

# Economic Impact Assessment of the **Hallett Wind Farms**



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# Economic Impact Assessment Of the Hallett Wind Farms

- Final Report
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## Contents

<b>1.</b>	<b>Definitions</b>	<b>1</b>
<b>2.</b>	<b>Executive Summary</b>	<b>2</b>
<b>3.</b>	<b>Introduction</b>	<b>5</b>
<b>3.1.</b>	<b>Background</b>	<b>5</b>
<b>3.2.</b>	<b>Terms of Reference</b>	<b>7</b>
3.2.1.	Deliverables	7
<b>3.3.</b>	<b>Brief description of the Hallett Wind Farm projects</b>	<b>7</b>
<b>3.4.</b>	<b>Brief description of the study requirements and process</b>	<b>8</b>
<b>4.</b>	<b>Description of the Hallett Region</b>	<b>10</b>
<b>4.1.</b>	<b>Socio-economic profile: Goyder, Clare and Northern Areas</b>	<b>10</b>
4.1.1.	Population	11
4.1.2.	Household Composition	15
4.1.3.	Migration	16
4.1.4.	Educational Attainment	17
4.1.5.	Labour force	18
4.1.6.	Industries of employment	19
4.1.7.	Agriculture	28
4.1.8.	Income	28
4.1.9.	Gross Regional Product	30
4.1.10.	Welfare and Disadvantage	31
4.1.10.1.	SEIFA	31
<b>4.2.</b>	<b>Summary</b>	<b>32</b>
<b>5.</b>	<b>Economic Impact</b>	<b>34</b>
<b>5.1.</b>	<b>Assessment of the expenditure and GRP impacts</b>	<b>34</b>
5.1.1.	Impact on gross regional product	35
<b>5.2.</b>	<b>Industry development and employment creation</b>	<b>38</b>
5.2.1.	Assessment of employment effects of Hallett1	39
5.2.2.	Hallett Wind Farms employment	41
5.2.3.	Regional capability	45
5.2.4.	Accommodation for on-site workers during construction	45
<b>5.3.</b>	<b>Qualitative assessment of the wind farms impact on the region</b>	<b>46</b>
5.3.1.	Regional Business	47
5.3.2.	Tourism	49
5.3.3.	Community benefits	50
<b>5.4.</b>	<b>Other economic impact</b>	<b>52</b>
<b>5.5.</b>	<b>Summary</b>	<b>54</b>



<b>6. Comparison of Hallett Wind Farms in Regional Terms</b>	<b>56</b>
6.1. Gross Regional Product	56
6.2. Regional Employment	56
<b>7. Summary</b>	<b>58</b>
<b>Appendix A Questionnaire</b>	<b>60</b>



## 1. Definitions

**Construction** includes all activities required to design, procure and construct the project.

**Development** includes all activities required to progress the project to the point where a business case is presented for Board approval. Typically, development activities would include attaining all required permits and authorisations, implementing a wind monitoring programme, procuring a design and construct contractor and negotiating a Transmission Connection Agreement.

**Direct Employment** includes the employee who are directly employed in developing, constructing and/or operating the wind farms and those directly employed in manufacturing wind farm plant and equipment and supporting these activities.

**Gross Regional Product (GRP)** is the total market value of goods and services produced in a region after deducting the costs of goods used up in the process of production (intermediate Consumption) but before deducting consumption of fixed capital (depreciation).

**Gross Value Added (GVA)** is defined as total factor income plus taxes and less subsidies on production. Total factor income is made up of compensation of employees, gross operating surplus and gross mixed income.

**Hallett Wind Farm Project** means the combination of stages 1,2,3,4 and 5.

**Indirect Employment** is generated from the expenditure on flow on activities from developing, constructing and operating wind farms including expenditure by suppliers of components for wind farm manufacture needed to replace materials used up in the manufacturing process such as steel, reinforcing bars, paint etc. (production induced) and the expenditure of the wages and salaries of direct employees (consumption induced).

**Operation** phase commences on issue of the Practical Completion certificate for the project. The Operational phase for a wind farm is typically 20 to 25 years.

**Region** means the local government areas of Goyder, Clare and Gilbert Valleys and Northern Areas (including Burra, Clare, Jamestown & Hallett) Councils.

**Total Expenditure** is the total amount spent on the direct development, construction and operations of the wind farms.



## 2. Executive Summary

AGL Energy Ltd (AGL) engaged SKM to undertake an Economic Impact Assessment (EIA) to assess the economic impact that the Hallett wind farm projects have had on the economy in the region. The objective for undertaking the study is to quantify the economic impacts of the wind farms and the associated AGL Burra Information Centre to demonstrate the benefits of AGL's wind energy activities in the region and more broadly.

The findings from the assessment are set out in the report and the highlights are summarised below:

- Total Project development and construction expenditure:
  - To date \$800m (June 2010)
  - To completion of Hallett 1, 2, 4 and 5 \$897m
  - To completion of Hallett 1, 2, 3, 4 and 5 \$1,065m
- Regional Project development and construction expenditure :
  - To date \$88m (June 2010)
  - To completion of Hallett 1, 2, 4 and 5 \$111m
  - To completion of Hallett 1, 2, 3, 4 and 5 \$132m
- Regional Project operations expenditure:
  - To date \$3.2m (June 2010)
  - After completion of Hallett 1, 2, 4 and 5 \$12.5m per annum
  - After completion of Hallett 1, 2, 3, 4 and 5 \$15m per annum
- Regional construction Gross Value Added (GVA) is estimated at some \$49.5m to date with the highest annual amount of some \$17.8m in the current (2010) year. This GVA would add some 3.3% to the Mid North GRP in the current calendar year
- Regional operational GVA is estimated to be either some \$6.25m or \$7.5m per annum depending on whether Hallett 3 is approved and constructed or not. These GVA would provide an annual increase in the Mid North GRP of either 1.15% or 1.4%
- Regional employment:
  - To date (June 2010) total direct employment of 450 FTE construction job years plus 15 in operations with an average annual employment of 98
  - To completion of Hallett 1, 2, 4 and 5 total direct construction employment would increase to 540 job years at an average annual employment of 90 plus 36 operations jobs over the life of the projects..



- To completion of Hallett 1, 2, 3, 4 and 5 the total direct construction employment numbers would increase to 640 job years at an average of 80 per annum and operations employment of 42 over the life of the projects
- Peak employment during construction of approximately 150
- The direct construction employment is spread over the period from the end of 2005 to date with some overlap of the different Hallett projects. Based on the average and peak employment estimates it is likely that the Hallett wind farm projects employed a workforce of some 100 resident in the region from mid to late 2006 and which is currently likely to be closer to 150 people. These numbers are likely to reduce from later this year as the large Hallett 4 project nears completion
- In addition to the direct construction employment in the region indicated above, the project will generate manufacturing and support jobs in other parts of South Australia, nationally and overseas depending on the source of labour and materials. The total direct workforce including the construction jobs above and manufacturing and support jobs is estimated to be:
  - To date (June 2010) some 185 people on average and 850 FTE job years of work
  - To completion of Hallett 1, 2, 4 and 5 some 200 people on average and some 1,000 FTE job years
  - To completion of Hallett 1, 2, 3, 4 and 5 some 190 people on average and some 1,200 FTE job years of work. The average employment reduces based on the construction workforce reducing to undertake the smaller Hallett 5 and Hallett 3 wind farms
- There will also be additional indirect employment estimated at between 2,000 and 2,400 job years depending on whether Hallett 3 is approved and developed or not. These jobs will be spread through the South Australian, national and overseas economies although a significant proportion of the jobs created by flow expenditure from the wages and salaries of construction workers could be created within the region
- Qualitative highlights from the interviews and questionnaires include:
  - Evidence of strong local business support for the Hallett project
  - Accommodation and food services providers have had a significant increase in sales over the period the wind farms have been in construction
  - Local contractors have been employed directly in the wind farms' construction, and
  - Other businesses in the region's towns seem to have increased business and be more buoyant as a result of the additional people and expenditure in the region
  - Local businesses that have benefitted from contracts with the wind farm include:
    - Domestic scale electricians
    - Transport operators
    - Competent machine operators





- General labourers
- Quarries, and
- Concrete businesses
- A view that the project has had no noticeable impact on visitation to the region and if anything seems to have had a positive impact in terms of visitor interest. Visitor numbers at the Burra Visitor Centre have been broadly static for the past seven years and seem to be rising over the past three
- The regional population has been relatively static and in some areas declining. It is considered that the community will grow as a result of the wind farms. If so this could ensure that the population doesn't decline and that services can be retained and augmented
- It was noted that a number of farmers were finding it difficult to make ends meet and that the wind farms had changed this by direct payments to farmers whose land is included in the wind farm site, by providing employment opportunities and by creating a demand for under-utilised assets such as farmhouses that contractors use for accommodation of site personnel.
- The Community Funds have been a big plus, with over \$110,000 distributed to date. Examples include:
  - Shade structure for the Booborowie community pool
  - Contribution to purchase of community tractor for the Mt Bryan Progress Association
  - Computer for the Hallett historical society
  - Funding for public building maintenance and upgrades
  - Sponsorships of local events such as the AGL Bush to Burra, Budaleer Music Festival and Burra Jazz in the Mine
- The wind farm development appears to have increased the buoyancy of the local rental market and encouraged new accommodation developments
- It was noted that there were successful projects such as the local school project undertaking native plantings at the wind farm for landscape amenity and environmental reasons that could be replicated within the region. The project includes an education component and AGL and contractors also provided careers talks and advice on the range of employment and training opportunities that are offered in the wind energy industry.





### 3. Introduction

AGL engaged SKM to undertake an Economic Impact Assessment (EIA) to assess the economic impact that the Hallett Wind Farm projects have had on the economy in the region. The objective for undertaking the study is to quantify the economic impacts of the wind farms and the associated AGL Burra Information Centre to demonstrate the benefits of AGL’s wind energy activities in the region and more broadly.

#### 3.1. Background

AGL has been active in the mid-north region of South Australia. It has completed the construction of two wind farms (Hallett Stage 1 & 2) and a further two wind farms (Hallett Stage 4 & 5) are under construction. Refer to Figure 1 below for the wind farm locations.

When completed as planned the four current sites and the proposed fifth Hallett 3 site will include 200 turbines (Table 1) and have a generation capacity of some 410 MW of electricity.

■ **Table 1: Hallett Wind Farms Size and Capacity**

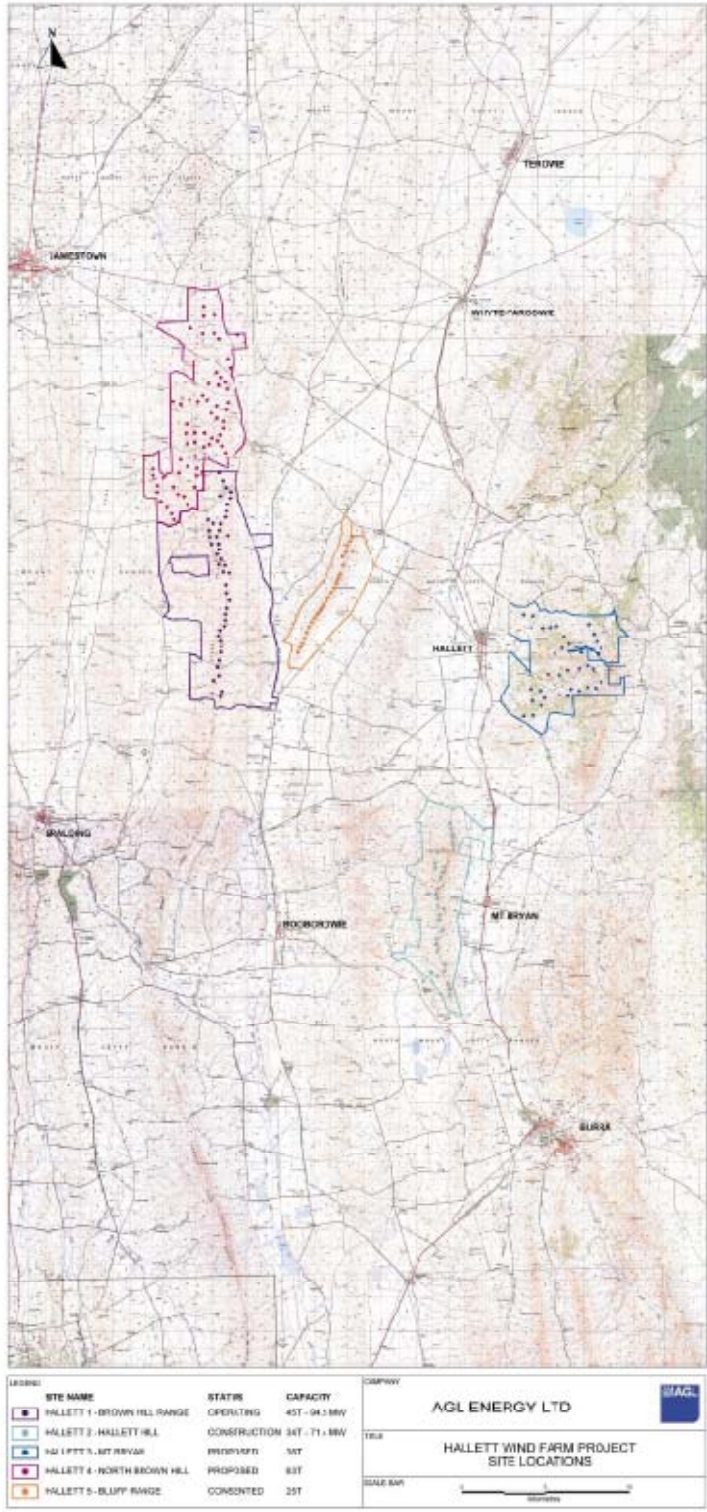
	No. Of Turbines	Capacity MW
Hallett 1	45	95
Hallett 2	34	71
<i>Hallett 3 (1)</i>	33	<i>69 (2)</i>
Hallett 4	63	132
Hallett 5	25	52.5
<b>Total Planned</b>	<b>200</b>	<b>410</b>

1: Planned (currently subject to appeal)

2: Assumes 2.1MW turbines



■ Figure 1: Hallett Wind Farm Locations





### 3.2. Terms of Reference

The terms of reference for the study are to determine for the development, construction and operation phases of the projects the:

- Impact on Region defined as the Local Government Areas (LGAs) of Goyder, Clare and Gilbert Valleys and Northern Areas (including Burra, Clare, Jamestown & Hallett)
- Impact and potential impact due to Hallett Stage 1,2,3,4 & 5 Wind Farms and AGL Burra Information Centre located in Burra
- Economic impacts, including but not limited to Gross Regional Product (GRP), Direct and Indirect Employment and Total Expenditure.

#### 3.2.1. Deliverables

This report, entitled, “Economic Impact Assessment of the Hallett Wind Farms” discusses the impacts of the wind farms on the mid-north region of South Australia and on the State.

### 3.3. Brief description of the Hallett Wind Farm projects

The Hallett Wind Farm Project comprises five wind farm sites in the vicinity of Hallett in Mid North of South Australia. Two wind farms are operational; Hallett 1 a 95 MW facility at Brown Hill and Hallett 2 a 71 MW facility at Hallett Hill. Two are under construction; Hallett 4 a 132.5MW facility at North Brown Hill and Hallett 5 a 52.5MW facility at the Bluff Range. The fifth stage development Hallett 3 proposal of 69MW facility at Mount Bryan is currently subject to appeal. If the Hallett 3 project is approved and developed, the total project will comprise 200 turbines and provide some 410MW of electricity generation capacity.

■ **Table 2: Hallett Wind Farms Total Expenditure to Date (June 2010)**

	Development	Construction	Operations
Hallett 1	\$5,385,000	\$227,452,000	\$10,500,000
Hallett 2	\$3,045,000	\$189,102,000	\$3,095,000
Hallett 3	\$2,833,000	N/A	N/A
Hallett 4	\$5,440,000	\$333,482,000	N/A
Hallett 5	\$1,845,000	\$31,300,000	N/A
Total to Date	\$18,548,000	\$781,336,000	\$13,595,000



Table 2 above, summarises the Total Expenditure to date in developing the project by stage and by phase of the project including developing each wind farm to approval, construction of the four approved individual wind farms to date and the operations expenditure for the two operating facilities.

The expenditure information was supplied by the main contractors for each wind farm as follows:

- AGL
- Wind Prospect
- Suzlon
- Electranet
- KBR
- Garrad Hassan
- Sinclair Knight Merz (SKM).

#### **3.4. Brief description of the study requirements and process**

Information on each of the above organisation's direct expenditure and expenditure by their sub-contractors was provided through completion of a questionnaire (Appendix A). The expenditure data was reviewed and anomalies reconciled. Consideration was given to any potential double counting and any double counting addressed. While it is possible that estimates may be either under or over estimated we consider that it is unlikely that these are major.

The questionnaire also requested information on estimated:

- Expenditure by location including the Mid North region, other South Australia, other parts of Australia and overseas
- Direct employment in the region
- Expenditure in the Mid North region related to the development, construction and operations of the wind farms. These items included accommodation, meals and incidental spending, regulatory fees and charges, community funds and sponsorships, payments to landowners and regional spending on services during the three phases of each wind farm
- Type of accommodation used by direct and contractor employees during construction. This information was only estimated for the construction phase of each wind farm when the largest number of employees are resident in the region. During development it is likely that while employees may visit a number of times, most visits would be relatively short term including day trips from Adelaide. Accommodation for overnight stays is likely to be motels, hotels, guest houses or Bed and Breakfast. Operational employment is smaller and it is expected that



permanent full time staff will either purchase or rent a home on a longer term lease with some specialist staff visiting for specific operational and/or maintenance activities.

In addition, the questionnaire asked about the various company policies related to labour hire and employment including any specific programs for specific target groups and skills development.

Other information was collected during a visit to the Wind Farm region including interviews with local business operators, local representatives of AGL and contractors and relevant officers/representatives of local councils and collection of relevant regional publications and other information.

The information obtained is analysed and reported on in this report. **As some information was confidential to individual companies no individual company information provided for the study is reproduced in this report.**

The Electranet capital cost information was not provided as an issue of commercial confidentiality and an estimate was calculated from the annual charges that were provided by both Electranet and AGL.

A socio-economic profile of the three regional Councils is provided and used to identify the relative importance of the Hallett Wind Farm Project to the region.



## 4. Description of the Hallett Region

This chapter describes the main demographic and socio-economic attributes of the region and then indicates the scale of the Hallett Wind Farms in this regional context.

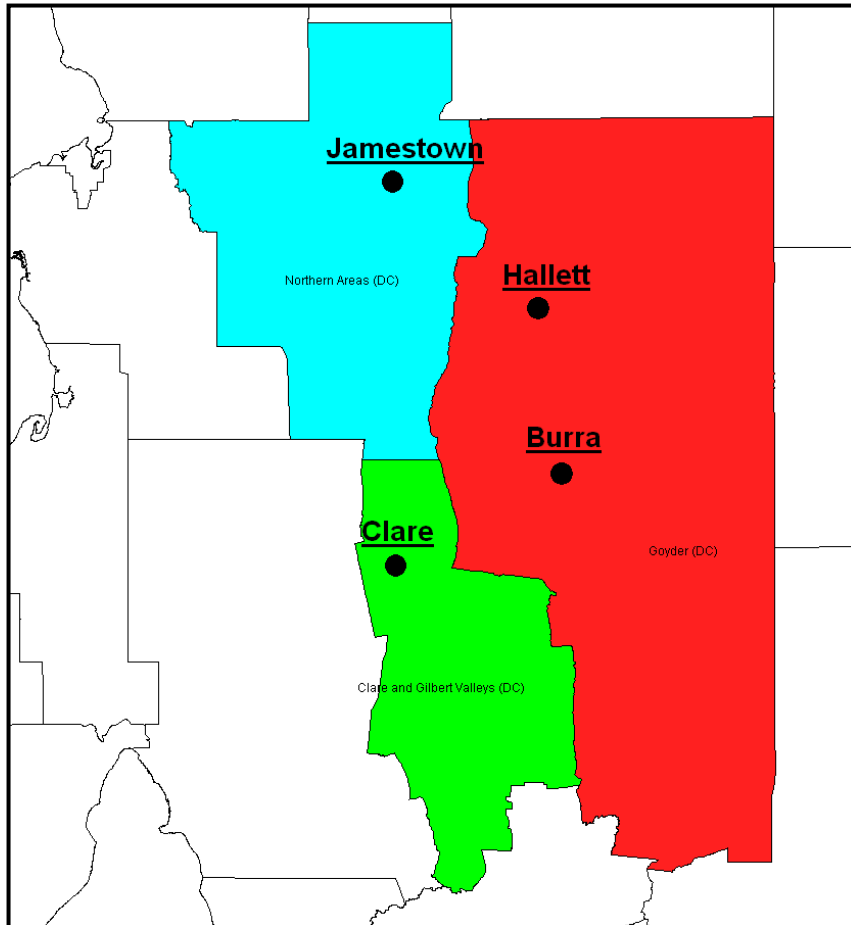
### 4.1. Socio-economic profile: Goyder, Clare and Northern Areas

The purpose of this report is to provide a socio-economic profile of the towns (Clare, Burra, Hallett and Jamestown) that may be affected by the Hallett wind farms. They are located approximately 100km north of Adelaide in the Local Government Areas (LGA) of Clare and Gilbert Valleys, Goyder and Northern areas (See Figure 2).





■ **Figure 2 Subject area – Clare and Gilbert Valleys, Goyder and Northern Areas**



**4.1.1. Population**

As of the 2006 census, the population of Clare and Gilbert Valleys, Goyder and Northern Areas were 8,142, 4,180 and 4,650 persons respectively or a combined estimate of 16,972 persons. This represents approximately 4% of the population of the Balance of South Australia<sup>1</sup>. Table 3 demonstrates that Clare and Gilbert Valleys and Northern Areas have experienced a growth of 0.9% and 2.29% respectively while Goyder has contracted by 0.9%. Results suggest that few people are leaving or arriving into these areas.

Despite the fact that the population has somewhat stabilised in all three areas, Figure 3, Figure 4 and Figure 5 show that there is a trend towards an aging population. From 2001 to 2006, the

<sup>1</sup> Balance of South Australia includes all areas outside the Major Statistical Region of Adelaide.





proportion of people under the age of 44 has fallen and the proportion of people over the age of 55 has increased. As a result, the median ages have increased in all areas. The median age increased from 40 years old in 2001 census to 42 years old in 2006 census in Clare and Gilbert Valleys and from 40 years old in 2001 census to 43 years old in 2006 census in Goyder and Northern Areas. The median ages of South Australia and Australia in 2006 were 39 and 37 years old respectively.

While it is impossible to predict population growth into the future, the Australian Bureau of Statistics (ABS) has released three main projections to the year 2056 for the Balance of South Australia. The first projection was largely based on year 2006 trends in fertility, life expectancy at birth, net overseas migration and net interstate migration. The remaining two projections were based on high and low assumptions for each of these variables.

Based on 2006 trends, Figure 6 shows that the population of the Balance of South Australia is projected to increase rapidly, to 18.5% higher than 2006 levels in 2026. However Figure 6 demonstrates that the population growth for the Balance of South Australia is much greater than the growth rates for Clare and Gilbert Valleys, Goyder and Northern Areas.

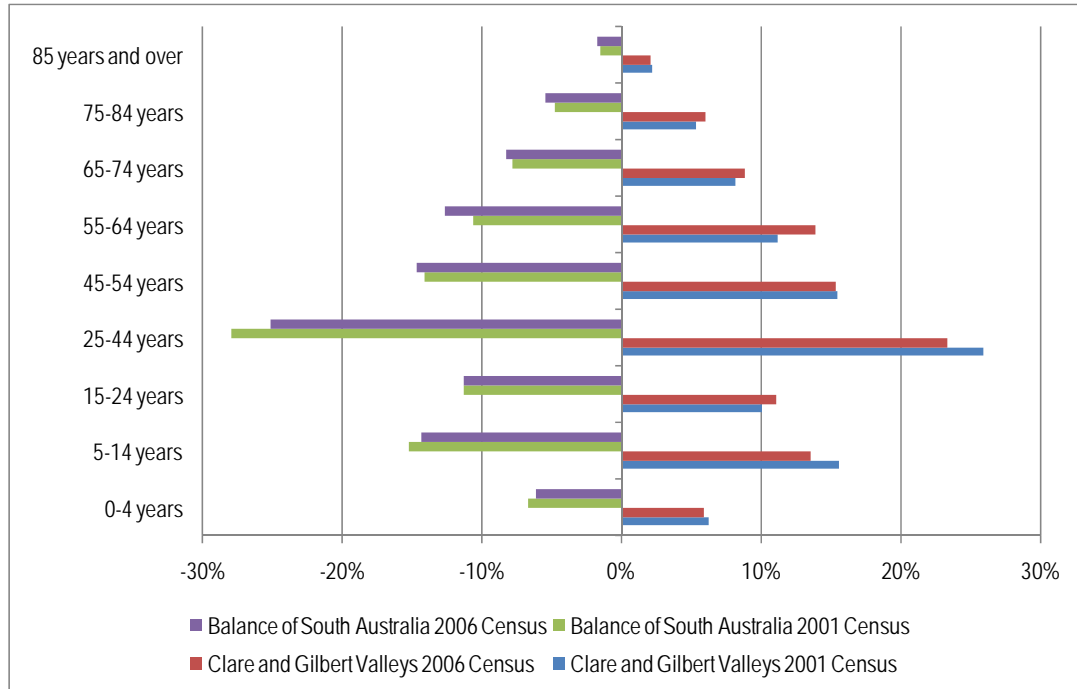
■ **Table 3: Population of Clare and Gilbert Valleys, Goyder and Northern Areas as of the 2001 and 2006 census**

	2001 Census	2006 Census	% change
Clare and Gilbert Valleys	8,069	8,142	0.90%
Goyder	4,218	4,180	-0.90%
Northern Areas	4,546	4,650	2.29%
Balance of South Australia	392,809	408,504	4.00%

*Source: ABS 2001 & 2006 Census*

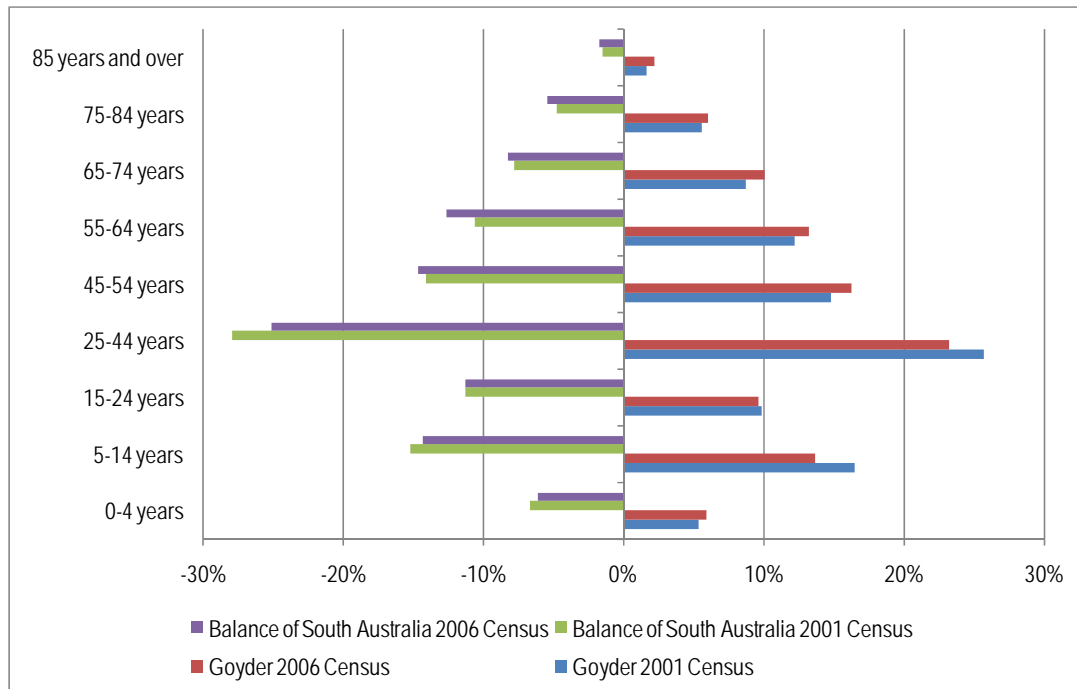


■ **Figure 3 Age distribution for Clare and Gilbert Valleys**



Source: ABS 2001 & 2006 Census

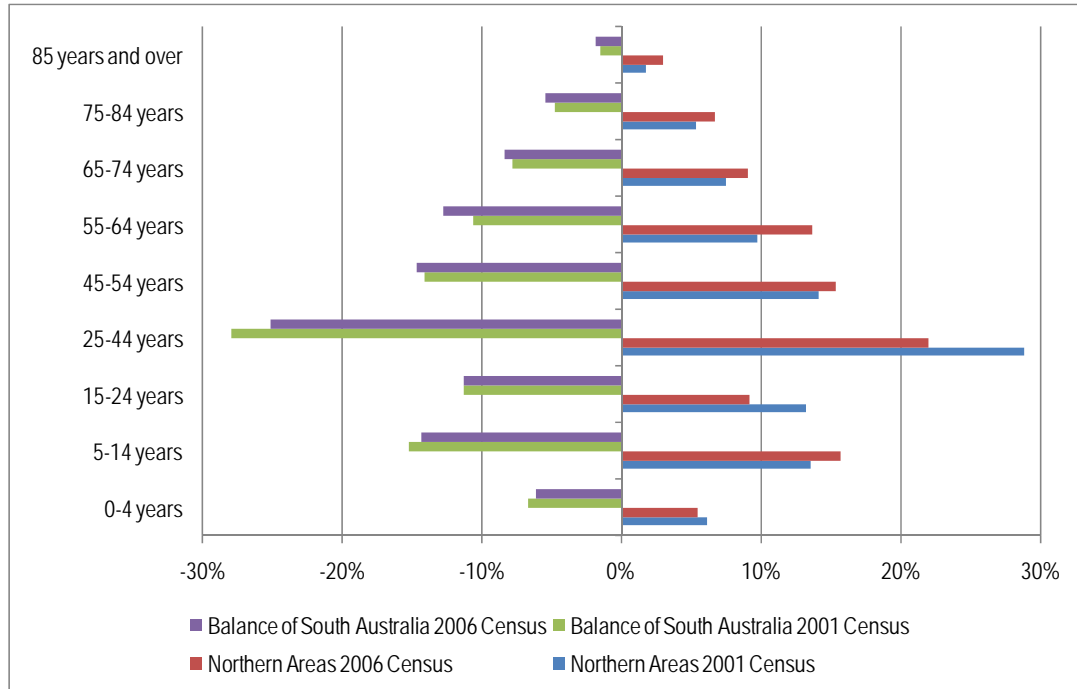
■ **Figure 4 Age distribution for Goyder**



Source: ABS 2001 & 2006 Census

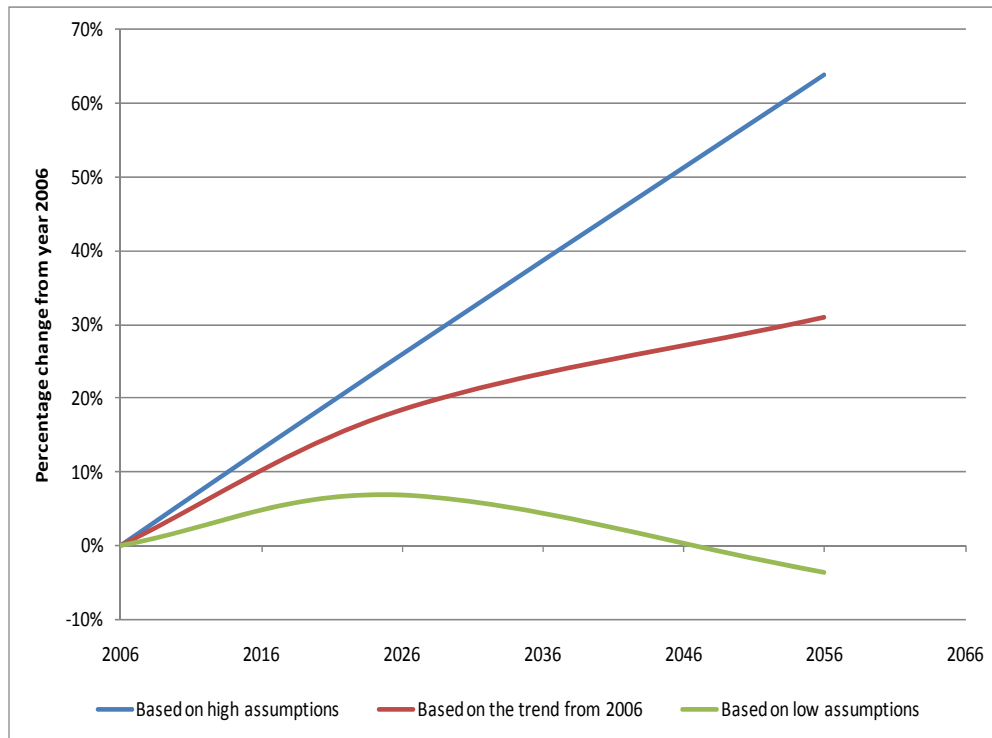


■ **Figure 5 Age distribution for Northern Areas**



Source: ABS 2001 & 2006 Census

■ **Figure 6 Population projection (Percentage Change) for the Balance of South Australia**





Source: ABS Population Projections, Australia, 2006 to 2101

#### 4.1.2. Household Composition

Reflecting the aging of the population in all three areas, Clare and Gilbert Valleys, Goyder and Northern Areas have all experienced a change in household composition.

Table 4 shows that couple families with no children have increased, couple families with children have decreased and lone person households have increased since the 2001 census across all areas. This is most pronounced in the Northern Areas, where the number of couple families with children has dropped from 585 in 2001 census to 513 in 2006 census or a 12% reduction.

■ **Table 4: Household composition as of the 2006 census and % change from 2001 census**

	Family households								Others			
	Couple family with no children		Couple family with children		One parent family		Other family		Lone person household		Group household	
	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001
Clare and Gilbert Valleys	1,118	8%	902	-6%	249	0%	24	20%	803	4%	82	34%
Goyder	549	2%	456	-2%	142	-3%	9	-10%	500	9%	29	-24%
Northern Areas	627	13%	513	-12%	147	7%	6	50%	499	8%	27	0%
Balance of South Australia	48,023	12%	45,398	-3%	14,649	14%	1,188	9%	40,544	7%	3,371	8%

Source: ABS 2001 & 2006 Census



### 4.1.3. Migration

The number of residents from Clare and Gilbert Valleys born in Australia, Germany, Netherlands, New Zealand and the United Kingdom has dropped since 2001 census. However the number of residents born elsewhere/ not stated has increased from 336 in 2001 census to 447 in 2006 census contributing to an overall increase in population.

In contrast, Goyder has experienced a small contraction in population and this trend is reflected in Table 5. The number of residents born in Australia has dropped from 3,689 in 2001 census to 3,572 in 2006 census or a 3% contraction.

Northern Areas has experienced a population growth, from 4,546 in 2001 census to 4,650 in 2006 census and this is reflected in Table 5. Table 5 shows that the number of residents born in Australia, Germany, Netherlands and New Zealand has increased by 1%, 115%, 36% and 117% respectively.

Table 6 shows the place of usual residence 1 year ago as of the 2006 census and the percentage change from 2001 census. All areas across all categories have experienced a positive growth with the exception of residents in Goyder relocating to a different address within the same statistical local area (SLA).

■ **Table 5: Country of Birth as of the 2006 census and % change from 2001 census**

	Country of Birth											
	Australia		Germany		Netherlands		New Zealand		United Kingdom		Elsewhere/ Not stated	
	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001
Clare and Gilbert Valleys	6,985	-1%	27	-7%	31	-3%	37	-16%	493	-1%	447	33%
Goyder	3,572	-3%	20	-29%	20	11%	29	61%	245	17%	245	15%
Northern Areas	4,103	1%	28	115%	19	36%	26	117%	175	-2%	251	12%
Balance of South Australia	338,632	3%	2,529	-2%	2,205	2%	2,848	9%	24,033	1%	26,983	19%

Source: ABS 2001 & 2006 Census



■ **Table 6: Place of usual residence 1 year ago as of 2006 census and % change from 2001 census**

	Same usual address 1 year ago		Different usual address 1 year ago (Same SLA)		Different usual address 1 year ago (Different SLA)		Different usual address 1 year ago (Overseas)		Not stated	
	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001
Clare and Gilbert Valleys	6,581	4%	561	1%	558	0%	30	150%	320	111%
Goyder	3,425	3%	227	-5%	302	13%	10	25%	180	44%
Northern Areas	3,899	3%	236	18%	278	1%	21	600%	175	86%
Balance of South Australia	324,927	N/A	25,890	N/A	29,958	N/A	2,154	N/A	20,784	N/A

Source: ABS 2001 & 2006 Census

#### 4.1.4. Educational Attainment

Clare and Gilbert Valleys has experienced significant growth in the number of residents having obtained a postgraduate degree, from 32 in 2001 census to 50 in 2006 census or a 56% increase. In addition, the number of residents having completed a graduate diploma & graduate certificate and bachelor degree has increased by 3% and 1% respectively. In contrast, the number of residents having completed an advanced diploma & diploma and certificate has decreased by 14% and 9% respectively (Table 7).

Goyder has not experienced any increase in the number of residents having completed non-school formal education. The number of residents with a postgraduate degree has not changed since 2001 census and the number of residents with a graduate diploma & graduate certificate, bachelor degree, advanced diploma & diploma and certificate has decreased across all categories.

Northern Areas has not experienced any increase or decrease in the number of residents having completed a postgraduate degree. However the number of residents having completed a graduate diploma and graduate certificate, advanced diploma and diploma and certificate has decreased by 5%, 15% and 9% respectively. In contrast, the number of residents with a bachelor degree has increased from 155 in 2001 census to 180 in 2006 census or a 16% increase.

The balance of South Australia has experienced a positive increase across all areas where the most significant increase occurred within the postgraduate category. The number of residents with a postgraduate degree increased from 1,525 in 2001 census to 2,189 in 2006 census or a 44% increase.



■ **Table 7: Non-school qualifications as of the 2006 census and % change from 2001 census**

	Postgraduate Degree		Graduate Diploma & Graduate Certificate		Bachelor Degree		Advanced Diploma & Diploma		Certificate	
	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001
Clare and Gilbert Valleys	50	56%	80	3%	456	1%	289	-14%	890	-9%
Goyder	9	0%	17	-19%	124	-6%	115	-1%	414	-3%
Northern Areas	18	0%	36	-5%	180	16%	132	-15%	429	-9%
Balance of South Australia	2,189	44%	2,833	11%	19,029	21%	16,709	27%	59,150	20%

Source: ABS 2001 & 2006 Census

**4.1.5. Labour force**

Table 8 demonstrates that the general employment trend is positive, where the number of employed persons has increased and the total number of unemployed persons has decreased across all areas since 2001 census. In addition, the total labour force has increase and total unemployment has dropped across all areas since 2001 census (Table 9).

Reflecting the positive trend in the number of employed persons and total labour force, Table 10 shows that the number of employed persons across all occupations has increased. The most significant increase was within the manger's category where Clare and Gilbert Valleys, Goyder and Northern Areas experienced an increase of 24%, 34% and 32% respectively.

■ **Table 8: Employment status as of the 2006 census and % change from 2001 census**

	Employed		Unemployed				Total labour force		Total unemployment	
			Looking for full-time work		Looking for part-time work					
	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001
Clare and Gilbert Valleys	3,974	8%	74	-32%	58	7%	4,106	7%	3%	-24%
Goyder	1,826	7%	59	-26%	28	-35%	1,913	5%	5%	-32%
Northern Areas	1,994	9%	76	-25%	20	-44%	2,090	7%	5%	-34%





Balance of South Australia	179,709	N/A	6,456	N/A	3,295	N/A	189,460	N/A	5%	N/A
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Source: ABS 2001 & 2006 Census

■ **Table 9: Total Labour Force and Unemployment 2009**

SLA	Unemployed		Total labour force		Unemployment Rate	
	Average of 2009	% change from 2006	Dec-09	% change from 2006	Average of 2009	% change from 2006
Clare and Gilbert Valleys	104	-21%	4,741	15%	2.18%	-32%
Goyder	75	-14%	2,210	16%	3.33%	-27%
Northern Areas	62	-35%	2,417	16%	2.55%	-44%
Balance of South Australia	9725	0%	223,500	18%	4.28%	-15%

Source: DEEWR and ABS 2006

■ **Table 10: Number of employed persons by occupation**

	Clare and Gilbert Valleys		Goyder		Northern Areas		Balance of South Australia	
	Number	% of total	Number	% of total	Number	% of total	Number	% of total
Managers	966	24%	616	34%	639	32%	34,539	19%
Professionals	555	14%	155	8%	243	12%	22,183	12%
Technicians & trades workers	493	12%	255	14%	232	12%	25,849	14%
Community & personal service workers	285	7%	122	7%	143	7%	15,994	9%
Clerical & administrative workers	391	10%	147	8%	190	10%	19,496	11%
Sales workers	303	8%	97	5%	138	7%	14,788	8%
Machinery operators & drivers	190	5%	108	6%	132	7%	13,644	8%
Labourers	722	18%	305	17%	245	12%	30,271	17%

Source: ABS 2001 & 2006 Census

#### 4.1.6. Industries of employment

The major industries of employment within Clare and Gilbert Valleys, Goyder and Northern Areas are quite similar to the Balance of South Australia. However since 2001 census some industries of employment categories have changed, therefore only the results of those industries that have not changed are presented below.

Table 11 shows the number of employed persons by industries as of 2006 census and the percentage change from 2001 census.



Source: ABS 2001 & 2006 Census

Figure 7, Figure 8 and Figure 9 show the percentage change in employment for the three municipalities based on the number of employed person by industries as a proportion of the total population.

Results show that:

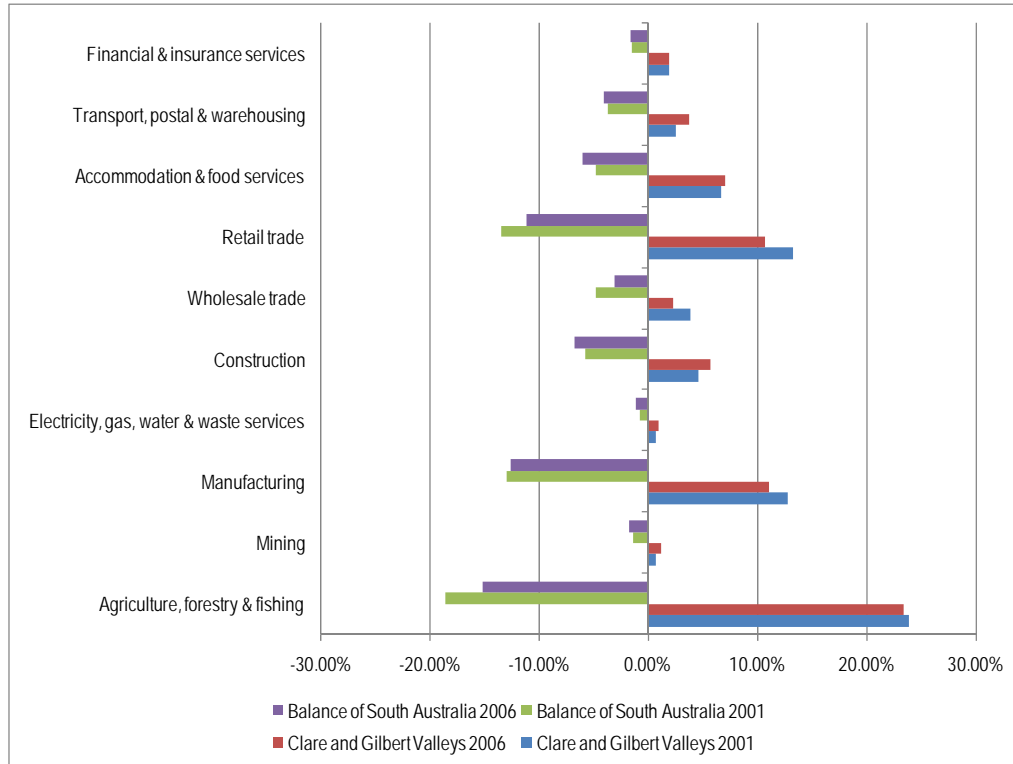
- Agriculture, forestry & fishing, manufacturing and retail trade are the three primary industries across all areas and for the Balance of South Australia
- The number of persons employed within the mining, electricity, gas, water & waste services, construction and accommodation & food services industries have increased across all areas and in the Balance of South Australia
- The wholesale trade and retail trade has experienced no increase or a contraction across all areas and in the Balance of South Australia.
- **Table 11: Employment by industries as of 2006 census and % change from 2001 census**

	Clare and Gilbert Valleys		Goyder		Northern Areas		Balance of South Australia	
	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001	2006	% change from 2001
Agriculture, forestry & fishing	932	4%	616	-8%	581	-6%	27,383	-12%
Mining	47	74%	28	211%	31	244%	3,127	33%
Manufacturing	441	-8%	194	14%	118	5%	22,655	3%
Electricity, gas, water & waste services	38	52%	9	0%	19	73%	2,038	56%
Construction	227	31%	81	25%	110	22%	12,156	25%
Wholesale trade	92	-36%	40	-25%	68	0%	5,528	-32%
Retail trade	427	-14%	158	-7%	229	-3%	20,150	-12%
Accommodation & food services	280	12%	90	34%	88	57%	10,954	36%
Transport, postal & warehousing	146	57%	70	23%	68	-9%	7,415	18%
Financial & insurance services	77	10%	17	0%	33	-3%	2,960	12%

Source: ABS 2001 & 2006 Census

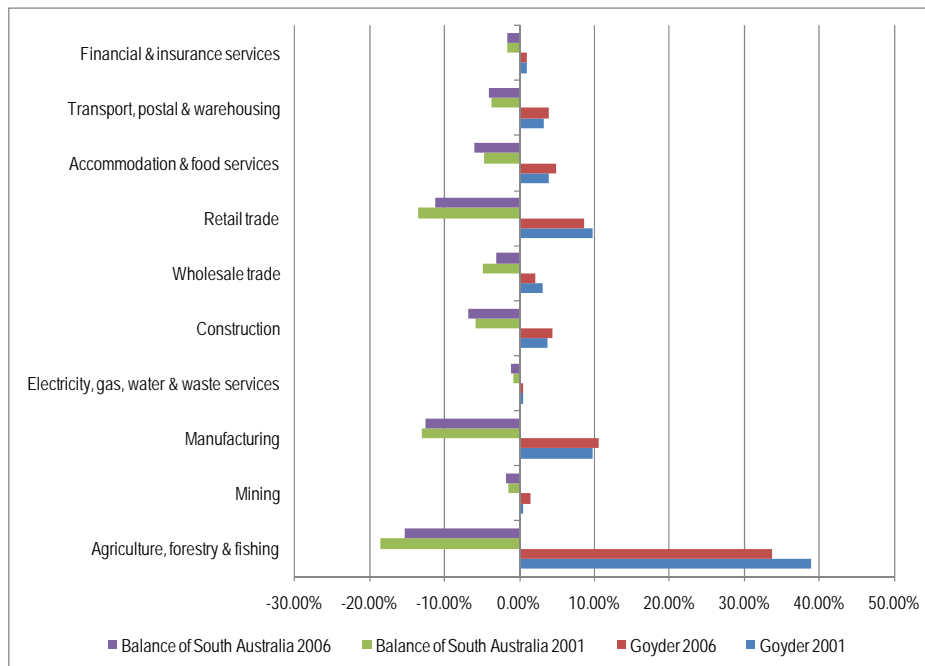


■ **Figure 7 Percentage of employment by industry for Clare and Gilbert Valleys**



Source: ABS 2001 & 2006 Census

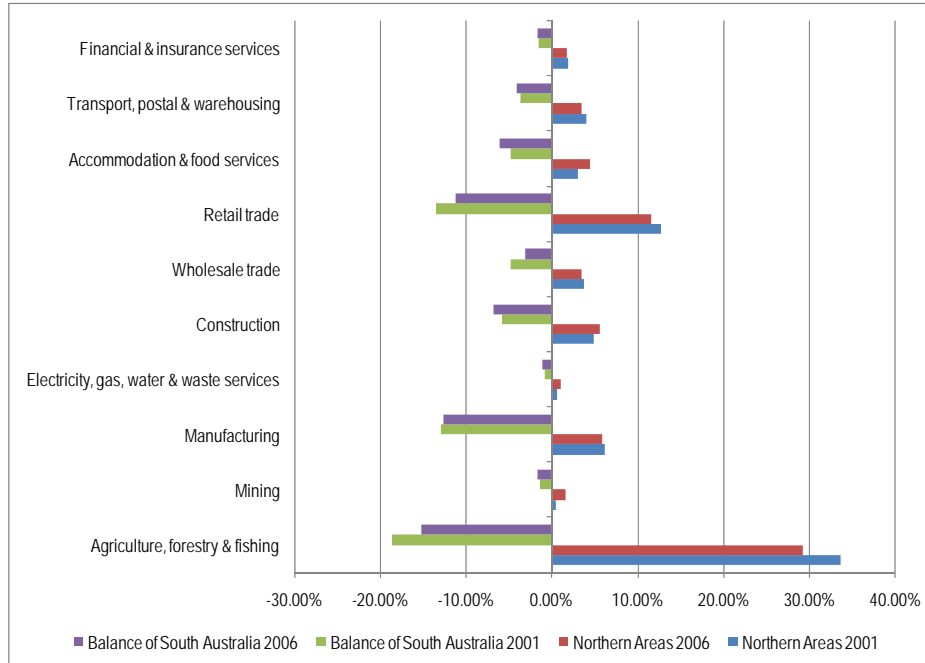
■ **Figure 8 Percentage of employment by industry for Goyder**



Source: ABS 2001 & 2006 Census



■ **Figure 9 Percentage of employment by industry for Northern Areas**



Source: ABS 2001 & 2006 Census

Table 12 shows the employment by industry by size based on employment for the three municipalities sourced from the latest ABS Business Counts. In all three LGAs there are no businesses with employment of 200 or over and only Northern Areas have any businesses with over 100 employees. The majority of businesses in the region are small with just over 78% employing four or less people. Northern Areas has the smallest proportion of these micro businesses at some 76% of businesses employing four or less, while just over 79% of businesses in the other two municipalities employ four or less people.



■ **Table 12: Employment by Industry Mid North LGS**

Industry	SLA Labels	Non employing no.	1-4 no.	5-19 no.	20-49 no.	50-99 no.	100-199 no.	200+ no.	Total no.
Agriculture Forestry and Fishing	Clare and Gilbert Valleys (DC)	294	123	102	6				525
Mining	Clare and Gilbert Valleys (DC)	0		0	0				0
Manufacturing	Clare and Gilbert Valleys (DC)	33	21	15	0	3			72
Construction	Clare and Gilbert Valleys (DC)	60	36	21					117
Wholesale Trade	Clare and Gilbert Valleys (DC)	12	0	9	0				21
Retail Trade	Clare and Gilbert Valleys (DC)	21	48	42	0				111
Accommodation Cafes and Restaurants	Clare and Gilbert Valleys (DC)	12	18	9	9	0	3		51
Transport and Storage	Clare and Gilbert Valleys (DC)	24	15	6					45
Communication Services	Clare and Gilbert Valleys (DC)	3	3	0					6
Finance and Insurance	Clare and Gilbert Valleys (DC)	45	6	0					51
Property and Business Services	Clare and Gilbert Valleys (DC)	111	39	18	3	3			174
Education	Clare and Gilbert Valleys (DC)	3	0						3
Health and Community Services	Clare and Gilbert Valleys (DC)	18	9	6	3				36
Cultural and Recreational Services	Clare and Gilbert Valleys (DC)	9	3						12
Personal and Other Services	Clare and Gilbert Valleys (DC)	24	3	3					30
<b>Total</b>	<b>Clare and Gilbert Valleys (DC)</b>	<b>669</b>	<b>324</b>	<b>231</b>	<b>21</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>1254</b>

Source: ABS Business Counts 2007

Industry	SLA Labels	Non employing no.	1-4 no.	5-19 no.	20-49 no.	50-99 no.	100-199 no.	200+ no.	Total no.
Agriculture Forestry and Fishing	Goyder (DC)	147	105	78	3				333
Mining	Goyder (DC)	3							3
Manufacturing	Goyder (DC)	3	0	0	3	0			6
Electricity Gas and Water Supply	Goyder (DC)	0							0
Construction	Goyder (DC)	24	3	0					27
Wholesale Trade	Goyder (DC)	12	9	3					24
Retail Trade	Goyder (DC)	36	9	18					63
Accommodation Cafes and Restaurants	Goyder (DC)	9	18	6	0				33
Transport and Storage	Goyder (DC)	27	9	3					39
Communication Services	Goyder (DC)	0	3						3
Finance and Insurance	Goyder (DC)	9	0						9
Property and Business Services	Goyder (DC)	30	6	3	0				39
Education	Goyder (DC)		0						0
Health and Community Services	Goyder (DC)	0	0	3					3
Cultural and Recreational Services	Goyder (DC)	3	0						3
Personal and Other Services	Goyder (DC)	6	0	3					9
<b>Total</b>	<b>Goyder (DC)</b>	<b>309</b>	<b>162</b>	<b>117</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>594</b>



Industry	SLA Labels	Non employing	1-4	5-19	20-49	50-99	100-199	200+	Total
		no.	no.	no.	no.	no.	no.	no.	no.
Agriculture Forestry and Fishing	Northern Areas (DC)	192	105	102	0				399
Mining	Northern Areas (DC)	3	0						3
Manufacturing	Northern Areas (DC)	6	3	0		3			12
Electricity Gas and Water Supply	Northern Areas (DC)								
Construction	Northern Areas (DC)	21	6	9	0				36
Wholesale Trade	Northern Areas (DC)	9	3	0	3				15
Retail Trade	Northern Areas (DC)	15	3	21	0				39
Accommodation Cafes and Restaurants	Northern Areas (DC)	6	3	3	0				12
Transport and Storage	Northern Areas (DC)	12	3	3					18
Communication Services	Northern Areas (DC)	0	0	3					3
Finance and Insurance	Northern Areas (DC)	9	3	0					12
Property and Business Services	Northern Areas (DC)	51	3	6					60
Education	Northern Areas (DC)	0							0
Health and Community Services	Northern Areas (DC)	12	6	0	3				21
Cultural and Recreational Services	Northern Areas (DC)	9							9
Personal and Other Services	Northern Areas (DC)	6	3						9
<b>Total</b>	<b>Northern Areas (DC)</b>	<b>351</b>	<b>141</b>	<b>147</b>	<b>6</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>648</b>

Table 13 provides the same business count data by business turnover. In line with the employment information, three businesses in the Northern Areas have over \$50m in turnover whereas in Clare the highest turnover companies range up to \$20m turnover and in Goyder \$5m. Overall, just over 81% of businesses in the three municipalities have an annual turnover of less than \$500,000. This ranges from 78.2% in Northern Areas through 79.4% in Clare to 87.9% in Goyder.



**Table 13: Turnover by Industry Mid North LGAs**

Industry	SLA Labels	Zero to	\$25k to less	\$50k to less	\$75k to less	\$100k to	\$150k to	\$200k to	\$500k to	\$1m to less	\$2m to less	\$5m to less	\$10m to	\$20m to	\$50m to	\$200m or	Total
		less than \$25k	than \$50k	than \$75K	than \$100k	less than	less than	less than \$500k	less than \$1m	than \$2m	than \$5m	than \$10m	less than \$20m	less than \$50m	less than \$200m	more	no.
Agriculture Forestry and Fishing	Clare and Gilbert Valleys (DC)	96	51	72	33	39	33	102	63	33	3		0				525
Mining	Clare and Gilbert Valleys (DC)		0					0	0	0	0						0
Manufacturing	Clare and Gilbert Valleys (DC)	6	3	6	0	3	6	21	12	6	3	6					72
Construction	Clare and Gilbert Valleys (DC)	15	15	12	9	9	12	24	12	9	0						117
Wholesale Trade	Clare and Gilbert Valleys (DC)	3	0	0	3	6	0	0	0	3	3		3	0			21
Retail Trade	Clare and Gilbert Valleys (DC)	3	6	12	0	6	9	30	21	18	6	0	0				111
Accommodation Cafes and Restaurants	Clare and Gilbert Valleys (DC)	3	0	9	6	6	3	9	3	9	3						51
Transport and Storage	Clare and Gilbert Valleys (DC)	3	9		0	6	6	12	6	3	0	0					45
Communication Services	Clare and Gilbert Valleys (DC)	0	3	3		0			0								6
Finance and Insurance	Clare and Gilbert Valleys (DC)	12	3	12	3	6	6	3	0	3	0	3	0				51
Property and Business Services	Clare and Gilbert Valleys (DC)	48	18	21	18	18	12	21	9	6	3	0					174
Education	Clare and Gilbert Valleys (DC)	0		3					0								3
Health and Community Services	Clare and Gilbert Valleys (DC)	3	3	0	3	6	3	12	3	3							36
Cultural and Recreational Services	Clare and Gilbert Valleys (DC)	9	3		0	0	0	0	0								12
Personal and Other Services	Clare and Gilbert Valleys (DC)	9	3	6	6	3	0	0	3	0							30
<b>Total</b>	Clare and Gilbert Valleys (DC)	<b>210</b>	<b>117</b>	<b>156</b>	<b>81</b>	<b>108</b>	<b>90</b>	<b>234</b>	<b>132</b>	<b>93</b>	<b>21</b>	<b>9</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1254</b>



### Economic Impact Assessment of the Hallett Wind Farms



Industry	SLA Labels	Zero to	\$25k to less	\$50k to less	\$75k to less	\$100k to	\$150k to	\$200k to	\$500k to	\$1m to less	\$2m to less	\$5m to less	\$10m to	\$20m to	\$50m to	\$200m or	Total
		less than \$25k	than \$50k	than \$75K	than \$100k	less than \$150k	less than \$200k	less than \$500k	less than \$1m	less than \$2m	less than \$5m	less than \$10m	less than \$20m	less than \$50m	less than \$200m	more	no.
Agriculture Forestry and Fishing	Goyder (DC)	54	27	30	18	36	30	102	18	9	9		0				333
Mining	Goyder (DC)		3						0								3
Manufacturing	Goyder (DC)	0	0			3		0	0	0	3				0		6
Electricity Gas and Water Supply	Goyder (DC)					0											0
Construction	Goyder (DC)	6	3	3	0	12	3	0	0	0							27
Wholesale Trade	Goyder (DC)	6	0	3		3	3	3	3		3						24
Retail Trade	Goyder (DC)	6	9	6	9	6	0	12	12	0	3						63
Accommodation Cafes and Restaurants	Goyder (DC)	0	3	0	6	6	0	18	0	0							33
Transport and Storage	Goyder (DC)	0	6	3	3	3	6	12	3		3						39
Communication Services	Goyder (DC)	0	0		0	3		0									3
Finance and Insurance	Goyder (DC)	3	6	0		0		0		0			0				9
Property and Business Services	Goyder (DC)	3	0	6	6	6	12	3	3	0	0						39
Education	Goyder (DC)	0															0
Health and Community Services	Goyder (DC)	0	0					0	0	3							3
Cultural and Recreational Services	Goyder (DC)	3	0	0													3
Personal and Other Services	Goyder (DC)	0	3	3	0	3											9
<b>Total</b>		<b>81</b>	<b>60</b>	<b>54</b>	<b>42</b>	<b>81</b>	<b>54</b>	<b>150</b>	<b>42</b>	<b>9</b>	<b>21</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>594</b>

Economic Impact Assessment of the Hallett Wind Farms



Industry	SLA Labels	Zero to less than \$25k	\$25k to less than \$50k	\$50k to less than \$75K	\$75k to less than \$100k	\$100k to less than \$150k	\$150k to less than \$200k	\$200k to less than \$500k	\$500k to less than \$1m	\$1m to less than \$2m	\$2m to less than \$5m	\$5m to less than \$10m	\$10m to less than \$20m	\$20m to less than \$50m	\$50m to less than \$200m	\$200m or more	Total
		no.	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.	no.
Agriculture Forestry and Fishing	Northern Areas (DC)	48	36	42	39	48	24	90	48	24							399
Mining	Northern Areas (DC)		0	3		0		0									3
Manufacturing	Northern Areas (DC)	0	0	3	3	0	3		0			0	3				12
Construction	Northern Areas (DC)	6	6	3	0	3	3	9	3	0	3	0					36
Wholesale Trade	Northern Areas (DC)	3	0		0	0		6	3			0			3		15
Retail Trade	Northern Areas (DC)	0	3	0	0	0	0	9	6	12	6	3					39
Accommodation Cafes and Restaurants	Northern Areas (DC)	3	3	0	0	0	0	0	3	3							12
Transport and Storage	Northern Areas (DC)	3	0	0	3	3	0	3	3	3							18
Communication Services	Northern Areas (DC)	0	0		0	3		0									3
Finance and Insurance	Northern Areas (DC)	9	3	0				0	0	0			0				12
Property and Business Services	Northern Areas (DC)	6	0	6	12	12	0	9	9	6							60
Education	Northern Areas (DC)	0						0									0
Health and Community Services	Northern Areas (DC)	3	3	0		3	0	12	0								21
Cultural and Recreational Services	Northern Areas (DC)	3	0			6											9
Personal and Other Services	Northern Areas (DC)		3	0	3	0	3										9
<b>Total</b>	<b>Northern Areas (DC)</b>	<b>84</b>	<b>57</b>	<b>57</b>	<b>60</b>	<b>78</b>	<b>33</b>	<b>138</b>	<b>75</b>	<b>48</b>	<b>9</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>648</b>



Based on the above, the predominance of small businesses may limit the participation of local businesses in major regional projects. However, there are a number of transport and construction companies of a reasonable size in all three municipalities that could have a relevant mix of skills and equipment. In addition, all three municipalities have a high proportion of agricultural businesses (42% Clare, 56% Goyder and 62% Northern Areas). These businesses are likely to have multi-skilled people and a range of equipment that allow them to participate in the process.

As shown later, local businesses with the relevant skills and equipment have been contracted as part of the project development.

#### 4.1.7. Agriculture

Table 14 shows the total land and agricultural land area for Clare and Gilbert Valleys, Goyder and Northern Areas. Results show that Goyder is the largest at 6,718 square kilometres, followed by Northern Areas and Clare and Gilbert Valleys at 2,987 and 1,893 square kilometres respectively. The proportion of land allocated to agriculture is similar across all three areas at 10%.

■ **Table 14: Total land and agricultural land area (2006 estimate)**

	Land area (km <sup>2</sup> )	Area of agricultural land (km <sup>2</sup> )	% of agricultural land to total land area
Clare and Gilbert Valleys	1,893	192	10%
Goyder	6,718	691	10%
Northern Areas	2,987	299	10%

*Source: ABS National Regional Profile, 2004-08*

#### 4.1.8. Income

Many of the occupation categories have changed since 2001 census therefore the results from 2001 have not been reproduced here.

Table 15 shows that the trend in median income range (by occupation) is similar across all three areas and the Balance of South Australia. Professionals have the highest median income range at \$600-\$999 per week while community and personal service workers, sales clerical and administrative, sales workers and labourers have the lowest median income range at \$250-\$599 per week across all areas.

Employed persons across all occupations of Clare and Gilbert Valleys have a median income range equal to or greater than Goyder and Northern Areas. This is likely to reflect the fact that Clare and



Gilbert Valleys have a greater number of residents with a postgraduate degree, graduate diploma & graduate certificate and/or bachelor degree qualifications.

Table 16 shows that the median income range for the mining industry is high across all areas with Goyder the highest at \$1300-\$1999 per week. This is greater than the median income range for the Balance of South Australia at \$1000-\$1599 per week. Clare and Gilbert Valleys and Northern Areas' median income range for the electricity, gas, water and waste services industry is \$800-\$1299 per week, greater than the Balance of South Australia's income range at \$600-\$999 per week. Employed persons of Northern Areas in the information media and telecommunications industry have a high median income range at \$800-\$1299 per week, in excess of Clare and Gilbert Valleys and Goyder's income range at \$250-\$599 per week and the Balance of South Australia's income range at \$400-\$799 per week.

The median income range of the Balance of South Australia is equal to or higher than all three areas across all industries with the exception of the mining, electricity, gas, water and waste services industry, information media and telecommunications industry and financial and insurance services industry.

■ **Table 15: Median weekly income range by occupation (2006 census)**

	Clare and Gilbert Valleys	Goyder	Northern Areas	Balance of South Australia
Managers	\$400-\$799	\$250-\$599	\$250-\$599	\$400-\$799
Professionals	\$600-\$999	\$600-\$999	\$600-\$999	\$600-\$999
Technicians & trades workers	\$400-\$799	\$250-\$599	\$400-\$799	\$400-\$799
Community & personal service workers	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599
Clerical & administrative workers	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599
Sales workers	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599
Machinery operators & drivers	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799
Labourers	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599

Source: ABS 2006 census

■ **Table 16: Median weekly income range by industry (2006 census)**

	Clare and Gilbert Valleys	Goyder	Northern Areas	Balance of South Australia
Agriculture, forestry & fishing	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599
Mining	\$800-\$1299	\$1300-\$1999	\$800-\$1299	\$1000-\$1599
Manufacturing	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799



Electricity, gas, water & waste services	\$800-\$1299	\$400-\$799	\$800-\$1299	\$600-\$999
Construction	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799
Wholesale trade	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799
Retail trade	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599
Accommodation & food services	\$150-\$399	\$150-\$399	\$150-\$399	\$150-\$399
Transport, postal & warehousing	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799
Information media & telecommunications	\$250-\$599	\$250-\$599	\$800-\$1299	\$400-\$799
Financial & insurance services	\$400-\$799	\$250-\$599	\$600-\$999	\$400-\$799
Rental, hiring & real estate services	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799
Professional, scientific & technical services	\$400-\$799	\$400-\$799	\$400-\$799	\$400-\$799
Administrative & support services	\$250-\$599	\$150-\$399	\$150-\$399	\$250-\$599
Public administration & safety	\$600-\$999	\$600-\$999	\$400-\$799	\$600-\$999
Education & training	\$600-\$999	\$600-\$999	\$600-\$999	\$600-\$999
Health care & social assistance	\$250-\$599	\$250-\$599	\$250-\$599	\$250-\$599
Arts & recreation services	\$600-\$999	\$1-\$249	\$400-\$799	\$250-\$599

Source: ABS 2006 census

#### 4.1.9. Gross Regional Product

This section discusses the GRP for the Yorke and Mid North region comprising the LGAs of Burunga West, Clare and Gilbert Valleys, Copper Coast, Goyder, Mount Remarkable, Northern Areas, Orroroo/Carrieton, Peterborough, Port Pirie, Wakefield and Yorke Peninsula. In 2006/07 the latest available the total GRP was some \$2.017 billion. This compares with South Australian GSP of some \$68.3 billion at the same period or a GRP of some 2.95% of the GSP. The latest estimate of the South Australian GSP to June 2009 is just under \$78 billion or just over 14% larger than two years earlier. Adjusting the regional GRP for the State growth suggests the GRP for the Yorke and Mid North region in 2008/09 could be some \$2.3billion.

The population of the three Mid North Councils in the Study area is some 24% of the population in the whole Yorke and Mid North Region. Assuming a similar industry structure and activity level this suggests the GRP for the study area could be some \$550 million. Additional criteria could be used to estimate the Mid North GRP but the use of population is likely to provide a reasonable indicative estimate of GRP.



#### 4.1.10. Welfare and Disadvantage

Reflecting the aging population, Table 17 shows that the number of residents on age pension has increased across all three areas. In addition, the number of residents on disability support pension has increased across all three areas.

- **Table 17 Number of residents on welfare as of 2006 estimates and % change from 2004 estimates**

	Clare and Gilbert Valleys		Goyder		Northern Areas	
	2006	% change from 2004	2006	% change from 2004	2006	% change from 2004
Age Pension - Centrelink	977	1%	576	2%	659	1%
Disability Support Pension	272	7%	289	4%	220	2%
Parenting Payment - Single	143	-6%	103	5%	89	17%
Youth Allowances	119	-9%	76	-16%	76	15%

Source: ABS National Regional Profile, 2004-08

##### 4.1.10.1. SEIFA

Table 18 summarises the Socio-Economic Indexes for Areas (SEIFA) scores as of the 2006 census and percentage change from 2001 census. SEIFA is a suite of four summary measures and the scores for each Census Collection District (CD), Postal Area (POA), Statistical Local Area (SLA) and Local Government Area (LGA) are derived from census data. The four indexes are:

- **Index of Relative Socio-economic Disadvantage:** using indicators of low socio-economic wellbeing, provides a general measure of disadvantage.
- **Index of Relative Socio-economic Advantage and Disadvantage:** extends the above measure to encompass the entire socio-economic spectrum.
- **Index of Economic Resources:** focuses on financial aspects of relative advantage and disadvantage.
- **Index of Education and Occupation:** focuses on the educational and occupational aspects of socio-economic status.

The indexes reflect the relative advantage or disadvantage of areas and may be used for comparative purposes. The lower the score, the more disadvantaged an area is, however the scores do not reflect the size of the difference in socio-economic levels between areas and cannot be used as a comparative tool between years. From Table 18 a general rank of the areas can be derived. The most advantaged area to most disadvantaged area is as follows: Adelaide, Clare and Gilbert Valleys, Northern Areas and Goyder.



■ **Table 18 SEIFA scores as of 2006 census and % change from 2001 census**

	Index of Relative Socio-economic Disadvantage		Index of Relative Socio-economic Advantage and Disadvantage		Index of Economic Resources		Index of Education and Occupation	
	2006	2001	2006	2001	2006	2001	2006	2001
Clare and Gilbert Valleys	999	1019	946	960	994	949	974	961
Goyder	960	984	905	908	967	885	959	922
Northern Areas	968	1005	918	926	967	886	964	947
Adelaide	1022	1067	1083	1135	951	1093	1171	1168

Source: ABS 2001 & 2006 census

#### 4.2. Summary

The regional population is growing more slowly than regional South Australia as a whole with the population of Goyder declining slightly between the 2001 and 2006 census. As service provision is to some extent a function of population, there is a danger that reductions in population can lead eventually to reduction in the services provided by local government due to a reduced rate base, state and federal government due to reduced population and the private sector. This may lead to a downward spiral in regional economic activity.

Major projects such as the Hallett Wind Farm Project help retain population by providing employment and income opportunities for existing residents and businesses, encourage residents and former residents working away from the region to return and bring new people into the region both temporarily during construction and permanently in operating the facilities. Even some of the employees who come into the region during construction may decide to stay on or make the region their home base while working on construction projects elsewhere.

The industry analysis suggests that, while the regional businesses are small there are a number of businesses in the industry sectors that can benefit from the wind farm developments as has happened in practice.

Similarly the occupation and skills information also suggests that the region is able to provide the more generic trades and employment skills needed by the wind farms. Again this seems to have been borne out in practice.

The latest unemployment data suggest that unemployment rates are relatively low and that therefore there may be reduced opportunities for local employment. However, this is often the case in regional areas where there may be under employment and hidden unemployment and where



residents leave the region to work elsewhere and may or may not return if the economy recovers or may return to work on specific new projects. The Hallett wind arm project has sought to employ locals with some success and to provide skills training and apprenticeships.





## 5. Economic Impact

This chapter looks at the economic impacts in more detail. It includes discussion on the project expenditure to date and estimates expenditure for the whole project (all stages). It considers impact on the gross regional product, the employment implications (including the actual employment to date and estimates for the whole project), direct expenditure in the region and a qualitative assessment of the project's benefits based on interviews with local business people and Council representatives during a site visit in early May 2010.

### 5.1. Assessment of the expenditure and GRP impacts

The total expenditure to date by phase is shown in Table 19 below. The development and construction activities to date are estimated at just under \$800m with some \$13.5m spent on the operations and maintenance of the two operating wind farms to date. The bulk of the operational expenditure has been at Hallett 1 which has been operating from September 2008 with a lesser amount on Hallett 2 which had been operational for less than two months since April this year (2010). The operational cost shown will increase on an annual basis over the life of the project.

■ **Table 19: Hallett Wind Farms Project Costs by Phase to Date**

	Development	Construction	Operations
Hallett 1	\$5,385,000	\$227,452,000	\$10,500,000
Hallett 2	\$3,045,000	\$189,102,000	\$3,095,000
Hallett 3	\$2,833,000	N/A	N/A
Hallett 4	\$5,440,000	\$333,482,000	N/A
Hallett 5	\$1,845,000	\$31,300,000	N/A
Total to Date	\$18,548,000	\$781,336,000	\$13,595,000

Source: Data provided by project participants

Based on the costs to date an indicative estimate of the cost of the projects to completion is shown in Table 20. The costs are shown with and without Hallett 3 on the basis that Hallett 3 is currently subject to appeal and may not proceed.

The estimates in Table 20 are based on average per turbine costs and as such they are indicative only. The operations costs are annual estimates. The Hallett 1 operations actual has been adjusted to provide an annual estimate.

Based on these indicative costs, the total project consisting of 5 stages, if it proceeds, will exceed \$1billion and with some \$30m a year in operating costs. From the information provided in the survey some 50% of the operating costs would be spent in the Mid North region or some \$15m.



■ **Table 20: Estimated Project Capital Costs and Annual Operating Costs**

Actual and Estimates	Total Pre Ops	Operations
Hallett 1	232,837,000	6,750,000
Hallett 2	192,147,000	5,100,000
Hallett 3	2,833,000	
Hallett 4	338,922,000	9,450,000
Hallett 5	130,000,000	3,750,000
Total Less Hallet 3	896,739,000	25,050,000
Hallett 3	168,767,000	4,950,000
Total Project cost	1,065,506,000	30,000,000

Source: Hallett Wind Farm Data and SKM Estimates

**5.1.1. Impact on gross regional product**

GRP is the total market value of goods and services produced in a region after deducting the costs of goods used up in the process of production (intermediate Consumption) but before deducting consumption of fixed capital (depreciation). To avoid double counting, only the value added at each stage of production is included in GRP and not the total expenditure.

Gross Value Added (GVA) is defined as total factor income plus taxes and less subsidies on production. Total factor income is made up of compensation of employees, gross operating surplus and gross mixed income. We have assumed that the value added component which excludes costs of materials is approximately 50% of the total expenditure. On this basis, the GVA to date is set out in Table 21.

■ **Table 21: Estimated Value Added to Date (June 2010)**

Actual and Estimates	Total Pre Ops	Operations
Hallett 1	116,418,500	5,250,000
Hallett 2	96,073,500	1,547,500
Hallett 3	1,416,500	
Hallett 4	169,461,000	
Hallett 5	16,572,500	
Total	399,942,000	6,797,500

Source: Hallett Wind Farm Data and SKM Estimates

Based on the local content of the construction cost of some 12.4%, the local value added would be some \$49.5m. On the same basis the value added to completion would be some \$55.6m without Hallett 3 and \$66m for the total Project with Hallett 3 (12.4% of half the total capital cost in Table 20).



The construction costs and value added are spread over a number of years (to date construction has been underway for five years). The current year 2010 includes the most construction activity with Hallett 4 and 5 under construction for all or most of the year and Hallett 2 at the early part of the year. Based on this level of activity we estimate that some 36% of the total construction activity is taking place this year (2010). On this basis the largest change in value added would be some \$17.8m in the current year.

The operations expenditure to date is not really relevant and a better estimate of the impact on GRP from operations of the wind farms would be to take the annual expenditure once fully operational. Given the doubt related to Hallett 3 this figure is estimated with and without Hallett 3 case.

The total operational value added without Hallett 3 would be some \$12.5m and with Hallett 3 some \$15m. Based on 50% of the operational expenditure remaining in the region the estimated regional value added would be \$6.25m or \$7.5m respectively.

Table 22 and Figure 10 indicate the Yorke and Mid North GRP. This region includes the municipalities of Goyder, Clare and Gilbert Valleys, Northern Areas, Orroroo/Carrieton, Peterborough, Barunga West, Mount Remarkable, Wakefield, Yorke Peninsula, Copper Coast and Port Pirie. The table and figure are based on the 2006/07 GRP provided in the “easydata” regional report adjusted to reflect the 2008-09 South Australian GSP. This adjustment increases the regional GRP by approximately 14% in total.

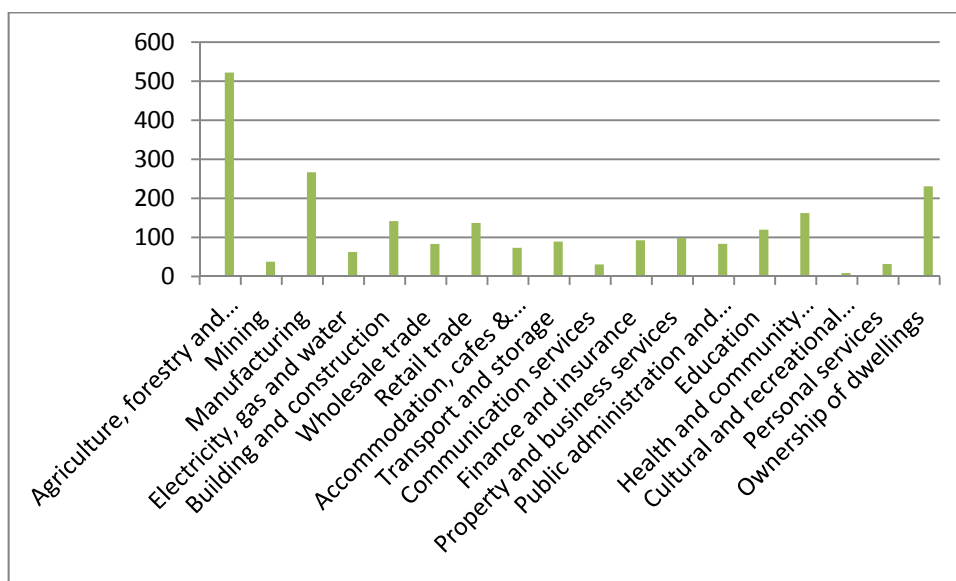


■ **Table 22: Yorke and Mid North GRP Adjusted to 2008-09**

Industry Sector	\$m
Agriculture, forestry and fishing	522.08
Mining	37.79
Manufacturing	266.97
Electricity, gas and water	62.60
Building and construction	142.04
Wholesale trade	83.23
Retail trade	137.05
Accommodation, cafes & restaurants	73.30
Transport and storage	89.28
Communication services	30.83
Finance and insurance	92.66
Property and business services	98.90
Public administration and defence	83.52
Education	119.76
Health and community services	162.34
Cultural and recreational services	8.76
Personal services	32.01
Ownership of dwellings	230.79
<b>Total</b>	<b>2273.92</b>

Source: South Australia .biz/easydata GRP, ABS South Australia GSP, SKM Estimates

■ **Figure 10: Yorke and Mid North GRP 2006-07 Adjusted to 2008-09**





Source: South Australia .biz/easydata GRP, ABS South Australia GSP, SKM Estimates

Table 23 provides an estimate of the Mid North regional GRP based on the study region of Goyder, Clare and Gilbert Valleys and Northern Areas. This estimate is based on adjusting the Yorke and Mid North GRP by industry sector by the relative populations of the two areas.

■ **Table 23: Estimated GRP for The Mid North Region (Goyder, Clare and Gilbert Valleys and Northern Areas)**

Industry Sector	\$m
Agriculture, forestry and fishing	124.44
Mining	9.01
Manufacturing	63.63
Electricity, gas and water	14.92
Building and construction	33.86
Wholesale trade	19.84
Retail trade	32.67
Accommodation, cafes & restaurants	17.47
Transport and storage	21.28
Communication services	7.35
Finance and insurance	22.09
Property and business services	23.57
Public administration and defence	19.91
Education	28.55
Health and community services	38.69
Cultural and recreational services	2.09
Personal services	7.63
Ownership of dwellings	55.01
<b>Total</b>	<b>541.98</b>

Source: South Australia .biz/easydata GRP, ABS South Australia GSP, SKM Estimates

The estimated Hallett Wind Farms construction value added in the current year (2010) is some \$17.8m which equates to a potential lift in the Mid North GRP of some 3.3%. The ongoing annual operational value added is some \$6.25m if Hallett 3 does not go ahead and \$7.5m if it does. These figures equate to a growth in GRP in the Mid North of 1.15% or 1.4%.

## 5.2. Industry development and employment creation

This section discusses the employment impacts of the projects to date and an estimate of the future impact of the projects with and without Hallett 3. The impact of Hallett 1 is shown initially to allow an assessment of the potential industry multipliers based on a completed and operating wind farm. While Hallett 2 is also operational, this is not included as it has only just been completed and from



the construction employment estimates it appears that the Hallett 1 construction team was logically kept together for Hallett 2 despite it being a smaller wind farm.

### 5.2.1. Assessment of employment effects of Hallett1

The Hallett 1 Wind Farm cost some \$227.5 million to construct. Of this amount approximately \$94.2 million (41.4%) is estimated to be spent in South Australia. Based on the estimated Australian to overseas content of 61.5% to 38.5% some \$140 million would have been spent in Australia (Table 24).

■ **Table 24: Estimated construction expenditure by location for Hallett 1**

Item	Mid North	Rest of South Australia	Rest of Australia	All of Australia	Overseas	Total
Proportion	12.40%	29.01%	20.09%	61.49%	38.51%	100.00%
Cost \$ m	28.2	66.0	45.7	139.9	87.6	227.5

Source: Hallett Wind Farm Data

The Hallett 1 Wind Farm was built over a 34 month period between December 2005 and September 2008. On average over this period some 66 construction employees were employed in the region, either directly or by contractors engaged by the companies involved in constructing the wind farm. Employment numbers at peak of construction were some 111 workers.

These data provided by the construction companies do not tell the whole story. In addition to the employees in the region constructing the wind farm there are also employees in other parts of South Australia and Australia manufacturing elements of the turbines such as the towers and providing a range of construction services.

The Passey report<sup>2</sup> provides estimates of direct employment per megawatt (MW) of power generated by wind energy of some 7.5 job years/MW for manufacture and installation in 2002. This figure is reduced by 5% annually to 5 job years/MW in 2010 based on a number of factors including economies of scale, increased wind turbine size and improved technology. The Passey report suggests that the fall in jobs per year will be partially off-set by increased Australian content over the period to 2010. We have conservatively assumed Australian content has not increased significantly.

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<sup>2</sup> Driving Investment, Generating Jobs: Wind Energy as a Powerhouse for Rural & Regional development in Australia, Report for the Australian Wind Energy Association by Dr Robert Passey March 2003



The results of these assumptions related to total direct jobs in construction, manufacturing and support that are likely to be generated by a wind farm development and the comparison with the actual on the ground construction jobs for Hallett 1 are indicated in the following Table 25.

■ **Table 25: Estimated direct employment generation from the Hallett 1 project**

Item	Total
Wind Turbines No.	45
MW Capacity	95
<b>Estimated Employment (Construction/Manufacturing job years)</b>	<b>EFT job Years</b>
Australia (based on 61.5% content)	<b>345</b>
South Australia ( based on 41.5% content)	232
Mid North ( based on 12.4% content)	70
<b>Estimated actual average FTE jobs</b>	<b>66</b>
<b>Estimated actual average FTE job years ((66 jobs x34 months)/12</b>	<b>187</b>
<b>Estimated Employment Multiplier</b>	<b>345/187=1.85</b>

Source: Hallett Wind Farm Data, Passey estimates and SKM estimates

The bulk of the expenditure at the regional level would have related to the construction workforce resident in the region over the duration of the construction activities. Some regional expenditure could have required additional support work in the region that generated a limited additional employment reflected in the small difference in the table above. However, as the difference is small it seems that the estimate based on the Passey assumptions holds reasonably at the regional level. This suggests that the Hallett 1 Wind Farm could have generated some 345 total direct FTE job years in Australia over the construction period compared with 187 created in direct construction activities, a multiplier of around 1.85 (see Table 25 above).

In addition to the direct jobs created by the project there will also be indirect jobs created based on the flow on effects of suppliers to the project that need to replenish their stocks (the production effect) and the flow on from the spending of wages and salaries of both direct and indirect workers (consumption effect). These indirect expenditures create further employment (multiplier). The Passey report uses a multiplier of just under 3 based on European Wind Energy Association (EWEA) estimates to calculate the likely flow on or indirect jobs. It should be noted that this multiplier is significantly lower than the national multiplier for the electricity, gas and water sector (over 6) and the non residential construction sector (over 4) and, as such, is likely to be conservative.

Applying this indirect employment multiplier to the estimate of direct jobs, suggests that the Hallett 1 project could generate some 1,025 total job years from construction and manufacturing. The additional 680 (1,025less 345) indirect jobs could be created anywhere within the Australian





economy and possibly overseas depending on the origin of the extra goods and services produced although it is likely that most would be in Australia and a reasonable proportion in South Australia.

Passey also reports estimates of on-going Australian O&M jobs at 0.12 jobs/MW in 2002. This again is assumed to fall annually to some 0.06 jobs by 2010. Based on these progressively reduced figures, it is estimated that O&M will require six (6) full time operational employees. However, these estimates seem to be conservative based on actual employment at operational wind farms.

The estimated actual employees at Hallett 1 are an average of 9 and a peak of 12. Hallett 1 started in operation in September 2008 and still has some 3-4 months to run before being in operation for two years. There may be some short term staff involved in post start up work who will leave the project once it is proved to be operating as required. Similarly there may be additional specialist staff employed in addressing issues in bedding the project down.

Suzlon reported that they have a standard of employing one person per seven turbines to cover operations and maintenance including periodic servicing and maintenance and repairs where required. This policy, which is in line with other companies, would involve employing some six full time people. In addition, to these regular facility maintenance staff there would need to be periodic contract work maintaining the site. This could include potentially such aspects as fence repairs, mowing, access road maintenance, electrical connection issues and servicing/maintenance of equipment including instruments, computers etc. There would also need to be facility management and administration although there may be able to be some sharing of these functions across the whole Hallett Wind Farm Project operations.

From the above, it appears that the Passey estimates for operational people are low. On this basis the actual average employment for Hallett 1 is used to extrapolate potential on-going employment for Hallett 1, 2, 4 and 5 and the for the whole Hallett Wind Farm Project if Hallett 3 is approved and constructed.

### **5.2.2. Hallett Wind Farms employment**

Table 26 shows the employment estimates to date for the four approved wind farms. The figures shown for Hallett 1, 2 and 4 which are either completed or well into construction (Hallett 4) are either actual employment or very reliable estimates. Hallett 5 only started construction in February 2010 and the employment figures provided are in a ramp up stage. The total reported average number of employees to date is just over 230 in construction and 15 in operations related to all the current projects. This figure underestimates the actual employment over the period as there have been some overlaps in the construction of the wind farms. Based on the construction schedule we estimate that the wind farm construction to date would have created some 450 FTE job years of work over the 4.6 years since starting in December 2005 and an average annual employment of some 98 FTEs.



The total employment estimates in this section are summarised in Table 29 below. The estimates for average annual employment assume the current construction schedule for the approved wind farms and that Hallett 3 would be constructed over 2012 and 2013 if approved and constructed.

The figures for Hallett 1 and 4 show a broadly consistent workforce of some 1.5 employees per turbine. Hallett 2 has a higher figure of just over 1.9 per turbine. However, given the employment figures are the same and the construction of each stage to date has overlapped we assume that broadly the Hallett 1 workforce was rolled into Hallett 2 and then into the next two stages of Hallett 4 with some additional people and now in part into Hallett 5. If Hallett 3 is approved, the whole project would have provided a reasonably stable regional workforce over some eight years.

This information suggests that there has been on average a workforce of some 100 people resident in the region from mid to late 2006 to date and that currently it is probably closer to 150 people although it is likely to start to reduce from later this year. This supports the estimate that the project could have generated at least 450 FTE job years to date and, if Hallett 3 goes ahead with construction over say 2012 and 2013, the whole Hallett Wind Farm Project could generate in total some 640 FTE job years of work in the region.

■ **Table 26: Estimated Actual Employment Hallett Wind Farms to Date**

	Construction		Operations	
	Average	Peak	Average	Peak
Hallett 1	66	111	9	12
Hallett 2	66	111	6	0
Hallett 3				
Hallett 4	96	151	0	0
Hallett 5	5	10	0	0
Total to Date	233	383	15	12

Source: Hallett Wind Farm Data and SKM Estimates

Based on the construction to total direct workforce multiplier of 1.85 deduced above, the current projects have potentially sustained on average an annual direct workforce in Australia of some 185 people to date and some 850 FTE job years of work.

As discussed above, there would also be flow on impacts that could occur anywhere across the Australian economy and even overseas. Based on a wind energy multiplier of just under 3 this suggests that the project to date could have generated an extra 1,650 FTE job years of flow on work.

Table 27 indicates that the estimated average and peak employment for the currently approved wind farm projects based on the actual information on employment to date. Based on the average



employment and the Project construction schedule the project without Hallett 3 could generate some 90 construction FTE jobs annually on average during the construction phase and a minimum of 36 on-going full time jobs during operations. The average annual employment is lower as the project ramps down although the total FTE job years created increases to some 540.

The estimated direct employment is based on the actual employees where available and an estimate based on employees per turbine from the completed project stage (1.5 employees per turbine in construction and 0.18 for operations) where not. Again, based on the construction to total direct workforce multiplier of 1.85 deduced above, it is estimated that the current projects could have created an annual average direct workforce in Australia of over 200 people to date (170 in construction, manufacturing and support over an extended period from 2005 to the end of 2011 and some 36 in operations over the life of the Wind Farms) and some 1,000 total FTE job years.

■ **Table 27: Estimated Employment Hallett Wind Farms Without Hallett 3**

	Construction		Operations	
	Average	Peak	Average	Peak
Hallett 1	66	111	9	12
Hallett 2	66	111	6	0
Hallett 3				N/A
Hallett 4	96	151	17	N/A
Hallett 5	38	60	4	N/A
Total to Date	266	433	36	N/A

Source: Hallett Wind Farm Data and SKM Estimates

As discussed above, there would also be flow impacts that could occur anywhere across the Australian economy and even overseas. Based on a wind energy multiplier of just under 3 this suggests that the project to date could have generated an extra 2,000 FTE job years of flow on work

Table 28 indicates the same information as Table 27 but also includes Hallett 3. This indicates that, on the same basis as the previous estimates above, the whole Hallett Wind Farm project could generate some 80 construction FTE jobs annually on average during the construction phase and a minimum of 42 on-going full time jobs during operations. The average annual employment is lower than without Hallett 3 (90 FTEs) as the project ramps down further, although again the total FTE job years created increases to some 640.

Again, based on the construction to total direct workforce multiplier of 1.85 deduced above this implies creation of a total of some 1,200 total FTE job years in construction, manufacturing and support and operations.



As discussed above, there would also be flow impacts that could occur anywhere across the Australian economy and even overseas. Based on a wind energy multiplier of just under 3 this suggests that the project to date could have generated an extra 2,400 FTE job years of flow on work

■ **Table 28: Estimated Employment Hallett Wind Farms With Hallett 3**

	Construction		Operations	
	Average	Peak	Average	Peak
Hallett 1	66	111	9	12
Hallett 2	66	111	6	0
Hallett 3	50	79	6	N/A
Hallett 4	96	151	17	N/A
Hallett 5	38	60	4	N/A
<b>Total to Date</b>	<b>315</b>	<b>512</b>	<b>42</b>	<b>N/A</b>

Source: Hallett Wind Farm Data and SKM Estimates

As indicated above, Table 29 provides a summary of the employment estimates discussed above.

■ **Table 29: Summary of Employment Estimates**

Employment in FTE Job Years	To Date	To Completion	
		Without Hallett 3	With Hallett 3
Direct construction employment	450	540	640
Direct Manufacturing & Support	400	460	560
<b>Total Direct Employment</b>	<b>850</b>	<b>1,000</b>	<b>1,200</b>
Flow on Employment	1,650	2,000	2,400
<b>Total Employment</b>	<b>2,500</b>	<b>3,000</b>	<b>3,600</b>
Est. Construction Period (Yrs.)	4.6	6	8
Est. Ave. Annual Const. Emp. (No.)	98	90	80

Source: SKM estimates include rounding

Table 30 indicates the estimated cost of developing and constructing the Hallett 1, 2, 4 and 5 Wind Farms at some \$894 million. Of this amount approximately some \$370 million (41.4%) is estimated to be spent in South Australia. Based on the estimated Australian to overseas content of 61.5% to 38.5%, on completion some \$550 million should have been spent in Australia.

■ **Table 30: Estimated expenditure by location for the four approved Hallett Wind Farms**

Item	Mid North	Rest of South Australia	Rest of Australia	All of Australia	Overseas	Total
Proportion	12.40%	29.01%	20.09%	61.49%	38.51%	100.00%



Cost \$m	110.8	259.3	179.6	549.7	344.2	893.9
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Source: Hallett Wind Farm Data and SKM Estimates

Table 31 provides an estimate of the total cost of the final project cost including Hallett 3.

■ **Table 31: Estimated expenditure by location for the current and proposed five Hallett Wind Farms**

Item	Mid North	Rest of South Australia	Rest of Australia	All of Australia	Overseas	Total
Proportion	12.40%	29.01%	20.09%	61.49%	38.51%	100.00%
Cost \$m	132.1	309.1	214.1	655.2	410.3	1065.5

Source: Hallett Wind Farm Data and SKM Estimates

### 5.2.3. Regional capability

Five of the seven organisations involved in developing, constructing and operating the Hallett Wind Farms indicated that they had a policy of employing local contractors where possible. Three of them involved in recruiting locally indicated they had a policy of local recruitment. In addition, the project provides a range of apprenticeship and training opportunities.

As noted earlier the region has a range of businesses with the capability to provide services to the project and individuals with skills to meet employment requirements. These include but are not necessarily limited to:

- Domestic scale electricians
- Transport operators
- Competent machine operators
- General labourers
- Quarries, and
- Concrete businesses.

### 5.2.4. Accommodation for on-site workers during construction

The survey indicated that the employees of consultants to the project and other non construction people working on the project stayed in hotel/motel accommodation. These people would generally visit the region for limited periods and the convenience and flexibility of a hotel/motel would outweigh any additional cost of a hotel/motel over rental accommodation. This included five of the



seven main organisations involved in working on the project. From discussions on the site visit it appears that the project has helped to underpin a reasonably buoyant hotel/motel market with operators indicating that the project has led to higher occupancies and profitability. The project staff/contractors using motels appear to have spread their custom about to some extent which has allowed more operators to benefit from the project and provided benefits to a number of the region’s towns and notably Burra, Jamestown and Clare.

Employees of Suzlon, the main construction contractor, use a variety of accommodation (Table 32) with 30% travelling from their own home in the region. This is likely to include both local people who have been recruited to work on the project and people coming from outside the region who have purchased a property based on the length of their expected work on the project. It is anticipated that most of these will be living with their family. It is likely that only the early starters on the project who expected some continuity would have purchased a home but this could still be 5-10 or more new families in the region.

The largest group of employees live in rental accommodation. Some of these will be living with their family, others will be renting in a group situation with other workers or other people and some will be renting independently. The locations of private rental has also been spread across the towns in the project location.

■ **Table 32: Accommodation Type used by Suzlon Employees/Contractors**

	Hallett 1	Hallett 2	Hallett 4
Own Home	30%	30%	20%
Private Rental	50%	50%	65%
Hotel/Motel	10%	10%	10%
Caravan Park	5%	5%	5%
Construction Camp			
Other /Not Reported	5%	5%	
Total	100%	100%	100%

Source: Hallett Wind Farm Data

### 5.3. Qualitative assessment of the wind farms impact on the region

This section discusses the findings from interviews with local business people and Council representatives in the Mid North region.





### 5.3.1. Regional Business

The site visit indicated strong support from local businesses:

- Accommodation and food services providers have had a significant increase in sales over the period the wind farms have been in construction
- Local contractors have been employed directly in the wind farms' construction, and
- Other businesses in the region's towns seem to have increased business and be more buoyant as a result of the additional people and expenditure in the region.

One accommodation business operator noted that business is up as a result of patronage from wind farm employees and contractors. The average occupancy at his establishment has risen from around 70% to 84% and he felt that business in the town is up generally. Another noted that accommodation and food and beverage sales were higher with patronage from wind farm workers.

One person suggested that the local accommodation sector is mixed with good and not so good operators. The good operators have done very well from the wind farm.

It was noted that Snowtown has more wind farms than around Burra but limited accommodation so most of the construction people have to live out of town. Burra has significant accommodation and therefore has benefitted more directly.

Brief conversations with other retail traders indicated that their business was up from both direct sales to wind farm employees and in some cases sales to other businesses that provide services to the wind farm workers. Some traders felt that people are coming to see the wind farms and that they will provide an on-going attraction.

Local businesses that have benefitted from contracts with the wind farm include:

- Domestic scale electricians
- Transport operators
- Competent machine operators
- General labourers
- Quarries, and
- Concrete businesses that appear to have done particularly well and put on employees.

Discussion with John Campbell the Suzlon Site Manager at Hallett 4 noted that they use a number of local contractors on the civil works including small contractors with up to eight employees, larger plant hire operations with big machines, local water cartage people, who fill tanks, clean out septic systems and do dust suppression, and a range of local farmers. One local farmer has built a business collecting scrap metal from the sites and salvaging appropriate bits for recycling into





fencing and other uses with the residual going to scrap. Some farmers hire out plant and equipment and have even purchased or leased additional plant and equipment to provide more targeted services for the wind farms.

Local transport operators are used. One provider of local haulage has increased its fleet since the wind farm started and has chased bigger contracts outside the region to extend its business. The extra work has seen their trucks out and about more and over a wider geographic area which has helped pick up new business. It was also noted that some of the contractors have moved to other jobs and used local transport to move their plant and equipment.

Local electrical contractors have provided services for the wind farm site offices and for the AGL Information Centre. One local resident also provides a take away food van at the Hallett 4 site depot to provide lunches and snacks.

It was noted that the project's monthly meetings can book out a whole hotel.

The open day was well attended and signs for it and other applications are made by a firm in Jamestown.

Suzlon has a significant spare parts depot and warehouse in Jamestown. This is a regional depot that services the Hallett, Snowtown and Capital wind farms. These comprise at present five wind farms in South Australia and one in the ACT. Suzlon has plans for a new regional \$4m Maintenance Centre which will add to the number of direct employees and economic activity in the region.

Council has passed on the contact details of people and organisations who have been interested in supplying services to the wind farm projects but largely reactively to date. Suzlon held information sessions at the Commercial Hotel in Jamestown and in Burra to inform local community members of forthcoming construction activities relating to the Hallett 1 wind farm, prior to site mobilisation.

These were informal meetings hosted by Suzlon site management that provided general information relating to scope and schedule, potential work opportunities for local businesses, accommodation requirements and potential jobs for locals etc. The sessions were advertised in local papers and with posters around the town and in council offices.

Many local businesses that were represented at these information sessions have been used extensively on the project to date. In addition, one local resident was recruited from the first information session as Hallett 1 site administrator and has subsequently gone on to manage the Suzlon warehouse in Jamestown.

Specific information sessions were not held for Hallett 2 and 4 as by the time these projects



commenced, Suzlon were well known in the local community and kept locals informed mainly through word of mouth.

The Port Pirie Regional Economic Development Body kept a register of individuals and companies for the Clements Hill Wind Farm and would be able to do the same or pass on the software to Northern Areas and other regional councils for future developments in the region if relevant.

### 5.3.2. Tourism

Discussions at the Visitor Centre in Burra and with other people including accommodation providers indicated that there have been no negative responses to the wind farms from visitors. Visitors are interested and ask about visiting and tours of the wind farms. There have been tours arranged by AGL which are very popular. The Visitor Centre was advertising the third public tour at the time of the interview.

The Visitor Centre has had very consistent visitation of between around 25,300 and just under 26,500 over the past seven years. The high visitation is in the non summer months from March to October with lower visitation from November to February.

The discussions suggested that most visitors to Burra visit the Visitor Centre. Some day trippers and/or people who have been to the area before may not visit the centre, however most overnight visitors would book their accommodation through the Visitor Centre. Visitors tend to stay for one night. The Visitor Centre also provides information and advice about tours and attractions. Tourism is an important part of the local economy.

The Visitor Centre Manager would like to develop educational tourism. In addition to the mining heritage and the extensive built heritage, there are other attractions including key fossil sites. The wind farms have the ability to complement and add value to educational tourism on a range of levels including schools and post schools programs and small scale experiential programs for adults.

Burra's main attraction is its built heritage based on its mining past. The wind farm offers an additional regional attraction that is to some extent complementary to Burra's engineering based past.

A number of people noted that the local schools have been involved in planting trees and native grasses as part of an environmental landscaping program with the wind farm and that AGL operate occasional but very popular tours.

In addition to the Burra Visitor Centre, AGL operate a Wind Farm Information Centre. The Information Centre has operated from January 2009 to date. To the end of April 2010 the Centre



had received nearly 4600 visitors or between 9 and 10 a day. The Information Centre provides information on the Hallett Wind Farms as well as general information about wind energy. Information is provided at a number of levels including right down to the nuts and bolts of construction. It provides a point of contact for visitors and the community and helps promote the project. The wind farm tours start from the Information Centre with a pre tour orientation. We understand that there is lots of interest from tourists and requests for tours.

The Information Centre also provides workspaces, amenities and a meeting room for AGL and contractor staff visiting the area for work.

The Information Centre is housed in a former butcher's premises. It was fitted out by a local builder at a cost of around \$100,000. The original facade was kept to retain the heritage fronting.

One person interviewed was concerned that there may have been some possible crowding out of tourist accommodation due to the take up of beds by wind farm personnel but this was not obvious and others spoken to did not see it as an issue. In general the people spoken to saw the wind farms providing a benefit from continuity and longer term stay arrangements that have benefitted a wide range of local providers. Tourists to the region are generally travelling through and only stay for a short period and appear to have been accommodated successfully.

### **5.3.3. Community benefits**

It was noted that a number of farmers were finding it difficult to make ends meet with an extended period of drought over most of the last decade. However, those farmers whose land is included in the wind farm site had benefited from a secure diversified income stream. The Project has provided further benefits beyond direct lease payments to many of these farmers, by providing employment opportunities and by creating a demand for under-utilised assets, including previously unleased accommodation.

There has been good communication between the project developers, contractors and the Councils with the few community issues addressed quickly by laying down rules at site toolbox meetings.

The Northern Areas Council see the community growing as a result of the wind farms ensuring that the population doesn't decline and that existing services can be retained and over time additional ones added.

The Northern Areas Council is about to launch a population attraction program to attract younger skilled people and older higher income people. Access to more technology based employment opportunities could support this. Opportunities for more skilled jobs were felt to be more advantageous for the region than larger numbers of low skilled work. The skilled workforce is



likely to be more secure and permanent. In addition, there are examples of younger locals who had left the region to gain skills and find work who have come back to work on the projects.

As a result of the range of developments across the region, the Country Club in Clare is building an apartment development where they will sell the apartments for owner occupation or manage them for the owner for short term stays. Another accommodation development in Jamestown associated with a restaurant was noted. The aim is to provide better quality accommodation than is currently available in Jamestown.

The community benefit funds have been a big plus. The Northern Areas Council has been involved in the process of assisting community submissions and advising on priorities.

It was suggested that a lot of people were not sure about the community funds. In some cases they are unaware of them in others they know about them but are not sure how to get access. It was noted that these funds are one of the good news stories that needs to keep being repeated.

AGL are providing \$15,000 per annum (CPI indexed) for each of the Hallett 1, 2, 4 and 5 wind farms and \$30,000 per annum for Hallett 3 if approved. This equates to a total of \$90,000 per annum for the life of the wind farms for local community associations, events and activities.

Table 33 below provides examples of funding distribution for 2009 in the Regional Council of Goyder area.

■ **Table 33: Examples of Community Funds Distribution**

Hallett Bowling Club	Team Shirts	\$1,400
Burra Community School	Replace 3 stoves	\$1,200
Mt Bryan Soldiers Memorial Hall	Repainting, repair cracks, air-con, security door	\$3,000
Booberowie Hall Inc.	150 chairs	\$1,780
Mt Bryan Progress Assoc.	Tractor	\$7,500
Burra Golf Club	Replace flags	\$1,120
SA Living Arts Festival	Sponsor	\$1,000
<b>Total</b>		<b>\$17,000</b>

Source: Hallett Wind Farm Data

It was noted that the wind farm development has increased the buoyancy of the local rental market and, as noted above, new accommodation developments are underway. Rental demand and rents went down when there was a gap in the wind farm development.

It was noted by a number of people that the local school is doing native plantings around a sub-station for landscape amenity and environmental reasons. The project includes an education component. AGL and contractors have also provided careers talks and advice which has opened the



local students' eyes to the range of opportunities that is offered and the requirements to get the jobs on offer. It was felt this type of project and information could be spread to other schools. This school project received \$4,000 from the community funds.

The planting project also had a direct benefit to the local bakery that supplied a large number of lunches indicating the potential for flow on benefits.

The issue of skills was noted more broadly with current skills gaps and opportunities in the wind energy sector noted and the need for skills development programs. At a subsequent meeting it was noted that the Regional Development Board have funds to support apprentices.

At an individual property level the contractors work with the landowner to add value. In one case they left the lay down area as a levelled area that was used to put up a large shed for farm operations purposes.

#### **5.4. Other economic impact**

Information was also provided on money spent directly in the region over each phase of the project. The total to date is some \$48.7m (Table 34). The bulk of this expenditure has been made over the construction phase \$44.8m, with some \$2.35 over the development stage and \$1.52 related to operations. The operations expenditure only applies to Hallett 1 and when adjusted to an annual basis equates to some \$1m per annum. This could gross up to over \$4m annual expenditure in the region from the operations of the whole Hallett Wind Farm project.



■ **Table 34: Total estimated expenditure in the region to date**

	Hallett 1	Hallett 2	Hallett 3	Hallett 4	Hallett 5	Total
Accommodation, meals and other spending	11,097,000	4,772,000	35,000	2,024,000	690,000	18,618,000
Council and other regulatory fees and charges	276,000	25,000	200,000	555,000	45,000	1,101,000
Community funds and sponsorship	102,000	37,000	2,000	29,500	1,000	171,500
Services e.g. wind monitoring, geotech investigation	7,775,000	4,775,000	35,000	12,775,000	170,000	25,530,000
Landowner payments	1,695,000	666,000	45,000	820,000	50,000	3,276,000
Other	0	0	0	0	0	0
<b>Total</b>	<b>20,945,000</b>	<b>10,275,000</b>	<b>317,000</b>	<b>16,203,500</b>	<b>956,000</b>	<b>48,696,500</b>

Source: Hallett Wind Farm Data

The largest expenditure category is services e.g. wind monitoring, geotech investigation followed by accommodation. These two categories comprise just under 91% of the total expenditure (Table 35).



■ **Table 35: Regional Expenditure by Category**

		Accommodation, meals and other spending	Council and other regulatory fees and charges	Community funds and sponsorship	Services eg wind monitoring, geotech investigation	Landowner payments	Total
Hallett 1	Dev	125,000	20,000	2,000	25,000	545,000	717,000
	Const	10,852,000	255,000	55,000	6,750,000	800,000	18,712,000
	Ops	120,000	1,000	45,000	1,000,000	350,000	1,516,000
Hallett 2	Dev	75,000	20,000	2,000	25,000	66,000	188,000
	Const	4,697,000	5,000	35,000	4,750,000	600,000	10,087,000
	Ops	0	0	0	0	0	0
Hallett 3	Dev	35,000	200,000	2,000	35,000	45,000	317,000
	Const	0	0	0	0	0	0
	Ops	0	0	0	0	0	0
Hallett 4	Dev	125,000	200,000	2,000	25,000	40,000	392,000
	Const	1,899,000	355,000	27,500	12,750,000	780,000	15,811,500
	Ops	0	0	0	0	0	0
Hallett 5	Dev	625,000	40,000	1,000	20,000	50,000	736,000
	Const	65,000	5,000	0	150,000	0	220,000
	Ops	0	0	0	0	0	0
Total	Dev	985,000	480,000	9,000	130,000	746,000	2,350,000
	Const	17,513,000	620,000	117,500	24,400,000	2,180,000	44,830,500
	Ops	120,000	1,000	45,000	1,000,000	350,000	1,516,000

Source: Hallett Wind Farm Data

## 5.5. Summary

The Hallett Wind Farms when completed will have:

- An estimated total capital expenditure of nearly \$900 million if Hallett 3 is not developed and well over \$1 billion if Hallett 3 is approved and developed
- An on-going operational expenditure of some \$25 million per annum without Hallett 3 and \$30 million per annum with Hallett, some 50% of which is estimated would be spent in the Mid North region
- Based on the estimated local content of some 12.4% of the construction a local value added of some \$49.5m to date or to completion some \$55.6m without Hallett 3 and \$66m with Hallett 3
- On a similar basis a value added from operations of some \$6.8m to date (Table 21) and \$12.5m and \$15m to completion





- An impact on the Mid North GRP of an extra 3.3% from construction activities and between 1.15 and 1.4 % per annum from operations
- Created some 90 construction FTE jobs annually on average over some six years during construction without Hallett 3 and some 80 construction FTEs over eight years with Hallett 3
- A minimum of 36 on-going full time jobs per annum without Hallett 3 and 42 with Hallett 3.

In addition to the jobs created in the region there will be significant additional direct jobs created by the project in other parts of South Australia and nationally from manufacturing and support functions and a larger number of indirect flow on jobs spread within the Australian economy and overseas.



## 6. Comparison of Hallett Wind Farms in Regional Terms

### 6.1. Gross Regional Product

Based on the estimated expenditure to date (Table 36 below) the total expenditure for the Hallett Wind Farms to date exceeds the GRP of the study area (Table 23). However, looking at expenditure by location indicates a significantly lower figure of some \$88m to date spent in the Mid North. This amount was also spent over a significant time period from January 2000 to date or nearly 10.4 years. The largest expenditure on construction covers a period from December 2005 to date some 5 years. Spreading the expenditure over these periods suggests that the maximum annual expenditure is likely to be some 36% of the total this year (2010) which would be some \$31.5m. This figure is slightly lower than the expenditure estimate based on the total capital expenditure to date.

In comparing expenditure with GRP the value added should be used. Based on the local content of the construction cost of some 12.4%, the local value added would be some \$49.5m. The construction costs and value added are spread over a number of years (to date construction has been underway for five years). The current year 2010 includes the most construction activity with Hallett 4 and 5 under construction for all or most of the year and Hallett 2 at the early part of the year. Based on this level of activity we estimate, as noted above, that some 36% of the total construction activity is taking place this year. On this basis, the largest change in value added would be some \$17.8m in the current year. This would add around 3.3% to the estimated GRP.

The operations expenditure to date does not reflect the potential on-going expenditure in the region. A better estimate of the impact on GRP from operations of the wind farms would be to take the annual expenditure once fully operational. Given the doubt related to Hallett 3 this figure is estimated for the with and without Hallett 3 case.

The operational value added without Hallett 3 would be some \$12.5m per annum and with Hallett 3 some \$15m. The regional value added from operations would be some 50% of this total value added which would add between 1.15% and 1.4% to the regional GRP each year.

### 6.2. Regional Employment

Currently the number of unemployed in the study area is 241. The estimated construction for Hallett 4 and 5 over the next two years would equal a significant proportion of this number. While most of the currently unemployed will not find employment on the projects there may be opportunities for some given the mix of work skills required and others may be able to replace



current workers who take up opportunities on the project. A similar position could apply during the operational phase as the additional wind farms are commissioned and start operating.

If Hallett 3 is approved it is likely that construction will follow Hallett 4 and 5 rather than overlap. On this basis it would lengthen the employment period rather than increase the numbers employed.

The on-going operational employment could also reduce regional unemployment with a theoretical maximum reduction of between 15% and 17.4% of the current total unemployed in the region. In practice this is unlikely although it would be expected that there would be an on-going positive impact on unemployment.

■ **Table 36: Project Expenditure by Location**

	Mid North	Rest SA	Rest Aust	Total Aust	Overseas	Total
<b>Development</b>						
Hallett 1	170,300	2,287,450	2,927,250	5,385,000	0	5,385,000
Hallett 2	89,500	1,161,750	1,793,750	3,045,000	0	3,045,000
Hallett 3	607,310	1,283,350	942,340	2,833,000	0	2,833,000
Hallett 4	623,842	2,007,659	2,808,500	5,440,000	0	5,440,000
Hallett 5	69,500	1,345,750	429,750	1,845,000	0	1,845,000
<b>Total to Date</b>	<b>1,560,453</b>	<b>8,085,957</b>	<b>8,901,590</b>	<b>18,548,000</b>	<b>0</b>	<b>18,548,000</b>
<b>Construction</b>						
Hallett 1	28,198,500	65,960,500	45,695,500	139,854,500	87,597,500	227,452,000
Hallett 2	19,858,000	63,452,000	33,017,000	116,327,000	72,775,000	189,102,000
Hallett 3	0	0	0	0	0	0
Hallett 4	32,738,900	106,690,700	41,367,400	180,797,000	152,685,000	333,482,000
Hallett 5	2,251,500	18,474,500	2,544,000	23,270,000	8,030,000	31,300,000
<b>Total to Date</b>	<b>83,046,900</b>	<b>254,577,700</b>	<b>122,623,900</b>	<b>460,248,500</b>	<b>321,087,500</b>	<b>781,336,000</b>
<b>Operations</b>						
Hallett 1	2,962,500	1,620,000	5,917,500	10,500,000	0	10,500,000
Hallett 2	223,500	2,487,500	384,000	3,095,000	0	3,095,000
Hallett 3	0	0	0	0	0	0
Hallett 4	0	0	0	0	0	0
Hallett 5	0	0	0	0	0	0
<b>Total to Date</b>	<b>3,186,000</b>	<b>4,107,500</b>	<b>6,301,500</b>	<b>13,595,000</b>	<b>0</b>	<b>13,595,000</b>
<b>Overall Total</b>	<b>87,793,353</b>	<b>266,771,157</b>	<b>137,826,990</b>	<b>492,391,500</b>	<b>321,087,500</b>	<b>813,479,000</b>

Source: Hallett Wind Farm Data



## 7. Summary

The regional population is growing more slowly than regional South Australia as a whole with the population of Goyder declining slightly between the 2001 and 2006 census. As service provision is to some extent a function of population, there is a danger that reductions in population can lead eventually to reduction in the services provided by local government due to a reduced rate base, state and federal government due to reduced population and the by private sector. This may lead to a downward spiral in regional economic activity.

It was noted that a number of farmers were finding it difficult to make ends meet with an extended period of drought over most of the last decade. However, those farmers whose land is included in the wind farm site had benefited from a secure diversified income stream. The projects have provided further benefits beyond direct lease payments to many of these farmers, by providing employment opportunities and by creating a demand for under-utilised assets, including previously unleased accommodation.

Major projects such as the Hallett Wind Farms help retain population by providing employment and income opportunities for existing residents and businesses, encourage residents and former residents working away from the region to return and bring new people into the region both temporarily during construction and permanently in operating the facilities. Even some of the employees who come into the region during construction may decide to stay on or make the region their home base while working on construction projects elsewhere.

Discussions with Northern Areas Council officers suggested that they see the community growing as a result of the wind farms. If so this could ensure that the population doesn't decline and that existing services can be retained and, over time, additional ones added.

The industry analysis suggested that, while the regional businesses are small there are a number of businesses in the industry sectors that could benefit from the wind farms' development. This has happened in practice.

Similarly the occupation and skills information also suggests that the region is able to provide the more generic trades and employment skills needed by the wind farm. Again this seems to have been borne out in practice.

The latest unemployment data suggest that unemployment rates are relatively low and that therefore there may be reduced opportunities for local employment. However, this is often the case in regional areas where there may be under employment and hidden unemployment and where residents leave the region to work elsewhere and may or may not return if the economy recovers or



may return to work on specific new projects. The Hallett wind farm projects have sought to employ locals with some success and to provide skills training and apprenticeships.

The on-going operational employment could reduce regional unemployment with a theoretical maximum reduction of between 15% and 17.4% of the current total unemployed in the region (241 people). In practice this is unlikely although it would be expected that there would be an on-going positive impact on unemployment.

The Hallett Wind Farms when completed will have:

- An estimated total capital expenditure of nearly \$900 million if Hallett 3 is not developed and well over \$1 billion if Hallett 3 is approved
- An on-going operational expenditure of some \$25m per annum without Hallett 3 and \$30m per annum with Hallett 3, some 50% of which is estimated would be spent in the Mid North region
- Based on the estimated local content of some 12.4% of the construction spend, a local value added of some \$55.6m without Hallett 3 and \$66m with Hallett 3
- On a similar basis a value added from operations of some \$12.5m without Hallett 3 and \$15m with Hallett 3
- An impact on the Mid North GRP of an extra 3.3% from construction activities and between 1.15 and 1.4 % per annum from operations
- Created some 90 construction FTE jobs annually on average over some six years during construction without Hallett 3 and some 80 construction FTEs over eight years with Hallett 3
- A minimum of 36 on-going full time jobs per annum without Hallett 3 and 42 with Hallett 3.

In addition to the jobs created in the region there will be significant additional direct jobs created by the project in other parts of South Australia and nationally from manufacturing and support functions and a larger number of indirect flow on jobs spread within the Australian economy and overseas.



## Appendix A Questionnaire

### Questionnaire for an Economic Impact Study of the mid-north region of South Australia due to the development, construction and operation of AGL wind farms

Please fill out the parts of the questionnaire that are relevant for your organisation as accurately as possible. The information required includes:

- Total expenditure by stage of the project by your organisation
- A broad percentage breakdown of the location of this expenditure based on the geographic location of the supplier
- More detailed spending in the mid-north region of South Australia, covering the Goyder, Northern Areas and Clare & Gilbert Valley Councils.

We understand the following dates are applicable. Please base your responses on these dates.

	Development	Construction	Operation
Hallett 1	Jan 2000 – Dec 2005	Dec 2005 – Sep 2008	Started Sep 2008
Hallett 2	Jan 2000 – Nov 2007	Nov 2007 -April 2010	Starting April 2010
Hallett 3	Jan 2000 – Dec 2010	unknown	unknown
Hallett 4	Jan 2007 – Feb 2009	Feb 2009 – May 2011	Starting May 2011
Hallett 5	Jan 2000 – Feb 2010	Feb 2010 – Dec 2011	Starting Dec 2011

### Total expenditure by stage of the project by your organisation

Q1: Estimated total expenditure by your organisation to date on the development, construction and operation phases of each of the Hallett Wind Farm stages \$(000)?

	Development	Construction	Operations
Hallett 1			
Hallett 2			
Hallett 3		Not Applicable	Not Applicable



Hallett 4			Not Applicable
Hallett 5			Not Applicable
Total to Date			

### Broad percentage breakdown of this expenditure by location

Q2: Estimated percentage of expenditure from Q1 above made in each of the geographic areas noted in the table

	Mid-North Region	Remainder of South Australia	Rest of Australia	Overseas	Total
<b>Development</b>					
Hallett 1					100%
Hallett 2					100%
Hallett 3					100%
Hallett 4					100%
Hallett 5					100%
Total to Date					100%
<b>Construction</b>					100%
Hallett 1					100%
Hallett 2					100%
Hallett 3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Hallett 4					100%
Hallett 5					100%
Total to Date					100%





<b>Operations</b>					100%
Hallett 1					100%
Hallett 2					100%
Hallett 3	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Hallett 4	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Hallett 5	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Total to Date					100%

Note: **Region** includes Goyder, Northern Areas and Clare & Gilbert Valley Councils

Further Information: ( Please note major items of expenditure in each location)

**More detailed expenditure in the Mid-north region**

Q3: Estimate of money spent in the Region during the **development phase** for each Hallett Wind Farm stage Au\$(000)?

	Hallett 1	Hallett 2	Hallett 3	Hallett 4	Hallett 5
Accommodation, meals and other incidental spending					
Council and other regulatory fees and					



charges					
Community funds or sponsorship					
Services eg wind monitoring, geotech investigation					
Landowner payments					
Other					
Total					

Further Information:

Q4: Estimate of money spent in the Region during the **construction phase** for each relevant Hallett Wind Farm stage Au\$(000)?

	Hallett 1	Hallett 2	Hallett 4	Hallett 5
Accommodation, meals and other incidental spending				



Council and other regulatory fees and charges				
Community funds or sponsorship				
Services e.g. Civil works, electrical, transport, turbine erection etc.				
Landowner payments				
Other				
Total				

Further Information:

Q5 : Estimate of money spent in the Region during the **operations phase** to date for each relevant Hallett Wind Farm stage Au\$(000)?

	Hallett 1	Hallett 2
Accommodation, meals and other		



incidental spending		
Council and other regulatory fees and charges		
Community funds or sponsorship		
Services e.g. facilities management, commissioning, turbine maintenance etc.		
Landowner payments		
Other		
Total		

Further Information:

Q6: Actual and estimated employment by stage in Region:

	Development		Construction		Operations	
Employment	Average	Peak	Average	Peak	Average	Peak



Hallett 1						
Hallett 2						
Hallett 3			Not Applicable	Not Applicable	Not Applicable	Not Applicable
Hallett 4					Not Applicable	Not Applicable
Hallett 5					Not Applicable	Not Applicable

Further Information: (Please indicate approximate date of Peak employment by stage and development phase.)


Q7: What type of accommodation was used by employees located on site or at other locations in the Region during construction by proportion (%) of employees and reasons for choice?

Item	Hallett 1	Hallett 2	Hallett 4	Hallett 5
Own home				
Private rental				
Hotel/Motel				
Caravan Park				



Construction Camp				
Other please specify:				

Q8: Please note any employment policies/practices e.g.

Yes    No

- a) Encourage recruitment of locals.....
- b) Encourage use of local/regional contractors subject to meeting competitive requirements .....
- c) Established numbers of O&M personnel for given numbers of Turbines e.g. 1 operative per 7 turbines.....
- d) Establishment of/support for skills creation programs
- e) Specific targeted recruitment including indigenous employment programs, employment of young people etc.
- f) Other please specify: