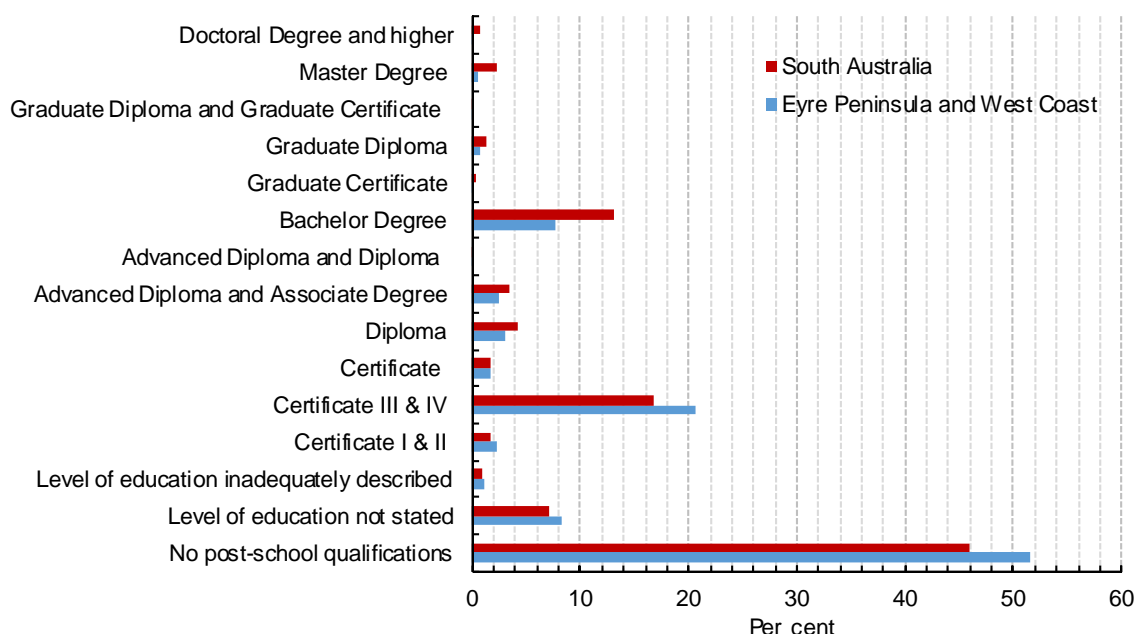
Source: ABS (2013) TableBuilder database, SACES calculations.

2.6.2 Qualifications

As at the 2011 Census, working age adults resident in the Eyre Peninsula and West Coast were significantly less likely to hold a post school qualification than the South Australian average, 51 per cent of the working age population compared to 46 per cent of the population as a whole (Figure 2.11).¹⁶ The gap in qualification is driven by higher education qualifications, with only 9.3 per cent of working age adults in the Eyre Peninsula and West Coast holding a bachelor's degree or higher, almost exactly half the rate for the state as a whole (18 per cent). Participation in the VET sector is much stronger with a slightly above average proportion of the region's population holding a Certificate III or higher VET qualification.

Proportions of university qualified graduates in the Eyre Peninsula and West Coast may increase over the next 5-10 years as further exploration leads to the discovery of additional deposits of commercially viable mineral reserves and approval and construction of new mines. Newly commissioned mines create demand for university qualified employees across a broad range of fields, e.g., engineering, science, geology, health and safety, etc.

Figure 2.11: Highest level of qualification, working age population (15-64 years) – Eyre Peninsula and West Coast, South Australia, Census 2011



Note: (a) Excludes Yalata Aboriginal Reserve.

Source: ABS (2013) TableBuilder database, SACES calculations.

2.6.3 Schools

There are 7,732 students enrolled across 38 government schools operated in the Eyre Peninsula and West Coast in 2011 (Table 2.35). Types of schools include 2 junior primary schools (at Whyalla and Port Lincoln), 16 primary schools (7 at Whyalla and 3 at Port Lincoln), 12 Area schools, 4 high schools, 2 special schools (Whyalla and Port Lincoln) and 2 Aboriginal schools (Koonibba and Yalata). Between 2006 and 2011 enrolments declined by 5.2 per cent.

¹⁶ The gap in participation in further education and training is likely to be exaggerated due to the younger age profile of the Eyre Peninsula and West Coast, with those currently working towards their first post-school qualification reported as not having a post-school qualification for these purposes. However even allowing for this demographic factor the gap in qualifications is still significant.

Table 2.35: Trends in enrolments, public schools – Whyalla and Eyre Peninsula, 2006-2011

SCHOOL AND ENROLMENT	2006	2007	2008	2009	2010	2011	Per cent change (2006-2011)
JUNIOR PRIMARY SCHOOLS (2)							
Nicolson Avenue Junior Primary School	252	271	239	247	260	231	-8.3
Port Lincoln Junior Primary School	343	318.2	335	322.5	294	322	-6.1
PRIMARY SCHOOLS (16)							
Fisk Street Primary School	181	185	169	166	145	106	-41.4
Hincks Avenue Primary School	177	181	181	200	177	187	5.6
Karkoo Primary School*	18	21	20	15	14	0	-100.0
Kirton Point Primary School	435	424	403	356	336	305	-29.9
Lake Wangary Primary School	98	111	100	97	98	94	-4.1
Lincoln Gardens Primary School	90	100	96	89	87	75	-16.7
Long Street Primary School	268	264	298	298	302	315	17.5
Memorial Oval Primary School	245	238	219	214	224	214	-12.7
Nicolson Avenue Primary School	365	383	400	383	378	388	6.3
Penong Primary School	23	26	28	33	31	25	8.7
Poonindie Community Learning Centre	67	67	56	57.8	61	58	-13.4
Port Kenny Primary School	15.4	15	14	16	18	22	42.9
Port Lincoln Primary School	598	580	544	496	463	490	-18.1
Port Neill Primary School	23	20.8	14	6	10	11	-52.2
Ungarra Primary School	35	29	25	30	31	31	-11.4
Wharminda Primary School*	20	16	15	0	0	0	-100.0
Whyalla Stuart R-7 Campus	112	110	101	94	100	125	11.6
Whyalla Town Primary School	267	276	271	263	262	288	7.9
AREA SCHOOLS (12)							
Ceduna Area School	452.2	476.4	481.9	521.7	533	558.9	23.6
Cleve Area School	352.3	347.4	324.2	326.7	326	284	-19.4
Cowell Area School	184.2	180.6	179.9	171.4	177	178	-3.4
Cummins Area School	398.8	375.9	385.4	378.4	383	394.9	-1.0
Elliston Area School	75	69.3	77.4	68.8	74	62.5	-16.7
Karcultaby Area School	89.6	84.1	72.7	61.2	68	68.4	-23.7
Kimba Area School	184.4	182.5	170.1	169.4	172	168.7	-8.5
Lock Area School	107.1	95	97	90.8	88	77.3	-27.8
Miltaburra Area School	79.8	77	77.5	68.9	71	58.6	-26.6
Streaky Bay Area School	275.6	270.6	266.5	258.3	263	256.1	-7.1
Tumby Bay Area School	243.8	264.2	280.3	278.1	298	288.9	18.5
Wudinna Area School	174.5	173	170.3	173.4	185	168	-3.7
SECONDARY SCHOOLS (4)							
Edward John Eyre High School	369.2	334	348	380.6	335	334	-9.5
Port Lincoln High School	697.7	717.6	741.3	749.1	722	741.9	6.3
Stuart High School	285	292	298	297	313	299	4.9
Whyalla High School	370.9	366.2	347	343	312	346	-6.7
SPECIAL SCHOOLS-PRIMARY/SECONDARY (2)							
Port Lincoln Special School	21.8	22	26.2	24.6	26	27	23.9
Whyalla Special School	39	39	44	43	43	38.6	-1.0
ABORIGINAL/ANANGU SCHOOLS (3)							
Koonibba Aboriginal School	30	36	35	32	30	28	-6.7
Yalata Anangu School	57	64	60	70	62	48	-15.8
TOTAL ENROLMENTS	8120.3	8102.8	8010.7	7889.7	7772	7713.8	-5.0

Source: RDA Eyre and Western (2013).

2.6.4 Educational challenges

Education and skills training determines labour quality (knowledge, competency, meets minimum standards, etc.) and labour type (i.e., skilled, semi-skilled, unskilled). Skilled-migration can supplement shortages, especially in regions with smaller labour markets lacking some types of highly specialised skills. Educational challenges affecting labour quality in the Eyre Peninsula and West Coast include:

- school performances below state average - based upon National Assessment Program - Literacy and Numeracy (NAPLAN) results;
- loss of best performing students to Adelaide;
- year 12 completion rates below state average;
- Indigenous education challenges – including specialised needs, social/economic disadvantage, truancy, student performance/outcomes,;
- availability of primary and secondary schooling for residents in remote/isolated areas; and
- educational service quality, insufficient technology support services, e.g., internet access/speed.

There are both demand and supply side factors affecting the mix of labour and availability of skills in the Eyre Peninsula and West Coast including:

- industry mix - mining has a higher component of skilled labour demand than agriculture;
- loss/gain of professionals to and from other regions, Adelaide and interstate; and
- education outcomes and year 12 completion rates - greater VET participation and certificate level qualifications.

2.7 Health

2.7.1 General indicators

Lifestyle and socio-economic factors determine variation in general health and wellbeing across councils in the Eyre Peninsula and West Coast. For example the likelihood of having a low birth-weight baby increases for mothers smoking during their pregnancy, and smoking rates are higher in councils with higher shares of low income households. Similarly, higher alcohol consumption/misuse is closely associated with regions experiencing social and employment disadvantage as well as being a causal factor in decreased health and the prevalence of chronic diseases. In rural areas alcohol consumption rates (across communities) are typically higher, caused by a number of factors including (but not limited to) a lack of recreation venues, drinking culture/attitudes and limited access to alcohol treatment programs.

Correlations between health status and economic indicators are reflected in Table 2.36. Using the example of Ceduna, unemployment is 9.9 per cent in December 2013 (see Table 3.29), a long-term problem (stemming from social, economic and cultural factors) which is significantly above the Eyre Peninsula and West Coast's unemployment rate (5.8 per cent Dec 2013). Indicators of poor health status for Ceduna – low birth weight, prevalence of smoking during pregnancy and rates of premature death – are all well above state and regional averages.

2.7.2 Health practitioners

General practitioners, registered nurses, enrolled nurses and midwives working in the Eyre Peninsula and West Coast (and also by council) as at Census 2011 are shown in Table 2.37.

Table 2.37: General health and wellbeing, selected indicators, councils – Eyre Peninsula and West Coast, South Australia, Adelaide and non-metropolitan SA

Council	Low birth weight babies, per cent (2008-10)	Smoking during pregnancy, per cent (2008-10)	Infant deaths average annual deaths/1000 live births (2008-12)	Child mortality average annual deaths/100,000 children (2008-12)	Estimated population with fair or poor self-assessed health/100 people ^a (2011-13)	Alcohol consumption at high risk level/100 people ^a (2011-13)	Premature death, average annual deaths/100,000 people ^a (2008-12)
Ceduna	10.1	36.9	0.0	0.0	n.a.	n.a.	384
Cleve	n.a.	13.9	0.0	0.0	14.5	4.3	272
Elliston	n.a.	14.6	0.0	n.a.	n.a.	n.a.	313
Franklin Harbour	14.0	23.3	0.0	0.0	14.5	4.3	298
Kimba	n.a.	17.4	0.0	0.0	14.5	4.3	212
Wudinna	n.a.	n.a.	0.0	0.0	n.a.	n.a.	250
Lower Eyre Peninsula	n.a.	14.5	n.a.	0.0	n.a.	n.a.	257
Port Lincoln	7.0	24.6	n.a.	n.a.	16.0	4.6	272
Streaky Bay	n.a.	11.3	n.a.	0.0	n.a.	n.a.	280
Tumby Bay	n.a.	14.5	0.0	0.0	n.a.	n.a.	300
Whyalla	7.5	25.6	3.9	n.a.	18.3	4.4	347
Eyre Peninsula and West Coast	7.7	23.7	-	-	-	-	-
South Australia	7.0	15.0	3.2	21.1	-	-	247
Adelaide	7.1	13.0	3.0	17.5	-	-	241
Non-metropolitan SA	7.0	20.8	3.8	30.7	-	-	260

Note: n.a. = not applicable; (a) Indirectly age-standardised rate.

Source: Public Health Information Development Unit (2014).

Economic development (e.g., due to mining) and associated demand for labour (and capital) encourages inward skilled-migration – and added demand for health services and health practitioners. Rapid population growth increases strain on health infrastructure and total workload of health providers servicing a growing population as the ratio of practitioners/population declines (Table 2.38) for ratio of medical practitioners/100,000 people by type for Eyre Peninsula and West Coast.

Table 2.37: Health practitioners, number, councils – Eyre Peninsula and West Coast, Census 2011

Council	GPs	Registered nurses	Enrolled nurses	Midwives ^a	Total nurses ^b
Ceduna	4	31	17	4	52
Cleve	n.a.	18	13	4	35
Elliston	n.a.	15	10	n.a.	26
Franklin Harbour	n.a.	10	10	n.a.	22
Kimba	n.a.	8	13	6	26
Lower Eyre Peninsula	n.a.	15	16	4	36
Port Lincoln	17	127	89	30	247
Streaky Bay	n.a.	13	11	4	29
Tumby Bay	7	14	13	7	34
Whyalla	12	204	89	42	334
Wudinna	n.a.	12	7	n.a.	22
Eyre Peninsula and West Coast^c	39	468	288	102	864
South Australia	2,045	17,894	6,776	2,688	27,354

Note: n.a = Not available..

(a) Midwives may also be a registered nurse or enrolled nurse;

(b) Total nurses may not equal sum of registered, enrolled and midwives, see note (a).

(c) Yalata Aboriginal Reserve excluded.

Source: Public Health Information Development Unit (2014).

Table 2.38: Health practitioners, number/100,000 persons, councils – Eyre Peninsula and West Coast, Census, 2011

Council	GPs	Registered nurses	Enrolled nurses	Midwives	Total nurses
Ceduna	105.4	843.8	462.4	121.5	1,427.7
Cleve	n.a.	1,006.1	716.2	251.5	1,973.8
Elliston	n.a.	1,464.3	981.7	n.a.	2,445.9
Franklin Harbour	n.a.	759.5	745.8	n.a.	1,738.2
Kimba	n.a.	707.1	1,158.2	500.9	2,366.2
Lower Eyre Peninsula	n.a.	306.5	319.6	86.7	712.8
Port Lincoln	113.9	877.9	614.4	209.7	1,702.0
Streaky Bay	n.a.	603.8	520.8	199.5	1,324.1
Tumby Bay	250.3	545.4	512.6	249.3	1,307.3
Whyalla	54.2	902.1	394.5	184.5	1,481.1
Wudinna	n.a.	968.2	567.5	n.a.	1,772.5
Eyre Peninsula and West Coast^a	n.a.	820.1	505.8	n.a.	1,514.7
South Australia	124.8	1092.3	413.6	164.1	1,669.8

Note: n.a = Not available; (a) Excludes Yalata Aboriginal Reserve.

Source: Public Health Information Development Unit (2014).

2.7.3 Indigenous health

Across Australia Indigenous persons have lower life expectancy and poorer overall health and wellbeing compared to non-Indigenous persons due to social, economic, and locational factors (see for example Department of Health, 2012). In remote or isolated Indigenous communities, access to health services is impeded by infrastructure (quality of facilities) and distance from health services. Indigenous health service provision and policy for Eyre Peninsula and West Coast's 3,164 Indigenous persons (5.5 per cent of the total population) requires separate consideration from non-indigenous persons/communities.

Improvements in Indigenous health (in the Eyre Peninsula and West Coast and Australia wide) and employment outcomes are linked - persons in good health being more likely to be employed (or participating in the labour market) which promotes/improves Indigenous community involvement and engagement. Mining companies across Australia are engaging the Indigenous community to more equitably share benefits from mining related development through Indigenous employment training programs. A number of successful training programs have provided positive employment outcomes for Indigenous persons, i.e., training and skills development, certificate qualification and permanent mine site position. Benefits flow through the community - wages and salary income from mining employment - reduces income support dependence (reduction in cost to governments) and increases demand for local goods and services, e.g., retail, construction, insurance/real estate services. Further benefits are achievable by investments in improving quality/access of Indigenous health services to complement Indigenous employment training programs through cooperation with governments and mining companies.

2.8 Yalata Aboriginal Reserve

Yalata Aboriginal Reserve is an Aboriginal Council (AC) located 200km west of Ceduna on the Great Australian Bight. Covering an area of 4,563 square kilometres Yalata Aboriginal Reserve lies within Unincorporated West Coast forming part of the Alinytjara Wilurara Natural Resources Management Region (AW NRM region).¹⁷ As at the 2011 Census (the most recent data available) Yalata Aboriginal Reserve had an ERP of 293 persons, of which 89.8 per cent were Indigenous, (Table 2.39). The Reserve's younger age structure (compared to the Eyre Peninsula and West Coast and South Australia) is skewed towards persons aged less than 30 years. Housing, retail, health and education services are provided by a single centre - Yalata Township - the only permanent settlement in the Reserve.

Table 2.39: **Indigenous status – Yalata Aboriginal Reserve, Census 2011**

Status	Males	Females	Persons	Per cent
Indigenous persons:				
Aboriginal	116	143	259	88.4
Torres Strait Islander	0	0	0	0.0
Both Aboriginal and Torres Strait Islander	0	4	4	1.4
Total Indigenous	116	147	263	89.8
Non-Indigenous persons	12	13	25	8.5
Indigenous status not stated	5	0	5	1.7
Total	133	160	293	100.0

Source: ABS (2011a) Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile, Yalata.

Yalata Aboriginal Reserve's Indigenous unemployment rate as at Census 2011 is 16 per cent; see Table 2.40. By comparison unemployment in Yalata is approximately three times South Australia's average of 5.7 per cent at Census 2011.

¹⁷ For a description of the AW NRM region and Board see: <http://www.naturalresources.sa.gov.au/alinytjara-wilurara/about-us>.

Table 2.40: Labour force, industry and qualifications – Yalata Aboriginal Reserve, Census 2011

Indicator	Indigenous			Non-Indigenous			Total		
	Males	Females	Persons	Males	Females	Persons	Males	Females	Persons
Persons aged 15 years and over	77	101	178	13	10	23	90	115	205
In the labour force:									
Employed	13	8	21	11	6	17	24	14	38
Unemployed	0	4	4	0	0	0	0	4	4
<i>Total labour force</i>	<i>13</i>	<i>12</i>	<i>25</i>	<i>11</i>	<i>6</i>	<i>17</i>	<i>24</i>	<i>18</i>	<i>42</i>
Not in the labour force	15	26	41	0	3	3	15	32	47
Labour force status not stated	52	63	115	0	3	3	52	66	118
Unemployment - per cent	0.0	33.3	16.0	0.0	0.0	0.0	0.0	22.2	9.5
Labour force participation - per cent	16.3	11.9	13.8	100.0	50.0	73.9	26.4	15.5	20.3
Employment to population - per cent	16.3	7.9	11.6	100.0	50.0	73.9	26.4	12.1	18.4
Industry sector:									
Government	3	0	3	0	3	3	3	3	6
Private	9	4	13	7	6	13	16	10	26
CDEP participants ^a	3	0	3	0	0	0	3	0	3
Self employed	0	0	0	0	0	0	0	0	0
Non-school qualifications:									
Postgraduate Degree Level	0	0	0	0	0	0	0	0	0
Graduate Diploma and Graduate Certificate Level	0	0	0	3	0	3	3	0	3
Bachelor Degree Level	0	3	3	5	0	5	5	3	8
Advanced Diploma and Diploma Level	0	0	0	0	3	3	0	3	3
Certificate II	0	0	0	0	0	0	0	0	0
Certificate III and over	3	3	6	3	0	3	6	6	12

Note: (a) CDEP - Community Development Employment Projects now operates under the name Remote Jobs and Communities Program (RJCP).

Source: ABS (2011a) Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile, Yalata.

Lack of employment opportunities, infrastructure, commercial business activity and education discourage/impede Indigenous labour market participants from, searching for/maintaining employment. Of a total potential labour force of 181 persons (i.e., persons over 15 years) there were 25 persons participating in the labour market (21 employed and 4 unemployed). Consequentially Yalata Indigenous labour force participation is 13.8 per cent as at Census 2011, approximately five times below South Australia's participation rate of 59.9 per cent over the same period.

Economic activity depends almost entirely upon the provision of publicly funded services for health, education and public administration and safety (i.e., law enforcement) and cyclical project grant funding. Yalata's main service providers are:

- Yalata Community Inc.¹⁸;
- Tullawon Health Service;
- Yalata Anangu School;
- SA Police;
- Complete Personnel - RJCP provider;
- Housing SA (staffed 2 days per week);
- Other agencies (visit on a drive-in-drive-out basis).

Yalata Community Store Pty Ltd. is the only commercial business operated under a management contract to Outback Stores. SACES recently completed a study identifying economic opportunities and potential sources of new income for the AW NRM Board responsible for overseeing natural resource management in South Australia's far west which is inclusive of Yalata Aboriginal Reserve.¹⁹ The study improves understanding of the region's existing industries, as well as identifying new industries to increase the AW NRM region's income and employment opportunities. It also identifies and lays the foundation for further possible research to undertake a larger comprehensive study of the AW NRM region.

Table 2.41: Selected indicators – Yalata Aboriginal Reserve and South Australia, Census 2011

Indicator	Yalata			South Australia All persons/ households
	Indigenous persons /households with Indigenous persons ^a	Non-Indigenous persons ^b / other households	Total	
Median age of persons	26	44	27	39
Median total personal income (\$/week)	312	933	381	534
Median total household income (\$/week)	900	1,468	1,343	1,044
Median mortgage repayment (\$/month)	0	0	0	1,500
Median rent (\$/week)	20	20	20	220
Average number of persons per bedroom	1.9	1.0	1.6	1.1
Average household size	4.9	1.5	4.0	2.4

Note: (a) A household with Indigenous person(s) is any household that had at least one person of any age as a resident at the time of the Census who identified as being of Aboriginal and/or Torres Strait Islander origin; (b) Includes persons who did not state their Indigenous status.

Source: ABS (2011a) Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile, Yalata.

¹⁸ Yalata Community Inc. is responsible for the managing government grants and contracts in relation to Municipal/essential/community services, land care, RJCP, housing, community internet and jobs programs.

¹⁹ Building Opportunities: Exploratory Baseline Study, Commissioned by the AW NRM Management Board, November 2014 is an economic development brief. It provides a Socio-economic baseline overview, identification of commercial economic development opportunities/potential sources of new income and collated/summarised existing studies in relation to the AW NRM region and three AC's. Copies may be available upon request from Matthew Ward, Regional Manager of the AW NRM.

High levels of unemployment (and income support dependence) are reflected in median incomes; median total personal income in Yalata Aboriginal Reserve as at Census 2011 is \$312/week compared with \$534/week in South Australia over the same period, (Table 4.41).

A single school - Yalata Anangu School - provides education services for Reception to Year 12 (R-12) in Yalata Aboriginal Reserve. As at term 3 of 2013 student enrolment is 53 students, of which 81 per cent were of primary school age, i.e., aged 12 years and under (see SA Government School Enrolments, Term 3, 2013, South Australian Government Data Directory, Yalata Anangu School). Year 12 completion rates for Indigenous persons are significantly below the South Australian average (similar to other ACs), 15 Indigenous persons (8.5 per cent) resident at Yalata have Year 12 or equivalent level of schooling as at Census 2011, (Table 2.42).

It is a nationwide goal to improve high school standards/retention in Indigenous community schools to provide required skills/standards/understanding in basic numeracy, literacy, reading, writing and spelling necessary for work or further education (e.g., TAFE, Apprenticeships, University). This is true for Yalata where the challenge of addressing Indigenous education outcomes remains for the future. Current skills of Yalata's labour force are suited to occupations requiring on-the-job training and attainment of certificate level qualifications. Many opportunities exist for development in and around Yalata Aboriginal Reserve which can utilise current skills, especially in arts and crafts, farming and tourism, such as whale watching, caravanning, fishing, and 4WD tours. Successful commercial development of opportunities is achievable by using the Indigenous community relationships with the land, Indigenous culture and heritage to bring about economic development and a reliable source of sustainable income.

Table 2.42: Highest year of school completed – Yalata Aboriginal Reserve, Census 2011

Year of school completed	Indigenous	Non-Indigenous	Indigenous status not stated	Total
Year 12 or equivalent	15	9	0	24
Year 11 or equivalent	10	3	0	13
Year 10 or equivalent	13	6	3	22
Year 9 or equivalent	7	3	0	10
Year 8 or below	25	0	0	25
Did not go to school	0	0	0	0
Highest year of school not stated	107	3	0	110
Total	177	24	3	204

Source: ABS (2011a) Aboriginal and Torres Strait Islander Peoples (Indigenous) Profile, Yalata.

CHAPTER THREE

The Database of VU-TERM

In order to develop the capacity to more accurately model the potential impact on the GAB of specific oil and gas exploration and development strategies, a tailored version of the VU-TERM (The Enormous Regional Model) was developed for the GAB. This Chapter outlines the theory underpinning the VU-TERM model and its application to the development of the model. For this project, the VU-TERM database is aggregated so as to concentrate on regions straddling the Great Australian Bight. The model has dynamic capability, enabling a comparison year-by-year between a forecast baseline and policy scenarios. In the context of exploration and oil field development the model enables these distinct phases (i.e., exploration, construction and operations) to be assessed year by year relative of a 'business as usual' baseline.

3.1 Overview of methodology

In a national CGE (computable general equilibrium) model, the starting point is an input-output table. A CGE model includes estimates of direct flows of goods and services from domestic and imported sources to all users at basic prices, reflecting the available input-output database. In addition, the CGE model includes details of different margins used to facilitate each flow. In the case of Australia, margins data are prepared by the Australian Bureau of Statistics (ABS). Similarly, indirect taxes on each transaction are available from the ABS. Data on direct flows, plus margins plus taxes enable us to distinguish between the values of transactions at producer prices and the values at user prices.

VU-TERM (The Enormous Regional Model) splits the national economy into many small regions. An important assumption used in splitting the national CGE database is that a given industry in each region uses identical technologies (i.e., input cost shares). This assumption becomes more defensible when we do the regional split at a high level of disaggregation. For example, farm sectors in VU-TERM are more detailed than those in the national input-output table. *Other agriculture*, includes a wide array of tree crops, grapes and tropical fruits. It is necessary to split this sector into many different farm outputs so as to lessen the burden on the assumption of identical technologies across regions. Whereas it would be controversial to assume that *Other agriculture* in Far North Queensland uses the same technology as that in the Riverland SA, it is less controversial to assume the technology used in banana production is the same in all regions.

In addition to agriculture, we split the national input-output in electricity generation, health and education. In electricity generation, this enables us to distinguish between different types of fossil-fuel generated electricity and different renewables. In health, we distinguish between the specialist services available only in large cities and GPs. In education, we distinguish between local services, such as pre-school and primary schools, and relatively traded sectors such as tertiary education. Instead of aggregating the national database, we disaggregate it. Whereas there are 114 sectors in the published input-output table, our database has 190 sectors.

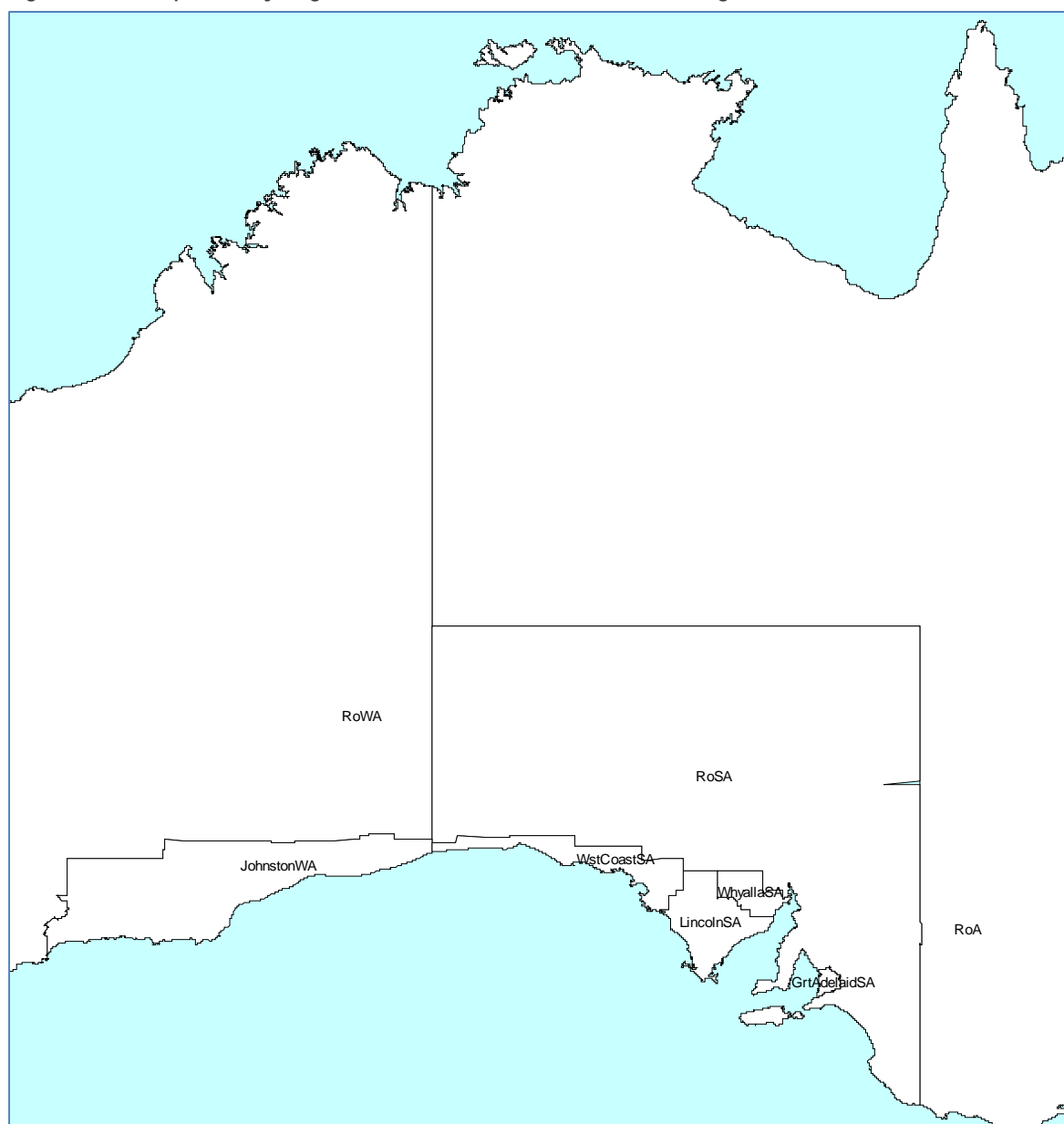
In the database preparation process, both with the national CGE database and the multi-regional CGE database, we use defensible assumptions in order to mould ABS data to a form suitable for CGE purposes. For example, at the national level, the commodities used in investment are recorded in a column rather than a matrix. We wish to devise an investment matrix that enables us to distinguish the commodity composition of investment in one industry from another. For example, dairy cattle are part of the investment (i.e., herd investment) in the dairy cattle industry. We would not expect other agricultural industries to use dairy cattle as part of investment, let alone industries outside of agriculture. To move from an investment vector to an investment matrix, we use default shares that reflect differences in investment composition between industries.

The profiles obtained on small regions using the VU-TERM master database are based on shares of national activity. Derivation of these shares relies heavily on ABS census data and agricultural census data, plus other sources.

In preparing a multi-regional database, we need to live with data that arise from different dates. The published input-output table is for 2009/10. After preparing the 190 sector national version, we update this to 2012/13 using national accounts and international trade data. The regional shares are based heavily on the 2011 census, but are normalised to the 2012/13 state level national accounts.

The process of preparing a CGE database from an available national input-output table, splitting it into 190 sectors, updating it to 2012/13 and then splitting it into 205 regions (i.e., statistical sub-divisions) is mechanised. We rely on programs, not spreadsheet calculations, to undertake the task. This ensures that an otherwise complex task is readily reproducible.

Figure 3.1: Map of Study Regions in VU-TERM for GAB Research Program



The master database created for VU-TERM is far more detailed than is ever required in a single project. It is computationally convenient and simplifies the presentation of results to aggregate the database for a particular study, while retaining the specific sectors and regions of interest in that study. For example, the

present study uses an aggregation that contains 23 sectors (see Table 3.6) and 9 regions (see Figure 3.1). The regional structure includes the three regions comprise the Eyre and Western region of SA:

- West Coast SA
- Lincoln SA
- Whyalla SA

The two other regions most likely to be affected by any oil or gas related development in the Great Australian Bight, namely:

- Johnson WA (the Western Australian region located on the Bight); and
- Greater Adelaide SA (as the most likely place of residence for Fly In Fly Out workers).

With the remainder of the country aggregated into:

- Rest of SA
- Rest of WA; and
- Rest of Australia

3.2 Regional data estimation²⁰

Table 3.1: Regional data estimation

Type of data	Data use
1. National input-output table 2009/10	Industry value-added (VA_i) Household consumption (HOU_c)
2. National accounts (regional – state level) 2012/13	Broad sector value-added ($VA_{b,st}$) Household consumption (19 broad sectors) -- $V3_state_{b,st}$ & $V3NAT_b$ Government consumption (macro) -- $\Sigma V5_state_{st}$ Investment (macro) -- $\Sigma V2_state_{st}$ International services exports --- $V4_state_{cs,st}$ International services imports --- $VM_state_{cs,st}$
3. Trade data by port (unpublished ABS data, 2012-13)	International merchandise exports – $R004_{cr}$ International merchandise imports – $R00M_{cr}$
4. Census employment data by small region 2011	Industry level – $R001_{ir}$ and $R002_{ir}$
5. Population by small region (POP_r , POP_{st})	Regional share of state household consumption Regional share of government consumption

Key: R001 – production shares; R002 – investment shares; R003 – household consumption shares; R004 – international export shares; R005 – government consumption shares; R00M – import shares.

Subscripts: b – broad national accounts sector; cs – services commodity; st – state; r – small region; i – industry.

Source: Wittwer and Horridge (2010).

Table 3.1 contains a summary of the various data inputs used in the process of estimating small-region shares of national activity. Regional shares (S) of industry value-added (VA_i) mapped from regions (r) to the state level (st) and from industries (i) to broad sectors (b) must equal state value-added ($VA_{b,st}$):

$$S_{r \in st} S_{i \in b} (R001_{ir} \cdot VA_i) = VA_{b,st} \quad (1)$$

The control totals in (1) are gathered from income-side national accounts at the state level published annually by the ABS. From (1), we may adjust regional production shares down/up for the regions in a particular state if the initial shares added up over industries and regions in that state imply a lower/higher state broad sector value-added than published national accounts data.

²⁰ This section draws on Wittwer, G. and Horridge, M. (2010), "Bringing Regional Detail to a CGE Model using Census Data", *Spatial Economic Analysis*, 5(2):229-255.

Regional household consumption shares are equal to the product of the region's share of state population and the state's share of national broad commodity consumption, mapped from the finer commodity level (c) to the broad sectoral level (b):

$$R003_{cr} = (POP_r/POP_{st(r)}).(V3_stateb(c),st(r)/V3NATb(c)) \quad (2)$$

If we have no sectoral breakdown of government spending in the national accounts (state level), a simplified version of (2) applies:

$$R005_{cr} = (POP_r/POP_{st(r)}).(V5_state_{st(r)}/V5NAT) \quad (3)$$

For local commodities, household and government consumption shares are set equal to production shares (commodities and industries correspond one to one). These sectors might include primary school education, child care services, various health care services and restaurants:

$$R005_{cr} = R001_{ir} \quad (4)$$

and

$$R003_{cr} = R001_{ir} \quad (5)$$

The treatment of local sectors shown in (4) and (5) is an example of how we make the most of minimal data at the small region level. At all stages, we wish to ensure that small region shares are consistent with state accounts data. Therefore, we will adjust consumption shares for all regions in a particular state to fit published data. That is, having estimated regional consumption shares using (2), and adjusted them for local sectors using (4), we need to adjust the shares again (using HOU_c from the published IO table) to satisfy:

$$Sr \in stSc \in b(R003_{cr}.HOU_c) = V3_stateb, st \quad (6)$$

where

$$Sc \in bHOU_c = V3NATb \quad (7)$$

Regional shares for government spending require a similar adjustment. Should better data become available, we may rewrite the data manipulation programs to make use of new data. Indeed, our first version of VU-TERM included crude estimates of international exports and imports by port, based on the annual reports of the port authorities (Horridge *et al.*, 2005). Had we waited until we had better data, we would have foregone the opportunity to undertake useful analyses in the meantime. In the event, we gained access to actual four digit merchandise trade data for 60 ports several years after the first application of VU-TERM. These data are sufficient to devise the shares $R004_{cr}$ and $R00M_{cr}$ shown in Table 3.2.

3.2.1 Estimating inter-regional trade matrices

We do not allow the absence of inter-regional trade data to discourage us from devising a multi-regional database. Rather, as explained in the first application of VU-TERM (Horridge *et al.*, 2005), we first estimate regional supplies and demands from which excess demands and excess supplies are implied. The key to this approach is to work at a high level of sectoral disaggregation, at which estimating regional production shares becomes easier. For example, we may not know the share of national mining activity in a region, but we might have a good estimate of the share of more specific bauxite mining in the region. Given that consumption patterns do not vary widely between regions whereas production patterns do, working at a high level of disaggregation will lead to defensible estimates of total supplies and total demands.

In order to distribute excess supplies and satisfy excess demands at the regional level, we invoke the gravity assumption: bilateral inter-regional trades are inversely proportional to distance. To devise a distance matrix, we require a set of coordinates of latitude and longitude for each region.

3.2.2 Representation of statistical local areas (SLAs)

A substantial effort has gone into reconciling agricultural census data with census data on employment by industry and region in the VU-TERM master database. The raw employment data in the census do not give the farm output detail as provided by the agricultural census data. Many broadacre farms in Australia produce mixed outputs. Therefore, when we estimate employment numbers in which we distinguish livestock from grains, we are in effect dividing the time of farm labour between the two activities. Therefore, the employment numbers shown in Tables 3.3 and 3.6 for livestock and grains are best thought of as person-hour equivalents, rather than strictly separate jobs.

The mapping of ANZSIC sectors to input-output sectors has been programmed. There is one-to-one mapping for 135 of the 190 sectors in the master database of VU-TERM. However, even for these sectors, the ANZSIC-based employment numbers are not final. There are employment numbers in the census data assigned to broader categories such as manufacturing. In this case, the manufacturing employment numbers are allocated across all manufacturing activities in a given region on the basis of estimated value-added shares. The employment numbers shown in Tables 3.3 and 3.6 are based on raw census data. They are not full-time equivalent numbers.²¹

3.3 Economic profile of regions straddling the Great Australian Bight

As mentioned previously, the version of VU-TERM developed as part of this study uses an aggregation that contains 23 sectors and 9 regions. The nine regions are:

- West Coast SA
- Lincoln SA
- Whyalla SA
- Johnson WA (the Western Australian region located on the Bight); and
- Greater Adelaide SA (as the most likely place of residence for Fly In Fly Out workers).
- Rest of SA
- Rest of WA; and
- Rest of Australia

Tables 3.2, 3.3 and 3.6 provide a detailed profile of the four regions straddling the Great Australian Bight, plus Adelaide, which is likely to be a significant source of expertise for any development in the Bight.

The LincolnSA region (see Figure 3.1) has more people employed in fishing than any other statistical sub-division in Australia, as well as having the second highest number of people employed in aquaculture. Together with a desalination plant under discussion, this raises sensitivities concerning developments in the Bight.

Water is scarce in the region with reliance on the Morgan-Whyalla pipeline, and the Tod-Ceduna pipeline. Extractions from the Tod River Reservoir have been negligible for the past decade due to salinity and concerns about farm chemical runoff²². Groundwater supplies were depleted severely during the millennium drought, but have recovered with a return to more usual rainfall conditions.²³

²¹ To put this in context, the raw numbers in the census data total 10.058 million workers. The national total in Table 3.3 is 10.036 million. Some workers are not assigned to regions as their place of work is not available.

²² See http://en.wikipedia.org/wiki/Tod_River_%28reservoir%29.

²³ See <http://www.abc.net.au/local/audio/2008/11/21/2426716.htm> and <http://www.portlincoln.sa.gov.au/webdata/resources/files/Eyre%20Peninsula%20Demand%20and%20Supply%20Statement%20Annual%20Review%202013.pdf>.

Table 3.2: Estimate of value-added by \$m and share of region total

\$m	LincolnSA	WstCoastSA	WhyallaSA	GrtAdelaidSA	JohnstonWA	National
Livestock	45	7	2	108	22	10178
Grains	373	74	1	27	111	5519
OtherAgri	74	4	0	529	24	15359
Fishing	98	18	3	26	3	929
OthMining	73	15	194	623	384	87896
Oil	6	2	21	482	4	12189
Gas	8	3	26	582	4	15015
FoodPrds	71	2	5	1248	12	23264
OtherManuf	48	4	140	4062	34	71852
FuelPrds	2	0	1	54	0	3722
Utilities	39	6	18	2216	34	32561
Construction	127	22	57	4679	158	114167
Trade	165	26	73	5618	83	109197
HotelsCafes	54	11	31	1694	29	32108
OthTransprt	104	20	45	2219	160	53115
AirTransport	2	0	1	257	2	8061
RailTransprt	0	0	0	136	0	967
Communicatn	11	2	8	635	9	15582
BusinessSrv	212	25	145	16058	129	349117
OwnerDwelling	125	24	78	5115	92	108675
GovAdmDefLwO	63	14	29	4607	30	76191
Education	65	13	39	2209	36	43707
HealthComSrv	96	20	68	5090	41	83723
OtherSrv	124	22	66	4417	67	83660
Total	1984	332	1052	62692	1468	1356754
% of total	LincolnSA	WstCoastSA	WhyallaSA	GrtAdelaidSA	JohnstonWA	National
Livestock	2.3	2.1	0.2	0.2	1.5	0.8
Grains	18.8	22.4	0.1	0.0	7.6	0.4
OtherAgri	3.7	1.3	0.0	0.8	1.6	1.1
Fishing	4.9	5.4	0.3	0.0	0.2	0.1
OthMining	3.7	4.6	18.4	1.0	26.2	6.5
Oil	0.3	0.7	2.0	0.8	0.2	0.9
Gas	0.4	0.8	2.4	0.9	0.3	1.1
FoodPrds	3.6	0.5	0.5	2.0	0.8	1.7
OtherManuf	2.4	1.3	13.3	6.5	2.3	5.3
FuelPrds	0.1	0.0	0.1	0.1	0.0	0.3
Utilities	2.0	1.9	1.7	3.5	2.3	2.4
Construction	6.4	6.6	5.4	7.5	10.7	8.4
Trade	8.3	7.7	6.9	9.0	5.7	8.0
HotelsCafes	2.7	3.2	3.0	2.7	1.9	2.4
OthTransprt	5.2	6.0	4.3	3.5	10.9	3.9
AirTransport	0.1	0.0	0.0	0.4	0.1	0.6
RailTransprt	0.0	0.0	0.0	0.2	0.0	0.1
Communicatn	0.6	0.5	0.7	1.0	0.6	1.1
BusinessSrv	10.7	7.5	13.8	25.6	8.8	25.7
OwnerDwelling	6.3	7.1	7.4	8.2	6.3	8.0
GovAdmDefLwO	3.2	4.1	2.8	7.3	2.0	5.6
Education	3.3	3.9	3.7	3.5	2.5	3.2
HealthComSrv	4.8	5.9	6.5	8.1	2.8	6.2
OtherSrv	6.3	6.6	6.3	7.0	4.6	6.2
Total	100	100	100	100	100	100

Table 3.3: Estimate of employment by industry (based on 2011 census)

Number	LincolnSA	WstCoastSA	WhyallaSA	GrtAdelaidSA	JohnstonWA	National
Livestock	338	47	19	726	277	110594
Grains	1751	409	6	153	890	44544
OtherAgri	288	21	0	2358	113	73667
Fishing	685	137	27	184	31	8421
OthMining	278	93	601	3256	693	166855
Oil	12	4	40	920	3	11307
Gas	14	5	49	1109	3	13801
FoodPrds	610	19	72	14134	91	219064
OtherManuf	556	39	1989	46885	237	700765
FuelPrds	9	0	4	204	0	11090
Utilities	187	25	78	8289	83	121495
Construction	1262	207	517	43933	640	849180
Trade	2201	367	1196	86433	1057	1481259
HotelsCafes	1017	220	572	35284	528	655108
OthTransprt	710	147	383	18395	593	382949
AirTransport	10	0	3	1618	7	45396
RailTransprt	0	0	0	320	0	1940
Communicatn	95	17	64	5497	55	108714
BusinessSrv	1250	183	927	92782	622	1771235
GovAdmDefLwO	779	172	376	44452	389	702128
Education	999	240	614	32920	602	594334
HealthComSrv	1111	261	819	65601	383	971279
OtherSrv	1410	276	873	63232	664	991270
Total	15572	2890	9230	568685	7961	10036394
% of total	LincolnSA	WstCoastSA	WhyallaSA	GrtAdelaidSA	JohnstonWA	National
Livestock	2.2	1.6	0.2	0.1	3.5	1.1
Grains	11.2	14.2	0.1	0.0	11.2	0.4
OtherAgri	1.8	0.7	0.0	0.4	1.4	0.7
Fishing	4.4	4.7	0.3	0.0	0.4	0.1
OthMining	1.8	3.2	6.5	0.6	8.7	1.7
Oil	0.1	0.1	0.4	0.2	0.0	0.1
Gas	0.1	0.2	0.5	0.2	0.0	0.1
FoodPrds	3.9	0.7	0.8	2.5	1.1	2.2
OtherManuf	3.6	1.3	21.5	8.2	3.0	7.0
FuelPrds	0.1	0.0	0.0	0.0	0.0	0.1
Utilities	1.2	0.9	0.8	1.5	1.0	1.2
Construction	8.1	7.2	5.6	7.7	8.0	8.5
Trade	14.1	12.7	13.0	15.2	13.3	14.8
HotelsCafes	6.5	7.6	6.2	6.2	6.6	6.5
OthTransprt	4.6	5.1	4.1	3.2	7.4	3.8
AirTransport	0.1	0.0	0.0	0.3	0.1	0.5
RailTransprt	0.0	0.0	0.0	0.1	0.0	0.0
Communicatn	0.6	0.6	0.7	1.0	0.7	1.1
BusinessSrv	8.0	6.3	10.0	16.3	7.8	17.6
GovAdmDefLwO	5.0	6.0	4.1	7.8	4.9	7.0
Education	6.4	8.3	6.7	5.8	7.6	5.9
HealthComSrv	7.1	9.0	8.9	11.5	4.8	9.7
OtherSrv	9.1	9.6	9.5	11.1	8.3	9.9
Total	100	100	100	100	100	100

Both LincolnSA and WstCoastSA are mixed farming regions, dominated by grain production. The relative proximity of much of the farmland to the deep sea ports at Thevenard and Port Lincoln keeps the costs of moving grain from the farm gate to export low relative to producers elsewhere in the nation.

The export base and distance of the region from Adelaide mean that transport industries (mainly road transport and services to transport) are relatively important in LincolnSA and WstCoastSA.

WhyallaSA is an example of a region with a declining manufacturing base. Shipbuilding commenced in 1939 and stopped in 1978. The population of Whyalla peaked at around 33,000 people in 1976 and has since declined to around 22,000 (ABS catalogue 3218.0). Steel making suffered due to the soaring Australian dollar after 2007. However, there have been substantial shipments of iron ore from the region with the mining boom (Table 3.4).

The JohnstonWA region has a substantial mixed farming base. In addition, the port at Esperance is a base for grain and mineral shipments. Its grain handling value is of a similar magnitude as Port Lincoln's, while it also handles massive quantities of ferrous and non-ferrous ores (Table 3.4). Esperance handles a much larger quantity of imports than the ports on Eyre Peninsula, as it services the mines around Kalgoorlie.

Table 3.4: Exports through port, 2012/13 (\$m)

Exports	Thevenard	Pt Lincoln	Whyalla	Esperance
Grains	62.0	460.7		446.0
Non-metallic minerals	5.5			
Confidential	4.3	92.9	5.5	145.3
Fruit & vegetables	0.5	9.0		6.4
Fishing		90.7		
Iron ore			802.6	1081.3
Smelted iron			1.2	
Petrochemicals			6.2	
Nickel ores				857.8

Table 3.5: Imports through port, 2012/13 (\$m)

Imports	Thevenard	Pt Lincoln	Whyalla	Esperance
Machinery			7.6	
Petroleum refined		128.4	0.4	342.5
Confidential			7.1	
Fertiliser		32		37.3
Rail rolling stock		5.4		
Non-metallic minerals				77.2
Synthetic resins				10.3
Other		0.3		2.0

Table 3.6: Estimated employment by statistical local area (based on 2011 census)

	CleveDC	EllistonDC	FranklinHarb	KimbaDC	LowerEyrePen	PortLincoln	TunbyBayDC	LeHunteDC	UnincorpLinc	CedunaDC	StreakyBayDC	UnincorpWes7	Whyalla	Uninc Whyalla	DundasS	EsperanceS	Ravensthorpe
Livestock	22	24	8	14	38	26	37	14	7	15	30	2	4	15	14	214	22
Grains	304	181	108	234	371	51	338	224	0	142	241	26	3	3	0	702	304
OtherAgri	3	8	3	3	29	6	8	5	0	9	8	3	0	0	0	96	3
Fishing	29	37	32	3	137	469	3	0	0	94	44	0	27	0	3	28	29
OthMining	11	0	85	9	34	89	24	13	0	59	21	13	601	0	180	203	11
Oil	0	0	1	0	0	5	0	0	0	2	2	0	40	0	0	2	0
Gas	0	0	2	0	0	6	0	0	0	3	3	0	49	0	0	3	0
FoodPrds	1	6	7	0	70	256	29	8	0	8	11	0	72	0	0	90	1
OtherManuf	5	6	24	20	66	228	24	13	0	21	15	3	1986	3	9	198	5
FuelPrds	0	0	0	0	0	9	0	0	0	0	0	0	4	0	0	0	0
Utilities	12	6	3	3	12	86	12	9	0	13	12	0	78	0	3	75	12
Construction	38	24	36	19	193	614	103	41	0	109	86	12	514	3	16	537	38
Trade	105	51	57	57	295	1117	138	98	0	236	117	14	1190	6	53	925	105
HotelsCafes	35	33	48	35	121	424	76	38	3	123	74	22	569	3	74	419	35
OthTransprt	58	6	13	17	131	310	36	25	0	106	35	6	380	3	14	543	58
AirTransport	0	0	0	0	3	3	0	0	0	0	0	0	3	0	0	7	0
RailTransprt	13	6	3	0	17	30	10	3	0	13	4	0	64	0	4	45	13
Communicatn	57	12	35	35	175	664	54	22	0	129	50	3	921	6	36	538	57
BusinessSrv	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
GovAdmDefLwO	28	21	16	26	112	338	43	28	0	123	36	13	376	0	41	298	28
Education	47	43	29	36	151	454	80	50	0	133	78	29	614	0	33	507	47
HealthComSrv	76	47	45	52	164	499	83	48	0	169	78	13	810	9	23	328	76
OtherSrv	46	17	22	18	217	721	78	44	3	189	52	35	870	3	18	599	46
Total	890	528	577	581	2336	6405	1176	683	13	1696	997	194	9175	54	521	6357	890

3.4 The role of dynamics in CGE analysis

Comparative static CGE analysis entails examining the economy-wide impacts of a scenario relative to a base case at some point in the future. However, the base case is not defined. From the modeller's perspective, this is hard to explain but relatively easy to implement.

Dynamic CGE analysis requires development of a baseline, typically year-by-year, which uses available data from national accounts and other sources to bring the model to the present. A dynamic model relies on macroeconomic forecasts to project the baseline into the future. Policy analysis is conducted by imposing policy shocks on the model in a separate year-by-year run. Results from the policy run are reported as cumulative deviations from the baseline. The results of dynamic CGE analysis are easier to explain conceptually than comparative static analysis, but dynamic models are harder to implement.

The importance of the baseline in dynamic analysis is that it can influence the magnitude of the deviations. For example, in a scenario in which we examine the impacts of development of an oil field, forecast oil prices will have an important impact on the magnitudes of earnings and royalties from the development. In a more extreme case such as an iron ore project, it may require only a moderate fall in price before the project starts incurring net losses instead of net gains.

In the context of exploration and oil field development, there are distinct phases that are modelled year by year. First, there will be costs associated with exploration for oil. In the event of viable fields being surveyed and approved for development, subsequent oil well construction will entail further costs and hired labour. In modelling exploration and construction scenarios, such activities at sea may draw on highly specialised labour. This implies that any strengthening of local labour markets in the construction and exploration phases will be diluted by the call on specialised labour, which most likely originates in capital cities.

It may be that some hired labour chooses not to work on a fly-in, fly-out basis, but instead rents or purchases accommodation in towns located around the GAB. If this were so (and our understanding is that much labour will be fly-in, fly-out), then impacts in adjacent towns would include an increase in housing rentals, and additional demands for relatively non-traded services such as restaurants and other services. If fly-in, fly-out labour dominates all phases of the scenario, then the local impacts are going to be mainly on air transport services. This may, for example, enhance the viability of airlines providing direct services between Port Lincoln and capital cities in addition to existing Adelaide services. However, the main base for fly-in, fly-out workers may be Ceduna or even Esperance. Spatial details will be an important part of devising scenarios at the regional level.

The operational phase of a project typically requires less labour than the construction phase. This implies that the labour market will be relatively close to the baseline in the operational phase.

Current arrangements are that the Commonwealth rather than state governments earn offshore royalties from oil and gas projects. This being the case, a state government is more likely to be concerned by the potential downside of proposed projects.

Within a modelling study, scope exists to examine different scenarios. For example, the year-by-year cost profile of the construction phase may vary, as may the output profile of the operational phase. A wellhead may be closer to one of the potential service towns in the region than others. It may be that the source of workers could vary, with greater or lesser reliance on the local workforce.

Given that Port Lincoln has the nation's highest concentration of fishing activity as a share of the local economy, there will be community concerns about hazards arising from wellhead developments at sea. Locals will be aware of the Gulf of Mexico oil spill of 2010. It is possible to use dynamic VU-TERM to model the year-by-year, or even the quarter-by-quarter impacts of a major spill, the subsequent clean-up

operations and the long-term consequences. Such a scenario would be reliant on direct inputs devised outside the model on clean-up costs, and the short-term and long-term impacts on the fishing and other industries.

CHAPTER FOUR

Overview and Use of the Baseline

Project 6.1 (Socio economic profile of the Eyre and Western region) and this project 6.2 (Economic profile of Eyre and Western region) bring together an economic and social profile (a baseline) of the Eyre Peninsula region and the West Coast, a summary of the regional community consultations and a regional economic model in which to assess the economic impact of exploration and development of oil and gas fields in the Great Australian Bight.

Emerging views in the region

The South Australian Centre for Economic Studies also conducted face to face interviews with councillors, community members and local business people on a visit to the region where we discussed the BP exploration in the Bight. Thoughts on the potential impact of oil and gas development in the GAB, including its advantages and challenges are already beginning to emerge, as are some evidence of impact from the exploration activity.

Councils and communities are supportive of exploration in the Great Australian Bight. They expect minor impacts on employment but benefit to the local business through retail sales, fuel and accommodation. The impacts onshore are not expected to be significant in the short to medium term. The outlook for longer term (15 years) is uncertain dependent on success in exploration and decision and to what would occur on the mainland. Tuna fishing industry in particular, (but other sectors) are concerned with the impact on major feeding/migration zone.

Ceduna will benefit from the investment in helicopter facilities and there is an expectation that other centres will benefit in short term through a capacity to supply some local labour, support services, supplies and administration. There is an acknowledgement that the exploration and development activity is "long a term activity" and it may be some years before significant development occurs on the mainland. The region is also planning for development of local mining activity (e.g., Iron Road, Centrex, Lincoln Minerals) with a realisation that not all will come to production in the immediate short term.

Conclusions from the socio-economic baseline

Key findings from the data and analysis in this report reveals that the region:

- is large (comprising 23.6 per cent of South Australia) and sparsely populated, and there is a concentration of residents in towns along coastal Eyre Peninsula;
- contains two Provincial Cities, Whyalla and Port Lincoln, together accounting for 65 per cent of Eyre Peninsula and West Coast's estimated resident population(ERP);
- has a slower than state average population growth, an older age profile, an aging population, and a small, rapidly increasing, Indigenous population;
- has an unemployment rate of 5.8 per cent as at December 2013, below South Australia's unemployment rate of 6.3 per cent;
- key industries include agriculture, fishing, aquaculture, mining and tourism;
- has a gross regional product (GRP) of \$2.6 billion, accounting for 3 per cent of South Australia's gross state product (GSP) in 2012/13;
- is a major exporter of cereals, sheep, fish, iron ore, and other minerals; and
- employment is dependent on primary production, i.e., cereal cropping and sheep livestock, mining, construction and tourism;

Key challenges

Discussion with industry leaders and local government representatives conducted in 2014 identified a wide array of challenges that can be grouped as follows:

Education

- school performances and Year 12 completion rates are below state average, higher rates of truancy and difficulties retaining top students; and
- strong local participation in the VET sector, with an above average proportion of the working age population holding a Certificate III or IV qualification, but significantly below average rates of higher level qualifications.

Skills shortages

- out-migration of Year 12 leavers, professionals, qualified tradespersons has been occurring and as a result, some skilled labour requires sourcing outside the Eyre Peninsula and West Coast, e.g., professional, scientific and technical services for mining exploration.

Infrastructure construction/upgrades required

- rail network, small regional airports, ports, remote Indigenous communities and power generation; and
- potential airport upgrade at Ceduna;

Indigenous challenges

- high rates of unemployment and labour force participation is low compared with non-Indigenous groups;
- income support dependence is high and, education outcomes are below the state average;
- skills training and development is low; and
- Indigenous labour is generally at a disadvantage.

Out-migration of younger residents

- the long term trend across the region is one of significant out-migration.

Councils

- nine of the 12 councils are relatively small; and
- there is increased demand for services, including education, health, social and law enforcement due to mining led population growth.

Cooperation between business and government

- there appears to be cooperation between the exploration companies whether mining or oil and gas with Commonwealth, State and Local Government, (i.e., agreed protocols).

This established baseline of socio-economic conditions in the region can act as a foundation for further work exploring the capacity of the region to take advantage of opportunities that arise, the sensitivity of the region to negative shocks and so on.

It will be important to update the profile (some, not all indicators) and to provide information back to councils with each stage of development.

Regional economic modelling capacity

The other output of the project is the development of a tailored economic modelling capacity for the region, built within the VU-TERM model. This creates the capability to objectively assess the impacts of a range of potential scenarios including the distribution of impacts between sub-regions and between industries. There are several potential uses of the regional modelling capacity, including:

- a. Using scenarios developed in consultation with stakeholders, estimation and assessment of possible future impacts
- b. Objectively documenting the contribution that BP has made to the region
- c. Using the model to predict the consequences of different development options.

As with the socio-economic baseline, the economic model should be updated as the region's economic structure evolves over time.

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Appendix A

Case Study – Bass Strait

A case study examining Bass Strait's oil and gas industry is used to provide insight into potential short-term and long-term economic impacts from offshore oil and gas development on local communities and government - both at a local, state and federal level. The example of Bass Strait also highlights the distribution of economic benefits in terms of the direct impact on Victoria, the Gippsland region and town of Sale (an oil and gas processing centre).

Oil and gas fields discovered in the Gippsland Basin of Bass Strait in the 1960s (approximately 50km off the coast of Gippsland in Victoria in water of 70 metres) supply Victoria and New South Wales with oil and gas. Extracted oil and gas is piped to gas processing facilities and oil refineries across Victoria (Longford, Western Port, Altona and Geelong) and sent by tanker to New South Wales.

A single crude oil and gas onshore receiving point for Bass Strait production is situated on a 169 hectare site at Longford Victoria - located in near the town of Sale, East Gippsland. Operations began in 1969 and currently run 24 hours per/day seven days/week (see Longford Plants update – Esso 2012), supplying approximately 20 per cent of Australia's crude oil requirements.

Oil and gas exploration, discovery and production in Bass Strait provides economic benefits locally, and at both state/national levels including:

- direct/indirect employment during construction and operation;
- ongoing operational support - plant maintenance, services, materials, etc.;
- taxation source for State and Federal Government;
- increased GRP and Gross domestic product (GDP) - investment and interstate/overseas oil and gas exports;
- industry support - oil and gas input into power generation, transportation, gas retailing, plastics, petrochemicals, manufacturing and minerals processing;
- household benefits - reliable supply of gas for cooking and heating.

Employment opportunities provided by Longford plant accrue to close-by regional towns, e.g., Sale, Victoria (14,259 people, ABS Census, 2011, Quickstats) located 20kms from Longford Plant. A major employer for the town directly at Longford site and indirectly through oil and gas services demand.

Nationally, since 1969 it is estimated Bass Strait operations have:²⁴

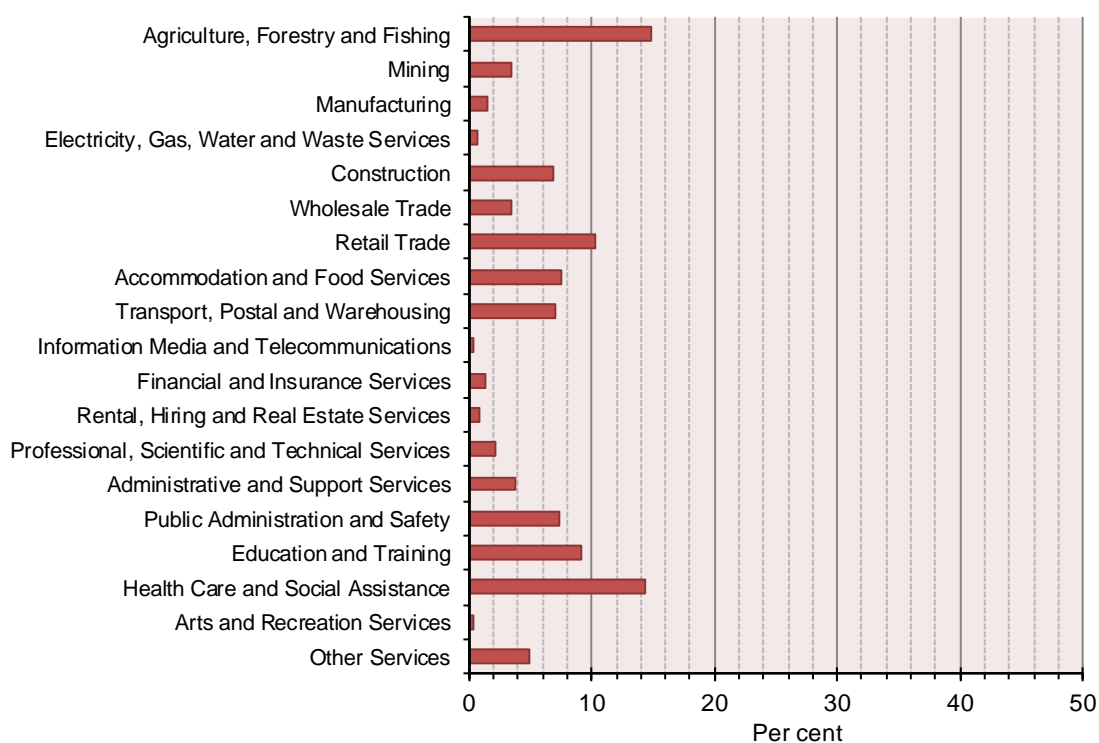
- contributed over \$200 billion to Australia's GDP – approximately \$2.2 billion in nominal terms;
- generated approximately \$300 billion in Federal Government tax revenue (in real terms) – 2.1 per cent of all revenues collected over the period;
- created 50,000 permanent additional jobs in Victoria (14,000 located in the Gippsland region).

²⁴ Findings from independent economic modeling firm Econtech commissioned by ExxonMobil from examining economic impacts of Bass Strait oil and gas industry on national, state and local economies since 1969.

Appendix B

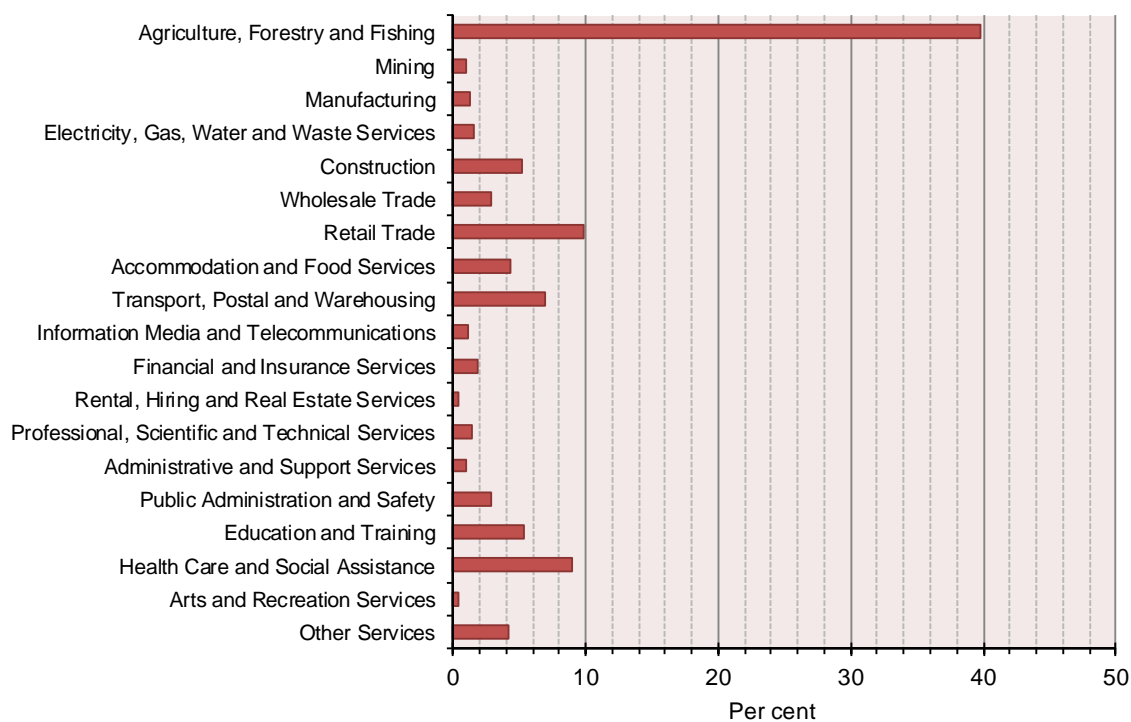
Employment by Industry

Figure B.1: Ceduna, Census 2011



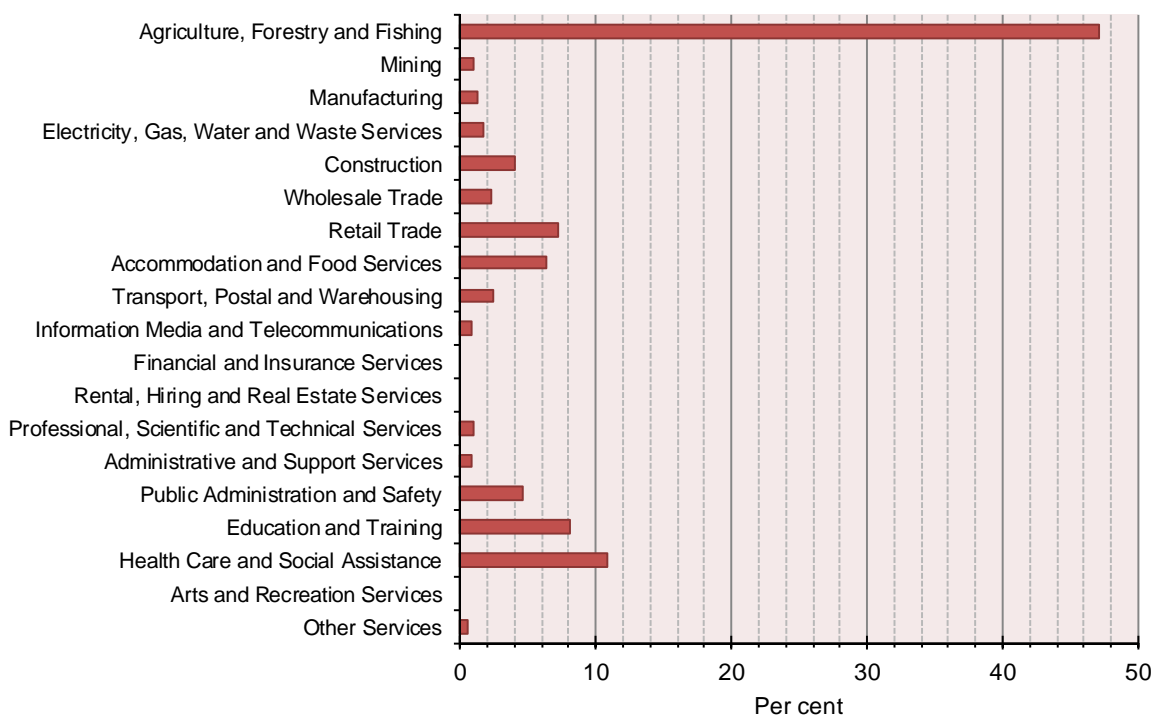
Source: ABS, Census 2011, Table Builder Basic.

Figure B.2: Cleve, Census 2011



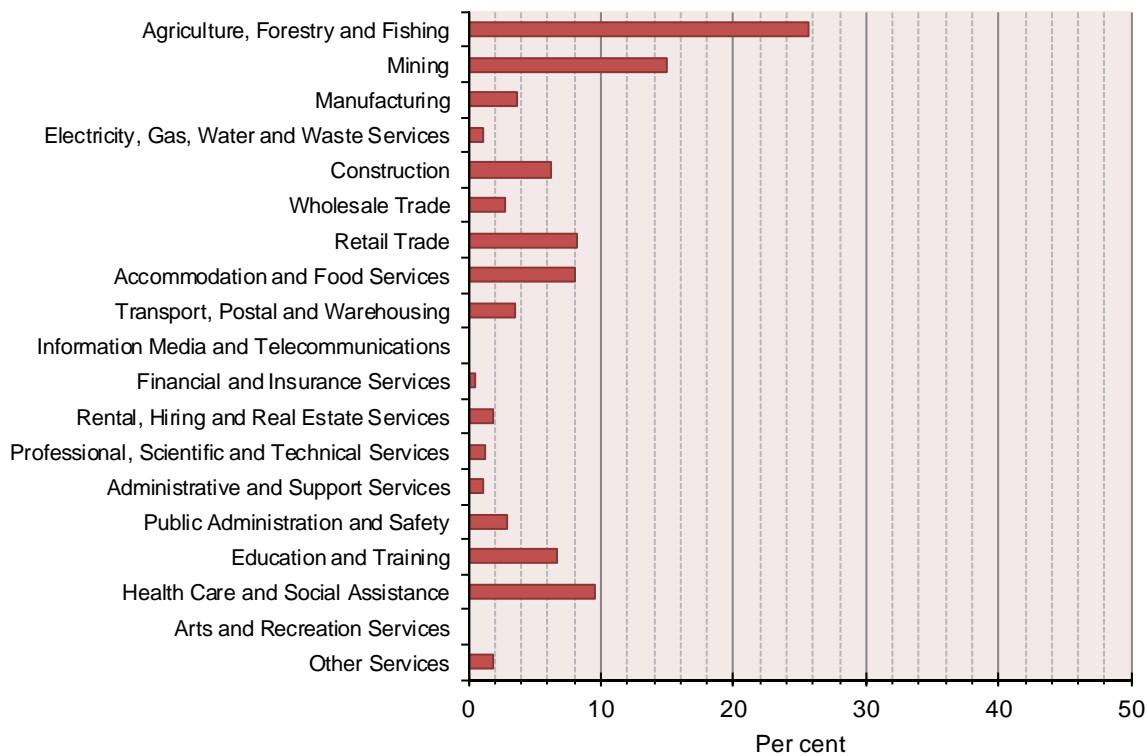
Source: ABS, Census 2011, Table Builder Basic.

Figure B.3: Elliston, Census 2011



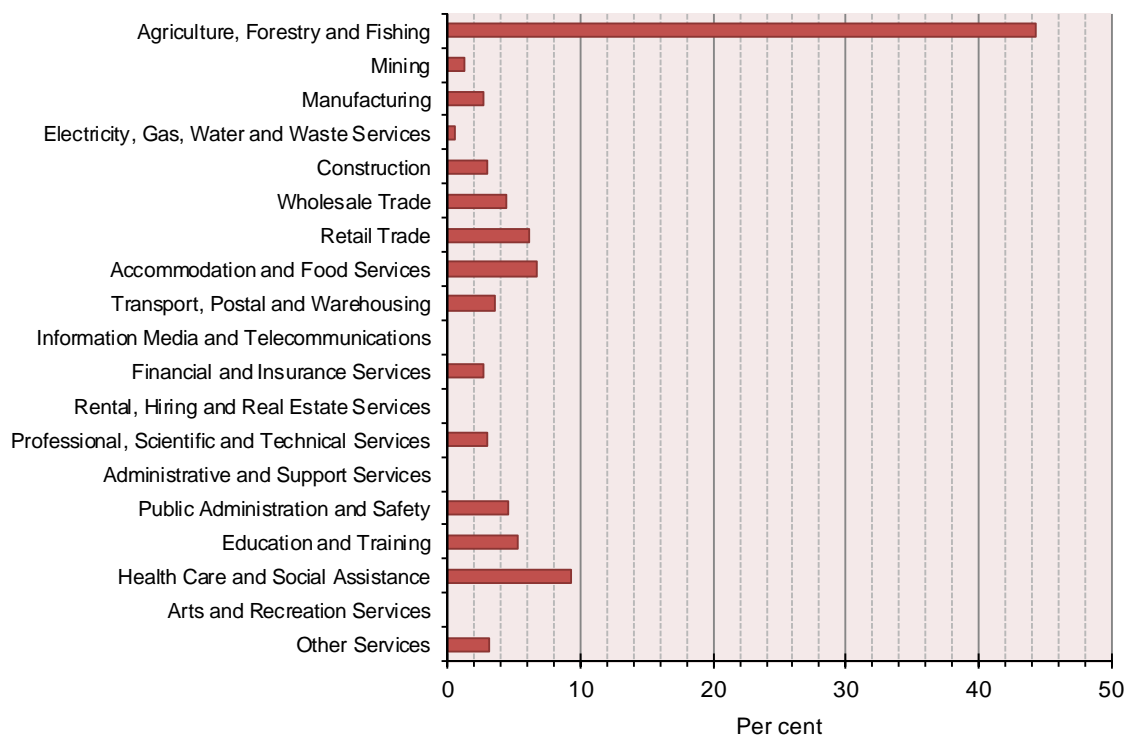
Source: ABS, Census 2011, Table Builder Basic.

Figure B.4: Franklin Harbour, Census 2011



Source: ABS, Census 2011, Table Builder Basic.

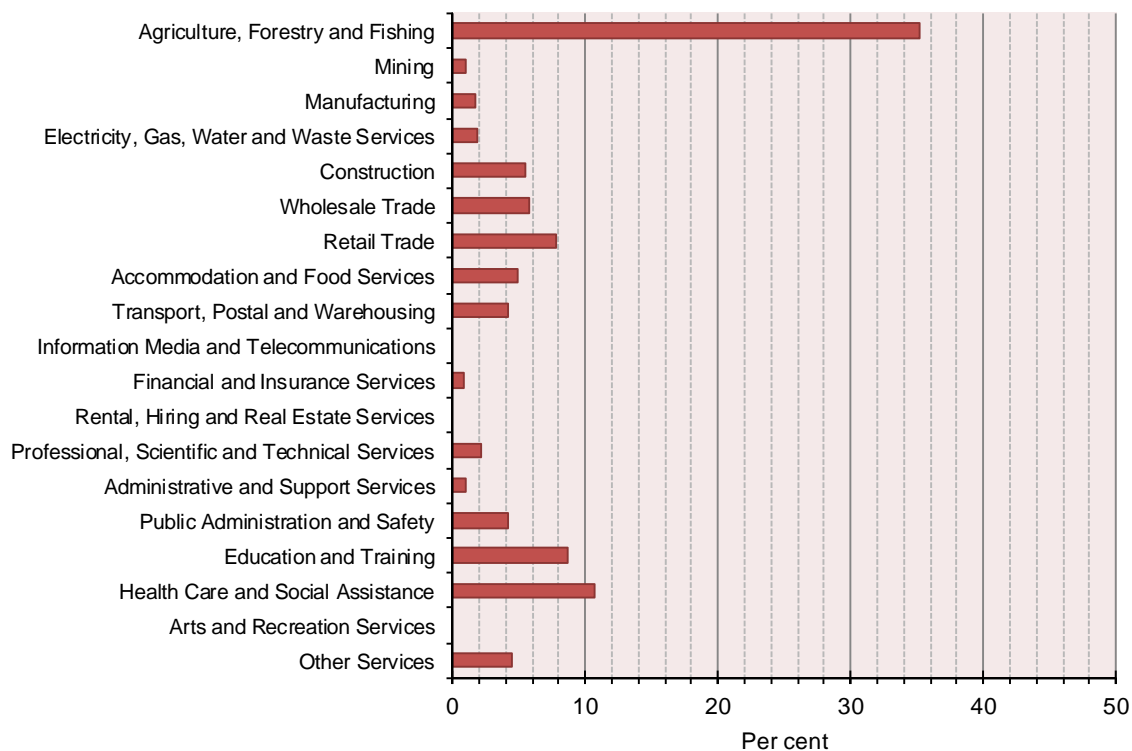
Figure B.5: Kimba, Census 2011



Source: ABS, Census 2011, Table Builder Basic.

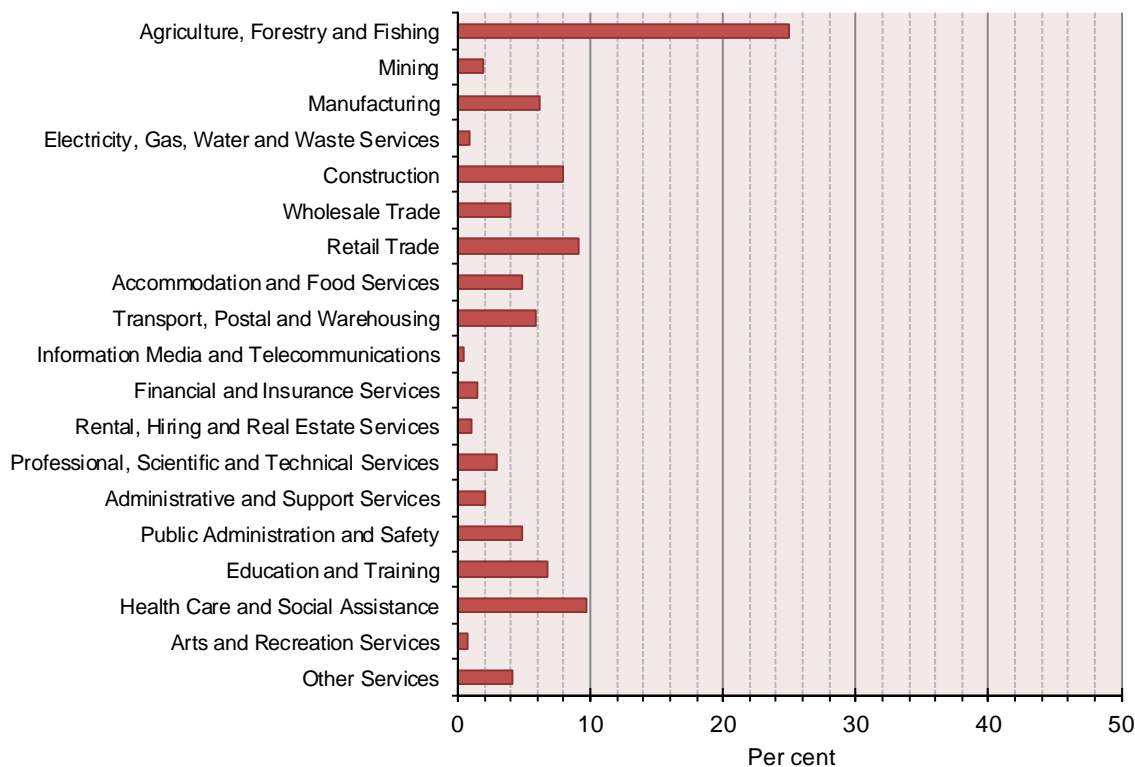
Figure B.6: Wudinna, Census 2011

Source:



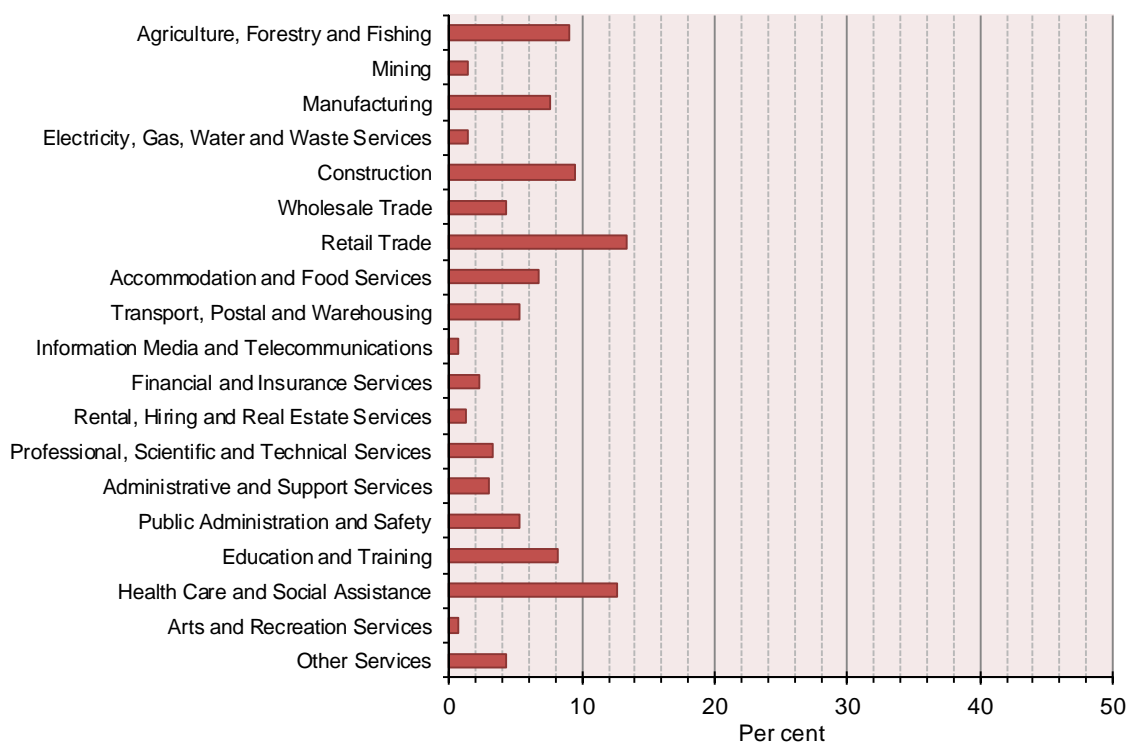
ABS, Census 2011, Table Builder Basic.

Figure B.7: Lower Eyre Peninsula, Census 2011



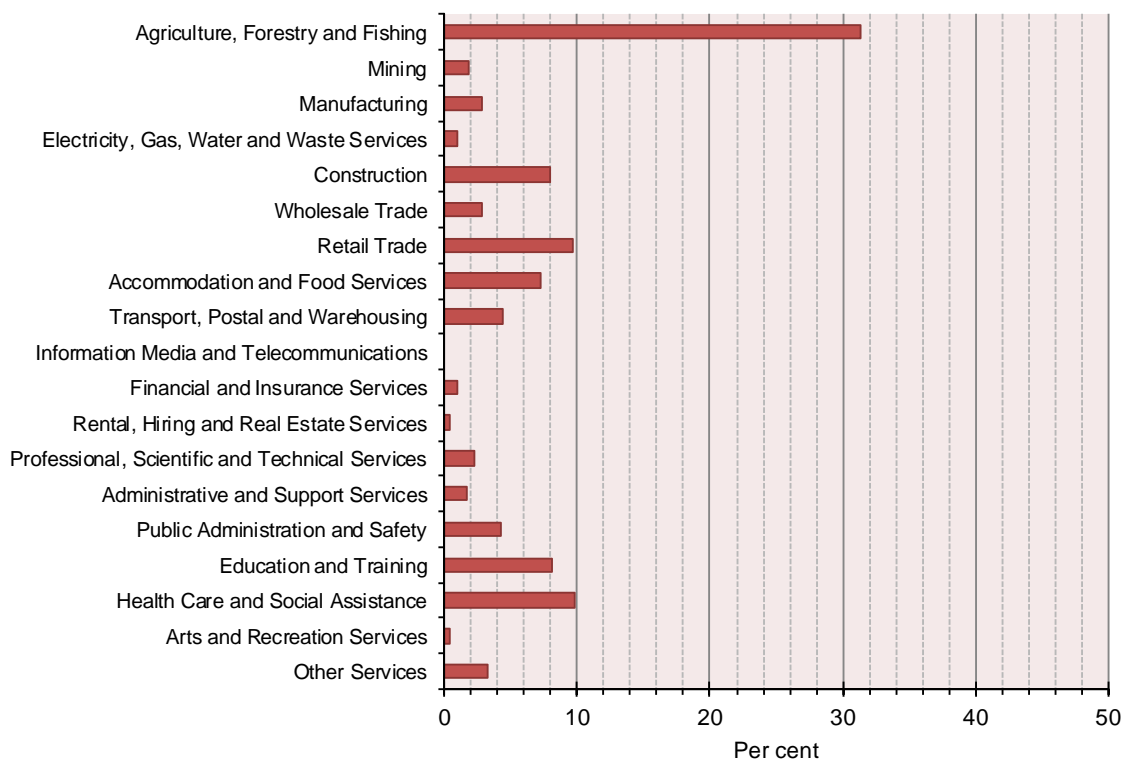
Source: ABS, Census 2011, Table Builder Basic.

Figure B.8: Port Lincoln, Census 2011



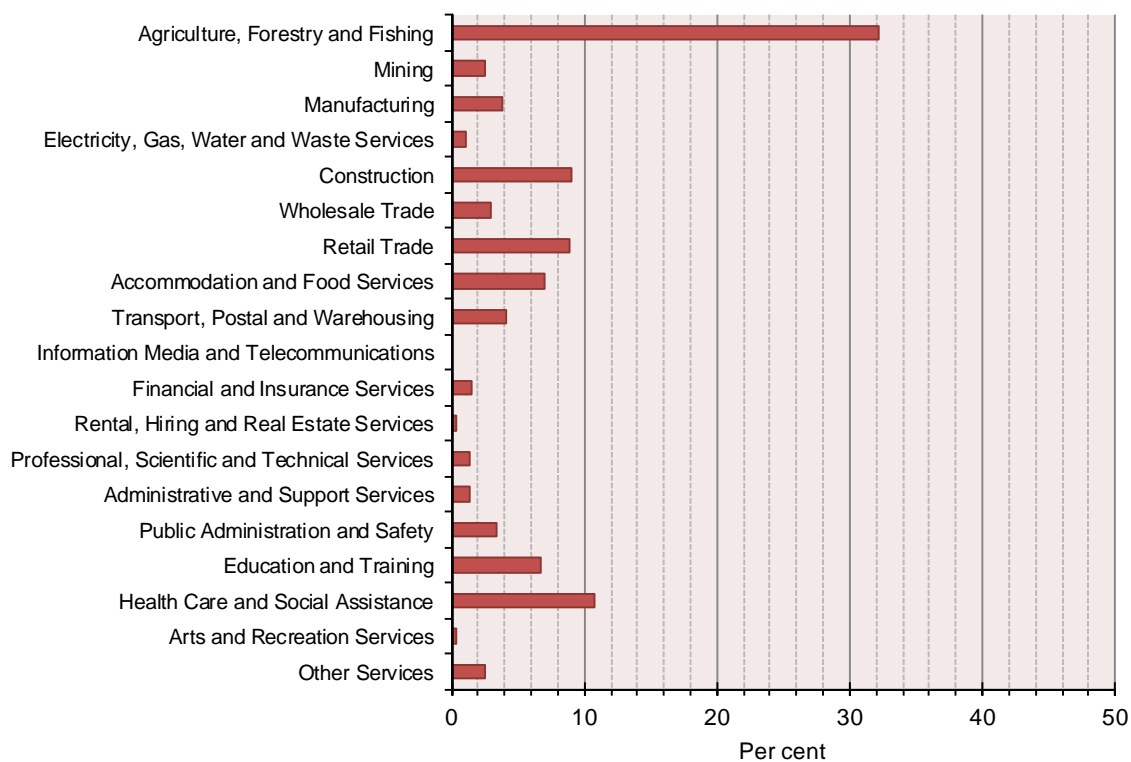
Source: ABS, Census 2011, Table Builder Basic.

Figure B.9: Streaky Bay, Census 2011



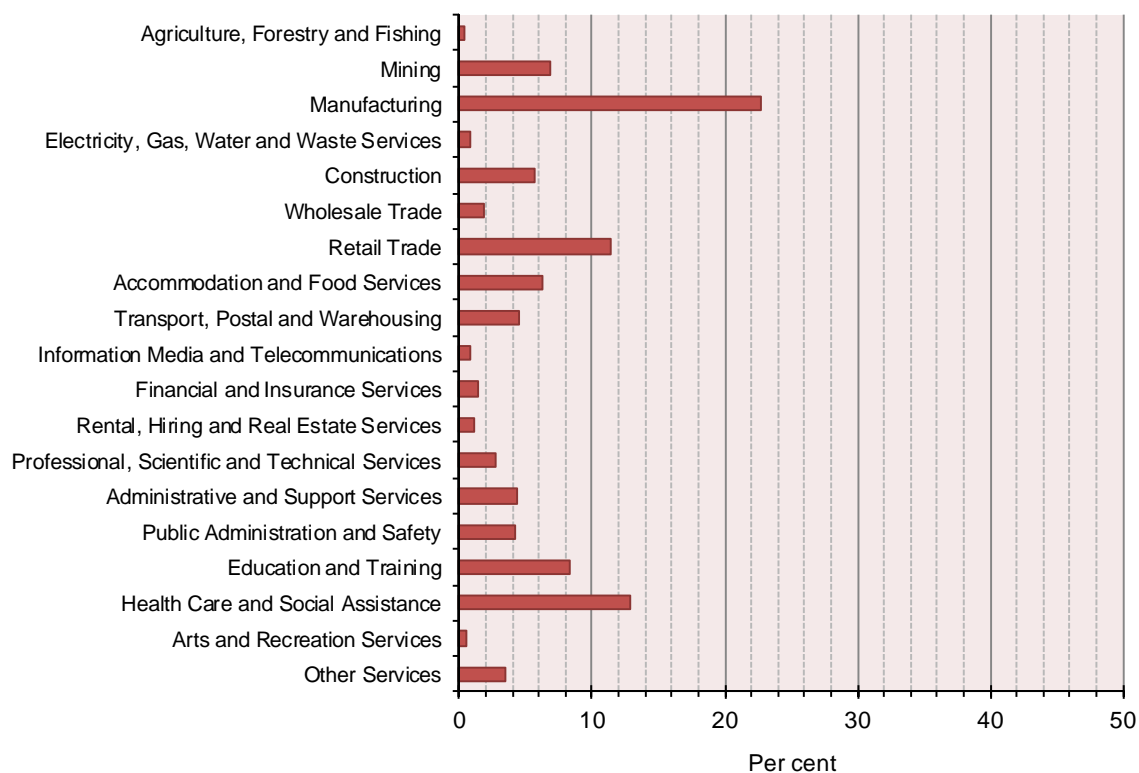
Source: ABS, Census 2011, Table Builder Basic.

Figure B.10: Tumby Bay, Census 2011



Source: ABS, Census 2011, Table Builder Basic.

Figure B.11: Whyalla, Census 2011



Source: ABS, Census 2011, Table Builder Basic.

Appendix C

Top 20 Input Requirements

Table C.1: Oil and Gas extraction, Australia, 2009/10

Oil and Gas Extraction	Direct requirement coefficient ^(a)
Oil and gas extraction	6.5147
Construction Services	2.3119
Heavy and Civil Engineering Construction	2.2417
Finance	1.9570
Exploration and Mining Support Services	1.7577
Water, Pipeline and Other Transport	1.3692
Gas Supply	1.3225
Transport Support services and storage	1.1556
Professional, Scientific and Technical Services	0.6392
Wholesale Trade	0.5344
Auxiliary Finance and Insurance Services	0.4934
Coal mining	0.4844
Rental and Hiring Services (except Real Estate)	0.4802
Non-Residential Property Operators and Real Estate Services	0.3768
Structural Metal Product Manufacturing	0.3684
Specialised and other Machinery and Equipment Manufacturing	0.3490
Petroleum and Coal Product Manufacturing	0.3304
Rail Transport	0.3180
Employment, Travel Agency and Other Administrative Services	0.2975
Road Transport	0.2556

Note: (a) Direct requirement coefficients: represent the direct or first round requirements from the output of each sector following the increase in output of any sector. Direct requirement coefficients for all sectors in the economy sum to 100. E.g., to produce \$100 of output the Oil Gas and extraction industry requires \$2.3119 of output from Construction Services.

Source: 5209.0.55.001 Australian National Accounts: Input-Output Tables - 2009-10.

Table C.2: Exploration and Mining Support Services, Australia, 2009/10

Exploration and Mining Support Services	Direct requirement coefficient
Professional, Scientific and Technical Services	26.7739
Finance	1.7209
Other Repair and Maintenance	1.6126
Auxiliary Finance and Insurance Services	1.5631
Construction Services	1.5480
Wholesale Trade	1.1794
Structural Metal Product Manufacturing	1.0054
Employment, Travel Agency and Other Administrative Services	0.8583
Iron and Steel Manufacturing	0.7912
Specialised and other Machinery and Equipment Manufacturing	0.7229
Petroleum and Coal Product Manufacturing	0.6088
Basic Non-Ferrous Metal Manufacturing	0.5954
Rental and Hiring Services (except Real Estate)	0.5756
Exploration and Mining Support Services	0.5608
Water, Pipeline and Other Transport	0.5134
Heavy and Civil Engineering Construction	0.4579
Non-Residential Building Construction	0.3811
Residential Building Construction	0.3711
Food and Beverage Services	0.3339
Automotive Repair and Maintenance	0.3235

Source: 5209.0.55.001 Australian National Accounts: Input-Output Tables - 2009-10.

Table C.3: Aquaculture, Australia, 2009/10

Aquaculture	Direct requirement coefficient
Other Food Product Manufacturing	6.9344
Wholesale Trade	6.3837
Specialised and other Machinery and Equipment Manufacturing	3.6428
Aquaculture	3.5485
Professional, Scientific and Technical Services	2.5865
Agriculture, Forestry and Fishing Support Services	2.4888
Petroleum and Coal Product Manufacturing	2.3217
Finance	2.2334
Retail Trade	2.1953
Ships and Boat Manufacturing	1.9315
Road Transport	1.7838
Automotive Repair and Maintenance	1.0384
Other Fabricated Metal Product manufacturing	0.9216
Construction Services	0.8598
Electrical Equipment Manufacturing	0.8279
Building Cleaning, Pest Control and Other Support Services	0.8039
Other Repair and Maintenance	0.7657
Structural Metal Product Manufacturing	0.7239
Transport Support services and storage	0.7225
Polymer Product Manufacturing	0.7213

Source: 5209.0.55.001 Australian National Accounts: Input-Output Tables - 2009-10.

Table C.4: Fishing, hunting and trapping, Australia, 2009/10

Fishing, hunting and trapping	Direct requirement coefficient
Agriculture, Forestry and Fishing Support Services	9.4613
Wholesale Trade	5.2833
Petroleum and Coal Product Manufacturing	2.8989
Ships and Boat Manufacturing	2.8819
Finance	2.7847
Automotive Repair and Maintenance	2.1614
Retail Trade	2.1056
Specialised and other Machinery and Equipment Manufacturing	2.0049
Other Food Product Manufacturing	1.7154
Other Fabricated Metal Product manufacturing	1.4958
Electrical Equipment Manufacturing	1.1569
Structural Metal Product Manufacturing	1.1109
Transport Support services and storage	1.0799
Road Transport	1.0767
Textile Product Manufacturing	1.0324
Polymer Product Manufacturing	0.9007
Insurance and Superannuation Funds	0.7907
Rental and Hiring Services (except Real Estate)	0.7829
Professional, Scientific and Technical Services	0.7288
Construction Services	0.6675

Source: 5209.0.55.001 Australian National Accounts: Input-Output Tables - 2009-10.

Table C.5: Agriculture, Forestry and Fishing Support Services, Australia, 2009/10

Agriculture, Forestry and Fishing Support Services	Direct requirement coefficient
Other Agriculture	12.9876
Agriculture, Forestry and Fishing Support Services	9.8919
Wholesale Trade	5.0700
Basic Chemical Manufacturing	3.4613
Professional, Scientific and Technical Services	2.9094
Construction Services	1.8887
Retail Trade	1.7836
Finance	1.7188
Road Transport	1.7095
Other Food Product Manufacturing	1.5349
Automotive Repair and Maintenance	1.3774
Rental and Hiring Services (except Real Estate)	1.3329
Petroleum and Coal Product Manufacturing	1.2376
Other Repair and Maintenance	0.7931
Specialised and other Machinery and Equipment Manufacturing	0.7080
Forestry and Logging	0.6239
Transport Support services and storage	0.5865
Auxiliary Finance and Insurance Services	0.4314
Telecommunication Services	0.3766
Building Cleaning, Pest Control and Other Support Services	0.3730

Source: 5209.0.55.001 Australian National Accounts: Input-Output Tables - 2009-10.

Table C.6: Oil and Gas extraction, Whyalla Eyre Peninsula region, 2011/12

Oil and Gas Extraction	Direct requirement coefficient
Oil and gas extraction	4.0144
Finance	0.8797
Water, Pipeline and Other Transport	0.6594
Wholesale Trade	0.6557
Rental Hiring Real Estate	0.5034
Construction Services	0.4644
Exploration and Mining Services	0.3347
Rail Transport	0.2832
Transport Support and Storage	0.2693
Personal and Other Services	0.2001
Retail Trade	0.1699
Road Transport	0.1523
Professional Scientific Technical Services	0.1284
Residential Building Construction	0.1208
Other Machinery and Equipment	0.0944
Electricity Supply	0.0856
Other Construction	0.0856
Iron and Steel	0.0780
Metal Products	0.0604
Food and Beverage Services	0.0579

Source: Econsearch - Rise Version 4.0 Impact model.

Table C.7: Exploration and Mining Services, Whyalla Eyre Peninsula region, 2011/12

Exploration and Mining Services	Direct requirement coefficient
Professional Scientific Technical Services	9.3651
Wholesale Trade	1.5635
Construction Services	1.3681
Rental Hiring Real Estate	0.9188
Iron and Steel	0.8845
Finance	0.8765
Personal and Other Services	0.6609
Administration Support Services	0.6024
Water, Pipeline and Other Transport	0.5742
Road Transport	0.4574
Other Machinery and Equipment	0.4191
Residential Building Construction	0.3909
Retail Trade	0.3466
Metal Products	0.3304
Food and Beverage Services	0.2922
Exploration and Mining Services	0.2861
Other Construction	0.2821
Basic Non-Ferrous Metals	0.2357
Insurance and Other Financial Services	0.2277
Transport Support and Storage	0.2116

Source: Econsearch - Rise Version 4.0 Impact model.

Table C.8: Aquaculture, Whyalla Eyre Peninsula region, 2011/12

Aquaculture	Direct requirement coefficient
Wholesale Trade	4.5270
Other Food Products	4.1351
Aquaculture	2.2236
Retail Trade	1.5151
Other Machinery and Equipment	1.4494
Road Transport	1.4206
Personal and Other Services	1.2333
Professional Scientific Technical Services	0.8207
Finance	0.7348
Administration Support Services	0.7131
Transport Support and Storage	0.6474
Agriculture Forestry & Fishing Services	0.6434
Construction Services	0.4929
Metal Products	0.4803
Rental Hiring Real Estate	0.3641
Water, Pipeline and Other Transport	0.3631
Food and Beverage Services	0.3025
Processed Seafood Products	0.2470
Insurance and Other Financial Services	0.2167
Other Wood Products	0.2091

Source: Econsearch - Rise Version 4.0 Impact model.

Table C.9: Fishing, hunting and trapping, Whyalla Eyre Peninsula region, 2011/12

Fishing, hunting and trapping	Direct requirement coefficient
Wholesale Trade	4.5733
Personal and Other Services	1.5782
Retail Trade	1.4694
Other Machinery and Equipment	1.3542
Finance	1.2915
Agriculture Forestry & Fishing Services	1.2500
Road Transport	0.9772
Other Food Products	0.8536
Metal Products	0.7366
Transport Support and Storage	0.7255
Construction Services	0.5632
Water, Pipeline and Other Transport	0.4784
Rental Hiring Real Estate	0.3890
Food and Beverage Services	0.3328
Administration Support Services	0.2922
Insurance and Other Financial Services	0.2489
Other Wood Products	0.2203
Fishing, Hunting & Trapping	0.2176
Professional Scientific Technical Services	0.1807
Education and Training	0.1493

Source: Econsearch - Rise Version 4.0 Impact model.

Table C.10: Agriculture, Forestry and Fishing Support Services, Whyalla Eyre Peninsula region, 2011/12

Agriculture, Forestry and Fishing Support Services	Direct requirement coefficient
Wholesale Trade	5.6782
Rental Hiring Real Estate	3.1935
Agriculture Forestry & Fishing Services	1.9261
Retail Trade	1.6343
Road Transport	1.5467
Construction Services	1.3820
Personal and Other Services	1.1173
Professional Scientific Technical Services	1.0443
Finance	0.8526
Other Food Products	0.8484
Residential Building Construction	0.6045
Transport Support and Storage	0.4753
Other Machinery and Equipment	0.4586
Other Construction	0.4377
Forestry and Logging	0.3690
Administration Support Services	0.3231
Vegetables	0.2022
Metal Products	0.1876
Grains	0.1709
Pharmaceutical and Other Chemical Products	0.1668

Source: Econsearch - Rise Version 4.0 Impact model.

Appendix D

Qualifications by Council

Table D.1: Level of education, per cent with qualification, councils – Eyre Peninsula and West Coast, South Australia, Census 2011

Council	Ceduna	Cleve	Elliston	Franklin Harbour	Kimba	Wudinna	Lower Eyre Peninsula	Port Lincoln	Streaky Bay	Tumby Bay	Whyalla	Eyre Peninsula and West Coast	South Australia
Postgraduate Degree	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.1	0.1	0.2
Doctoral Degree	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.4	0.0	1.5	0.4	0.4	1.7
Master Degree	2.0	1.5	0.0	1.6	1.5	0.0	1.4	2.0	1.4	0.4	2.0	1.7	4.7
Graduate Diploma and Graduate Certificate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.2
Graduate Diploma	1.7	3.0	3.3	2.5	2.6	1.2	2.9	1.9	2.1	3.5	1.3	1.9	2.8
Graduate Certificate	0.6	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.0	0.3	0.3	0.6
Bachelor Degree	17.1	17.8	23.2	14.8	20.6	23.8	20.7	18.8	18.5	18.2	18.1	18.7	27.7
Advanced Diploma and Diploma	0.5	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.2	0.2
Advanced Diploma and Associate Degree	8.8	8.2	9.8	7.6	9.9	9.7	8.4	7.9	7.6	9.7	4.8	6.9	8.2
Diploma	8.9	8.2	9.1	8.2	7.7	6.2	8.9	7.4	6.4	7.0	6.9	7.4	9.1
Certificate	4.6	5.7	5.1	6.6	2.9	5.3	4.0	4.4	3.1	4.8	3.7	4.2	3.9
Certificate III and IV	51.4	49.9	45.3	54.3	51.5	48.2	48.5	50.1	56.4	49.4	57.2	53.1	37.4
Certificate I and II	4.5	5.7	4.3	4.4	3.3	5.6	4.0	6.2	3.9	5.6	4.9	5.1	3.3

Note: (a) Excludes Yalata Aboriginal Reserve.

Source: Census of Population and Housing 2011.

Table D.2: Change in number of qualified persons, councils – Eyre Peninsula and West Coast, South Australia, 2006 to 2011

Council	Ceduna	Cleve	Elliston	Franklin Harbour	Kimba	Wudinna	Lower Eyre Peninsula	Port Lincoln	Streaky Bay	Tumby Bay	Whyalla	Eyre Peninsula and West Coast	South Australia
Postgraduate Degree	0	0	0	0	0	0	3	-3	0	-3	4	1	298
Doctoral Degree	0	-3	0	0	0	0	5	-3	0	8	6	13	2,193
Master Degree	7	4	0	5	4	0	5	27	4	-1	39	94	10,614
Graduate Diploma and Graduate Certificate	0	0	0	0	0	0	0	3	0	0	8	11	1,342
Graduate Diploma	-9	1	1	4	-6	-1	10	12	-1	3	-14	0	1,830
Graduate Certificate	1	0	0	0	0	0	3	0	3	-3	4	8	1,007
Bachelor Degree	21	-5	10	3	13	26	97	161	15	22	191	554	31,205
Advanced Diploma and Diploma	4	0	0	0	0	0	3	7	0	0	3	17	182
Advanced Diploma and Associate Degree	5	-4	2	4	-5	5	9	65	5	9	29	124	3,767
Diploma	30	2	6	8	3	5	61	78	4	23	97	317	12,040
Certificate	0	6	4	11	-3	-1	5	6	-8	-6	16	30	347
Certificate III & IV	105	17	9	16	25	37	165	366	44	94	537	1,415	29,781
Certificate I & II	5	3	5	3	-4	6	11	25	7	22	54	137	3,042

Note: (a) Excludes Yalata Aboriginal Reserve.

Source: Census of Population and Housing 2011.

