

# STOCKYARD HILL WIND FARM

## SOCIO-ECONOMIC ASSESSMENT



(A243) 2116908A



# Stockyard Hill Wind Farm Socio-economic Assessment

November, 2008

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Stockyard Hill Wind Farm Pty Ltd

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## Executive summary

Parsons Brinckerhoff (PB) has been engaged by Stockyard Hill Wind Farm Pty Ltd (SHWF P/L) to undertake a socio-economic assessment of the construction and operation of the proposed Stockyard Hill Wind Farm (the Project). The Project will extend over an area of approximately 250 square kilometres, comprising 242 wind turbine generators with an installed capacity of 484 megawatts. The total construction cost of the project is expected to be almost \$1.4 billion. The Project would be located between the towns of Beaufort and Skipton, two hours west of Melbourne.

This socio-economic assessment is based on the input-output analysis framework which focuses on the effects on output and employment at the local, regional and national levels. The analysis is supported by information provided by the developer, SHWF P/L, the work undertaken by Dr Robert Passey for the Australian Wind Energy Association (Passey, 2003) and the existing literature on wind farm project development. In addition the assessment takes into consideration the existing socio-economic profile of the project area.

The socio-economic analysis found that the Stockyard Hill Wind Farm should deliver the following outcomes:

### ***Regional, state and national economic impacts during construction***

Regional, state and national economic benefits are expected during the construction phase of the project. At the regional level, the construction of the wind farm is expected to contribute up to \$166 million per annum in revenues associated with the increase in demand for goods and services (including up to \$68 million initially, \$25 million directly, \$23 million indirectly and \$50 million induced). This is expected to support between 164 and 246 full-time equivalent jobs related to the initial construction the Project. At the state level, it is expected that revenues from the additional demand for goods and services would contribute up to \$145 million per annum resulting from the Project. This is expected to support between 444 and 665 jobs per annum for the period of construction. At the national level, the flow-on output of all industries is expected to increase by up to \$12 million per annum. This is expected to support 38 to 56 full-time equivalent jobs nationally across all upstream and downstream industries in the economy.

### ***Regional, state and national economic impacts during operation***

Regional, state and national economic benefits are expected during the operation phase of the project. At the regional level, the operation of the wind farm is expected to contribute up to \$21 million per annum in revenues associated with the additional demand for goods and services. This is expected to support up to 84 full-time equivalent jobs regionally across all industries, of which 32 would be initially related to the operation of the Project. At the state level, it is expected that revenues associated with the additional demand for goods and services would contribute up to \$4 million per annum. This is expected to support up to 17 full-time equivalent jobs across all upstream and downstream industries in Victoria. At the national level, the flow-on impact of all industries is expected to increase by up to \$3 million per annum. This is expected to support up to 13 full-time equivalent jobs nationally.

### ***Implications for business and industry development in the region***

The Project will have a number of positive implications for business and industry development in the region. It is expected that there would be greater private sector investment in the Pyrenees and Corangamite regions as new and emerging businesses seek to supply the increase in demand for goods and services resulting from the Project. In addition there may be an increase in the number and type of businesses across new and existing development areas, reflecting increased demand for goods and services.

The Project may also generate greater profitability across new and existing development areas, reflecting increased commerce and demand for goods and services.

#### ***Implications for economic base for the region***

The Project would stimulate additional economic activity during construction in non-residential building and construction trade services. During operation additional economic activity and employment is expected in electricity, gas and water supply.

#### ***Implications for local services and infrastructure***

The Project would increase the demand for local services and infrastructure. Suppliers could be sourced from larger regional centres such as Ballarat, Ararat, Portland, Warrnambool and Colac, and accommodation for the workers could be serviced through existing vacancy rates. This increase in demand presents an opportunity for growth for local and regional services and suppliers. Local workers would be upskilled and hence encouraged to be involved in the Project. There would also be local and regional benefits through improved project related infrastructure.

#### ***Implications for greenhouse gas emissions***

The Project would result in the generation in excess of 1,890 gigawatt hours per annum of wind generated electricity with a saving of just over 1,890,969 tonnes of CO<sub>2</sub>e. This equates to a greenhouse gas saving of \$37 million per annum and about \$490 million net present value over the life of the project.

#### ***Implications on property values***

A literature review found that there was no conclusive evidence of negative impacts on the value of agricultural land and that the Project is unlikely to be a major influence on the value of property in the region.

#### ***Implications on tourism***

The Project is likely to have positive impacts on tourism in the area through:

- an increase in travellers stopping in the local area
- expenditure of stopping travellers purchasing items such as food and fuel
- a potential increase in demand for overnight accommodation
- a broader exposure of the Pyrenees and Corangamite LGAs.

#### ***Implications of the community fund and Council rates***

SHWF P/L has committed to the establishment of a Community Fund as part of the Project. Funds would be spent on community projects that would benefit the local community and that would have a lasting contribution to the area. In the first full year of operation the expected contribution would be \$121,000. Assuming 3% CPI, the total contribution to the Community Fund over a 25 year period would be approximately \$4.7 million.

SHWF P/L would be required to pay Pyrenees Council rates in lieu following the completion of the wind farm. In the first full year of operation the expected contribution would be \$475,000. Assuming 3% CPI, the total contribution to the Pyrenees Shire over a 25 year period would be approximately \$18 million.

**In summary, the socio-economic assessment has identified that the Project would have regional, state and national benefits during construction and in the future during operation.**

# 1. Introduction

## 1.1 Overview of the Project

A planning application for the construction and operation of the Stockyard Hill Wind Farm (the Project) is being undertaken by Stockyard Hill Wind Farm Pty Ltd (SHWF P/L). Parsons Brinckerhoff (PB) has been engaged by SHWF P/L to assess the potential socio-economic impacts of the Project.

The Project would be located between the towns of Beaufort and Skipton, two hours west of Melbourne, Victoria. The Project would cover an area of approximately 250 square kilometres, with 242 turbines to be constructed. The total cost of the project is almost \$1.36 billion. The grid connection point is likely to be the 500 kilovolt transmission line to Alcoa, reducing Alcoa's demand for electricity produced from fossil fuel sources, such as gas and black and brown coal (Sustainability Victoria, 2007).

Victoria's energy demand is increasing by 1.5% per year, with greenhouse gas emissions also continuing to increase (Sustainability Victoria, 2007). A wind farm of the size proposed would typically be expected to generate approximately of 1,890 gigawatt hours per annum (based on a long term average and a conservative estimate of a capacity factor of 44.6%). This is equivalent to supplying enough power to service approximately 21% of Melbourne's homes. Additionally, as a source of clean energy, the turbines would reduce greenhouse gas emissions by 1,890,969 tonnes CO<sub>2</sub>e per annum, (based on a long term average and figures from Sustainability Victoria, 2007).

This report provides the socio-economic context for the Project and identifies and assesses the socio-economic impacts of the development.

## 1.2 Report structure

The report is structured as follows:

- Section 1 provides an overview of the project and report structure.
- Section 2 provides a profile of the socio-economic environment of the Project area.
- Section 3 outlines the methodology adopted to assess the socio-economic impacts, including the data and assumptions adopted for the assessment.
- Section 4 outlines the results of the socio-economic impact assessment and provides a discussion on both the social and economic implications of the Project.
- Section 5 summarises the findings of the socio-economic assessment.

## **2. Socio-economic profile of the region**

This section provides a socio-economic profile of the region surrounding the Project area. The purpose of this description is to provide a basis to understand the conditions affecting the region's economic and social environment, from which the effects of the Project can be anticipated.

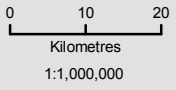
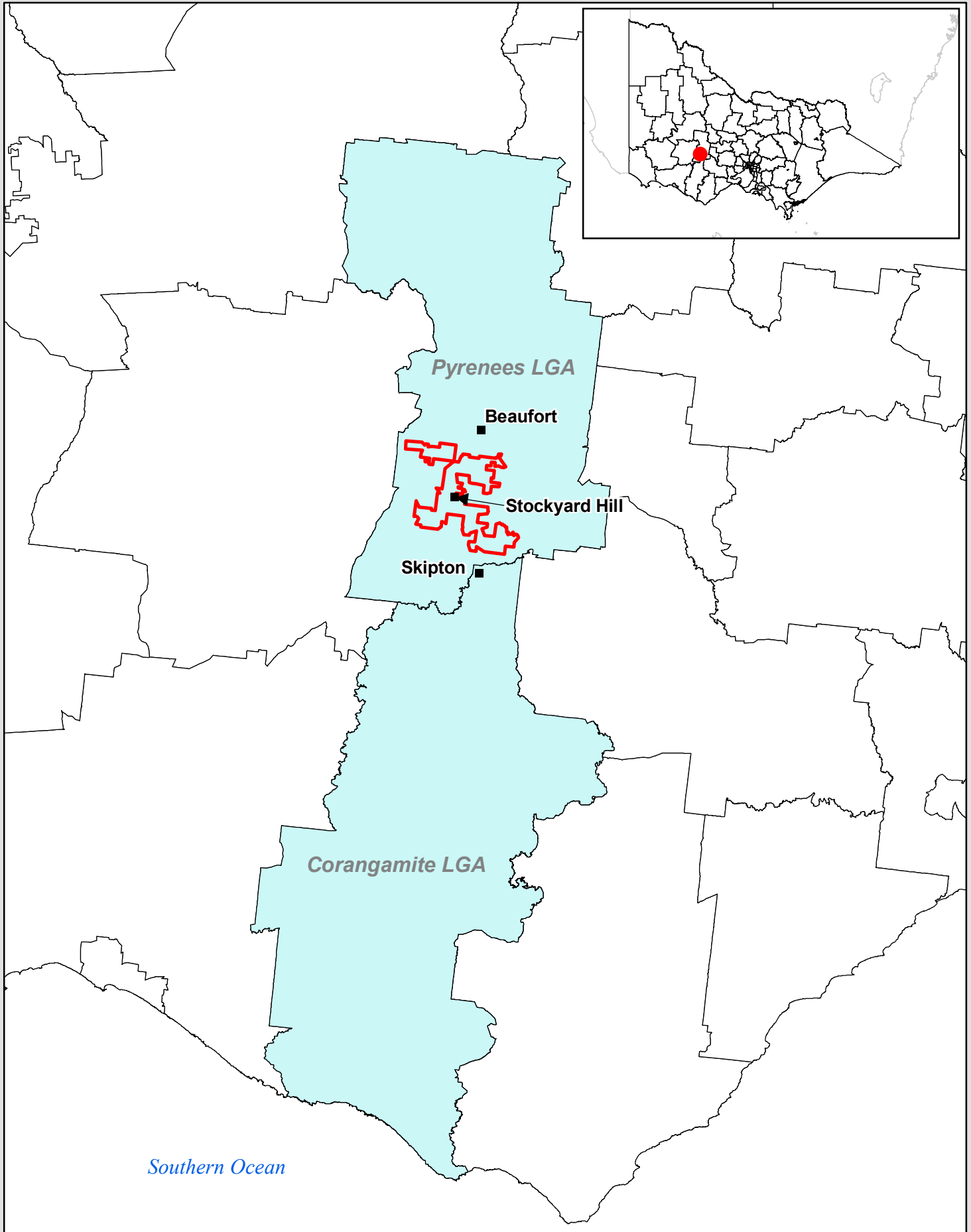
### **2.1 Overview of the Project area**

The Stockyard Hill Wind Farm would be located within the Pyrenees local government area (LGA), approximately 45 kilometres west of Ballarat in Victoria's central highlands. The wind farm would extend from approximately five kilometres south of the township of Beaufort to approximately four kilometres north of Skipton, centred on the area of Stockyard Hill.

For the purpose of assessing the existing economic and social environment, this section focuses on the townships of Beaufort within the Pyrenees LGA and Skipton within the Corangamite LGA. These regions have been selected on the basis of the location and proximity to the Project.

The Pyrenees and Corangamite LGAs were reviewed as study areas for this report due to their proximity to the Project. The construction of the SHWF P/L and associated electrical infrastructure will fall entirely within these LGA boundaries and hence the report focuses on these areas. However, it is likely that other LGAs and townships would also benefit from the project (such as Ballarat and Ararat).

A location map of the Project and accompanying wind power turbine locations is illustrated in Figures 2-1 and 2-2.



Project No: 2116908A  
 Revision: R0  
 Drawn: LARW  
 Verify: RV  
 Date: 30-10-2008

- Wind farm site
- Town Centres
- LGA's

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### **2.1.1 Pyrenees LGA**

The Pyrenees LGA is located approximately two hours drive north-west of Melbourne. The Shire has a total population of 6,556 and comprises predominantly prime agricultural land. Key industries in the region include livestock grazing, cropping and viticulture, as well as a growing tourism sector. The region also supports associated agricultural activities, such as agricultural component manufacture, timber industry services (such as milling and timber treatment) and food manufacture. The LGA is, to a large degree, reliant on the agriculture sector, either as a supplier or market source.

A large proportion of the Pyrenees LGA population resides in the two main towns of Beaufort and Avoca (1,073 and 947 persons respectively), with the remainder spread amongst the smaller towns and rural areas (ABS, 2006). The Pyrenees LGA, like many rural areas over recent years, has an ageing population and fewer young people returning to the region after receiving a tertiary education. The additional increase in older people undertaking a 'tree change' and moving to the LGA in search of a different lifestyle also contributes to the ageing population (ABS, 2006).

### **2.1.2 Beaufort township**

The town of Beaufort is located approximately four kilometres to the north of the Project. The total population of Beaufort is 1,073 (ABS, 2006). The town offers several tourist attractions. One is the annual Rainbow Serpent Festival which takes place over the Australia Day weekend and attracts approximately 7,000 people. This festival is billed as one of the premier 'outdoor alternative lifestyle, music and arts' festivals.

### **2.1.3 Corangamite LGA**

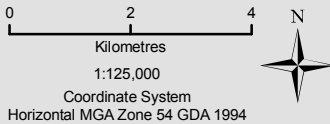
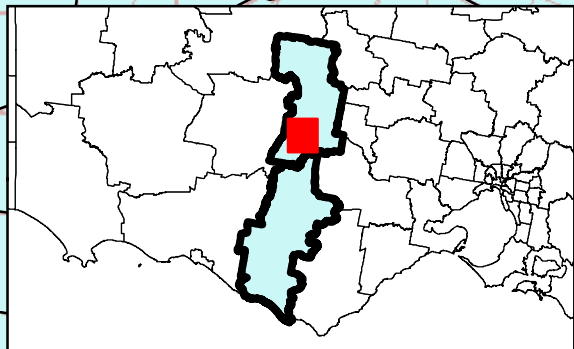
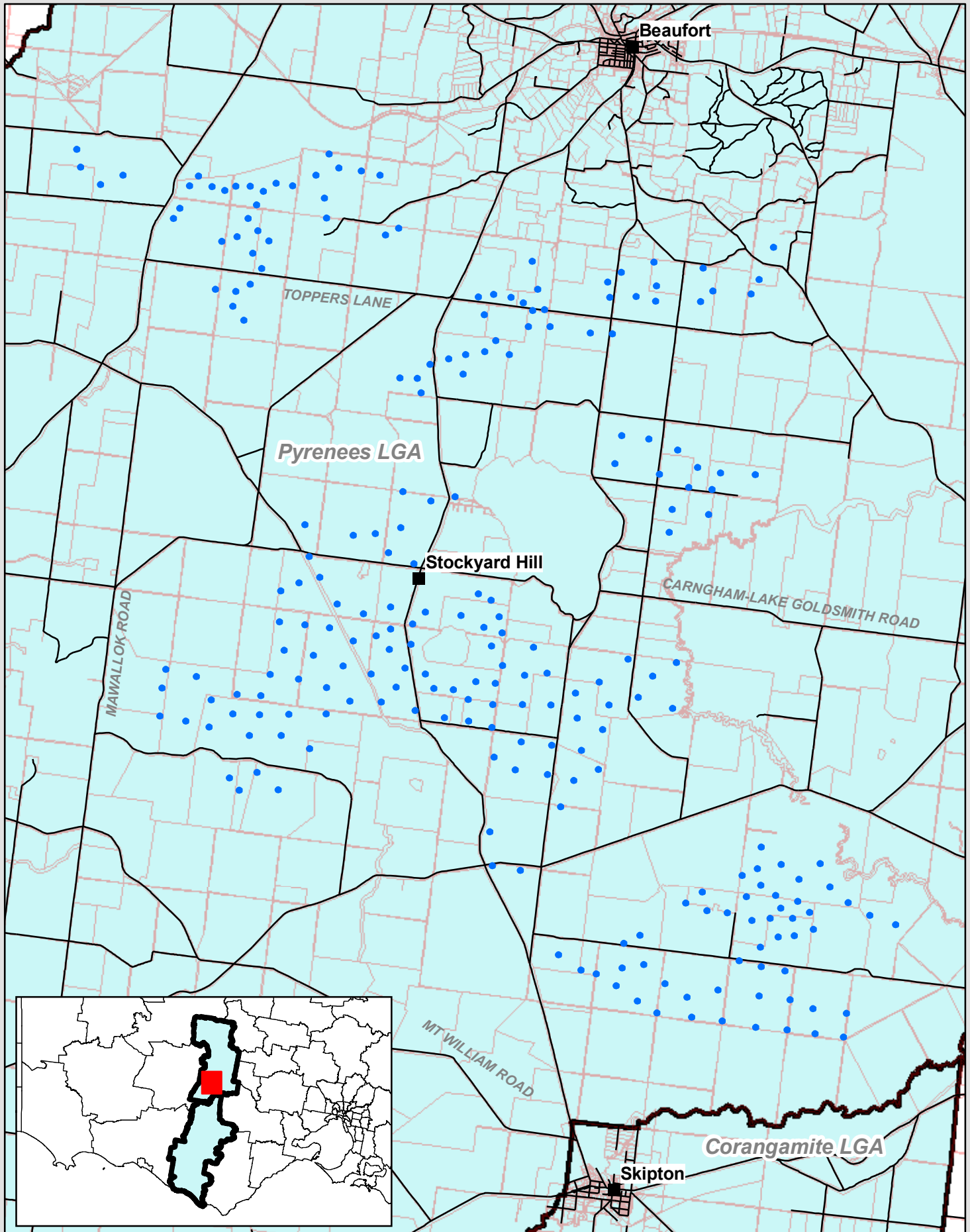
Although the Stockyard Hill Wind Farm would be located within the Pyrenees LGA, Skipton is located within the Corangamite LGA, which similar to its neighbour, is a rural area producing wool, grain and cattle, with a population of 16,616 people. The labour force is generally employed in dairy cattle farming (1,651) and sheep, beef cattle and grain farming sectors (635).

Although the median age in this LGA is 41 years, there is a large ageing population, with 5,014 people 55 years and over. This may be influenced by an increase in people seeking a 'tree change' through relocation to a rural and/or coastal location for their semi or full retirement.

The LGA contains a number of Australia's famous natural features, including the Twelve Apostles and the Kanawinka Geopark, which, as Australia's first geopark, attracts national and international tourists.

### **2.1.4 Skipton township**

Skipton is located approximately four kilometres to the south of the Project, on Mount Emu Creek. Lying 165 kilometres west of Melbourne on the Glenelg Highway, Skipton was initially settled as a pastoral run of over 20,000 acres in 1839, and remains a farming region, producing wool, grain and cattle. The population of Skipton is 482 (ABS Census, 2006).



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- Turbine Locations
- Town Centres
- Road Network
- Cadastre
- LGA's

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## 2.2 Current and future population growth

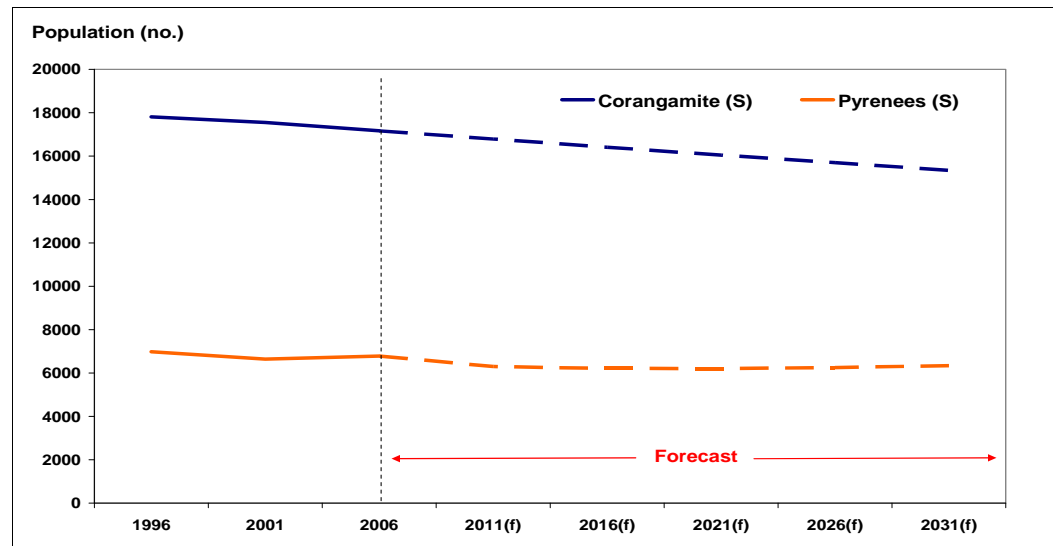
Population growth is an important driver of economic growth creating opportunities for employment and supporting local businesses and commerce. Population growth in the Corangamite LGA, however, declined from 2001 to 2006. This decline was not observed in the Pyrenees LGA, where a 2.2% increase in population growth was recorded. Data published by the Department of Sustainability and Environment (2004) indicates that the total resident population in the Corangamite LGA is expected to decline over the period 2006 to 2031, averaging minus 2.2% over the forecast period. By contrast, total resident population in the Pyrenees LGA is expected to fall over the shorter term (2006 to 2021), but thereafter increase slightly (Table 2-1 and Figure 2-3).

**Table 2-1 Current and future population growth**

Year	Pyrenees LGA (No.)	Pyrenees (% change)	Corangamite LGA (No.)	Corangamite LGA (% change)
1996	6,978	-	17,812	-
2001	6,641	-4.8%	17,558	-1.4%
2006	6,786	2.2%	17,165	-2.2%
2011(f)	6,297	-7.2%	16,790	-2.2%
2016(f)	6,212	-1.3%	16,413	-2.2%
2021(f)	6,204	-0.1%	16,050	-2.2%
2026(f)	6,252	0.8%	15,700	-2.2%
2031(f)	6,338	1.4%	15,347	-2.2%

Source: Population data for 1996, 2001, 2006 sourced from ABS 2008  
Population projections sourced from DSE 2004.

Notes: (f) forecast



Source: Population data for 1996, 2001, 2006 sourced from ABS 2008  
Population projections sourced from DSE 2004.

Notes: (f) forecast

**Figure 2-3 Current and future population growth projections**

## 2.3 Existing base and economic activity

### 2.3.1 Industry and employment structure of Pyrenees and Corangamite LGAs

The economic base of the Pyrenees and Corangamite LGAs is dominated by the agricultural sector. As shown in Table 2-2, the largest numbers of businesses in the Pyrenees LGA are classified as agricultural, forestry and fishery (62%), followed by property and business services (9.2%), and construction (6.3%). Corangamite LGA, by contrast, is comprised of agriculture, forestry and fishing (64.2%), property and business services (7.2%) and construction (6.9%).

**Table 2-2 Number and percentage of businesses by industry**

Industry	Pyrenees LGA (No.)	Pyrenees LGA (%)	Corangamite LGA (No.)	Corangamite LGA (%)
Agriculture, forestry and fishing	447	62.1%	1,680	64.2%
Mining	0	0.0%	6	0.2%
Manufacturing	18	2.5%	42	1.6%
Electricity, gas and water supply	0	0.0%	0	0.0%
Construction	45	6.3%	180	6.9%
Wholesale trade	24	3.3%	54	2.1%
Retail trade	33	4.6%	147	5.6%
Accommodation, cafes and restaurants	21	2.9%	60	2.3%
Transport and storage	33	4.6%	102	3.9%
Communication services	12	1.7%	27	1.0%
Finance and insurance	6	0.8%	21	0.8%
Property and business services	66	9.2%	195	7.5%
Education	3	0.4%	6	0.2%
Health and community services	3	0.4%	54	2.1%
Cultural and recreational services	3	0.4%	12	0.5%
Personal and other services	6	0.8%	30	1.1%
<b>Total</b>	<b>720</b>	<b>100.0%</b>	<b>2,616</b>	<b>100.0%</b>

Source: ABS 2008a and 2008b

The above composition of businesses is reflected in industry employment for the Pyrenees and Corangamite LGAs (see Table 2-3). In the 2006 Census, the top five industries of employment for Pyrenees LGA were sheep, beef cattle and grain farming (20%), followed by hospitals (4.6%), school education (4%), beverage manufacturing (3.8%) and road freight transport (3.0%). For Corangamite LGA, the top five industries of employment were dairy cattle farming (22%), followed by sheep, beef cattle and grain farming (8.4%), school education (4.2%), hospitals (3.9%) and supermarket and grocery stores (3.5%). The composition of the top five industries of employment in the region appears to be relatively large compared to the Australian industry share of employment as shown in Table 2-3.

**Table 2-3 Top five industries of employment**

Employment Type	Locality (Number of individuals employed)	Percent aged 15 years and over	Australia (Number of individuals employed)	Percent aged 15 years and over
<b>Pyrenees LGA</b>				
Sheep, beef cattle and grain farming	509	20.0%	133,275	1.5%
Hospitals	117	4.6%	303,923	3.3%
School education	101	4.0%	414,214	4.5%
Beverage manufacturing	97	3.8%	26,749	0.3%
Road freight transport	75	3.0%	162,448	1.8%
<b>Corangamite LGA</b>				
Dairy cattle farming	1,651	21.9%	21,997	0.2%
Sheep, beef cattle and grain farming	635	8.4%	133,275	1.5%
School education	320	4.2%	414,214	4.5%
Hospitals	295	3.9%	303,923	3.3%
Supermarket and grocery stores	260	3.5%	218,821	2.4%
Source: ABS 2006 Census				

### 2.3.2 Industry and employment structure of Beaufort and Skipton townships

In reviewing the character of the Beaufort and Skipton townships more specifically, it is observed that both localities have similar prevalent industries (see Table 2-3). Based on the 2006 Census, the main employment activity in the area was agriculture, forestry and fishery, agriculture, retail trade, healthcare and social assistance. In observing the LGA more broadly, it is evident that agricultural activity supports local employment and income.

It can also be seen from Table 2-4 that the employment is marginally different in terms of distribution of employment shares. Whilst Skipton's industry employment mainly comprises of agriculture (41%), Beaufort has a more widely distributed and diverse employment base with agricultural employment (19%) accounting for a smaller base. Within this context, it is worth noting that both townships have a small number of people involved in construction and trade industries.

The data indicates that both the townships do not have skills or an employment base in electricity, gas, water and waste services, which represents the closest similarity to the employment needs for the Project.

**Table 2-4 Industry employment shares**

Industry	Beaufort (Number of individuals employed)	Beaufort (%)	Skipton (Number of individuals employed)	Skipton (%)
Agriculture, forestry and fishing	106	19%	97	41%
Mining	3	1%	5	2%
Manufacturing	54	10%	13	6%
Electricity, gas, water and waste services	0	0%	0	0%
Construction	42	8%	8	3%
Wholesale trade	14	3%	0	0%
Retail trade	66	12%	22	9%
Accommodation and food services	29	5%	4	2%
Transport, postal and warehousing	17	3%	18	8%
Information media and telecommunications	9	2%	0	0%
Financial and insurance services	4	1%	5	2%
Rental, hiring and real estate services	4	1%	0	0%
Professional, scientific and technical services	18	3%	3	1%
Administrative and support services	14	3%	4	2%
Public administration and safety	43	8%	4	2%
Education and training	28	5%	13	6%
Health care and social assistance	56	10%	28	12%
Arts and recreation services	9	2%	0	0%
Other services	20	4%	3	1%
Inadequately described/not stated	16	3%	8	3%
<b>Total</b>	<b>552</b>	<b>100%</b>	<b>235</b>	<b>100%</b>

Source: ABS 2006 Census

## 2.4 Labour force and unemployment statistics

The labour force characteristics of Beaufort, Pyrenees LGA, Skipton, Corangamite LGA and Australia are shown in Table 2-5. Based on the 2006 Census, the different employment types are expressed in terms of full-time, part-time, away from work, employed hours not stated, and unemployment. The corresponding percentage of these employment types (as a proportion of the total labour force) are shown in Table 2-6.

The Census data indicates that there are a higher proportion of full-time workers in Skipton and Corangamite compared to Beaufort and Pyrenees. In particular, the proportion of full-time workers in Corangamite is higher than the state and national averages, suggesting that commerce and industry activity in these localities are above average. Further, with the exception of Skipton, the number of part-time workers across all localities is above the state and national averages.

Table 2-6 also shows unemployment as a proportion of the total labour force. With the exception of Corangamite, unemployment for the other localities observed is above the state and national averages.

**Table 2-5 Labour force (population aged 15 years and over)**

	Beaufort	Pyrenees LGA	Skipton	Corangamite LGA	Victoria
Total labour force	588	2,746	256	7,823	2,404,608
Employed full-time	325	1,585	147	4,786	1,445,456
Employed part-time	179	780	67	2,230	682,604
Employed away from work	18	92	17	293	82,497
Employed hours not stated	28	83	3	226	63,892
Unemployed	38	206	22	288	130,159

Source: ABS 2006 Census

**Table 2-6 Percentage of labour force, by type of employment**

	Beaufort	Pyrenees LGA	Skipton	Corangamite LGA	Victoria
Employed full-time	55.3%	57.7%	57.4%	61.2%	60.1%
Employed part-time	30.4%	28.4%	26.2%	28.5%	28.4%
Employed away from work	3.1%	3.4%	6.6%	3.7%	3.4%
Employed hours not stated	4.8%	3.0%	1.2%	2.9%	2.7%
Unemployed	6.5%	7.5%	8.6%	3.7%	5.4%

Source: ABS 2006 Census

## 2.5 Income, earnings and cost of housing

Table 2-7 illustrates the income, earning and housing statistics for Beaufort, Pyrenees LGA, Skipton and Corangamite LGA. The different income types are expressed in terms of median individual, household and family incomes.

Median family incomes were the highest for Corangamite (\$1,060 per week), followed by Pyrenees (\$790 per week), Beaufort (\$788 per week) and Skipton (\$715 per week). This trend is consistent with the level of employment in these localities, with Corangamite having the lowest unemployment percentage compared to the other localities examined (see Table 2-5). However, the greater affluence of Corangamite in terms of earnings is also accompanied by higher cost of housing. Specifically, median housing loan repayments were the highest for Corangamite (\$867 per month), followed by Pyrenees (\$715 per month), Skipton (\$693 per month) and Beaufort (\$650 per month).

The ABS Census also provides information on rental prices from 2006, which shows that the median rent paid per week is relatively low compared to what would be expected. That is, \$100 per week for Corangamite, \$90 per week for Pyrenees, \$65 per week for Beaufort and \$50 per week for Skipton. These low rental figures may indicate regional trends whereby rented properties are provided at reduced rates or as part of a salary package for those who work and manage agricultural properties for the owners. Therefore, the median weekly rents should be treated with caution as they appear relatively low.

**Table 2-7 Regional income and household statistics**

2006 Census Data	Beaufort	Pyrenees LGA	Skipton	Corangamite LGA	Victoria
Median age (in years)	48	45	48	41	37
Median individual income (\$ per week)	341	332	299	417	456
Median household income (\$ per week)	613	621	589	819	1,022
Median family income (\$ per week)	788	790	715	1,060	1,170
Median housing loan repayment (\$ per month)	650	715	693	867	1,252
Median rent (\$/weekly)	65	90	50	100	185
Average household size	2.2	2.4	2.2	2.5	2.6

Source: ABS 2006 Census

## 2.6 Dwelling characteristics, vacancy and tenure type

The dwelling, vacancy and tenure characteristics of Beaufort, Pyrenees LGA, Skipton, Corangamite LGA and Victoria are summarised in Table 2-8 below. Based on the 2006 Census, the data indicates that Pyrenees has the highest vacancy rate (21%), followed by Skipton (16%), Corangamite (14%), Beaufort (13%), Victoria (10%). Thus these vacancy rates suggest that the Pyrenees LGA would have a greater capacity to cater (at least initially) for increased housing demand resulting from the Project.

The Census data also indicates that across the regions observed, full ownership is the dominant form of tenure type, followed by being purchased and rental.

**Table 2-8 Dwelling characteristics, vacancy rate and tenure type (2006 Census)**

	Beaufort		Pyrenees LGA		Skipton		Corangamite LGA		Victoria	
	No.	%	No.	%	No.	%	No.	%	No.	%
<b>Dwelling characteristics</b>										
Total dwellings	703	-	3,359	-	326	-	7,534	-	2,085,113	-
Dwelling occupancy	609	-	2,640	-	274	-	6,442	-	1,869,384	-
Vacancy rate (%)	13%		21%	-	16%	-	14%	-	10%	-
<b>Tenure type</b>										
Fully owned	314	52%	1,380	52%	144	52%	2,886	45%	648,924	45%
Being purchased	118	27%	709	27%	74	27%	1,770	27%	634,800	27%
Rented	123	14%	366	14%	40	14%	1,350	21%	447,074	21%
Other tenure type	11	1%	36	1%	3	1%	94	1%	12,472	1%
Not stated	43	6%	149	6%	15	5%	342	5%	126,114	5%

Source: ABS Census 2006.

### 3. Socio-economic impact analysis framework

The socio-economic impact assessment of the Project is based on the input-output analysis framework. The method focuses on the effects on output and employment at the local, regional and national levels. The analysis is supported by information provided by the developer, SHWF P/L, the work undertaken by Dr Robert Passey for the Australian Wind Energy Association (Passey, 2003) and the existing literature on wind farm project development.

#### 3.1 Method description

The method used to measure the socio-economic impacts of constructing and operating the Project is Input-Output (I-O) analysis. I-O analysis is a well-established and widely used technique for estimating economic impacts of an existing, expanding or new economic activity in a region. It examines how a project affects an economy through all of the backward and forward linkages between all industries in the economy. It takes the initial effect of a project, and traces all the multiplier or 'flow-on' effects – known as direct, indirect and induced. The final result is an overall picture of a project's expected contribution to the regional, state and national economies.

The economic impact of a project can be traced through the economic system in several different ways. For the purpose of this assessment, the following types of impacts are used:

- the initial effect measures the direct impact of the Project's expenditure on economic activity (output) and employment, (e.g. construction workers employed by the wind farm directly)
- the direct flow-on multiplier effect represents the increase in output and employment which is directly generated across all supply sectors in the industry receiving the initial impact (e.g. industries supplying construction material and machinery)
- the indirect flow-on multiplier effect represents the output and employment that occurs across all secondary industries in the economy to support the direct impact (e.g. accommodation, cafes and restaurants)
- the induced flow-on multiplier effect represents the change in consumption by the household sector or 'pay packet' effect in response to income changes resulting from the direct and indirect impacts (e.g. the additional expenditure by households on hospitality and recreational services)
- the total multiplier effect is the sum of the initial, direct, indirect and induced multiplier effects outlined above.

The economic impact is measured by means of two key economic indicators — output and employment:

- *Output impact.* The output measure is defined as the gross revenue associated with the additional demand for goods and services produced by all industries in the economy that are required to satisfy the needs of the Project. At the regional level, this can be defined as gross regional product (GRP), at the state level this can be defined as gross state product (GSP), and at the national level this can be defined as gross domestic product (GDP).

- *Employment impact.* Employment flow-on effects occur because businesses adjust the level of resources used to accommodate for changes in output resulting from the Project. Employment includes the number of working proprietors, and may encompass managers, directors, and other employees in terms of full-time equivalents.

## 3.2 Method constraints

The multipliers used in this study rely on multipliers obtained from the Australian Bureau of Statistics I-O Multiplier Tables. I-O multipliers, however, are not readily available for state and local economies in Victoria. Therefore, in the absence of these multipliers, national multipliers are used and are modified to provide regional and state estimates. Further, as the multiplier table sources are dated, care should be taken in terms of the estimates provided. In particular, the assessment assumes that the industrial structure of the Australian economy has remained relatively unchanged since the compilation of the tables. For this reason, range estimates rather than point estimates are provided in order to take into account possible structural changes in the economy since the compilation of the I-O multipliers.

In this study the flow-on multiplier base estimates are set to range between 60 and 80% to take into account possible biases and uncertainty for output and value-added. By contrast, the multipliers for employment have a higher degree of uncertainty due to rising wages and incomes in the economy. As such, the employer base estimates are set to range between 40 and 60% of the base estimates. In this context, a comparison is made with the bottom-up employment multiplier derived in Passey (2003) for the purposes of cross-comparison (see Section 6).

Despite these limitations, the I-O framework provides a means of estimating the economic impact of the Project and is intended to be indicative only.

## 3.3 Data and assumptions

### 3.3.1 Regional, state and national impact definition

In this assessment the impacts are separated into regional, state and national impacts. That is, the regional level is defined as the Pyrenees and Corangamite LGAs; the state level is defined as Victoria; and the national level is defined as Australia.

Capital and operating expenditure profiles are apportioned at these geographic levels to estimate the economic impacts and are intended to be indicative only. The proportion of costs assumed to be expended across the geographic areas is outlined below.

### 3.3.2 Construction phase data and assumptions

Relevant data provided by SHWF P/L used to estimate the impact of the Project during the construction phase are presented in Table 3-1 and are separated in terms of expected total expenditure at the regional, state, national and overseas levels. Examples of key construction costs include wind turbine generator, communication and control systems, installation and commissioning, as well as construction of the turbine foundations.

The construction period is expected to take place over a period of approximately 3.3 years (or 43 months). Total construction cost is expected to be almost \$1.4 billion (2008/09 dollars) over this period. As there is uncertainty about the final level of regional expenditure, PB has adopted the regional expenditure profiles stated in SKM (2004). That is, it is expected that around 20% would be expended at the regional level, 29.5% would be expended at the state

level, and 2.5% would be expended nationally. The remaining 48% is expected to be expended internationally. However, for the purpose of this assessment, expenditure overseas has been treated as a leakage in the model. That is, the expenditure internationally is expected to result in overseas revenues and employment. The proportions are preliminary and have been used to estimate the economic impacts for the separate geographies.

**Table 3-1 Construction expenditure distribution**

Item	Regional	State	National	Overseas	Total
Proportion	20.0%	29.5%	2.5%	48.0%	100%
Total Cost (\$m)	273	403	34	656	1,366

Notes: Values are in 2008/09 dollars. Per annum cost are the average cost adjusted for the 43 month construction  
Source: Total expenditure sourced from SHWF P/L. Proportion shares sourced from SKM (2004)

### 3.3.3 Operational phase data and assumptions

The operational data used to estimate the impact of the Project are presented in Table 3-2. Operational expenditure is expected to be approximately \$18 million per annum (2008/09 dollars) over the projected operating period. Examples of key operating expenditure include scheduled and unscheduled maintenance and service, as well as network operation and maintenance.

Similar to the construction expenditure proportions, there is uncertainty about the level of regional expenditure. However, Passey (2003) provides some guidance on operational expenditure proportions, noting that for a separate wind farm project, the operation achieved a 40% local content. In this context, a regional content of 60% has been adopted, as the Passey (2003) estimates are based on a local rather than regional content. The state, national and overseas content, in comparison, is also based on the expected expenditure proportions. Specifically, it is expected that around 20% would be expended at the state level, 15% would be expended at the national level, and 5% would be expended internationally. The expected share at the state level is consistent with expectations that the Project will seek to source goods and services, as well as workforce personnel, as much as possible from the State. Like the construction phase, these proportions are preliminary and have been used to estimate the economic impacts for the separate geographies.

**Table 3-2 Operating expenditure distribution**

Item	Regional	State	National	Overseas	Total
Proportion	60%	20%	15%	5%	100%
Per Annum Cost (\$m)	10	4	3	1	18

Notes: Values are in 2008/09 dollars.  
Source: Total expenditure sourced from SHWF P/L.

## 4. Socio-economic impacts

This section presents the socio-economic impacts that would potentially arise from the construction and operation of the Project. The impact analysis is based on the socio-economic profile (Section 2).

### 4.1 Regional, State and national economic impacts during construction phase

Based on the projected capital expenditure proportions outlined in Section 3.3.2, the Project's economic impacts during construction are summarised in Table 4-1 and displayed graphically in Figure 4-1 and Figure 4-2.

**Table 4-1 Regional, state and national economic impacts, during construction (per annum)**

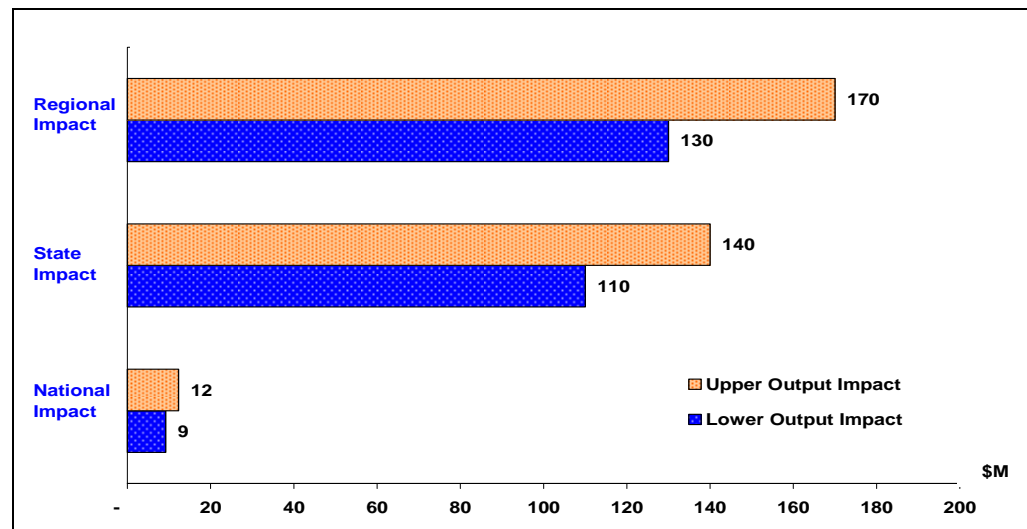
Impact type	Output (Gross Product, \$m)		Employment (Full-Time Equivalent Jobs)	
	Lower	Upper	Lower	Upper
<b>REGIONAL</b>				
Initial impact	55	68	164	246
Direct flow-on impact	19	25	82	123
Indirect flow-on impact	17	23	55	82
Induced flow-on impact	38	50	164	246
<b>Total</b>	<b>129</b>	<b>166</b>	<b>465</b>	<b>697</b>
<b>STATE</b>				
Direct flow-on impact	28	37	121	182
Indirect flow-on impact	26	34	81	120
Induced flow-on impact	55	74	242	363
<b>Total</b>	<b>109</b>	<b>145</b>	<b>444</b>	<b>665</b>
<b>NATIONAL</b>				
Direct flow-on impact	2	3	10	15
Indirect flow-on impact	2	3	7	10
Induced flow-on impact	5	6	21	31
<b>Total</b>	<b>9</b>	<b>12</b>	<b>38</b>	<b>56</b>

Notes: Values are in 2008/09 dollars. Figures may not sum precisely due to rounding.

Source: PB estimates.

As shown in Table 4-1, investment in the Project would provide a significant stimulus to the regional, state and national economies, offering opportunities for output (i.e. revenues associated with the increased demand for goods and services) and employment. That is:

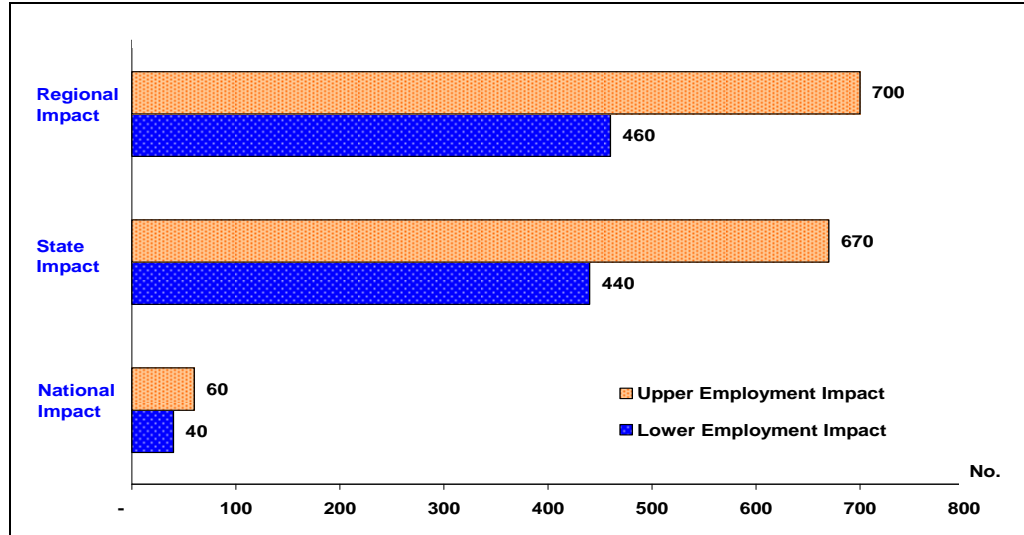
- At the regional level, the construction of the wind farm is expected to contribute up to \$166 million per annum in GRP (including up to \$68 million initially, \$25 million directly, \$23 million indirectly and \$50 million induced). This is expected to support between 164 and 246 full-time equivalent jobs related to the initial construction of the Project.<sup>1</sup> The number of jobs arising from flow-on impacts is expected to range between 301 and 451. Combined, the initial and flow-on impacts are expected to contribute between 465 and 697 jobs during construction.
- At the state level, the Project is expected to contribute up to \$145 million per annum in GSP. This is expected to support between 444 and 665 jobs per annum for the period of construction. Of the jobs, 33 full time equivalent jobs will be directly related to the operation of the Stockyard Hill Wind Farm. These jobs are estimated to provide income of up to \$1.6m locally.
- At the national level, the flow-on output of all industries is expected to contribute up to \$12 million per annum. This is expected to support 38 to 56 full-time equivalent jobs nationally across all upstream and downstream industries in the economy.



Note: Figures for regional and state impacts are rounded. Impacts are the sum of initial, direct, indirect and induced.

**Figure 4-1 Total output impacts during construction**

<sup>1</sup> Initial impacts only apply at the regional level and represent the direct workforce expected to be employed during construction at the Project's regional location.



Note: Figures are rounded. Impacts are the sum of initial, direct, indirect and induced.

**Figure 4-2 Total employment impacts during construction**

## 4.2 Regional, State and national economic impacts during operation phase

Spending would continue during the operation of the wind farm once construction has been completed. Based on the projected operational expenditure proportions outlined in Section 3.3.3, the Project’s operational impacts are summarised in Table 4-2 and displayed graphically in Figure 4-3 and Figure 4-4.

**Table 4-2 Regional, state and national economic impacts, during operation (per annum)**

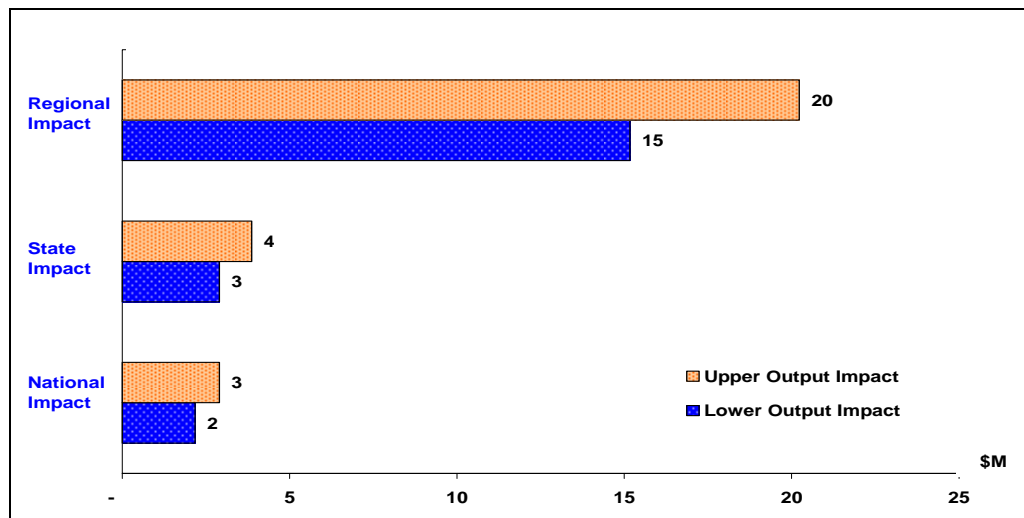
Impact type	Output (Gross Product, \$m)		Employment (Jobs, Full Time Equivalents)	
	Lower	Upper	Lower	Upper
<b>REGIONAL</b>				
Initial impact	6	9	26	32
Direct flow-on impact	3	3	8	13
Indirect flow-on impact	2	3	4	6
Induced flow-on impact	4	6	22	32
<b>Total</b>	<b>15</b>	<b>21</b>	<b>60</b>	<b>84</b>
<b>STATE</b>				
Direct flow-on impact	1	1	3	4
Indirect flow-on impact	1	1	1	2
Induced flow-on impact	1	2	7	11
<b>Total</b>	<b>3</b>	<b>4</b>	<b>11</b>	<b>17</b>

Impact type	Output (Gross Product, \$m)		Employment (Jobs, Full Time Equivalents)	
<b>NATIONAL</b>				
Direct flow-on impact	1	1	2	3
Indirect flow-on impact	0	1	1	2
Induced flow-on impact	1	1	5	8
<b>Total</b>	<b>2</b>	<b>3</b>	<b>9</b>	<b>13</b>

Notes: Values are in 2008/09 dollars. Figures may not sum precisely due to rounding.  
Source: PB estimates.

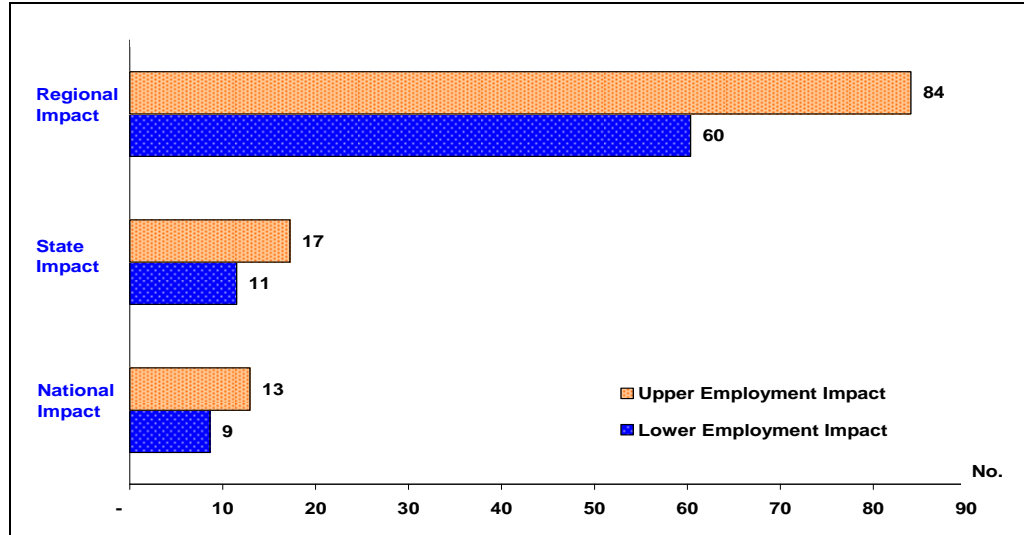
Similar to the construction period, expenditure during the operating phase of the Project is expected to provide employment and output opportunities, especially for the region as demand for goods, services and employment are predominantly sourced from within the region. That is:

- At the regional level, the operation of the wind farm is expected to contribute up to \$21 million per annum in GRP. This is expected to support up to 84 full-time equivalent jobs regionally across all industries, of which 32 would be initially related to the operation of the Project (i.e. construction workers employed by the wind farm directly).
- At the state level, the Project is expected to contribute up to \$4 million per annum in GSP. This is expected to support up to 17 full-time equivalent jobs across all upstream and downstream industries in Victoria.
- At the national level, the flow-on impact of all industries is expected to increase by up to \$3 million per annum. This is expected to support up to 13 full-time equivalent jobs nationally.



Note: Impacts are the sum of initial, direct, indirect and induced.

**Figure 4-3 Total output impacts during operations**



Note: Impacts are the sum of initial, direct, indirect and induced.

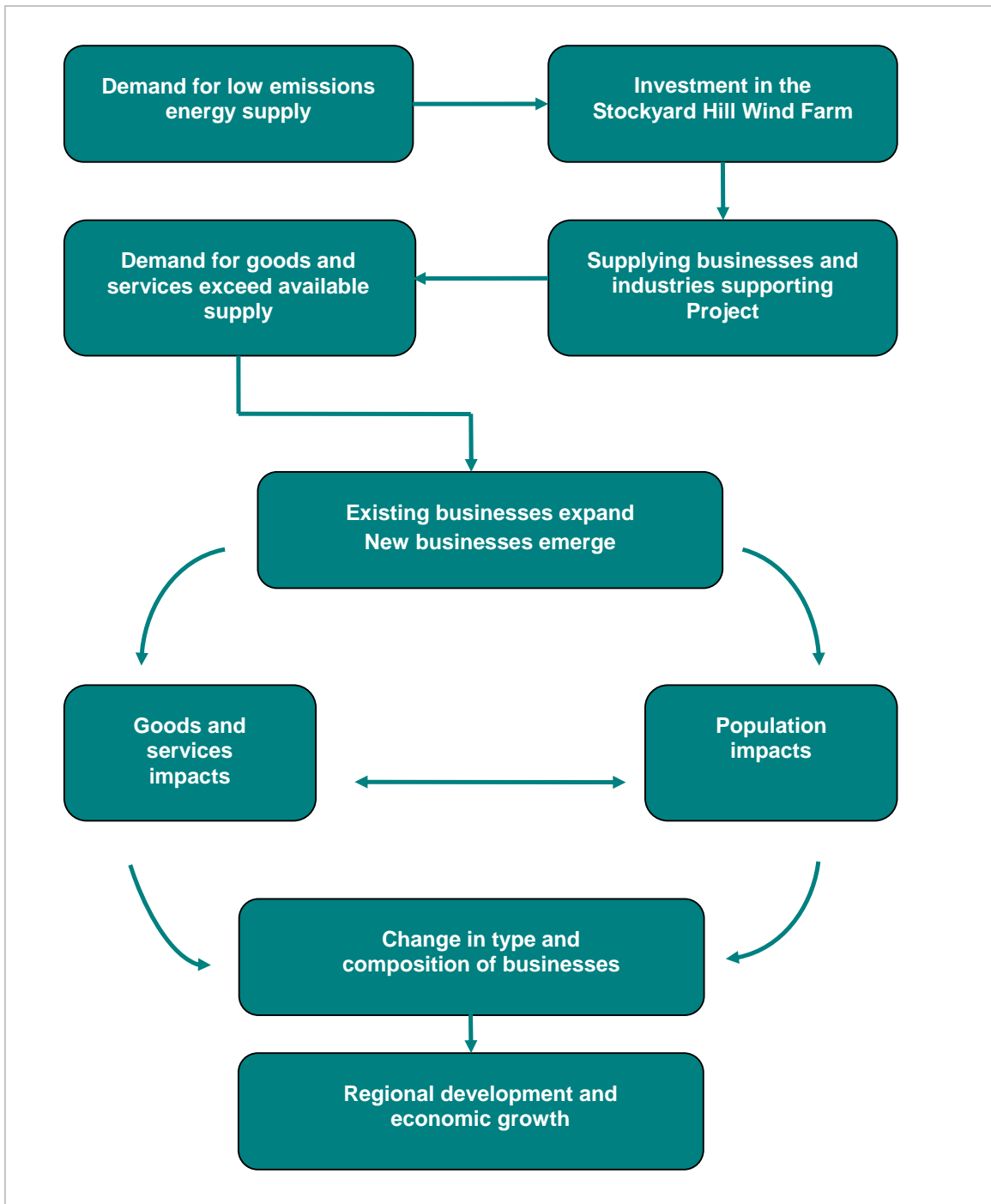
**Figure 4-4 Total employment impacts during operations**

In addition, direct multiplier estimates provided by Passey (2003) provides a cross-reference to the results estimated in Table 4-2. Passey (2003) suggests that during the operational phase of wind farm projects, 0.06 jobs could be expected to be generated per megawatt installed. As the Project is expected to have a capacity of 484 MW, this would translate to approximately 29 direct jobs. This estimate is within the range of employment estimated in Table 4-2. That is, it is expected that 26 to 32 full-time equivalent jobs would be expected to be generated, compared with 29 full-time equivalent jobs based on the Passey (2003) report.

### 4.3 Implications for business and industry development in the region

The economic impacts measured above are expected to lead to a steady increase in the region’s population and subsequent demand for goods and services. Figure 4-5 summarises the economic implications of the Project for future development and change in the locality.

As shown in Figure 4-5, the key driver of the Project is the demand for additional supply of low emissions energy. This in turn is expected to result in an increase in demand for goods and services from existing supplying businesses and industries supporting the Project. However, the ability of existing business to meet increased demand is likely to exceed available supply as the market expands (e.g. construction and wind energy maintenance workers). New opportunities for entrepreneurs would, therefore, emerge to directly support wind energy production, and indirectly through supporting activities. As a result of this growth, businesses would most likely respond by changing the type and composition of their business to better meet the needs and preferences of the demanded services. Taken together, these effects and resulting change would lead to regional growth, as businesses and industries adjust to cater for the Project and associated needs.



**Figure 4-5 Implications of the Project for development in the region**

In summary, the increase in demand for goods and services from the supplying industries can be expected to lead to:

- Greater private sector investment in the Pyrenees and Corangamite regions generally as new and emerging businesses seek to supply the increase in demand for goods and services resulting from the Project.

- An increase in the number and type of businesses across new and existing development areas, reflecting increased demand for goods and services.
- Greater profitability across new and existing development areas, reflecting increased commerce and demand for goods and services.

It should be noted that a likely consequence of this economic growth would be higher property values and rents for local and regional businesses, reflecting growth in the demand for real estate as a result of the rising population, income and business activity. The negative impacts in terms of increased rents may be offset, however, by the higher local employment and incomes.

#### **4.3.1 Implications for economic base of the region**

The Project may potentially change the underlying economic base and industrial structure of the region by developing businesses and industries that directly and indirectly support the construction and operation of the Project's activities. At a high level, the types of businesses expected to be affected directly, based on the ABS's industry classification, are as follows:

- for construction: additional economic activity and employment in:
  - non-residential building construction
  - construction trade services
- for operation: additional economic activity and employment in electricity, gas and water supply.

In contrast, the types of businesses most likely to be affected indirectly during both construction and operation of the Project are as follows:

- additional economic activity and employment in:
  - residential building construction
  - accommodation, cafes, and restaurants
  - wholesale and retail trade
  - property and business services
  - manufacturing
  - communication services
  - education services
  - government administration
  - health and community services
  - cultural and recreational services.

However, as the existing economic environment in the region is mainly agriculture orientated, there is the opportunity for transition into construction and operation of wind farm activities. The presence of the Stockyard Hill Wind Farm presents an opportunity for growth of local and regional services and suppliers. Local workers would be up skilled and hence encouraged to be involved in the Project.

Consequently, whilst the Project would provide opportunities for regional labour and business supply, it is likely that the attraction of skilled workers and new business entrepreneurs would be required.

Overall, the net change in industrial orientation resulting from the investment in the Project is expected to increase the level of economic activity particularly for the regional and state economies. This in turn is expected to lead to improved prosperity as incomes, employment and demand for goods and services increases during the life of the Project.

### 4.3.2 Implications for local services and infrastructure

SHWF P/L would encourage the employment of local and regional resources throughout construction and operation. However, the Pyrenees and Corangamite LGAs have a relatively small construction workforce (Section 2.3). On this basis, it is anticipated that some of the workforce sourced for construction would come from outside these LGAs. Local workers would be up skilled and encouraged to be involved in the Project. Given the Project construction period is 43 months, there will be a need for construction workforce to relocate to the area. This may place increased demand on social services and infrastructure in the area, including accommodation. This impact may be offset by accommodation being serviced through the existing vacancy rates in the Pyrenees and Corangamite LGAs (Section 2.6).

It would be beneficial if a large portion of the workers were to be located in close proximity to the Project site, for example in nearby Skipton and Beaufort. This influx may potentially place constraints on local businesses to meet the increase in demand. These demands may be accommodated through suppliers from larger regional centres, such as Ballarat, Ararat, Portland, Warrnambool and Colac.

The Project presents an opportunity for local and regional services and suppliers to grow (Section 4.3).

Infrastructure required to develop the project would also provide local and regional benefits to the community. These would include:

- *Road maintenance and upgrades:* it is possible that there will be the need to maintain and upgrade roads in the vicinity of the wind farm. This would provide opportunities for employment in industries associated with road building and maintenance in addition to providing higher quality roads for local residents.
- *Access tracks:* access tracks established on private property would be constructed and maintained by SHWF P/L.
- *Council rates:* SHWF P/L would be required to pay Pyrenees Council rates in lieu following the completion of the wind farm. Payments for the Project in the first full year of operation would be \$475,000. After 25 years and 3% CPI, the rates in lieu would be \$996,000 per annum and the total over a period of 25 years would be \$18 million.

## 4.4 Implications for change to community lifestyle and values

There may be the perception amongst some members of the community that wind farms would have an impact on community lifestyle and values. However, the outcomes of the national and Ararat wind farm surveys, below, indicate that the public is concerned about climate change and there is increased awareness of the availability of clean energy alternatives. The surveys show that there is support for wind farms and that, in this context, the community is generally not averse to having wind farms in their immediate locality.

#### 4.4.1 National survey

A review of perception surveys was undertaken to gain insight into the public perception on wind farms and to understand their perceived and real impacts. In August 2003 a telephone survey of 1,027 participants was carried out by the Australian Research Group Pty Ltd on behalf of the Australian Wind Energy Association (Passey, 2003). In general, the survey identified that:

- 94% of respondents thought a target to increase clean energy from renewable sources was a good/very good idea
- majority of respondents were prepared to pay more for clean energy
- renewable energy has substantial community support
- there is strong support for building wind farms to meet Australia's increasing demand for electricity
- 91% of respondents thought that it is more important to build wind farms for electricity supply than avoid building them in rural Australia
- respondents residing in the city were as likely as those in regional or outer-metropolitan areas to support the building of wind farms, but city residents were more likely to strongly support this.

#### 4.4.2 Local perception

To focus on more local perceptions of wind farms generally, a perception survey was undertaken in July 2007, *Report on Community Perceptions Towards Wind Farms*, to understand the attitudes to the proposed Ararat wind farm (ERM, November 2007). This Report provides a comparative study area based on the proximity of Ararat to Beaufort and Skipton. It is likely that the respondents of the ERM survey were mindful of the Challicum Hills wind farm, which is located between the towns of Beaufort and Ararat, and is approximately 14 kilometres from the boundary of the SHWF P/L. The proximity of Challicum Hills to both the current project and survey respondents suggests that the ERM survey is relevant to this report. The July 2007 survey involved 300 telephone interviews. In summary the survey findings were:

- 83% of respondents were concerned with the threat of climate change and the impact on the environment
- awareness of wind turbines was very high
- whilst respondents were prepared to be critical of wind farms, when it came to a trade-off between clean energy and the landscape, 97% agreed: 'We need to use wind power as a source of clean energy even if it means changing the appearance of some landscapes'
- the study found that 94% of respondents were in favour of wind farm projects being developed in the South West of Victoria, 2% were opposed. 92% of respondents agreed 'I would be happy to see a wind farm built on farm land near where I live'
- when respondents were asked regarding the acceptability of a wind farm near where they lived, 83% supported a wind farm located 25 kilometres from home and 71% of respondents supported a wind farm within one kilometre of their home

- in response to introducing the concept of multiple 'typical' (30 to 40 turbines) wind farms, 87% respondents accepted one typical wind farm and 71% accepted three typical wind farms in their local rural area.

## 4.5 Implications for greenhouse gas emissions

The project is expected to generate in excess of 1,890 gigawatt hours per annum of electricity which equates to a saving of over 1,890,969 tonnes of CO<sub>2</sub> equivalent greenhouse gas emissions. Thus, the Project's generation of renewable energy will displace greenhouse gas emissions associated with traditional fossil fuel power generation.

Assuming a conservative cost of carbon of \$20 per tonne and the discount rate of 7%, the greenhouse gas saving is valued at \$37 million per annum and about \$490 million net present value over the life of the Project.

## 4.6 Implications on property values

At present, there is little land value or valuation research with respect to wind farms in Australia. The report for The Australia Institute (Macintosh and Downie, 2006) indicates that property values are not adversely affected by the presence of wind farms in the long term.

A review of United States based research has also indicated that in the analysis of 10 wind farm sites, twenty-six property values within the wind farm sites performed better than the comparable properties. This study concluded that "there is no support for the claim that wind development will harm property values" and was qualified with a statement that more data will need to be analysed as it becomes available (Sterzinger *et al* 2003, p9).

This conclusion is supported by a number of similar studies and findings in the limited literature on the subject, most of which failed to find any statistical evidence of the relationship between either proximity to or visibility of the wind farm and the sale price of homes (Sterzinger *et al* 2003).

## 4.7 Implications on tourism

There is the potential for increased tourism opportunities as a result of the construction and operation of the Project. The positive effect on tourists visiting the area would include:

- an increase in travellers stopping in the local area
- expenditure of stopping travellers purchasing items such as food and fuel
- a potential increase in demand for overnight accommodation
- a broader exposure of the Pyrenees and Corangamite LGAs.

There is evidence overseas that confirms that wind farms attract tourists and hence create opportunities for development of the tourism industry. Some examples are as follows:

- In Scotland, a study found that 43% of responding visitors said a wind farm would have a positive effect on their propensity to visit the Argyll area, an area of high landscape value. Less than 8% felt it would have a negative effect (Glasgow Caledonian University 2008, p. 63).
- Surveys in the UK showed that for 94% of visitors to North Cornwall, the presence of wind farms has had no adverse effect on the likelihood of them visiting North Cornwall

again. The majority of the remaining 6% said that the presence of wind farms would actually encourage them to revisit (Australian Greenhouse Office, 2002).

The Australian Government (Australian Greenhouse Office, 2002) suggests that there is empirical evidence which supports a positive correlation between wind farms and tourism numbers.

## 4.8 Implications of the community fund

SHWF P/L has committed to the establishment of a Community Fund as part of the Project. In the first year the Community Fund contributions would be approximately \$121,000. After 25 years and 3% CPI this would grow to a contribution of \$253,000 per year and the total contributions to the Community Fund would be approximately \$4.7 million. The objective of the Community Fund is to broaden the benefits of the wind farm within the local community. The intent is that funds would be spent on projects that would benefit the local community and that would have a lasting contribution to the area. Examples of projects may include (but would not be limited to):

- sponsorship of local sporting teams, including expenditure on infrastructure
- funding for CFA vehicles and other projects
- recycled water systems for community parks/gardens and sporting grounds
- new playground equipment for local schools
- upgrade of community facilities and other community projects
- funding towards local festivals and community events.

A committee would be established to administer the Community Fund and would comprise of local people interested and suitably able to be representatives.

The Community Fund would provide financial support to local organisations and individuals. Eligibility for funding would be determined through a committee specifically formed to administer the Community Fund. Projects would be evaluated under assessment criteria that would be developed by the committee. It is possible that multiple projects would receive funding, with the number of projects dependent on the size and scope of each individual project. As such, this may vary from year to year as decided by the committee.

## 5. Conclusions

In summary the socio-economic analysis has found that the Stockyard Hill Wind Farm should deliver the following outcomes:

### 5.1 Regional, state and national economic impacts during construction

- At the regional level, the construction of the wind farm is expected to contribute up to \$167 million per annum in GRP (including up to \$68 million initially, \$25 million directly, \$23 million indirectly and \$50 million induced). This is expected to support between 164 and 246 full-time equivalent jobs related to the initial construction the Project.
- At the state level, it is expected that GSP would increase by up to \$145 million per annum. This is expected to support between 444 and 665 jobs per annum for the period of construction.
- At the national level, the flow-on output of all industries is expected to increase by up to \$12 million per annum. This is expected to support 38 to 56 full-time equivalent jobs nationally across all upstream and downstream industries in the economy.

### 5.2 Regional, state and national economic impacts during operation

- At the regional level, the operation of the wind farm is expected to contribute up to \$21 million per annum in GRP. This is expected to support up to 84 full-time equivalent jobs regionally across all industries, of which 32 would be initially related to the operation of the Project (i.e. maintenance workers employed by the wind farm directly).
- At the state level, the Project is expected to contribute up to \$4 million per annum in GSP. This is expected to support up to 17 full-time equivalent jobs across all upstream and downstream industries in Victoria.
- At the national level, the flow-on impact of all industries is expected to contribute up to \$3 million per annum. This is expected to support up to 13 full-time equivalent jobs nationally.

### 5.3 Implications for business and industry development in the region

- Greater private sector investment in the Pyrenees and Corangamite regions more generally as new and emerging businesses seek to supply the increase in demand for goods and services resulting from the Project.
- An increase in the number and type of businesses across new and existing development areas, reflecting increased demand for goods and services.
- Greater profitability across new and existing development areas, reflecting increased commerce and demand for goods and services.

## 5.4 Implications for economic base for the region

- For construction: additional economic activity and employment in:
  - non-residential building construction
  - construction trade services.
- For operation: additional economic activity and employment in electricity, gas and water supply.
- Additional economic activity and employment in:
  - residential building construction
  - accommodation, cafes, and restaurants
  - wholesale and retail trade
  - property and business services
  - manufacturing
  - communication services
  - education services
  - government administration
  - health and community services
  - cultural and recreational services.

## 5.5 Implications for local services and infrastructure

- increased demand for goods and services accommodated through suppliers in larger regional centres such as Ballarat, Ararat, Portland, Warrnambool and Colac
- accommodation for the workers serviced through existing vacancy rates
- opportunity for local and regional services and suppliers to grow
- up skilling of local workers to promote and encourage involvement in the project
- local and regional benefits through improved project related infrastructure.

## 5.6 Implications for change to community lifestyle and values

- literature indicates that generally community is not averse to having wind farms in their immediate locality particularly when considered in the context of climate change and renewable energy technology.

## 5.7 Implications for greenhouse gas emissions

- generation in excess of 1,890 gigawatt hours per annum of wind generated electricity with a saving of just over 1,890,969 tonnes of CO<sub>2</sub>
- a greenhouse gas saving of \$37 million per annum and about \$490 million net present value over the life of the project.

## 5.8 Implications on property values

- no conclusive evidence of negative impacts on the value of agricultural land

- unlikely to be a major influence on the value of property in the region.

## **5.9 Implications on tourism**

- increase in travellers stopping in the local area
- expenditure of stopping travellers purchasing items such as food and fuel
- potential increase in demand for overnight accommodation
- broader exposure of the Pyrenees and Corangamite LGAs.

## **5.10 Implications of the community fund**

- SHWF P/L has committed to the establishment of a Community Fund as part of the Project.
- Funds would be spent on community projects that would benefit the local community and that would have a lasting contribution to the area.
- Assuming 3% CPI this would amount to \$4.7 million over the life of the project.

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