UNION FENOSA
WIND AUSTRALIA

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PALING YARDS WIND FARM

CHAPTER 6

PROJECT JUSTIFICATION

6 Project Justification

This chapter contains a strategic assessment of the justification for the project and discusses its environmental, economic and social benefits. It also discusses the alternatives to the project in relation to its type, location and scale.

6.1 Climate Change

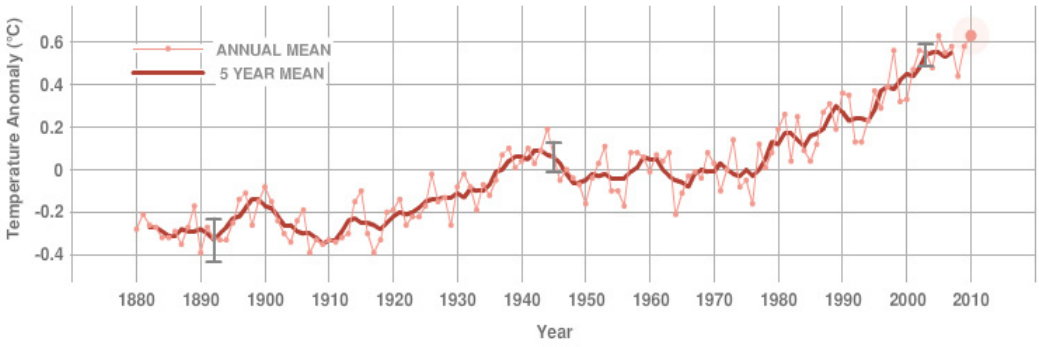
6.1.1 International and Australian Impacts

Climate change is an increase in global average surface temperature resulting from an increase in the amount of greenhouse gases, such as carbon dioxide (CO_2), methane and certain other trace gases in the atmosphere (DCCEE 2010). Greenhouse gases contribute to a warming of the earth's surface and lower atmosphere. The earth's climate has always changed; however, since the industrial revolution, the earth has warmed at an unprecedented speed. The amount of greenhouse gases entering the atmosphere has caused an advanced level of climate change and global warming that has had major influence on sea level rise, biodiversity depletion and extreme weather events (DCCEE 2010).

It is recognised by the majority of scientists and all major scientific associations that human-induced global warming and its subsequent harmful consequences are real, and must be mitigated. The United Nation's Intergovernmental Panel on Climate Change projects that average temperatures around the world will increase by up to 5.8°C over the coming century (GWEC 2012). This is predicted to result in dramatic climate shifts, including increased global average air and ocean temperature, melting ice caps, flooding of low-lying land, storms, droughts and dramatic changes in weather patterns. The majority of the world's population will experience these effects by 2050 (Garnaut 2008, UN 2009).

In 2010, the global average temperature was 0.53°C (0.95°F) above the 1961-90 mean, and the year ranked as the warmest year on record (WMO 2011). The World Meteorological Organisation (WMO) emphasises that *"over the ten years from 2001 to 2010, global temperatures have averaged 0.46°C (0.83°F) above the 1961-1990 average, and are the highest ever recorded for a 10-year period since the beginning of instrumental climate records"*. This data confirms the Earth's significant long-term warming trend (refer to **Figure 18**).

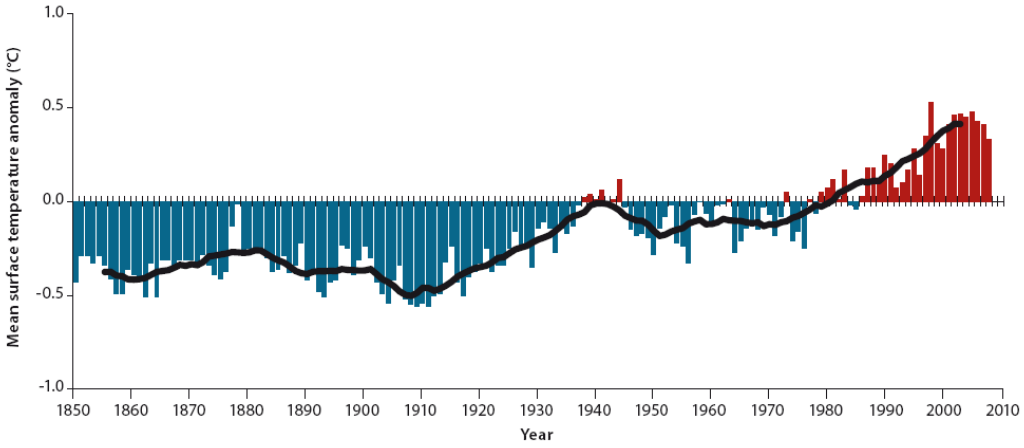
Figure 18 Global temperature rise (1880-2010)



Source: www.climate.nasa.gov

Since the mid-20th century, Australian temperatures have, on average, risen by about 1°C (BOM, 2010) (refer to **Figure 19**). An increase in the frequency of heatwaves and a decrease in the numbers of frosts and cold days have also been observed in Australia over that time (BOM, 2010). Rainfall patterns have also changed, as the northern areas have seen an increase in rainfall over the last 50 years while much of Southern Australia has experienced a decline in rainfall over the same period (BOM, 2010).

Figure 19 Mean surface temperature change (1910-2007) for Australia



Source: BOM, 2011

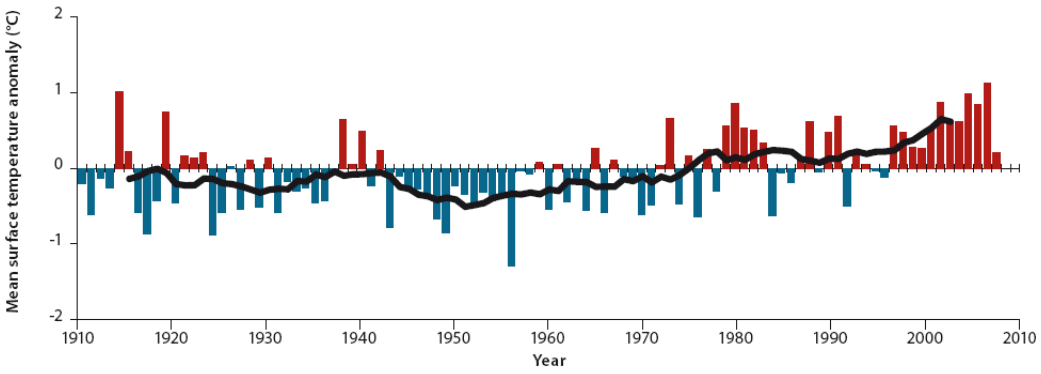
The *Garnaut Review Final Report* (2008) found that *"Australia's level of exposure and sensitivity to the impacts of climate change is high"* and that the major impacts of climate change are likely to include considerable drying in southern Australia, with risk of much greater drying, stressed urban water supply and the effects of changes in temperature and water availability on agriculture. This is expected to have a severe and costly impact on agriculture, infrastructure, biodiversity and ecosystems in Australia, as well as flow on effects on neighbouring nations (Garnaut 2008).

The update to the Garnaut Climate Change Review (2011) advocates that Australia should *"calibrate its emissions reductions proportionately to the global mitigation effort which aims to limit global warming to below 2 degrees above pre-industrial global average temperatures"*, and that a target to reduce Australia's carbon pollution to 25% below 2000 levels by 2020 is appropriate (Garnaut, 2011).

6.1.2 NSW and Local Impacts

Current climate trends identified by the Bureau of Meteorology (BOM) indicate an accelerating increase in average annual temperature in NSW (refer to **Figure 20**). During the 1950s to 1980s, the annual average temperature rise was around 0.1°C per decade; since 1990 it has been about 0.5°C per decade (BOM 2010). All years from 1997 to 2008 were warmer than average, which represented *"an unprecedented sequence in the historical records"* (BOM 2010).

Figure 20 Mean surface temperature change (1910-2007) for NSW



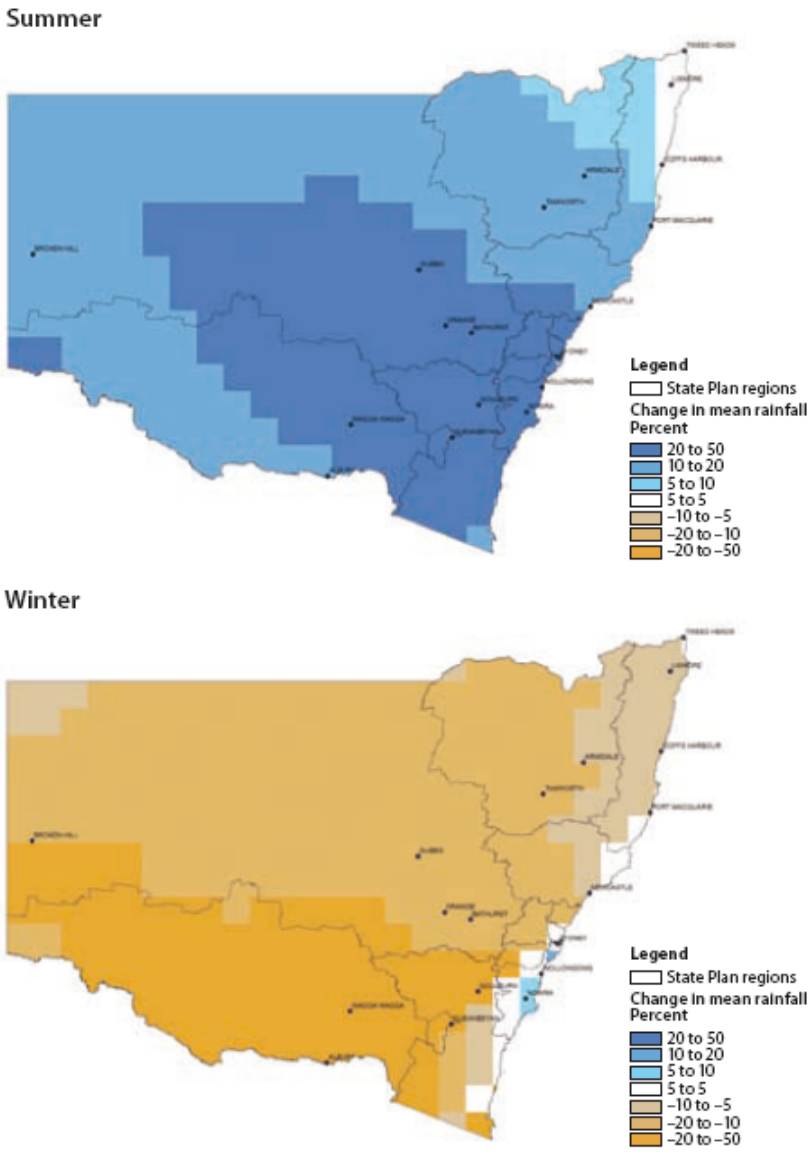
Source: BOM, 2010

According to the NSW Government, CSIRO and Bureau of Meteorology projections, the NSW community needs to prepare for higher temperatures, rising sea levels, less rainfall, more frequent and more severe droughts, and more extreme storms (DECCW 2010). These changes *"are likely to have significant impacts on agriculture, water supply, settlements and infrastructure, natural resources, biodiversity and human health"* (DECCW 2010).

The NSW *Climate Impacts Profile* predicts greater maximum and minimum temperatures to be experienced across the state in all seasons. Winter and spring maximum temperatures are expected to rise by around 2–3°C across much of northern NSW by 2050 (DECCW 2010).

In addition, many parts of the state are forecasted to experience a shift from winter-dominated to summer-dominated rainfall, which may have implications for the length and severity of drought in these areas (refer to **Figure 21** below).

Figure 21 Projected changes in summer and winter rainfall by 2050 for NSW



Source: NSW Climate Impact Profile, DECCW, 2010

The *NSW Climate Impact Profile* is the first integrated assessment of the biophysical changes projected for the state as a result of climate change. It outlines risks, and provides regional projections for eight different areas of the state. The climate impact projections for the South-East region by 2050, in which the site is located, are:

- *"The climate is virtually certain to be hotter, with a likely rainfall increase in summer and decrease in winter. Snowfall is likely to decrease.*
- *Run-off and stream flow are likely to decrease in spring and winter, particularly in the west, and increase during summer.*
- *Sea level is virtually certain to keep rising.*
- *The rate of erosion is likely to increase on some soils. Coastal agricultural soils are likely to be inundated and acidification is likely to increase.*
- *Sea level rise coupled with increased flooding is virtually certain to pose an increased risk to property and infrastructure in coastal areas. Developments near coastal lakes and estuary entrances and on coastal floodplains are vulnerable.*
- *Widespread changes to some natural ecosystems are very likely. Those most at risk are alpine ecosystems, low-lying coastal ecosystems and those sensitive to fire" (DECCW 2010).*

6.2 Renewable Energy

6.2.1 Energy Generation

Internationally, the world is heavily dependent on the supply of fossil fuels, which emit large levels of CO2, for electricity production. Further, per capita consumption rates and energy demands are expected to rise, driven by an estimated global population of approximately 9.2 billion people by 2050, and the increasing industrialisation of the large Chinese, Indian, and other economies (Garnaut 2008, United Nations 2006). It is projected that world consumption of energy from all fuel sources will increase by 49 % from 2007 to 2035 (EIA 2010). The known impacts of fossils fuels, combined with increasing energy demand, highlight the global need for renewable energy technologies that emit less greenhouse gases.

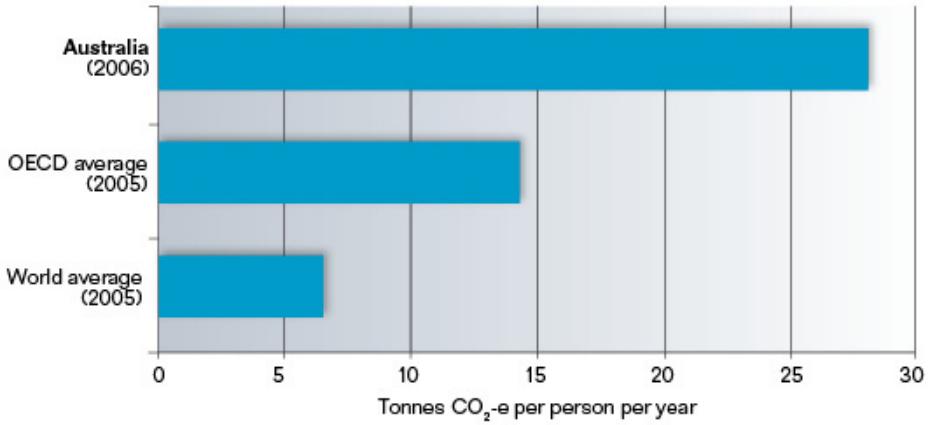
Australia has the highest per capita emissions in the OECD and is among the highest emitters in the world (Garnaut 2008, OECD 2009). Garnaut's (2008) Climate Change Review identifies that Australia's per capita emissions are nearly twice the OECD average and more than four times the world average (refer to **Figure 22 – Per capita greenhouse gas emissions, Australia, OECD average and the World average, 2005**).

The Review also highlights findings from the Department of Climate Change (2008) and the International Energy Agency (2007) that *"the high emissions intensity of energy use in Australia is mainly the result of our reliance on coal for electricity"* (refer to **Figure 23 – Per capita emissions due to electricity, 2005**).

Australia's long-term energy projections show total energy production nearly doubling due to strong export demand, primary energy consumption rising by 35%, and electricity demand increasing by nearly 50% by 2030 (ABARE 2010).

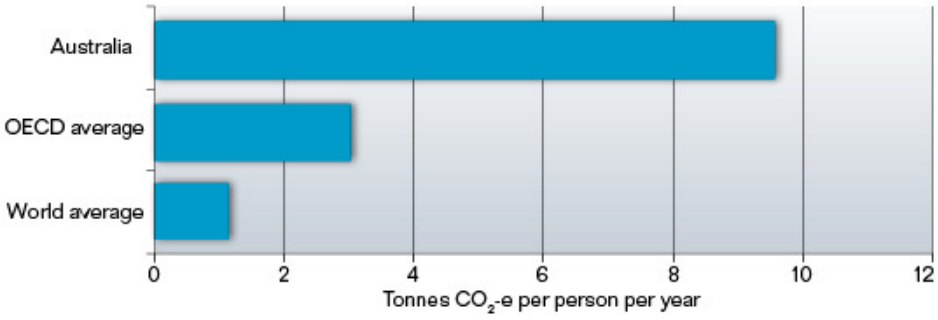
At current rates of production, the Australian Coal Association estimates 500 years supply of brown coal, 100 years of black coal and 60 years for conventional gas (ABARE 2009). **Figure 24 – Composition of Australian energy supply**, demonstrates the domination of the fossil fuels in Australian energy sources.

Figure 22 Per capita greenhouse gas emissions, Australia, OECD average and the World average, 2005



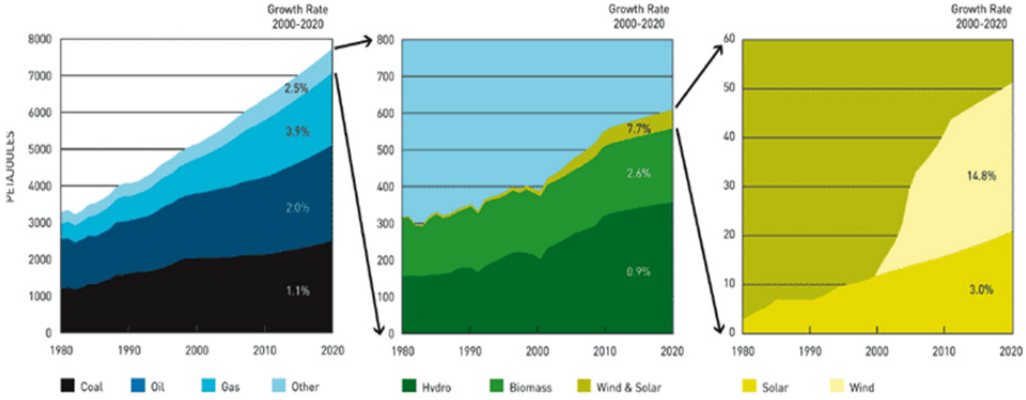
Source: DCC (2008c); IEA (2007a) cited in Garnaut 2008, http://www.garnautreview.org.au/chp7.htm

Figure 23 Per capita emissions due to electricity, 2005



Source: DCC (2008b); IEA (2007a) cited in Garnaut 2008, http://www.garnautreview.org.au/chp7.htm

Figure 24 Composition of Australian energy supply



Source: http://www.energymatters.com.au/faqs/renewable-energy-faq.php

6.2.2 The role of renewable energy

As the negative impacts of climate change and global warming become increasingly apparent, society is looking at the role of innovative technology to address these concerns. A key example is renewable energy. Renewable energy harnesses the replaceable natural energies of the Earth and can be defined as *"energy that is drawn from sources that cannot be depleted or can be replaced"* (House of Representatives Standing Committee on Industry and Resources, 2007).

As energy demands continue to rise and non-renewable energy supplies are depleted, new sources of energy are increasingly required. The adoption of renewable energy is acknowledged as a primary solution to increase energy security, reduce greenhouse gas emissions and cater for future energy needs.

One of the greatest benefits of renewable energy is its potential to provide clean sources of electricity. When generating electricity, renewable energy sources produce less greenhouse gas emissions than fossil fuel or non-renewable energy sources. Additionally, renewable energy produces little or no waste products such as chemical pollutants so, therefore, have a smaller direct impact on the surrounding environment. Renewable energy technologies have, therefore, been sought and developed *"not only to increase the diversity of energy supplies but to potentially displace fossil fuels and consequently reduce greenhouse gas emissions generated by electricity production"* (IEA 2009 cited in NSW Legislative Council 2009).

Renewable energy can also provide opportunities for rural economic development and establish vibrant new industries in local communities, reducing the dependency of the local economy on agriculture alone.

Australia is a nation endowed with significant renewable energy potential, including: *"high levels of solar rays to be used for solar projects; some of the best dry hot rock sites in the world in South Australia, Tasmania, New South Wales and Victoria for geothermal energy production; a vast coastline bordering the southern ocean available for wave energy; and significant wind resources"* (DEWHA 2009, Sustainability Victoria 2010).

Currently, renewable energy accounts for approximately 8.67% of all electricity generated in Australia (CEC, 2010).

6.2.3 The role of wind energy

There are many benefits of wind energy technology.

Wind energy is clean and renewable. Unlike conventional energy sources, wind energy can produce electricity locally, thus reducing transference distances and loss of energy in the process (Diesendorf 2007b).

Wind energy does not involve the harmful side-effects which may result from other energy sources such as the risk of gas explosions, nuclear meltdowns or produce radioactive by-products requiring future storage for thousands of years (Diesendorf 2007b).

Wing energy is currently the most commercially viable and proven renewable technology and, since the 1970s, has been viewed as a key part of a new generation energy mix.

Wind energy can play a key role in reducing greenhouse gas emissions, by providing energy security, decreasing transmission losses, and reducing water consumption. The Australian Energy Regulator (AER), in its State of the Energy Market 2008 report, found that *"renewable energy sources, such as hydroelectric, wind and solar, produced*

some of the lowest greenhouse gas emissions" (AER 2008 in NSW Legislative Council, 2009). Within three to six months of operation, a wind turbine has offset all carbon emissions resulting from its construction, enabling it to operate 'carbon free' for the remainder of its operational life (GWEC, 2010).

Wind energy avoids the negative environmental impacts that are associated with coal-fired electricity generation, such as direct emissions of oxides of nitrogen and sulphur, which cause acid rain and other atmospheric pollution (SEDA NSW 2002).

Other types of electricity generation (such as coal-fired) also require a considerable amount of water during operation. In the case of a coal-fired plant, water is required for the cooling towers, to replace water lost from the boilers, and to stabilise the mine.

Wind energy does not require the use of water during operation and does not require large amounts of water during construction. In contrast, other types of electricity generation such as coal-fired generators require a considerable amount of water during operation. In the case of a coal-fired plant, water is required for the cooling towers, to replace water lost from the boilers, and to stabilise the mine.

Technological advancements have increased wind energy capacity across the world. By June 2011, worldwide wind capacity reached 215,000 MW (WWEA, 2011), accounting for almost 3% of the electricity demand all over the world (WWEA, 2011).

The global wind industry has set itself *"a target of saving 1.5 billion tons of CO^2 per year by 2020"* (GWEC, 2010).

Wind energy also has benefits for land owners involved in the projects. The small development footprint of wind energy projects diversifies the revenue stream available from the land without compromising the core business of agricultural production (due to the small development footprint of a wind farm). Wind farms also provide significant local investment and direct and indirect employment. Refer to **Chapter 5 – Economic and Social Impacts** for more information.

One of the present challenges of wind power is the intermittent nature of its power production. Varying wind speeds affect the energy produced from wind turbines. It is recognised that with current technology, a single wind farm cannot produce sufficient electricity to meet base load power requirements. However, wind farms can meet a significant portion of electrical demand where the transmission network is well linked and wind farms are geographically diverse. This is because, whilst the wind may not be blowing at peak generation speeds in NSW, a modern transmission network is able to utilise wind power generated from Victoria or South Australia where the wind is blowing at a more favourable rate, and vice versa.

Considerable research is underway within the energy industry to improve the management of different types of energy generators as part of the overall modern power generation network. For example, improvements in wind forecasting can increase the ability of grid operators to schedule and accommodate generation from wind, whilst reducing the generation from polluting sources of base load generation. Furthermore, wind generation can be combined with other renewable sources such as hydroelectricity to improve its ability to supply base load power when required. Additionally, advances in energy battery technologies also offer the potential for short term storage of energy to be utilised when the wind is not blowing. Wind power is seen as a key component of a modern energy network that also includes solar, hydro and gas.

As technology advances, the role of wind power in Australia's energy mix is increasing. The University of Melbourne Energy Research Institute team has established an organisation, Beyond Zero Emissions, a non-profit, independent climate change

solutions research and advocacy group that has developed the *Zero Carbon Australia 2020 Project*. The Zero Carbon Australia 2020 Project is a *"costed, detailed blueprint for a transition of Australia to a Zero Emissions Economy by 2020 using proven, commercialised technology"* (University of Melbourne, 2010).

The Zero Carbon Australia 2020 Project only uses proven and costed technologies that are commercially available. Importantly, wind power is one of only two primary technologies utilised (the other being concentrating solar thermal (CST), providing a significant proportion of (approximately 40%) of the proposed energy mix (University of Melbourne, 2010). Wind power and CST are backed up by a 2% annual contribution from crop waste biomass and hydroelectricity (University of Melbourne, 2010).

The Zero Carbon Australia 2020 Project mid-term goals are to have 15,000 MW of wind and 5,000 MW of CST operational by 2015. Australia, however, currently has less than 2,000 MW of wind turbine capacity installed (University of Melbourne, 2010). Wind power was selected as a key source for Australia's future energy requirement on the basis that:

- wind power is generally the cheapest renewable energy source to deploy;
- it is technologically mature;
- 40% wind power can be readily integrated with the CST-based electricity supply grid; and
- at least 15% of the installed wind capacity would always be producing power, with the same reliability as conventional 'base load' power.

Wind power, therefore, can play a crucial role in Australia's future energy. Accordingly, developments such as the Paling Yards Wind Farm project are important in supplying Australia's increasing demand for clean renewable energy.

6.3 Wind Power Context

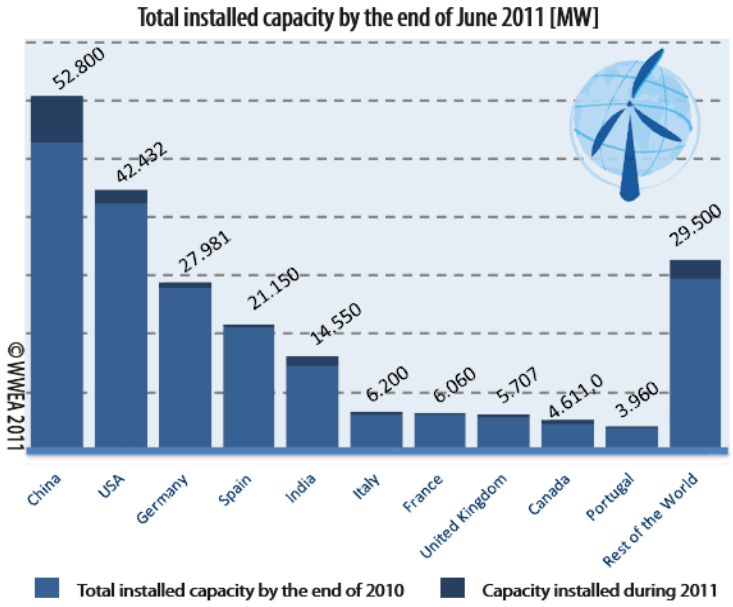
6.3.1 International Context

Wind power is one of the fastest growing energy technologies in the world (Diesendorf 2009). According to the World Wind Energy Association, at the end of June 2011 over 215 GW of wind energy capacity was installed globally (WWEA, 2011), of which 18.4 GW of new capacity had been installed in the first half of 2011. Wind power showed a growth rate of 22.9 % from June 2010 to June 2011 (WWEA, 2011). This rate was lower than the growth in 2008 (29%) and 2009 (32%) due to a large volume of projects that had been initiated in late 2006 through 2008 (Pike Research, 2011a). However, global wind generation capacity is expected to grow from 194.3 GW in 2010 to 562.9 GW by 2017 (Pike Research, 2011b). **Figure 25** - **World total installed capacity (MW) from 2001 to 2011** shows the total installed wind capacity at the end of 2010 and June 2011 for the top ten wind energy markets and the rest of the world.

Wind power now accounts for a significant majority of the world's renewable electricity capacity, after hydropower.

The international wind energy industry witnessed growth worth over 56 billion in 2010 (Pike Research, 2011a) and is predicted to see an investment in new wind power capacity of $820 billion between 2011 and 2017 (Pike Research, 2011b). A global capacity of 600 GW is predicted as possible by the year 2015 and more than 1,500 GW by the year 2020 (WWEA, 2010).

Figure 25 World total installed capacity (MW) from 2001 to 2011



Source: World Wind Energy Association, 2011

The international wind industry is responsible for significant employment. The World Wind Energy Association estimated that the wind sector employed 670,000 persons worldwide by 2010 (WWEA 2010).

Whilst wind energy is most commonly utilised in Europe, it is being increasingly embraced by nations outside that continent. In 2010, China became number one in total installed capacity, and added 18.9 GW within one year, accounting for more than 50% of the world market for new wind turbines (WWEA 2010). In the first 6 months of 2011, China added 8 GW, accounting for 43% of the world market for new wind turbines (WWEA, 2011).

While the wind energy industry has grown by over 30% over the past decade, wind energy currently supplies less than 3% of global electricity generation (WWEA 2011). It is considered, however, that wind energy has the potential to supply *"10-12% of global electricity demand by 2020, reducing greenhouse gas emissions by 1.5 billion tonnes per year"* (NSW Legislative Council, 2009).

6.3.2 Australian Context

Wind energy in Australia has shown rapid growth over the last 30 years, and is increasingly recognised as a key component needed to supply our increasing energy needs. The Australian wind industry is generally concentrated in the southern states of Western Australia, South Australia, Victoria, Tasmania and New South Wales (NSW).

The Renewable Energy Target (RET) scheme outlines the Australian Government's commitment to reducing greenhouse gas emissions and expanding the use of renewable sources from 2020 and beyond. On 20 August 2009, the Renewable Energy (Electricity) Amendment Bill 2009 was passed in the Commonwealth Parliament, which expanded the MRET (Mandatory Renewable Energy Target) scheme into a single national scheme, called the RET. This scheme places a legal liability on wholesale purchasers of electricity to proportionately contribute towards the generation of

renewable energy (Sustainability Victoria, 2010). In June 2010, the Government passed an enhanced RET scheme, which created new categories for renewable energy to encourage commercial scale energy development.

The aim of the RET is to ensure that *"20 per cent of Australia's electricity comes from renewable sources by 2020"* (Commonwealth of Australia, 2013), and to:

- *"encourage the additional generation of electricity from renewable sources;*
- *reduce emissions of greenhouse gases in the electricity sector; and*
- *ensure that renewable energy sources are ecologically sustainable." (Clean Energy Regulator, 2012),*

The RET achieves this by *"the creation of online certificates by eligible renewable energy sources based on the amount of electricity in megawatt hours (MWh)"* and *"placing a legal obligation on liable entities (usually electricity retailers) to purchase and surrender a certain amount of these certificates each year"* (Clean Energy Regulator, 2012). The RET places an obligation on electricity retailers and large users of electricity to purchase 20% of their electricity from renewable energy sources by 2020 (Minister for Climate Change, Energy Efficiency and Water, June 2010).

On 1 January 2011 the RET split into two separate schemes, and the 'Large-scale Renewable Energy Target' (LRET) and the 'Small-scale Renewable Energy Scheme' (SRES) became effective. The LRET encourages large scale energy generation to be produced using technologies such as hydro, biomass, solar, tidal and wind power. The LRET will drive investment in renewable energy projects like wind farms, commercial solar and geothermal, which will deliver the majority of the 2020 target. The annual targets for the LRET increase each year up to 41,000 GWh by 2020 (DCCEE 2010).

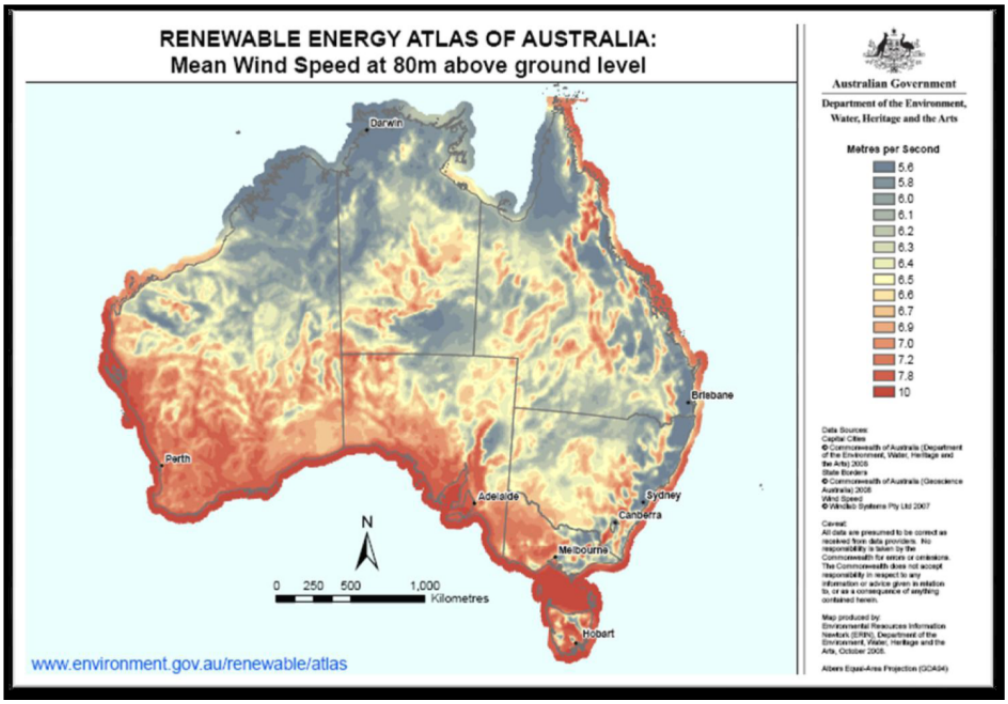
To achieve this target, Australia will require significant investment in renewable generation. As wind power is currently one of the most economic and mature renewable energy technologies available, it is likely to contribute a large share of this target. The development of up to 178 MW of wind generation at the site will make an important contribution to Australia's renewable energy sector.

At the end of 2011, the total investment in large-scale renewable energy power stations was approximately $10.5 billion and their generating capability was approximately 13,700 gigawatt hours of eligible renewable energy per year (Clean Energy Regulator, 2012). This generating capability is *"equivalent to the residential electricity needs of over 2.1 million households"* (Clean Energy Regulator, 2012).

Billions of dollars of investment of additional wind generation capacity will be required to meet the RET target by 2020 (Infigen Energy, 2012, Origin Energy, 2013). Wind power remains the renewable technology leader in cost competitiveness and is expected to play a significant role in meeting the large scale target.

Beyond the environmental benefits, the profile of wind power in Australia has grown due to its status as a market ready technology, at an increasingly affordable price. Moreover, Australia is described by the GWEC as having some of the world's best wind resources (DEWHA 2009, CEC 2010), making it a prime location for wind farm development (refer to **Figure 26 – Renewable Energy Atlas of Australia**).

Figure 26 – Renewable energy atlas of Australia



Source: The Department of the Environment, Water, Heritage and the Arts 2009.

Investment in wind energy technology has increased substantially over the last few years. Australia's total operating wind capacity at the beginning of 2011 was 1991 MW (CEC 2012). Wind power generation in Australia has increased by approximately 30%each year over the previous decade (CEC 2012). Since 2000, *"more than 1400 direct jobs and $3.3 billion of investment have been generated through the development of wind energy in Australia"* (GL Garrad Hassan cited in CEC 2011).

However, total installed wind generation capacity in Australia is considerably lower in comparison to many other developed and developing nations (WWEA, 2010).

In September 2011, the Commonwealth Government moved towards implementing its carbon reduction initiatives by introducing the Carbon Bill package to the Australian Parliament. The key component of this legislative package is the Clean Energy Act 2011 (Cth) which was passed by the Senate on 8 November 2011. The carbon price commenced under this Act on 1 July 2012.

The Australian Government announced that the Australian carbon pricing mechanism and Europe's emissions trading scheme will be linked onwards and that the proposed $15/t price floor in the Australian mechanism will be scrapped from July 2015. These changes will not affect the Australian fixed price between now and 30 June 2015 ($23/t CO2e, rising to $25.40/t CO2e).

The introduction of a carbon price for high polluting users promotes low and zero emission energy sources and provides funding for the development and transition to low emission methods; including wind farms. Therefore, the development of the Paling Yards by UFWA is consistent with the current policy of the Commonwealth government.

The intention of the current Federal Government (elected in 2013) is to repeal Australia's carbon pricing scheme, as stated by Prime Minister Tony Abbott; however the date and likelihood of success of this repeal is unknown (SMH, 2013).

By the end of 2012, Australia was home to 62 operating wind farms (CEC, 2013) (refer to **Table 6** below). This wind energy investment has created:

- 2,584 MW total installed wind capacity
- more than 7,700 GWh of electricity
- a supply that accounts for over 3.4 per cent of Australia's overall electricity needs
- 1,397operating wind turbines
- A situation where over 1 million equivalent Australian homes are powered
- $7 billion total capital investment $4.25 billion of local investment
- 1,700 direct jobs
- 5,200 total jobs

Table 6 Jurisdictional breakdown of wind farms in Australia (2013)

Jurisdiction	Wind farms Installed	Turbines Installed	Capacity Installed
New South Wales	9	170	282 MW
Queensland	2	22	12 MW
South Australia	16	561	1205 MW
Tasmania	6	68	142 MW
Victoria	12	314	519 MW
Western Australia	17	262	424 MW
Northern Territory	Nil		
Australian Capital Territory	Nil		
Australia	**62**	**1,397**	**2,584 MW**

Source: Clean Energy Council, Technologies, Wind Energy, 2013:
http://www.cleanenergycouncil.org.au/technologies/wind-energy.html

South Australia and Western Australia contain the highest number of wind farms, and South Australia is reported to have the highest level of total electricity coming from wind energy production.

6.3.3 NSW Context

In NSW, more than 90% of electricity is generated from coal, and one third of NSW's total greenhouse gas emissions are due to the generation of electricity (NSW Government 2010b). Most of NSW's electricity is sourced from black coal fired power stations in the Hunter Valley, such as the Bayswater Power Station. In NSW, each kW of electricity produced from coal generation results in 1.07 kg of carbon pollution (NSW Government 2010a), whilst electricity produced from wind farms produces no direct carbon pollution. The greenhouse gases generated by the manufacture of the turbines and the construction of the farm are offset within three to six months of wind farm operation.

Additionally, there is increasing community concern in regional NSW regarding air and water pollution caused by both coal fired power stations and coal mines. The Sydney Morning Herald has publicised community concerns over health impacts thought to be associated with the coal mining industry in the Hunter Valley (SMH, 2010).

Energy demands in NSW are predicted to rise as a result of increased population and consumption rates. Governments have recognised that renewable energy sources should be encouraged in order to reduce the greenhouse gas emissions resulting from increased generation. In lieu of the RET legislation, the NSW government introduced the draft NSW Renewable Energy Target (NRET) in 2007. This scheme required 10% of NSW's electricity to be sourced from renewable energy by 2010, and 15% by 2020 (NSW Government 2006).

The NSW scheme's target, which applied to all electricity retailers required electricity retailers to purchase 10% of their electricity supply from accredited renewable generation sources (NSW Government 2006). Due to the introduction of the RET scheme by the Federal Government, the draft NRET scheme was not legislated.

While dependence on fossil-fuelled energy remains high, the wind energy sector in NSW is currently experiencing rapid growth. By the end of 2012, there were 9 operating wind farms and 282 MW of installed wind power in NSW.

The key reasons for the emergence of the wind energy industry in NSW include:

- the status of wind energy technology as 'market ready';
- its role in reducing greenhouse gas emissions;
- the potential for considerable investment and economic activity driven by the Commonwealth Renewable Energy Target (RET);
- the significant wind resources available in NSW; and
- the price competitiveness of electricity generated by wind energy.

NSW has an excellent wind resource (refer to **Figure 27 – NSW Wind Atlas**). Background wind speeds in NSW are comparable to northern Europe, where a large portion of international wind generation is currently installed (NSW Government 2010a). NSW has an estimated potential for over 5,000 MW of wind energy (NSW Government 2010c).

Many of the ideal sites in NSW are "*the hills and ridges of the Great Dividing Range and calmer background winds that blow from west to east across the vast NSW inland*" (NSW Government 2010c). The extensive NSW transmission network is linked to the

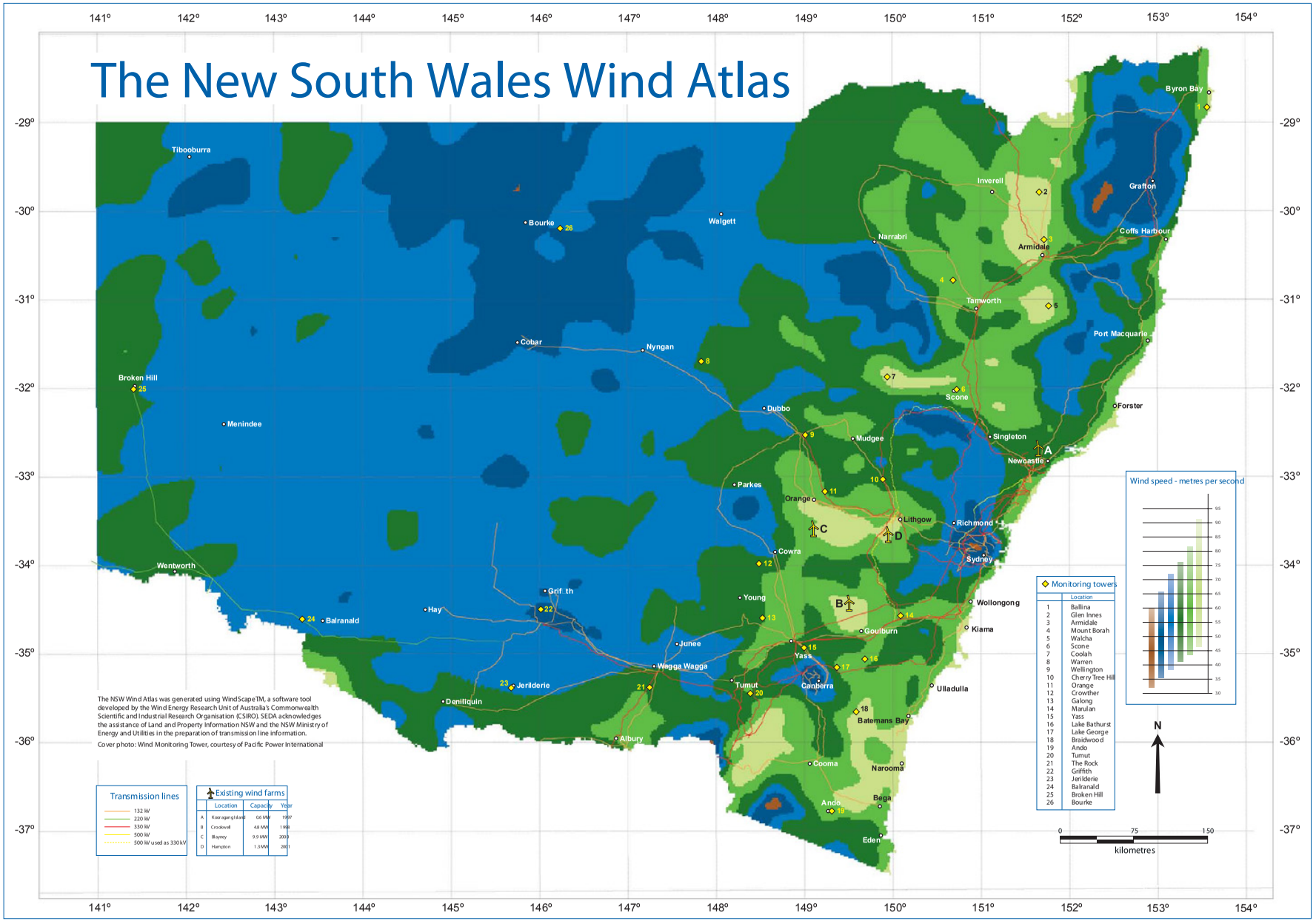


Figure 27 NSW Wind Atlas

Source: *NSW State Government*

national grid, offering easy access for wind farms (SEDA NSW 2001). Furthermore, NSW has one of the biggest wind monitoring networks in Australia.

6.4 Community Attitudes

In 2012 CSIRO conducted an investigation, *Exploring Community Acceptance to Rural Wind Farms in Australia: a snapshot* that sought to improve the understanding of community attitudes to rural wind farms.

The study involved interviews and media analysis across nine wind farms of different sizes and operational status across New South Wales, Victoria and South Australia. Overall, the study found that "*community acceptance of wind farms could be increased by developers intentionally adopting frameworks for transparent and well structured community engagement*".

The study produced four high level findings:

1. *There is strong community support for the development of wind farms, including support from rural residents who do not seek media attention or political engagement to express their views. This finding contrasts with the level of opposition that may be assumed from the typically 'conflict-oriented' portrayal of wind farm proposals in the popular media.*
2. *The actual and perceived local costs and benefits of wind farms are strongly influenced by the design, implementation, and community engagement processes.*
3. *Existing regulatory approaches provide an appropriate framework for negotiating wind farm developments, but there is scope for improving outcomes.*
4. *The emerging notion of a 'social licence to operate' provides a useful framework for wind farm developers to engage local communities in ways that could enhance transparency and local support, and complement formal regulatory processes. This approach could provide a structured and cooperative framework for exploring strategies for reducing potential adverse impacts, sharing financial benefits equitably, and building local trust and understanding through a clear communication process.*

An in-depth and thorough community consultation program has been designed for the project for direct community consultation and have stakeholders' views heard and responded to. The proponent has already taken appropriate steps in the process to proactively inform and engage the local community and relevant stakeholders about the project. Community input has influenced the design of the wind farm and any concerns will continue to be addressed.

At the end of 2010, the NSW Government conducted a survey of approximately 2,000 people and 300 businesses in rural NSW in order to assess public attitudes to wind farms. The results showed that around 80% of respondents said they would strongly support wind farms in their region (SMH, 2011).

Refer to **Chapter 22** of this EA for details on the extensive community and stakeholder consultation undertaken by the proponent for this project.

6.5 Project Benefits

6.5.1 Environmental benefits

Wind energy plays a key role in reducing greenhouse gas emissions and mitigating climate change. The NSW State Government promotes the development of renewable energy as part of an approach to ensuring sustainable development in the NSW energy sector and reducing the state's greenhouse gas emissions.

The project would contain up to 55 turbines, generating up to 178 MW of wind energy. If approved, the project would save between 269,827 and 535,961 tonnes of CO_2 annually (when compared to generating the same amount of electricity from black coal fired power stations). An equivalent CO_2 reduction could be achieved by taking up to 123,778 cars off the road, or planting up to 799,941 trees. The electricity generated by the wind farm could supply up to 85,344 households with energy, or a population of 221,895.

The environmental benefits of wind energy projects such as the Paling Yards Wind Farm project are clear: wind farms do not generate any greenhouse gas emissions during electricity production (NSW Legislative Council, 2009), and minimal quantities during the manufacture of its equipment and construction phase. By contrast, fossil fuels such as coal, gas and oil are major emitters of carbon dioxide.

Wind power generation also mitigates other adverse environmental impacts such as landscape degradation from fossil fuel exploration and mining, the pollution caused by accidental oil spills, and waste from fuel (GWEC 2010). Furthermore, wind energy does not require large water resources or make large tracts of land unusable, as the turbines and associated infrastructure use, on average, approximately 0.1% of land upon a site (GWEC 2010). This footprint is slightly larger during the temporary construction period.

Another key environmental benefit of wind power generation is energy security. An energy future based on conventional fuel sources is uncertain as oil, coal and gas are non-renewable and by definition will one day run out. It is estimated that by 2030 world energy needs will be between 30 and 60% higher than current levels (GWEC 2010). However, the main fossil fuels used in power generation, which nations are heavily reliant upon, are becoming more expensive and more difficult to extract (GWEC 2010). There is uncertainty over supply and cost associated with the importation of fossil fuels. In contrast, wind energy is a renewable energy source that is endlessly obtainable in almost every country in the world.

Air Pollution

The generation of wind power at Paling Yards Wind Farm would also have a positive effect on regional air quality by displacing pollutants generated from coal power stations. The combustion of coal to generate electricity produces sulphur dioxide and nitrogen oxide, which are emitted into the atmosphere and are the main components of the ‘acid rain’ effect. Acid rain negatively impacts upon forests, water courses and human health (GWEC 2010). Based on 2008/09 NSW Electricity Generation figures (NPI 2010) approximately 240 million kg of acid rain producing sulphur dioxide, as well as 170 million kg of oxides of nitrogen, are emitted by NSW electricity generators per year. The majority of this pollution is emitted by coal power stations. For example, NSW’s largest electricity generator, the Bayswater Power Station in Muswellbrook, emitted 37 million kg of Oxides of Nitrogen and 70 million kg of Sulphur Dioxide in 2008/2009 (NPI 2010). By contrast, the Paling Yards Wind Farm would produce no oxides of nitrogen, sulphur dioxide, or any other direct air pollutants.

Other pollutants emitted by coal power stations include (NPI 2010):

- Ammonia
- Arsenic & compounds
- Beryllium & compounds
- Boron & compounds
- Cadmium & compounds
- Carbon monoxide
- Chromium (III) compounds
- Chromium (VI) compounds
- Cobalt & compounds
- Copper & compounds
- Cumene (1-methylethylbenzene)
- Fluoride compounds
- Hydrochloric acid
- Lead & compounds
- Manganese & compounds
- Mercury & compounds
- Nickel & compounds
- Particulate Matter
- Polychlorinated dioxins and furans
- Polycyclic aromatic hydrocarbons
- Selenium & compounds
- Sulfuric acid
- Zinc and compounds

As wind farms do not produce any direct pollution, every MW of energy produced by wind farms displaces the emission of the above pollutants.

Greenhouse gas reductions

A key determinant in calculating the emission reductions of the project is the type of energy that is displaced by the wind energy. Whilst in Victoria wind energy displaces brown coal fuelled energy at a rate of 1.31 tonnes per MWh of energy, in NSW it is less as black coal converts to energy at a higher efficiency. A co-efficient of 0.973 tonne per MWh of energy has been used to support the calculations below. This pool co-efficient is derived from GGAS (2009). The table below outlines the savings that would be made as an outcome of the project.

Table 7 Greenhouse gas savings

	Maximum up to	Source
Total Capacity (MW)	178*	Calculated – Union Fenosa
Capacity factor (%)	35%	Calculated – Union Fenosa
Output (MWh)(Annual)	550,833	Calculated – Union Fenosa
Greenhouse gas displaced (tonnes)	535,961	Based on NSW GGAS 2010
Number of households supplied electricity	85,344	Based on AGO, 1999
Population supplied electricity	221,895	Based on Vic Sustainable Energy Authority 2003
Equivalent cars off road	123,778	Based on Vic Sustainable Energy Authority 2003
Equivalent number trees planted	799,941	Based on Vic Sustainable Energy Authority 2003

* The 178 MW figure has been derived from an estimate of the mix of turbine capacities. Whilst it is theoretically possible for the wind farm to produce up to 247.5 MW (4.5 MW x 55 turbines), this is unlikely given site constraints. As a result, it is more likely that a mix of turbine models with different capacities will be pursued. It has therefore been estimated that the maximum output will be up to 178 MW.

As outlined in the table above, the greenhouse gas savings attributable to the project equates to the electricity use of a population up to 221,895 or 85,344 households. This is approximately two-thirds of Canberra's population (350,000) or more than ten times the size of Goulburn (20,127).

Water Savings

In addition to electricity savings, due to the amount of water required to fuel black coal energy production, significant amounts of water would be saved by the production of energy through the project.

The five coal power stations currently in operation in NSW use approximately 85,000 ML per year or 15% of Sydney's annual water consumption (NGH Environmental 2009). As coal fired electricity production continues to rely on potable rather than recycled water, this represents a major environmental impact in addition to the pollution and greenhouse gases produced by coal fired power stations.

Based on the annual water consumption and energy production rates for coal fired power stations in NSW, approximately 1316 litres is used per MWh produced (NGH Environmental 2009). The project would therefore significantly reduce the amount of potable water consumption attributable to energy generation in NSW every year.

6.5.2 Economic benefits

The Global Wind Energy Council emphasises the significant economic benefits of utilising wind power, as follows:

- No fuel price risk: Wind energy is a large indigenous power source which is permanently available in virtually every country in the world.
- Investment and jobs: According to the GWEC scenario, the annual value of global investment in wind energy would reach €149.4 billion by 2020 and account for over 2.2 million jobs.
- Regional economic development: The wind power industry is revitalising regional economies, providing quality jobs and expanding tax bases in rural regions.
- No geo-political risk: There are no fuel costs, no geo-political risk and no supply dependence on imported fuels from politically unstable regions.
- Speed of development: Wind power also has the advantage that it can be deployed faster than other energy supply technologies.
- Emissions: Wind energy emits neither climate change inducing carbon dioxide nor the other air pollutants and, as a result, has none of the high external costs related with conventional energy sources.

Environmental Resources Management Australia Pty Ltd has calculated the specific economic impacts of the project, as follows:

- A total capital investment of approximately $275 million.
- Stimulation of the economy in the Oberon Shire as a result of greater income generation and subsequent expenditure in the region.
- Provision of flow on economic benefits in terms of employment and commercial opportunities from the economic investment.
- Up-skilling of the local workforce within a growing energy market.
- Creation of up to 65 full time jobs during the construction phase.
- Creation of 11 full time jobs during the operational phase of the wind farm.
- Use of a significant portion of locally sourced materials and employment.
- Increases in the local tourism industry, and in turn, increased expenditure on local services such as accommodation and retail.

In addition, UFWA is exploring potential options to support the local community surrounding the site, including through the establishment of the Oberon Community Enhancement Fund for community groups and organisations. The door-knock survey which UFWA representatives and environmental consultants undertook asked respondents to suggest community funding projects that they would like to see occur if the project went ahead.

The Clean Energy Council of Australia (CEC) released a publication, *Wind Farm Investment, Employment and Carbon Abatement in Australia*, in June 2012. The study provides a snapshot of wind farm investment, jobs and carbon abatement in Australia and each of the states. The key findings of the study are as follows:

- Total local capital investment in Australian wind farms is $4.25 billion (of a total $7 billion) and potential further local investment in proposed wind farms is $17.8 billion (of a total $29.6 billion).

- Construction of a 50 MW wind farm would provide a gross value added of some $50 million to a state and contribute between 0.012% and 0.21% to gross state product (GSP) depending on the size of the state economy.
- Based on four indicative regions, construction of a 50 MW wind farm could contribute 0.1% to 2.6% to regional gross regional product, depending on the size of the regional economy.
- Construction of a wind farm could lead to potential local personal expenditure of $25,000 per person per annum on accommodation, food and other services in the region.
- A typical 50 megawatt (MW) wind farm:
    - Has an estimated average construction workforce of 48 people with each worker spending $25,000 per year in the local area. This equates to some $1.2 million per year flowing into hotels, shops, restaurants, and other local service providers.
    - Employs around five staff for operations and maintenance, equating to an ongoing local annual influx of $125,000.
    - Creates 795 one-year, full-time equivalent construction jobs per 50MW wind farm in Australia, including 504 jobs in the State and 160 in the region.
    - Creates 44 one-year, full-time equivalent operation jobs per 50MW wind farm in Australia, including 19 jobs in the State and 12 in the region.
- The national average of emissions abatement achieved by wind farms across Australia is 246,200 tons per annum which is equivalent to 57,300 cars removed from the road.

The study concluded that the development of wind farms contribute significantly to investment, employment and emissions abatement at regional, state and national levels.

6.5.3 Social benefits

Chapter 8 details the social impacts of the project. The specific social impacts of the project are as follows:

- beneficial social outcomes through supporting national and international efforts to reduce the potential impacts of global warming and climate change;
- greater employment opportunities and up-skilling of the local workforce;
- establishment of a collaborative approach to implementing local business assistance programs;
- the development of a formal approach to community investment programs and partnerships which provide sustainable benefits to the local community and the surrounding districts;
- potential options to support the local community surrounding the site, including through the establishment of the Oberon Community Enhancement Fund for community groups and organisations; and
- beneficial social outcomes arising from landowner payments flowing through the local economy.

6.6 Consideration of Alternatives

6.6.1 Do Nothing

An alternative is to not proceed with the project. Such an option has a number of significant consequences, primarily the continued reliance on fossil fuels for electricity generation and the consequential emission of greenhouse gases. The continued emission of greenhouse gases will contribute to anthropogenic climate change and its impacts such as sea level rise and extreme weather. For example, the project is expected to displace up to approximately 535,961 tonnes of greenhouse gases, the equivalent of taking up to approximately 123,778 cars off the road, or planting up to approximately 799,941 trees.

The 'Do Nothing' alternative will also forego the project benefits outlined in **Chapter 6.5**. These include the reduction of pollutants otherwise emitted by fossil fuels and water savings. The Paling Yards region and wider NSW would not realise the economic benefits of the project, such as an investment of $287 million and the creation of 65 jobs during construction and 11 ongoing jobs during operation.

6.6.2 Alternative energy sources

The key alternative energy source to wind power is the continued use of fossil fuels, such as coal and natural gas. However, the combustion of these fuels results in the release of CO_2 that contributes to the warming of the Earth and results in the dangerous impacts of climate change. State and National legislation has been passed to address climate change by reducing greenhouse gas emissions. Ambitious targets have been put into place at all levels of government to substantially reduce emissions over the coming decade.

Further, it is considered unlikely that power generation companies would invest in higher emitting fossil fuel sources, especially coal, with the worldwide movement away from such forms of energy and the introduction of a market mechanism for carbon in Australia.

Since the 1970s, alternative renewable technologies have been researched, promoted and developed, to varying extents in many nations. Other forms of renewable energy include:

- solar energy, including solar thermal energy;
- hydro energy;
- ocean energy, including tidal; wave energy;
- geothermal energy; and
- bioenergy.

The likely degree of adoption and commercial viability of these forms of renewable energy is difficult to ascertain, as most depend on technological advances and overcoming major barriers. With the exception of solar energy, all are in the early stages of development and are not 'market ready'. None have benefited from several decades of operation like wind power.

Hydroelectricity, the conversion of strong water flows to electricity using a water turbine, has been utilised since the early 20th Century on a large scale. It is known to have environmental impacts, such as the direct loss of flora and fauna from the flooding of the dam site, aquatic temperature impacts, the creation of aquatic fauna barriers, the reversal of seasonal flows, and the reduction in flooding events. In recent years, doubts have been raised over the ability for hydroelectricity to generate sufficient energy given the low dam levels associated with reduced rainfall patterns.

Whilst alternative forms of renewable energy are promising and are likely to form a component of Australia's future energy mix, they are currently unable to compete with wind energy on a cost-effectiveness basis. Wind is the only proven energy source used internationally for decades.

Furthermore, each of these alternatives has their own environmental and social impacts, and many are simply incompatible with the climate and topography of the locality. Wind speeds, population density, land use, vegetation and transmission lines combine to make the Paling Yards locality and surrounding region ideally suited to wind energy. On balance, it is considered that wind energy is the most commercially viable renewable energy, and is the best technology for the site.

6.6.3 Wind Farm location

As outlined in **Chapter 4 – Design Response** of this report, the location of a wind farm is dependent on a number of location criteria, including the following factors:

- distance from coastline;
- population density and buffers to residential settlements;
- willingness of land owners;
- size of land holdings;
- proximity to existing electricity grid;
- strength of wind resource;
- access to existing infrastructure (ports, good quality roads etc); and
- general environmental constraints.

The Great Dividing Range in NSW presents a consistent wind resource that meets many of the above criteria. This is evidenced by the number of wind farms planned, proposed or built within the Central and Southern Tablelands.

Whilst it may appear that countless sites exist across NSW, finding a suitable location for a wind farm is a difficult exercise. More remote areas of the State where population densities are lower, such as Western NSW, do not possess the transmission infrastructure necessary to ensure a project's viability. Most energy generators, including wind, are unviable if it is necessary to construct hundreds of kilometres of transmission lines to connect the farm to the electricity grid.

In some cases, where existing transmission lines are available in more remote areas, wind speeds are insufficient to power the turbines. In other areas, where transmission lines combine with high wind speeds, the land is publicly owned or has significant flora and fauna constraints.

Other constraints not evident at the site include significant landscape and visual constraints, close proximity to urban areas, high population density, proliferation of non-stakeholder dwellings, geotechnical constraints, and lack of supporting infrastructure.

UFWA have been active in the region and currently have two additional proposals in various stages of planning and development (the approved Crookwell 2 Wind Farm and proposed Crookwell 3 Wind Farm). UFWA's involvement in the area is based on a long history of wind monitoring and existing relationships with local land holders.

The subject site is also favoured by the proximity of the existing 500kV high voltage power line, which passes the site approximately 2km to the east and north-east of the site.

6.6.4 Wind Farm Scale

In addition to the location criteria outlined above, the scale of the project has been determined by several factors. This includes:

- the number of willing land owners and their proximity to each other;
- environmental constraints;
- proximity to nearby dwellings;
- landscape and visual impacts;
- the amount of turbines required to create a viable project; and
- the consultation carried out with the local community.

The majority of wind farms proposed in NSW are greater than 25 turbines and, in recent times, greater than 50. At up to 55 turbines, the project is of a scale comparable to most modern wind farms in Australia.

Whilst the subject site has an area of 3,900 ha, less than 1% of the land is directly used for the turbines, access tracks and supporting infrastructure during the operation phase. It is not possible to reduce the area of the subject site as turbines must be placed at minimum distances apart in order to maintain operational efficiency. It is noted that because modern turbines are taller and wider and are generally spaced further apart than older, smaller turbines, the total number of turbines per hectare is lower.

Therefore, the scale of the project has been optimised in consideration of the given characteristics of the site and locality.

For more information on the scale of other proposed, approved or built wind farms in the area, please refer to **Chapter 21 – Cumulative Effects**.

6.6.5 Turbine size

The general size of turbines for the project is influenced by the following criteria:

- The type and characteristics of the of wind resource;
- Visual impacts from neighbouring receptor points;
- The topography of the land;
- The cost and availability of turbines from various turbine manufacturers; and
- The 'capacity factors' of different turbine sizes (the larger the turbine the smaller the capacity factor).

Advances in technology and construction techniques have seen turbines steadily increase in size since the 1970's. This is evident in the region by comparing the size of the turbines for Crookwell I Wind Farm, established in the late 1990s, with the larger turbines at Cullerin Wind Farm and Capital Wind Farm, which were developed in recent years. Taller turbines are more efficient, as they are able to capture higher winds that are less affected by surface roughness caused by obstacles such as trees.

The project would utilise turbines up to 175 metres tall at the top of the blade tip. The wind turbines currently under assessment are outlined in **Table 2**. New turbines are continually coming onto the market; therefore it is possible that minor variations to these typical dimensions could occur prior to final turbine selection.

The output of each turbine will vary depending on the final turbine selection. The output of the turbines is currently expected to be up to 4.5 MW depending on the final turbine selection.

The wind turbines currently under assessment for this project are commonly available and frequently used in projects around Australia. Smaller turbines are now difficult to source and do not represent an efficient use of capital.

A reduction in turbine height or width would also result in less energy produced from the farm and a consequential reduction in the greenhouse emissions displaced. A wind farm with a reduced total energy output would make a smaller contribution to meeting the Federal Government's Renewable Energy Target of 20% of renewable energy by 2020.

The noise generated by a wind turbine is not necessarily related to its size, as larger modern turbines can produce less sound than older, smaller turbines. The various turbines currently under assessment for this project have differing noise characteristics and have been assessed based on these differences.

It is important to note that whilst the modern turbines are taller and have a greater zone of visual influence, they are more efficient and are spaced further apart. Therefore, by increasing the height of the proposed turbine, the number of turbines per hectare decreases, thus reducing the overall scale of the project.

6.6.6 Electricity Connection

Several options were investigated for connection of the project to the electricity grid. These include:

- North-eastern option: an overhead powerline connection of approximately 9km to a proposed off-site electrical Terminal Station that would connect to the Mt Piper to Bannaby 500kV transmission line which passes the north-east and east of the site. This option has two sub-options, or
- Southern option: a 55km overhead powerline connection to the approved Crookwell 2 Wind Farm substation which connects to the Yass to Bannaby 330kV transmission line. This option has three sub-options.

The northern and southern options include a number of sub-options.

Please refer to **Chapter 5** and **Figure 13 – Proposed Transmission Line Plan** for more information.

The assessment carried out has been established that the northern connection option is the most feasible and will result in lower impacts to the environment and to the community. On this basis, approval is only being sought for the northern connection option.

The preferred option was selected based on the following criteria:

- length of route; and
- minimising vegetation loss.

The preferred northern route represents a reasonable balance between the avoidance of native vegetation loss, reducing impact to the community, and the economic viability of the route.

The proposal is for an overhead powerline. Whilst an overground connection may increase the visual impact of the project, it reduces impacts on native vegetation, as disturbance can be generally restricted to the base of electricity poles and some clipping of tree canopies, in contrast to the underground cabling which would disturb the vegetation along its path.

UNION FENOSA
WIND AUSTRALIA

gasNatural fenosa

PALING YARDS WIND FARM

CHAPTER 7

STATUTORY PROVISIONS

7 Statutory Provisions

7.1 Introduction

This chapter of the EA addresses the relevant statutory provisions relating to the project.

The development of the project requires project approval under Part 3A of the EP&A Act.

DGRs were issued for the Project within two years before Part 3A of the EP&A Act was repealed (on 1 October 2011), therefore, the project is a transitional Part 3A project under clause 2(1)(c) of schedule 6A of the EP&A Act. Accordingly, the project will continue to be assessed and determined under Part 3A notwithstanding the repeal of Part 3A.

This chapter discusses and assesses compliance of the project under the relevant Federal, State and Local Government legislation, policies and guidelines.

7.2 Commonwealth Instruments

7.2.1 Environment Protection and Biodiversity Conservation Act 1999

The objectives of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) are to:

- provide for the protection of the environment, especially matters of national environmental significance
- conserve Australian biodiversity
- provide a streamlined national environmental assessment and approvals process
- enhance the protection and management of important natural and cultural places
- control the international movement of plants and animals (wildlife), wildlife specimens and products made or derived from wildlife
- promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.

The EPBC Act is administered by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). The EPBC Act is aimed at environment and heritage protection and biodiversity conservation.

The EPBC Act requires referral to the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities of any "action" that has, will have, or is likely to have a significant impact on:

- a matter of national environmental significance;
- the environment of Commonwealth land (even if the action is taken outside Commonwealth land);
- the environment of a Commonwealth Heritage Place outside the Australian jurisdiction; and
- the environment anywhere in the world (if the action is undertaken by the Commonwealth).

Once a referral is made, the Minister for the Sustainability, Environment, Water, Population and Communities (Environment Minister) determines whether the action is a "controlled action" which requires assessment and approval under the EPBC Act.

An action includes a project, development, undertaking, activity, or series of activities.

The eight matters of "national environmental significance" protected under the EPBC Act are:

- world heritage properties;
- national heritage places;
- wetlands of international importance;
- listed threatened species and ecological communities;
- migratory species protected under international agreements ;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park; and
- nuclear actions

The Significant Impact Guidelines 1.1: Matters of National Environmental Significance (Significant Impact Guidelines) have been prepared by the former Department of Environment, Water, Heritage and the Arts, now DSEWPAC, to assist any person who proposes to take an action to decide whether or not they should submit a referral to the SEPAC for a decision by the Environment Minister on whether assessment and approval is required under the EPBC Act. These guidelines define significant impact as:

"… an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts". [1]

EPBC Act Policy Statement 2.3 – Wind Farm Industry provides further guidance to assist operators in the wind farm industry to decide whether or not proposed actions require referral under the EPBC Act.

The project was referred to the then Minister for Environment and Heritage (now the Minister for Sustainability, Environment, Water, Population and Communities) under the EPBC Act in 2005. The Minister determined on 31 March 2005 that the project was not a controlled action which required approval under the EPBC Act.

The flora and fauna assessments contained in **Appendix 8a** and **Appendix 8b** confirm that the project is not likely to result in a significant impact on any endangered ecological community or species listed under the EPBC Act. Please refer to **Chapter 12** for details.

7.2.2 Renewable Energy (Electricity) Act 2000 (Cth)

The *Renewable Energy (Electricity) Act 2000* (Cth) (the REE Act), provides the statutory framework for mandatory renewable energy targets (MRET) and an energy trading scheme. The REE Act initially established an MRET of 2% (or 9500 GWh) to be reached by 2010, which means that 2% of total energy produced must be from renewable energy sources. The REE Act identifies wind as an eligible renewable energy sources.

[1] *Significant Impact Guidelines, p 3.*

In August 2009, the Government implemented the Renewable Energy Target (RET) Scheme, designed to legislate the Government's commitment of 20% of Australia's electricity supply coming from renewable sources by 2020.

On 26 February 2010, the Government announced changes to be made to the RET scheme to provide greater certainty for households, large-scale renewable energy projects and installers of small-scale renewable energy systems like solar panels and solar water heaters. The enhanced RET legislation was passed by the Commonwealth Parliament on Thursday 24 June 2010. As of 1 January 2011, the enhanced RET was split into two parts, the Large-scale Renewable Energy Target (LRET) and the Small-scale Renewable Energy Scheme (SRES).

The LRET creates a financial incentive for large-scale renewable power stations such as wind, solar and hydro-electric by providing a mechanism for the creation of large-scale generation certificates (LGCs) by these power stations according to how much renewable energy electricity they produce.

The LRET also places a legal liability on liable entities (typically electricity retailers) to purchase an amount of large-scale generation certificates (LGCs) from these power stations to meet an annual target. The annual targets for the LRET increase each year from 16,763GWh in 2012 up to 41,850 GWh by 2020 (DCCEE 2010) or 18% of total energy.

The project directly and specifically supports the REE Act by supplying up to 550,833 MWh (or 551 GWh) of renewable energy per year and, therefore, contributing to the LRET target.

7.2.3 Civil Aviation Safety Regulations 1998

The *Civil Aviation Safety Regulations 1998* made under the *Civil Aviation Act 1988* (Cth), require that CASA must be informed of proposals to build a structure greater than 110 metres above Australian Datum. This is required to allow assessment of whether the structure may represent a hazard to aircraft, and to provide any associated requirements including any requirements for markings or lighting.

A circular: *Obstacle Marking and Lighting of Wind Farms* (AC139-18(0) (the circular) was released by CASA. Clause6.2 of the circular provides that where CASA has been informed of a proposal to build a wind turbine greater than 110m above the Australian Dataum, CASA will conduct an aeronautical study to determine if the wind turbine will be a hazardous object to aviation. If as a result of the aeronautical study CASA finds that a proposed wind turbine will penetrate an OLS of an aerodrome, the proposal will be must be lit in accordance with MOS-Part 139 Section 9.4. The circular advises that the hazard that an object poses to aviation can be reduced by indicating its presence by appropriate marking and/or lighting. This circular has been withdrawn by CASA pending a review of the guideline material. Despite this, CASA has advised that the circular remains of relance to proponents wishing to assess aeronautical impacts. It is understood that the review of this circular is continuing.

An assessment of aviation matters was undertaken by Aviation Projects Pty Ltd to inform this EA. The report found that *"the proposed development does not impose any significant risk to normal flying operations, provided aircraft are operated in compliance with applicable regulatory and operational control requirements and with the application of good airmanship"*.

Chapter 13 – Aeronautical Impacts provides further information on the potential for hazard to aircraft and details the proposed hazard lighting.

7.2.4 Clean Energy Act 2011

The Clean Energy Act 2011 (Cth) commenced on 2 April 2012 as part of the Clean Energy Legislative Package. The Clean Energy Legislative Package introduced a carbon pricing mechanism commencing on 1 July 2012 as follows:

- Liable entities (generally entities which control the operation of facilities that emit greater than 25,000 tonnes per annum of greenhouse gas emissions) will be required to purchase and surrender carbon units for each tonne of carbon pollution they emit.
- The carbon price commenced on 1 July 2012 at $23 per tonne of carbon dioxide equivalent, increasing to $24.15 on 1 July 2013 and $25.40 on 1 July 2014.
- The Australian Government has recently announced that the Australian carbon pricing mechanism and Europe's emissions trading scheme will be linked onwards and that the proposed $15/t price floor in the Australian mechanism will be scrapped from 1 July 2015.

The Clean Energy Legislative Package is expected to increase demand for renewable energy from projects such as from the project.

7.3 NSW State Instruments

7.3.1 Environmental Planning and Assessment Act 1979

The EP&A Act is the primary piece of legislation governing development within NSW. The *Environmental Planning and Assessment Regulation* 2000, made under the EP&A Act also operates to regulate development within NSW.

The then Minister for Planning declared the project to be a major project under Part 3A of the EP&A Act.

In addition, in accordance with a declaration published in the NSW Government gazette on 27 November 2009 all renewable energy projects with a peak generating capacity of 30 megawatts (MW) or more were declared to be critical infrastructure projects under Part 3A. As the project has a peak generating capacity of up to 178 MW, the project is a critical infrastructure project.

The critical infrastructure provisions:

- ensure the timely and efficient delivery of essential infrastructure projects;
- allow the Government and the planning system to rapidly and readily respond to the changing needs of the State;
- provide certainty in the delivery of these projects;
- provide for rigorous scrutiny to ensure environmental outcomes are appropriate; and
- focus on delivering outcomes essential to the NSW community.

As DGRs were issued for the Project within two years before Part 3A of the EP&A Act was repealed on 1 October 2011, the project is a *transitional Part 3A project* under Clause 2(1)(c) of Schedule 6A of the Act. Accordingly, the Project will continue to be assessed and determined under Part 3A under to Clause 3(1) of Schedule 6A of the EP&A Act.

A range of State, Regional and Local environmental planning instruments (EPIs) apply to the site, including State Environmental Planning Polices (SEPPs), which include

Regional Environmental Plans (REPs), and Local Environmental Plans (LEPs). These are considered at **Chapters 7.3** and **7.4**.

The Minister for Planning and Infrastructure (or the Planning and Assessment Commission as his delegate) must take into account applicable SEPPs in determining and may (but is not required to) take into account the provisions of other applicable EPIs in determining whether to approve the project.

As the project is a critical infrastructure project, the project may be approved under Part 3A of the EP&A Act even if it is prohibited by the applicable EPIs.

Once a project has been assessed and approved under Part 3A of the EP&A Act it has the benefit of provisions in the EP&A Act which:

- remove the requirement to obtain a range of additional approvals including:
- an Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974* (NSW);
- an authorisation referred to in section 12 of the *Native Vegetation Act 2003* (NSW) to clear native vegetation; and
- a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91 of the *Water Management Act 2000* (NSW); and
- provide that certain other approvals may not be refused and must be granted on terms consistent with the Part 3A approval including a consent under section 138 of the *Roads Act 1993* (NSW).

The DGRs require that the objectives of the EP&A Act be taken into account by the project, as detailed in the table below.

Table 8 Objectives of EP&A Act

Objective	Comment
To encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,	The project will develop the natural wind resource of the Paling Yards region and conserve other resources such as soil, water and air. It will have environment benefits by displacing greenhouse emissions and reducing the impacts of climate change and global warming. See Chapter 8 for more information on the social and economic effects of the wind farm.
To encourage the promotion and co-ordination of the orderly and economic use and development of land,	The project will promote the orderly and economic use of the land by adding a new use and development to the site that can coexist with the current agricultural use.
To encourage the protection, provision and co-ordination of communication and utility services,	Chapter 15 provides assessment of the electromagnetic interference and communication impacts of the project.
To encourage the provision of land for public purposes,	The project does not involve any change to the status of public land.
To encourage the provision and co-ordination of community services and facilities, and	UFWA is exploring potential options to support the local community surrounding the site, including through the establishment of the Oberon Community Enhancement Fund for community groups and organisations.
To encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and	Chapter 12 details the assessment of the impact of the project on flora and fauna, which has concluded that no endangered ecological communities or flora species listed under the TSC Act or EPBC Act will be significantly impacted as part of the project. The wind farm had been designed to be situated mainly on cleared grazed paddock areas, therefore avoiding as far as possible potential ecological impacts.
To encourage ecologically sustainable development, and	Please refer to the more detailed overview of the application of the ecologically sustainable development (ESD) principles to the project contained below.
To encourage the provision and maintenance of affordable housing, and	Not applicable.
To promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and	Both State and Local statutory instruments have been considered in the wind farm design and in the preparation of this EA.
To provide increased opportunity for public involvement and participation in environmental planning and assessment."	A community consultation strategy, as detailed in Chapter 22, has been implemented and will continue to be implemented as the project moves towards construction. This EA will be placed on public exhibition and comments will be considered by the Minister for Planning in decision making.

Ecologically Sustainable Development (ESD)

Australia has adopted ecologically sustainable development (ESD) as a guiding principle of environmental management. It involves the *"effective integration of social, economic and environmental considerations in decision-making processes"* (*Protection of the Environment Administration Act 1991* (NSW), Section 6).

A core principle of ESD is the 'precautionary principle'. The precautionary principle has been adopted in Australia to guide the decision-making process in relation to measures that address environmental damage.

The precautionary principle has been defined in Principle 15 of the Rio Declaration (1992) as: where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation (United Nations, 1992).

The *Protection of the Environment Administration Act 1991* (NSW) outlines the following principles which act to achieve ESD:

- *Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment*
- *An assessment of the risk-weighted consequences of various options*
- *Inter-generational equity: that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations*
- *Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration*
- *Improved valuation, pricing and incentive mechanisms: that environmental factors should be included in the valuation of assets and services, such as:*
    - *Polluter pays: that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement*
    - *The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste*
    - *Environmental goals, having been established, should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

The environmental assessment for the project has considered and adopted ESD principles and the precautionary principle. Careful evaluation of the potential impacts associated with the project has been undertaken, and measures to minimise or mitigate these impacts where possible have been incorporated into the project. These impact mitigation measures also include future actions to address areas of uncertainty.

Refer to **Chapter 24 – Statement of Commitments** for the list of measures that the proponent will implement to minimise or mitigate potential impacts of the project.

Potential ecological and biodiversity impacts of the project have been assessed in **Appendix 8a – Flora and Fauna Assessment** and **Appendix 8b – Supplementary Flora and Fauna Assessment**.

An assessment of the risk-weighted consequences of various options such as the use of the site for alternative renewable energy facilities or the 'do nothing' approach has been undertaken for this environmental assessment. The assessment concluded that a

wind energy facility is the most viable option and the project will make a valuable contribution to avoiding serious or irreversible damage to the environment caused by climate change.

The potential impacts of the project are expected to be confined to the site, transmission line route and transport route. The project is not anticipated to unreasonably inhibit use of the site for existing activities or significantly minimise options for future use of the site.

The Decommissioning and Rehabilitation Plan (DRP) at **Appendix 4** outlines measures to mitigate the potential impacts resulting from the cessation of operation of the wind energy facility.

7.3.2 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* (NSW) (POEO Act) is the primary piece of legislation regulating pollution control and waste disposal in NSW. The POEO Act is administered by the NSW Environment Protection Authority (EPA), part of the Department of Environment and Climate Change (DECC).

The POEO Act requires an Environment Protection Licence (EPL) to be obtained in relation to certain electricity generation works. However, an EPL is not currently required for wind power generation. At the time this EA was prepared, a draft regulation was on exhibition which, if made, will re-introduce a requirement to obtain an EPL for wind farms. If the event that this draft regulation is made, an EPL will be required for the wind farm. Owing the operation of the EP&A Act, once Part 3A project approval is granted for the project, any required EPL cannot be refused and must be granted on terms consistent with the Part 3A approval.

7.3.3 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NSW) (NPW Act) governs the establishment, preservation and management of national parks, historic sites and certain other areas. The NPW Act also provides the basis for the legal protection and management of threatened native flora and fauna and Aboriginal sites within NSW.

Major projects subject to Part 3A of the EP&A Act do not require separate Aboriginal heritage impact permits under the NPW Act. The impacts of the project on Aboriginal heritage have been considered and assessed as part of this EA. Refer to **Chapter 18** for details.

7.3.4 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (NSW) (TSC Act) provides for the conservation of threatened species, populations and ecological communities of animals and plants. It provides a framework for the assessment of any action that may impact on threatened species.

The Assessment of Significance (Seven Part Test) is a statutory mechanism under Section 5A of the EP&A Act, for assessing whether a proposed development activity may have a significant impact on threatened species, populations or ecological communities or their habitats. The Seven Part Test does not apply to projects which are assessed under Part 3A of the EP&A Act.

However, the DGRs provide that the EA must include *"an assessment of all project components on flora and fauna and their habitat consistent with the Draft Guidelines for Threatened Species Assessment (DEC, 2005), including details on the existing site conditions and quantity and likelihood of disturbance"*.

If the results of the test of significance concludes that there is likely to be a significant impact on a listed species, population or Endangered Ecological Community protected under the TSC Act then the *Draft Guidelines for Threatened Species Assessment* (DEC, 2005) specify that a Species Impact Statement is required.

As part of this EA, a flora and fauna assessment was undertaken by Anderson Environmental. This report assessed the impact of the project on threatened species and endangered ecological communities listed under the EPBC Act. This report concluded that *"the project is not likely to result in a significant impact on any fauna species listed under the TSC Act. Accordingly, there is no requirement for a species impact statement to be prepared"*.

A full assessment of species and communities under the TSC Act is found at **Appendix 8a** and **Appendix 8b**.

See **Chapter 12** for further details of the flora and fauna impacts of the project.

7.3.5 Water Management Act 2000 and Water Act 1912

Water in NSW is regulated by the *Water Management Act 2000* (NSW) (WM Act) and *Water Act 1912* (NSW). The WM Act applies to all water sources for which a water sharing plan has been gazetted and the Water Act applies to remaining water sources.

The objective of the WM Act is the sustainable and integrated management of the State's water for the benefit of both present and future generations.

A controlled activity approval under the WMA is required for certain types of developments and activities that are carried out in or near a river, lake or estuary. Under the WMA, a controlled activity means:

- the erection of a building or the carrying out of a work (within the meaning of the EP&A Act 1979), or
- the removal of material (whether or not extractive material) or vegetation from land, whether by way of excavation or otherwise, or
- the deposition of material (whether or not extractive material) on land, whether by way of landfill operations or otherwise, or
- the carrying out of any other activity that affects the quantity or flow of water in a water source.
- Controlled activity approvals are not required for projects approved under Part 3A of the EP&A Act.

Major projects approved under Part 3A of the EP&A Act still require to obtain water licences under the WM Act or Water Act for the project in the event that water from onsite bore, dam or river (e.g. concrete batching plant, etc) is required.

Refer to **Chapter 20** and **Appendix 14** for further details.

7.3.6 Native Vegetation Act 2003

In accordance with the principles of ecologically sustainable development, the *Native Vegetation Conservation Act* 2003 (NSW) (NV Act) provides for the conservation of native vegetation through the prevention of inappropriate clearing and promotion of rehabilitation practices.

The design of the wind farm sought to minimise the removal of vegetation by the careful placement of turbines and tracks.

Major projects approved under Part 3A of the EP&A Act do not require a separate approval under the NV Act for the clearing of native vegetation.

Refer to **Chapter 12** for further details of the flora and fauna impacts of the project.

7.3.7 Heritage Act 1977

The *Heritage Act 1977* (NSW) aims to protect and preserve items of non-indigenous Heritage significance. The Act provides for the protection of items of local, regional and State heritage significance.

A cultural heritage impact assessment undertaken by Anderson Environmental found that none of the non-indigenous cultural heritage items located within the site would be disturbed as part of the project. Furthermore, none of the non-indigenous heritage sites are considered to be significant and none are protected under the listed under the *Heritage Act 1977* (NSW) or any other heritage listing, including the Local Environmental Plan (LEP) for Oberon.

Refer to **Chapter 18** for details of the heritage impacts of the project.

7.3.8 Roads Act 1993

Section 138 of the *Roads Act 1993* (NSW) prohibits a number of activities, such as conducting work in, on or over a public road, unless consent has been obtained from the appropriate roads authority.

The project would require consent from the appropriate roads authority for the following items:

- installation of electrical cables under or along roads;
- access points from roads into the wind farm site.

Abercrombie Road is a State owned public road and therefore consent would be required from the NSW Roads and Traffic Authority.

If the project is approved under Part 3A of the EP&A Act then any consents required under section 138 of the *Roads Act 1993* cannot be refused and must be granted on terms substantially consistent with the project approval.

7.3.9 Crown Lands Act 1989

Part 4 of the *Crown Lands Act 1989* (NSW) provides for circumstances where Crown Land may be leased or sold and where licenses over Crown Land may be granted.

There is a network of Crown public roads in the area, and it is proposed that an electrical transmission line be installed to cross these road corridors to connect the turbines to the electricity transmission network. A number of options have been shown in **Figure 17**; however the selected and proposed option is shown in **Figure 13 – Proposed Transmission Line Plan** for electrical connections, which involve crown land public roads.

As outlined above, consents will be applied for under section 138 of the *Roads Act 1993* to authorise the carrying out of any works within the road reserves. The Department of Lands will be consulted with to ensure that all of its requirements under the *Crown Lands Act 1989* will be met in relation to these works.

7.3.10 State Environmental Planning Policies (SEPPs)

The SEPPs that are relevant to the site include:

- *State Environmental Planning Policy (Major Development) 2005 (Major Development SEPP);*
- *State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP);*
- *State Environmental Planning Policy No. 44 Koala Habitat Protection (SEPP 44);*
- *State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP);*
- *State Environmental Planning Policy (Rural Lands) 2008 (Rural Lands SEPP);*
- *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 (Drinking Water SEPP); and*
- *Drinking Water Catchments Regional Environmental Plan No. 1.*

State Environmental Planning Policy (Major Development) 2005

The effect of Schedule 6A of the EP&A Act is that, because the project is a transitional Part 3A project, the now repealed clauses 6-6C and schedules 1, 2 and 5 of *State Environmental Planning Policy (Major Development) 2005* continue to apply to the project.

Clause 6 (repealed) of the Major Development SEPP provides that, development which, in the opinion of the Minister for Planning is development of a kind listed in Schedule 1 to the SEPP Major Development is a project to which Part 3A of the EP&A Act applies.

Clause 24 of Schedule 1 (repealed) lists:

"Development for the purpose of a facility for the generation of electricity …(using any energy source, including …wind power), being development that:

(a) has a capital investment value of more than $30 million…."

On 29 October 2009, the Director, Infrastructure Projects Branch of the Department of Planning, as a delegate of the Minister for Planning, confirmed that the project is one to which Part 3A of the EP&A Act applies.

State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy (State and Regional Development) 2011 does not apply to make the project State significant development as the project is a transitional Part 3A project under schedule 6A of the EP&A Act.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

Clause 3 of the SEPP 44 provides that it:

"aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline".

The flora and fauna assessment of the area by Anderson Environmental states that *"No koalas or signs of koalas being present were detected within the Project Site. The nearest koala recorded in the vicinity of the Project Site was recorded approximately 1.5 kilometres to the west of the proposed wind farm site within Abercrombie River National Park… Accordingly there is unlikely to be a significant impact on this species and there is no need to further consider the requirements of SEPP 44 in relation to the Project"*.

State Environmental Planning Policy (Infrastructure) 2007

Clause 2 of the State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) provides that it aims to facilitate the effective delivery of infrastructure across the State by:

- *"(a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and*
- *(b) providing greater flexibility in the location of infrastructure and service facilities, and*
- *(c) allowing for the efficient development, redevelopment or disposal of surplus government owned land, and*
- *(d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and*
- *(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and*
- *(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing."*

Part 3, Division 4 of SEPP Infrastructure is relevant to the project as it applies to 'electricity generating works'. It outlines a range of electricity generating works that are exempt development, complying development, and development permissible with consent.

Clause 34(1) of SEPP Infrastructure provides that:

"development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone".

Clause 33 of the SEPP Infrastructure provides that *"electricity generating works' has the meaning contained in the Standard Instrument (Local Environmental Plans) Order 2006 (Standard Instrument). The Standard Instrument defines "electricity generating works" as "a building or place used for the purpose of making or generating electricity."*

The project is one for the purpose of electricity generating works.

Part 3, Division 5 of the SEPP Infrastructure is also of relevance to the proposed transmission line component of the project and relevantly provides that development for the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without consent on any land. The proposed transmission line is to be constructed between the on-site substation (owned and operated by UFWA) and the off-site Terminal Station (owned and operated by TransGrid). This proposed transmission line will be constructed as part of the project by the project contractor(s), and is proposed to be a privately held asset by UFWA.

State Environmental Planning Policy (Rural Lands) 2008

Clause 2 of the Rural Lands SEPP provides that the aim of the policy is:

- *"(a) to facilitate the orderly and economic use and development of rural lands for rural and related purposes,*
- *(b) to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,*
- *(c) to implement measures designed to reduce land use conflicts,*
- *(d) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations;*
- *(e) to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions."*

The project would not conflict with the continued use of the land for agricultural purposes as only 1% of the site is utilised for the project and agricultural practises, such as grazing, can successfully operate on the balance of the site and in close proximity to the wind turbine.

This policy does not contain any provisions of specific relevance to the project.

7.4 Local Instruments

7.4.1 General

The site, including the preferred electrical connections option for which approval is being sought, is zoned under the *Oberon Local Environment Plan 1998* (Oberon LEP).

7.4.2 Oberon Local Environmental Plan 1998

The particular aims of the Oberon LEP are as follows:

(a) to recognise and promote the Oberon local government area as a desirable and viable place to visit and in which to live and to invest, and

(b) to encourage the proper management, development and conservation of natural and built resources within the Oberon local government area by protecting, enhancing or conserving:

(i) prime crop and pasture land,

(ii) timber, minerals, soil, water and other natural resources,

(iii) areas of significance for nature conservation,

(iv) areas of high scenic or recreational value,

(v) places and buildings of heritage significance, including archaeological and Aboriginal relics and places,

(vi) water catchment areas, and

(c) to replace planning controls, as they applied to rural land before this plan commenced, with a local environmental plan to help facilitate growth and development of the Oberon local government area in a manner which is consistent with the aims stated in paragraphs (a) and (b) and which:

(i) minimises the cost to the community of fragmented and isolated development of rural land,

(ii) facilitates the efficient and effective delivery of amenities and services,

(iii) facilitates a range of residential and employment opportunities in accordance with demand,

(iv) facilitates farm adjustments, and

(d) to encourage tourism in the Oberon local government area in a manner which is consistent with the aims stated in paragraphs (a) and (b), and

(e) to encourage agriculture (including forestry) and protect the agricultural base of the Oberon local government area.

The site and transmission line options are zoned 'Zone No 1(a) Rural A Zone' under the Oberon LEP.Development for the purposes of generating works are permissible with consent on land zoned Zone No 1(a) Rural A Zone' under the Oberon LEP.

Table 9 identifies the relevant objectives of Zone No 1(a) Rural A Zone' under the Oberon LEP and assesses whether the project complies with the objectives.

Table 9 Objectives of Oberon Local Environmental Plan 1998

Objectives **Part 2 Zones** **Zone No 1 (a) (Rural 'A' Zone)**	**Comment**
(a) Protecting, enhancing and conserving: (i) agricultural land in a manner which sustains its efficient and effective agricultural production potential, and	The project has a small footprint relative to the site area (approximately 1%). Agricultural activities will be able to continue surrounding the turbines without disruption. The access tracks will enhance agricultural activity by providing more efficient access across the farm. The project will support the project involved landowners hosting wind farm infrastructure who wish to stay on the land through off-farm income, and thereby sustaining agricultural activities.
(ii) soil stability, by controlling and locating development in accordance with land capability, and	The project is situated to minimise the potential for erosion. Further, an erosion management plan will be developed to manage land stability and erosion during construction and operation.
(iii) forests of existing and potential commercial value for timber production, and	The subject site is largely cleared and is not known as being identified as having potential for commercial timber production.
(iv) valuable deposits of minerals, coal, petroleum and extractive materials, by controlling the location of development in order to ensure the efficient extraction of those deposits, and	The site is not known to have been identified as having valuable nor viable deposits of minerals, coal, petroleum or extractive materials.
(v) trees and other vegetation in environmentally sensitive areas where the conservation of the vegetation is likely to control land degradation or is significant to scenic amenity or the natural wildlife habitat, and	The project has been designed to generally locate turbines and other infrastructure in areas that area presently cleared. A review of the impact of the proposed design can be found in the following chapters: -Vegetation – refer to Chapter 12

	-Visual Impact – refer to Chapter 9 -Fauna – refer to Chapter 12
(vi) water resources, including groundwater, for use in the public interest, preventing the pollution of water supply catchments and water storage, and	Protection of water resources, and in particular ground water, has been given consideration in the design of the wind farm. Groundwater is not anticipated to be affected by the project as the footings are too shallow to significantly interrupt groundwater flows and large areas of vegetation would not be removed. Refer to Chapter 20 and Appendix 14 for further details.
(vii) areas of significance for nature conservation, including areas with rare plants, wetlands and significant habitats, and	The project is unlikely to result in a significant impact on any endangered ecological community or flora species or any fauna species listed under the EPBC Act or TSC Act.
(viii) items of archaeological or heritage significance, including Aboriginal relics and places.	The project is not anticipated to impact upon the identified sites of indigenous heritage, or any sites of non-indigenous heritage.
(b) Preventing the unjustified development of prime crop and pasture land for purposes other than agriculture.	The project will not unreasonably impact agricultural activities on site, as once the turbines and infrastructure are in place, farming may continue around the elements satisfactorily. Furthermore, the project will support the landowners hosting wind farm infrastructure who wish to stay on the land through off-farm income, and thereby sustaining agricultural activities.
(c) Facilitating farm adjustments.	The project consists of separate turbines and a linear transmission line. It is unlikely that these will have an impact on the potential for future farm adjustments. In the event that a farm adjustment occurs, and the farm is divided, the division of the turbines across the resulting lots can be addressed through a review of the relevant contractual arrangements, it is not anticipated that the physical infrastructure will constrain farm adjustments.
(d) Minimising the cost to the community of: (i) fragmented and isolated development of rural land, and	The project does not propose a reconfiguration of allotments, therefore will not result in the fragmentation of rural land.
(ii) providing, extending and maintaining public amenities and services.	As the project does not involve residential development, the project will not create a greater demand on public amenities and services in the area. .
(e) Providing land for rural small holdings development and for other non-agricultural uses in accordance with demand for that development and in a manner which has the least adverse impact on prime crop and pasture land.	The project aligns with this objective by providing for a non-agricultural use which is designed to have the least adverse impact on prime crop and pasture land.
(f) Controlling and locating dwelling-house development to provide buffers from adjoining agricultural land in order to provide adequate environmental safeguards to the inhabitants and not prejudice future agricultural activity in the near vicinity.	The project location does not include dwelling houses, and therefore separation of dwellings and agricultural uses is not relevant to this project.

Objectives	Comment
Part 3 Special provisions **Section 10 General considerations for development within rural zones**	
(1) The Council must not consent to development on land within Zone No 1 (a), 1 (c) or 1 (e) unless it has taken into consideration, if relevant, the effect of the carrying out of the proposed development on:	
(a) the present use of the land, the potential use of the land for the purpose of agriculture and the potential of any land which is prime crop and pasture land for sustained agricultural production, and	The project has a small footprint, equating to about 1% of the site, and therefore will have a negligible impact on agricultural activity. Further, the presence of wind turbines is compatible with the current agricultural use of the site for pastoral activity.
(b) vegetation, timber production, land capability (including soil resources and soil stability) and water resources (including the quality and stability of water courses and ground water storage and riparian rights), and	The project will have minimal impact on: -Vegetation - Chapter 12, details the impact of the project on vegetation. In summary, the design locates the majority of the turbines in cleared areas, with only small amounts of vegetation clearing required. -Timber production: the site is not currently used for timber production. The project will therefore not impact on the future viability of timber production. -Land capability: the project only utilises about 1% of the site, and therefore does not impact on land capability. -Water resources: the project design minimises impact on hydrological flows. Please refer to Chapter 20 for a summary of the hydrological assessment.
(c) the future recovery from known or prospective areas of valuable deposits of minerals, coal, petroleum, sand, gravel or other extractive minerals, and	No known valuable deposits of minerals, coal, petroleum, sand, gravel or other extractive minerals are present on the site. The project will not therefore jeopardise the future extraction of such resources as it uses only a small portion of the site.
(d) the protection of areas of significance for nature conservation or of high scenic or recreational value, and items of archaeological or heritage significance, including Aboriginal relics and places, and	The project has the following impacts: -Nature conservation: The design responds appropriately to ecological matters. The response is summarised in Chapter 12 (Flora and Fauna Assessment). -Recreational value: The site is presently used for pastoral activities and does not presently have recreational values. Its remote location also means that the future use of the site for recreation purposes is unlikely. -Heritage significance: The project will not unreasonably impact on cultural heritage. Please refer to Chapter 18 for a summary of the findings of the heritage assessment.
(e) the cost of providing, extending and maintaining public amenities and services to the site of the proposed development, and	The project will not require the extension of public amenities or services. Upgrades will be required to the road network. The cost of this is subject to agreement with Council.

(f) the future expansion of settlements in the locality.	The project will not result in the future expansion of settlements in the locality.
(2) As well as the matters referred to above, the Council must take into consideration the relationship of the development to development on adjoining land and on other land in the locality.	As there are no existing, approved or known wind farms within 25km of the site, the cumulative impacts of the project are not substantial.

Objective	**Comment**
Section 25 Access	
A person, other than the Council, must not construct a road which has access to a public road except with the consent of the Council.	The project will not involve the creation of a road which has access to a public road without the consent of Oberon Shire Council.
Section 27 Environmentally sensitive land and destruction of trees	
A person must not, except with the consent of the Council, carry out development for any purpose on environmentally sensitive land, unless as a normal incident of an agricultural use of the land.	The site is located adjacent to the Abercrombie River. Schedule 1 of the Oberon LEP identifies the Abercrombie River as a water body classified as environmentally sensitive land. The project is designed to have a minimal impact on hydrological flows (see Chapter 20), riparian vegetation (Chapter 12) and erosion (see Chapter 19). Further, vegetation and sediment control management plans can be developed and used to manage construction and operation of the wind farm to ensure that the ecological values of the Abercrombie river are maintained.
The Council must not consent to the carrying out of development on environmentally sensitive land if, in the opinion of the Council, the carrying out of the development will degrade the environment by way of: denudation of the land, or generating uncontrolled flow of water across the land, or generating uncontrolled disposal of animal, vegetable or chemical waste products on the land, or soil erosion or sedimentation, or surface water or ground water pollution.	The wind farm design responds to the matters listed in the following way: -Denudation of the land: The project design mostly utilises cleared paddocks, with limited vegetation clearing. Please refer to vegetation report in Chapter 12. -Overland water flows: The project design does not materially alter the on-site drainage patterns, therefore not generating uncontrolled overland water flows. Please refer to hydrology report in Chapter 20. -Waste: The project will not result in the generation or uncontrolled disposal of animal, vegetable or chemical waste products on the land. On site waste will be managed in an environmentally sensitive manner. A waste management plan will be preparation as part of the construction and operation environmental management plan. -Soil erosion or sedimentation: The project will not lead to significant erosion (please refer to the summary of the geotechnical report in Chapter 19). The construction and operation of the farm will be managed in accordance with an erosion and sediment management plan. -Surface water or ground water pollution: The project has been designed to minimise surface and ground water pollution. Chapter 20 includes a summary of the hydrology assessment.

Without limiting the generality of subclause (2), a person must not carry out development on environmentally sensitive land for the purpose of: intensive livestock keeping establishments, or junk yards, or liquid fuel depots, or offensive or hazardous industries, or sawmills, or stock and sale yards.	The project does not include any use of the land for these purposes.
Section 28 Flood liable land	
A person must not carry out any development on or subdivide flood liable land except with the consent of the Council. This clause does not apply to minor extensions to a dwelling-house where the total area of such extensions carried out since the appointed day is less than 30 square metres.	The project is not located on land that is identified as being flood liable.
Section 29 Bush fire hazard reduction	
Bush fire hazard reduction work authorised by the *Rural Fires Act 1997* may be carried out on any land without consent. Note: The *Rural Fires Act 1997* also makes provision relating to the carrying out of development on bushfire prone land.	The project is generally in accordance with the guiding objectives and requirements of the NSW Rural Fire Service *Planning for Bush Fire Protection 2006*.
Section 42 Development within water catchment areas (including the Sydney drinking water catchment)	
If a development application is received for land considered by the Council to be within a water catchment area, including the Sydney drinking water catchment, the Council must not grant consent unless it has considered the impact of the proposed development on the ecological integrity of the water catchment area.	The site is not located within the hydrological catchment of Sydney's drinking water supply (*Drinking Water Catchments Regional Environmental Plan No 1* (REP1)). However the project area is in the catchment of the Abercrombie River within the Lachlan Catchment Management Authority Area. A hydrological assessment of the project found that the overall potential risks to water and soils are relatively minor. Based on the nature of the project and management techniques to be implemented, it is not expected that any of the local water bodies would be unreasonably impacted by the project.

7.4.3 Relevant Development Control Plans

The project is a project to which Part 3A of the EP&A Act applies. There is no specific statutory provision requiring the Minister to consider the provisions of any development control plan (DCP) in determining an application for project approval under Part 3A. The Minister may choose to consider, as part of the general discretion to consider matters in the public interest, the provisions of a DCP in determining an application for project approval under Part 3A.

Oberon Council Development Control Plan 2001

The *Oberon Shire Council – Development Control Plan 2001* (DCP 2001) was adopted by Oberon Shire Council in February 2002.

DCP 2001, supplements the Oberon Local Environmental Plan 1998 (Oberon LEP) by providing general information and detailed guidelines and controls which relate to the decision making process.

The table below identifies the relevant provisions of DCP 2001 along with an assessment of the compliance of the project against these.

Table 10 Objectives of the Oberon Council Development Control Plan 2001

Objective	Comment
A.2 Rural Development Generally **A.2.1 General Policy**	
Non-agricultural development, including dwellings, should be located on land that is not prime crop and pasture land, unless there are no alternative suitable sites.	Although the project is a non-agricultural use, it is compatible with the ongoing pastoral use of the site. Suitable alternative sites are limited because prospective wind farm sites must meet highly specific criteria. Due to the reliability of the wind resource and low population in the locality, the site has been identified as being suitable. On this basis, the development is a suitable use of the site.
Non-agricultural development, particularly dwellings, should be sited and carried out so that it is unlikely to inhibit or give rise to complaints about normal farming and forestry practices (e.g. pine harvesting, crop and weed spraying, separation from noxious odours etc).	The project will affect normal farming practice as it occupies only approximately 1% of the site and farming and wind farms are compatible land uses.
Non-agricultural development should be carried out in a way that minimises any adverse effects on adjoining land – particularly by way of: -Land degradation. -Alteration of drainage patterns. -Pollution of ground water. -Spread of noxious plants and animals. -Increased fire hazard.	The project will have negligible impact on the matters outlined below: -Land degradation – refer to Chapter 19. Erosion is evident in the region and site, but can be managed through careful construction techniques and rehabilitation of disturbed areas. The majority of the site is not disturbed by the project, and as such the risk of further erosion is considered to be low. Where the project has the potential to cause additional erosion hazard, this would be avoided and managed through the preparation of a Soil & Water Management and an Erosion and Sediment Control Plan. These plans would implement necessary management controls and techniques during construction and operation of the project. -Alteration of drainage patterns – refer to Chapter 20. Turbines are generally located away from drainage lines. Some access tracks cross drainage lines and therefore have the potential for flow alteration and water pollution, especially where fords or small culverts are required. The design of the crossing would consider the flow pattern of the drainage lines and ensure that sufficient allowance is made for unaffected flows for most rain events. This would be managed through the

	soil and water management plan. Existing farm tracks that cross drainage lines would be upgraded as part of the development where they are needed for the project. -Pollution of ground water – refer to Chapter 20. Groundwater would not be affected by the project as the footings are too shallow to significantly interrupt groundwater flows and large areas of vegetation would not be removed. There are no known recharge zones on the subject site that would be impacted by the project. -Spread of noxious plants and animals. The movement of machinery, soil, and vehicles across the site have the potential to spread noxious weeds into and across the site. The environmental management plan will detail the mechanisms to prevent the spread of weeds and animals. This may include machinery wash downs, staff training, soil and fill screening and other commonly used techniques. The project would improve the control of noxious plants and animals by introducing coordinated management regimes managed by the wind farm developer. -Bushfire hazard – refer to Chapter 16. The site is considered to be bushfire prone land. Parts of the site that are cleared pastureland have a lower risk of fire than the forested portions. A significant majority of the turbines are located in cleared pasture, with a small number within areas of remnant vegetation. The potential risk of fire caused by wind farms is considered lower in comparison to normal power generation sites, as power transmission is located within the turbine towers and distributed underground to the transformers (CFA 2007). Due to modern manufacturing, the risk of fire at wind farms is considered 'very low' (CFA 2007, AusWind 2007). As part of the environmental management plan, a bushfire risk management plan would be developed based on the guidelines *Planning for Bushfire Protection 2006*. Further, the proponent commits to consult with the RFS during periods of high fire danger, and generally to ensure the RFS are familiar with the project.
Development which assists the process of farm build-up and the strengthening of the family farm unit, including development which enables revenue to be raised for farm build up, is encouraged.	The project provides the land holders with an opportunity to diversify income sources and increase revenue from their rural property holdings. This will strengthen the viability of farm operation, supporting farm build up and strengthening the family farm unit.
Nonagricultural development should be located and carried out in a manner that minimises the likelihood of added costs to ratepayers of the Shire as a result of the development.	The project does not require significant investment by Council in new infrastructure, and is unlikely to place an additional demand on existing infrastructure as it does not include residential development. Further, Council will benefit from the funding available through the Community Enhancement Fund. Consequently, the project is not likely to result in an increase in costs to ratepayers of the Shire.

Sustainable development that generates employment in the Shire is encouraged.	The project embodies the core principles of sustainable development. In particular, the project provides an opportunity to generate jobs within the locality. It is estimated that: -65 full-time jobs will be created during construction; and -11 full-time jobs during operation.
A.2.6 Specific Aspects	
Prime Crop and Pasture Land In considering whether development (i.e. dwelling and subdivision) would fragment or otherwise affect prime crop and pasture land, the Council will have regard to the definition in the Oberon LEP 1998.	The project is compatible with the current agricultural uses (grazing), and it anticipated that there will be negligible impact. Specifically, the development will not result in the subdivision and fragmentation of property holdings.
Concentration of Non Agricultural Use In considering a development application involving a concentration of non-agricultural uses (E.g. more than three dwellings) or which has the effect of creating such a concentration through a series of individual developments (including previous approvals and existing development), the Council will have regard to whether the concentration is likely to have the effect of:- Inhibiting or restricting farming or forestry practices in the area by way of increased complaints, land management problems or otherwise, and Increasing demands for the Council to spend ratepayer's money providing services to the land.	The project does not present the potential to negatively impact on ongoing farming or forestry activities. The project will not result in an increase in residential population in the area, and will therefore not result in increased complaints, land management problems or otherwise. The project does not require Council to provide services to the site.
Land Degradation Although applicants are encouraged to seek the advice of the Department of Land and Water Conservation in preparing proposals likely to alter landform, vegetation or drainage patterns, this section provides some basic design principles to ensure that developments are designed to minimise the potential for land degradation. In general, developments should have regard to the following principles: Try as much as possible to use natural features in any development. In particular, for subdivisions, lot boundaries should be located with regard to the topography and site conditions. This will eliminate the need for large areas of clearing, stripping or excavation. Developments should be phased so that the area exposed at any one time is confined to an area of workable size. Where areas to be worked are to be stripped of topsoil it should be stockpiled for respreading after final landscaping has taken place to help in the revegetation of the area. Drainage works should be planned and installed as one of the first steps in development. These should be designed to divert surface runoff around disturbed areas to minimise the potential for erosion and not	The project will have minimal impact on the landform, drainage patterns and vegetation. These matters are discussed in detail in: -Landform – refer to Chapter 19. Alternations to landform are minimal. Works include construction of an access track and footings for the wind tower, but these comprise only 1% of the site. A soil and water management plan will be prepared to manage these issues. -Drainage patterns – refer to Chapter 20. The landform will largely remain unaltered, and will not result in a change to drainage patterns. A soil and water management plan will be prepared to manage these issues. -Vegetation – refer to Chapter 12. The project will not require significant vegetation clearing. The project has a minimal footprint and generally avoids areas that are densely vegetated.

adversely impact adjoining premises. Sediment and erosion control structures such as sediment or retarding basins, perimeter banks etc may be necessary on larger projects to prevent possible land degradation. Where necessary, these structures should be installed before any land disturbance takes place. All sediment and erosion control structures should be revegetated or mulched as soon as they are built to prevent erosion of the structures. Similarly, all disturbed areas should be revegetated within thirty days of final landscaping.	
A.3 Hazards **A.3.1 Flooding**	
The designer must consider and Council will have regard to:- -Whether it is feasible to alter the location of the proposal to minimise the risk. -Whether it is feasible to require the elevation of floors one metre above known 1:100 year flood levels. -Whether evacuation or refuge is possible in the event of a flood. -Whether the proposal is likely to alter floodwater patterns in a way that increases risks to other land or buildings.	The project is not at risk of flood hazard, on the following basis (refer to Chapter 20 – hydrology): The site is in an elevated location, well drained, and is located in an area that is not subject to flooding. The project does not include uses that attract significant numbers of people requiring evacuation in a flood event. The project does not alter drainage patterns in a way that increases flood hazards to other buildings.
A.3.2 Bush Fire	
The whole of the Rural 1(a) zone in Oberon Shire is susceptible and or liable to bush fires and grass fires, the Council will have regard to:- -Whether it is feasible to require a perimeter road or fire radiation zone. -Whether evacuation or on-site refuge measures are feasible. -Whether any buildings are sited so as to minimise fire risk. -Measures available to ensure the property can be managed to minimise the risk to it and to other land and buildings. -Whether building materials and any proposed planting should be of a fire resistant type.	Chapter 16 provides a review of bushfire risks and management associated with the project. A wind farm in a rural area, as with any large scale development, can increase the potential risk of fire to nearby people and property. Wind turbines manufactured today incorporate the highest quality and safety standards The risk of fire is considered to be in fact minimised by wind farm developments because they introduce more intensive fire planning. Chapter 16 outlines the mitigation measures to be implemented as part of this project.

Part O Wind Power Generation 2005

Commercial wind power projects with the Oberon Council area are subject to the *Oberon Council Development Control Plan – Part O Wind Power Generation 2005* (DCP Part O 2005).

Clause 06 of the DCP Part O 2005 provides that the plan's objectives are:

- *"To provide development controls and guidelines that will assist in achieving the objectives of the Oberon Local Environmental Plan, 1998 as amended.*
- *To provide development that will relate well to its surroundings both manmade and natural.*

- *To promote and encourage a high quality of design and amenity.*
- *To restrict development to the Rural I (a) zone only.*
- *To provide for and require well considered development that is environmentally and economically sustainable.*
- *To minimize the likelihood of added costs to ratepayers of the Shire as a result of the development.*
- *To promote sustainable energy."*

The table below identifies the relevant provisions of DCP Part O 2005 along with an assessment of the compliance of the project against these.

Table 11 Objectives of the Oberon Council Development Control Plan 2001 - Part O Wind Power Generation 2005

Objective	Comment
Planning and Environmental Controls	
Development should when located on agricultural land, minimise the adverse impact on the future use of "prime crop and pasture land" (as defined in Clause 6 of the Oberon Local Environmental Plan 1998) and agricultural use in general.	The project has been designed to minimise impact on the future use of the land for agricultural purposes. The project has a footprint equating to approximately 1% of the site area, and the infrastructure has been designed to have minimal impact. The access track will be able to be used by the farmer, to more efficiently access paddocks. The site is presently being used for grazing activities, and this will be able to continue surrounding the turbines.
Development should be sited and carried out so as to minimise adverse impacts on, and not restrict, normal grazing, farming, forestry practices and tourism.	As above.
Development should be carried out in a way that minimises any adverse effects on adjoining land and the development site - particularly by way of: Land degradation. Alteration of drainage patterns. Pollution of ground water. Spread of noxious plants and animals. Bushfire hazard Effects on existing tourist operations.	Refer to Table 10 – Objectives of the Oberon Council Development Control Plan 2001.
Development that assists the process of farm build up, diversification and the strengthening of the family farm unit, including development that enables revenue to be raised for farming activities is encouraged.	The project provides a secondary income stream for the landowners. This enhances the viability of farm operation for at least the next 30 years (and potential extension of permit and operational contracts), throughout the period of the wind farm operation.

Wind power generation facilities and development should be located and conducted in such a manner, whereby there are no added costs to the ratepayers of the Shire as a result of the development.	The construction and operation of the project will not require the construction of infrastructure external to the site that will require significant maintenance. Therefore, the project is unlikely to impose a financial liability to Oberon Council; consequently, the project is unlikely to result in an increase in rates for ratepayers.
Environmentally and financially sustainable development that generates employment in the shire is encouraged.	The project inherently promotes environmentally sustainable development. The specialist reports are summarised in Chapter 8 to 21, and describe the environmental impact of wind farm construction and operation. The project also promotes economic sustainability through the provision of 65 jobs during construction, and 11 jobs during operation.
Development should not be located at sites recognised as having high scenic value or impact adversely on vista of high scenic value. The developer must assess visual impact and consult with the Council and the community on appropriate visual impact measures.	The visual impact of the project is described in Chapter 9. This establishes that the visual impact of the project will not be unreasonable on surrounding residences or from key publically accessible locations.
Development is to be located at a minimum setback of -1,500 metres (plus 10 metres for everyone (1) metre that the Wind Turbines exceed 120 metres in height) from the nearest likely affected residence not associated with the development. -1,500 metres (plus 10 metres for everyone (1) metre that the Wind Turbines exceed 120 metres in height) from any building envelope on any registered lot that has been created for the purpose of a dwelling. If the registered lot does not have an approved building envelope, then the distance is measured from the lot boundary. The above distances apply to the whole of the Oberon Local Government Area. The operation of this provision may be relaxed if the Council determines that the relaxation would not adversely affect residential amenity. In assessing whether to allow a relaxation the Council should have regard to the criteria to be addressed pursuant to Clause 7 of this Development Control Plan and the views expressed by the owners of any affected lot.	The project partially achieves the requirements outlined in the DCP. The tallest turbine currently under consideration has a tip height of 175 metres, which equates to a buffer distance of 2050 metres to the nearest likely affected residence, not associated with the project; and from any building envelope on any registered lot that has been created for the purpose of a dwelling. The distance to the closest possible dwelling that is not associated with the project (dwelling, labelled 'N' non-identified on the access and infrastructure plan) is 1.65km (from turbine P23). The nature and role of this building has been unable to be confirmed and it is possible that it is not used a dwelling. The distance to the closest dwelling that is not associated with the development (dwelling, labelled '4'on the access and infrastructure plan) is 2km (from turbine P51). Although the project does not meet the stipulated buffer distances, it is a marginal difference and the buffer distances are far greater than most comparable wind farms. The distances are also more than the noise and other impact studies suggest are needed to meet relevant standards. They also meet the suggested buffer distances in the Draft Guidelines.

Development designers should consider and refer to the Planning NSW EIA Guidelines and the NSW Wind Energy Handbook.	The project has been designed giving consideration to the Planning NSW EIA Guidelines (EIA Guidelines) and the NSW Wind Energy Handbook. The EIA Guidelines provided for the followings steps have been taken into consideration: -site selection -project feasibility -detailed assessment; -planning application; -construction; -operation; -decommissioning. The design approach is summarised in Chapter 4 of this EA report.
Developments are required to provide a well designed, serviced and safe designated public viewing and information area/s that allow safe roadside public viewing of the facility. Applications will be referred to the traffic committee for concurrence in relation to road safety.	As there is a viewing area for Crookwell 1 to the south, and for other wind farms in the wider region, it is not proposed to build a new viewing area for the project.
To maintain rural aesthetic amenity and to minimise any potential traffic conflicts, a minimum setback from public roads (building line) of the tip height of the turbine, plus 20% will apply. Where there is development adjacent to a main road location, particular consideration will be given to the number, location and design of access points to main roads. Generally, the number of accesses should be minimised, and all accesses proposed should be located and designed to avoid any conflict with other traffic.	The assessed turbine tip height of up to 175 metres, which equates to a required buffer distances from public roads of 210 metres. The number of access points along the main road has been minimised through the creation of internal access tracks. The number proposed access tracks are necessary given the ownership of the site and the need to avoid numerous waterway crossings.
As soon as the Wind Turbine Generators become redundant, they are to be fully dismantled and removed from the site and Council is to obtain a suitable legal guarantee that the developer or landholder will be able to comply with this clause.	Refer to the Decommissioning and Rehabilitation Plan found at Appendix 4. The lease arrangements entered into with the landowners include reference to access arrangement to the turbines, and mechanisms for the termination of the agreements.
Contributions	
Council will require the developer to make contributions in accordance with the Council Contributions Plan. A reasonable and adequate road and infrastructure bond will be required to be paid to Council. It will be used by Council to repair any damage to Council roads and/or infrastructure due to the construction of the development. Council will refund the bond following satisfactory inspections and full commissioning of the development.	The proponent acknowledges the requirement to provide a contribution in accordance with the Council Contributions Plan, and payment of an infrastructure bond. The proponent is exploring potential options to support the local community surrounding the site, including through the establishment of the Oberon Community Enhancement Fund for community groups and organisations.

It is noted that the project does not comply with some of the guidelines contained in both DCP 2001 and the DCP Part O 2005.

The *Environmental Planning and Assessment Amendment Act 2012* has been passed and is expected to commence in early 2013. This Act is aimed at ensuring that will

ensure that development that is permissible under an environmental planning instrument is not prevented, or unreasonably restricted, by a DCP. On commencement, this Act will amend the EP&A Act to provide that a provision of a DCP will have no effect to the extent that it:

- it is the same or substantially the same as a provision of an environmental planning instrument applying to the same land, or
- it is inconsistent or incompatible with a provision of any such instrument, or
- it has the practical effect of preventing or unreasonably restricting development that is otherwise permissible under any such instrument and that complies with the development standards in any such instrument.

It is also noted that:

- the buffer guidelines contained in the Council's DCP go beyond those typically found reasonable by Australian planning courts, tribunals and panels; and
- few wind farms in Australia, either constructed or planned, would comply with these guidelines.

Similar provisions were contained in the now repealed *Upper Lachlan Shire Council Development Control Plan – Wind Power Generation 2005 (2005 DCP)*. These provisions were considered by the NSW Land and Environment Court in *King & anor v Minister for Planning; Parkesbourne-Mummel Landscape Guardians Inc v Minister for Planning; Gullen Range Wind Farm Pty Limited v Minister for Planning [2010]* NSWLEC 1102 (7 May 2010) (Gullen Range Decision). In the Gullen Range Decision Moore SC and Fakes C held at paragraph 661 that:

'We have rejected, for two reasons, giving any weight to the council's DCP and the numerical prescriptions in it. First, there is no statutory requirement for us to do so. Second, although it would be possible to have regard to the document as part of the broad public interest, the evidence given concerning the adoption of the numerical limits was exposed as being inaccurate and without foundation. The numerical limits in the DCP could, therefore, only be considered to be arbitrary and certainly could not be considered as being satisfactorily derived in the fashions for either a DCP or a council policy discussed by McClellan CJ in Stockland Development v Manly'.

7.4.4 Oberon Council Development Contributions Plan and Water Management Works Plan 2004

Section 94 of the EP&A Act provides that:

If a consent authority is satisfied that development for which development consent is sought will or is likely to require the provision of or increase the demand for public amenities and public services within the area, the consent authority may grant the development consent subject to a condition requiring:

(a) the dedication of land free of cost, or

(b) the payment of a monetary contribution,

or both

The Land and Environment Court has established the following principles for testing the validity of a consent condition requiring contributions under section 94 of the EP&A Act:

- The contribution must be for, or relate to, a planning or development purpose;
- The contribution must fairly and reasonably relate to the subject development; and

- The contribution must be such as a reasonable planning authority, duly appreciating its statutory duties, could have properly imposed the contribution.

The objectives of the Oberon Development Contributions and Water Management Works Plan 2004 (Oberon Contributions Plan) are:

- to provide the basis for levying developer contributions;
- to identify the services, facilities and amenities which Council intends to provide, and those for which Council intends to require contributions towards;
- to set out contributions required by Council;
- to establish a nexus between anticipated development and contributions sought;
- to enable the timely provision of services, facilities and amenities;
- to encourage public participation in the formation of the Plan;
- to provide the development industry with early advice as to the amount of contribution which will be required for a particular development;
- to facilitate proper financial management and accountability for expenditure of contributions received;
- to develop minimum standards which will meet that demand;
- to set out the works required to meet demand of new development over the next five years;
- provide details of Council's proposed work schedules for the expenditure of contributions levied on developments;
- to ensure that Section 94 (EP&A Act) and Section 64 (LG Act) contributions levied on developments are reasonable;
- to ensure compliance with the relevant provisions of the Water Management Act 2000 (Division 5 Part 2 Chapter 6 section 306); and;
- to employ a “user pays” policy regarding the funding of amenities and services so that the existing population of the Oberon Local Government Area does not subsidise new developments.

Council may seek a development contribution from the development proponent for additional demand generated as a result of this project. In reference to the principle of establishing a “nexus” between infrastructure demand and the charges by Council, it is anticipated that the wind farm will impose a limited additional demand on the infrastructure of Oberon. The proponent anticipates that an infrastructure contribution will be limited to road charges.

The Oberon Contributions Plan does not make specific reference to wind farm development within the charges schedules; therefore the proponent anticipates that future negotiations will be undertaken with Council to determine the contribution that is required.

The proponent is exploring potential options to support the local community surrounding the site, including through the establishment of the Oberon Community Enhancement Fund for community groups and organisations. The door-knock survey which UFWA representatives and environmental consultants undertook asked respondents to suggest community funding projects that they would like to see occur if the project went ahead.

7.5 Other Plans and Guidelines

7.5.1 Draft NSW Planning Guidelines: Wind Farms (December 2011)

The *Draft NSW Wind Farm Planning Guidelines* (Draft Guidelines) were exhibited from 23 December 2011 to 14 March 2012.

The purpose of the guidelines is to:

- provide a clear and consistent regulatory framework for the assessment and determination of wind farm proposals across the state;
- outline clear processes for community consultation for wind farm developments; and to
- provide guidance on how to measure and assess potential environmental noise impacts from wind farms.

On 18 April 2012 the Department of Planning and Infrastructure (DoPI) issued a letter attaching a policy statement regarding the Guidelines to UFWA. The Policy Statement provides that the Guidelines will apply to the maximum extent possible to all wind farm applications for which DGRs have been issued, but an environmental assessment has not yet been exhibited. The DoPI also included a checklist of the key provisions of the Guidelines which are relevant for applications which have not yet been exhibited. This EA addresses the key provisions of the Guidelines which are relevant to wind farm applications 'yet to be exhibited'.

Of particular note is that the Guidelines require additional assessment where a proposed turbine lies within 2km of existing residences. The 2km distance specified in the Guidelines is met in this project, as the closet non-project involved dwelling is 2km from the nearest turbine. There is a non-identified building within 1.65km; however, the nature and role of this building has been unable to be confirmed and it is possible that it is not used a dwelling.

Refer to **Appendix 1** for a discussion on how this EA addresses the guidelines.

7.5.2 Draft National Wind Farm Development Guidelines (Environment Protection and Heritage Standing Committee (EPHC), July 2010)

EPHC has prepared a set of Draft National Wind Farm Development Guidelines which aim to outline best practice for industry and planning authorities in areas including, heritage, threatened species and turbine noise.

It is not the intention of these guidelines to be mandatory or change existing jurisdictional statutory processes, but to provide a basis for further consultation and consideration of the role of national guidelines in existing state approval processes.

These guidelines have been considered in the preparation of this EA.

7.5.3 Best Practice Guidelines for Implementation of Wind Energy projects in Australia (Australian Wind Energy Association (AusWEA), 2006)

These guidelines outline general principles to guide wind farm development, such as consultation, mitigation measures, biodiversity and visual impact. They also highlight the information required to be supplied by the proponent in a development application for a wind farm.

These guidelines have been considered in the preparation of this EA.

7.6 Conclusions

The chapter has found that the project is compatible with the existing land uses of the area and substantially complies with the relevant environmental planning instruments applicable to the site and surrounding area.

Some further approvals and authorisations from other governmental agencies would be required for the purposes of the project, as detailed above.

UNION FENOSA
WIND AUSTRALIA

gasNatural fenosa

PALING YARDS WIND FARM

CHAPTER 8

ECONOMIC & SOCIAL IMPACTS

8 Economic and Social Impacts

8.1 Introduction

Environmental Resources Management Australia Pty Ltd (ERM) was engaged by UFWA to conduct a socio-economic impact assessment of the project. The potential impacts and benefits of the project are summarised within this chapter. The full report prepared by ERM is found at **Appendix 5**.

8.2 Methodology

The preparation of the socio-economic impact assessment involved the following tasks:

- Attendance at an on-site inception meeting organised by UFWA to obtain an overview of the project, an appreciation of the site, its setting and location, timetables for planned activities and preliminary identification of anticipated issues and impacts.
- Reporting of the UFWA consultation strategy and activities undertaken by UFWA, ERM and other members of the UFWA environmental assessment team.
- Reporting of surveyed community attitudes.
- A baseline review of publicly available information to gain an understanding of existing socio-economic conditions in the 'Study Area', and the potential challenges for developing the project.
- Analysis of the baseline data to determine the potential project impacts and to systematically assess their significance.
- Reporting of the findings of this research and assessment.

The 'Study Area' is defined as the site, the area covered by the four transmission line route options, the smaller communities around the site, the larger towns of Oberon and Goulburn townships and the local government areas (LGA) of Oberon, Upper Lachlan and Goulburn Mulwaree.

8.3 Economic impacts

Economic impacts as a consequence of the project may arise from three phases during the life cycle of the project:

- planning and construction related impacts;
- operational impacts; and
- decommissioning impacts.

The project is likely to stimulate the Oberon Shire economy as a result of greater income generation and subsequent expenditure in the region. The project has the potential to deliver direct and indirect benefits for host communities and the local and regional economies.

It is also anticipated that the project would provide flow on economic benefits including:

- increased employment opportunities;
- commercial opportunities from the economic investment;
- up-skilling of the local workforce within a growing energy market; and

- project involved landowners with lease agreements are expected to benefit directly from additional income.

The economic impacts are discussed in more detail below.

8.3.1 Direct Impacts

There would be a number of direct economic impacts as a result of project, arising from:

- design and development of the project;
- construction of the project;
- construction and commissioning of the project; and
- expenditure and employment associated with the management, operation and maintenance and decommissioning of the project.

Below is a discussion of the key direct economic impacts on the local economy.

Employment

The socio-economic assessment found that:

- In the Study Area, the dominant industry in 2006 was agriculture (50.4%), followed by manufacturing.
- In 2006, the highest proportion of occupational competencies in the Study Area was managers (21.5%), technicians or trades workers (14.3%) and labourers (13.7%).
- In comparison to the State, the Study Area has an overrepresentation of technical, trade based and labour based skills and an under representation of professionals within the Study Area.
- In 2006 the unemployment rate for the Study Area was 4.8%.
- Median individual and household incomes in all LGAs and the Study Area are below the State average.

The project has the potential to directly create new employment opportunities in the Study Area for the local community. The socio-economic assessment found that the construction phase of the project has the potential to create approximately 65 full time jobs during the construction phase and 11 full time jobs once the project is operational.

These full time jobs include management staff during normal working hours and on-call services out-of-hours. In addition, up to 10 additional contractors could be working on the site once every 10 to 15 years as part of schedule major site overhauls.

It is possible that some of these jobs could be carried out by workers from the local community. The socio-economic assessment of the population figures and the industry and employment profile of the local community in the Study Area indicate that the local and wider region have the capacity and skill diversity to potentially staff for the project.

There is the potential for further temporary employment arising out of future decommissioning or re-powering of the project.

The increase in employment opportunities has a direct benefit to the local economy.

Capital Investment

The socio-economic assessment found that the estimated total capital investment for the project would be approximately $275 million. Capital investment spending which will benefit the local community will arise out of:

- construction and operation phase wages; and
- the purchase of local materials and services where available.

The socio-economic assessment notes the level of capital investment into the local, regional, state and national economies would depend upon the sourcing of materials and services.

Although it cannot be accurately calculated, there would be a level of direct economic benefit for the Study Area and the Oberon Shire as a result of the project's capital investment.

In addition, UFWA is exploring potential options to support the local community surrounding the site, including through the establishment of the Oberon Community Enhancement Fund for community groups and organisations.

Land Use and Revenue

Additional income stream provided to the project involved landowners hosting project infrastructure from the leases may slightly raise the average household income in the area. The additional income would diversify the base of the local economy and further support landowners who wish to stay on the land through off-farm income.

Once the project is operational, the additional areas of land that would be temporarily unavailable for farming during the construction phase can be used once again. These areas can be used to grow crops and graze livestock close to the base of the wind turbines during the operational phase.

In relation to subdivision, concerns have been raised by the public about the impact on adjoining landowners' ability to subdivide land or build dwellings where this land is in close proximity to turbines. However, the current rural zoning and the rural location of the properties already constrains the subdivision of land for residential purposes.

8.3.2 Indirect impacts

The project is likely to provide a range of flow-on effects and noticeable boosts to the local economy through various income and expenditures.

People employed during the construction phase may contribute to the local economy through spending some proportion of their salaries on local goods and services, and therefore supporting existing jobs or creating new ones.

Further indirect economic impacts of the project are outlined below.

Indirect employment opportunities

ERM found that there would be indirect employment benefits to the rural community, Oberon Shire and the broader region, as a result of the project.

The employment of labour for the construction, operation and decommissioning of the project has the potential to increase demand for local goods, services and infrastructure. In turn, local retail, accommodation and entertainment businesses would experience a greater demand. While the impact would be highest in the construction phase, it would continue during the operational phase.

Tourism impacts

The project has the potential to increase local tourism and correspondingly increase expenditure on local services.

Large numbers of tourists visit wind farms every year in Australia, including:

- *"50,000 visitors per year to Codrington Wind Farm in Victoria,*
- *30,000 visitors in three months to the Windy Hill Wind Farm in the Atherton Tablelands, and*
- *400-500 people to an open day at the existing Crookwell Wind Farm" (AusWEA, 2003).*

Crookwell 1 Wind Farm in NSW is advertised by both Oberon Tourism and NSW Tourism websites as one of the 'top tourist activities' in Crookwell.

Changes to land value

It is not anticipated that the project would adversely impact land values of neighbouring, non-project involved properties to the project.

ERM emphasise that the value of rural land in the area surrounding the site is determined by a range of economic factors such as commodity prices, interest rates, and the supply of land and /or availability of similar land for sale. Therefore, the establishment of the project on rural lands would be only one consideration in determining land value.

The value of properties on which there will be wind turbines should increase, as the registered leases will run with the land ensuring that the rights to rental income for the turbines are transferable with the sale of the property (Community Affairs References Committee, June 2011).

In relation to neighbouring properties and properties with views of the turbines, there is little evidence to suggest that the land values are detrimentally affected by the project. Generally, impacts to the property values are primarily experienced during construction and commissioning of projects, and once a project is established, the prices recover with little to no adverse impacts on land prices (Offor Sharp & Associates, 2003).

The social-economic assessment refers to key findings of the *Preliminary Assessment of the Impact of Wind Farms on Surrounding Land Values in Australia* (2009) which was provided to the NSW Valuer General. The key finding of that study was that *"wind farms do not appear to have negatively affected property values in most cases"*. That study noted that *"a property's underlying land use may affect its sensitivity to price impacts"* and found that, of the properties studied, *"no reductions in sale price were evident for rural properties or residential properties located in nearby townships with views of the wind farm"*.

The Australian Senate established a Community Affairs References Committee (the Committee) to investigate:

- any adverse health effects for people living in close proximity to wind farms; and
- the economic impact of rural wind farms such as impacts on land values.

The report Committee's report, *The Social and Economic Impacts of Rural Wind Farms* was released in June 2011 (Community Affairs References Committee, 2011).

The Committee understood that that values of some properties that are close to turbines may be adversely affected but noted that, in most cases, planning processes such as setbacks are designed to avoid such situations.

The Committee's report referred to the findings of the 2009 assessment for the NSW Valuer General that found no reductions in sale prices, as well as a study of 78 property sales around the Crookwell 1 Wind Farm from 1990 to 2006. The study found that there were *"no measurable reduction in values for those properties that have a sight line to the [wind turbine] development*" and "*factors such as soils, improvements and access to services are more important drivers in determining value then the visual amenity of the wind farm*" (Henderson & Horning 2006 cited in Windlab 2011).

ERM highlights that *"international reports and surveys show that proximity to wind farms has not had a material effect on property values"*.

There are also international examples, such as, *The Effect of Wind Development on Local Property Values*, a report prepared for the US Government in 2003 which examined the values of land where wind turbines are visible (up to 8km) associated with every US wind farm installation between 1989 and 2001 (Windlab 2011). Over 25,000 records of property sales were subject to statistical analysis. This report concluded that:

"The statistical evidence does not support a contention that property values within the view shed of wind developments suffer or perform poorer than in a comparable region. For the great majority of projects in all three of the Cases studied, the property values in the view shed actually go up faster than values in the comparable region" (Beck et al 2003 cited in Windlab 2011).

Community investment

UFWA is committed to supporting local community organisations in the local area. The activities of UFWA are not limited to wind farm planning and development but extend to operating the wind farms with a view to becoming a long-term member of the community.

UFWA's parent company, Gas Natural Fenosa, is committed to the community in which it operates, where it actively engages with the community as part of its long term commitment to community investment. Gas Natural Fenosa received the 2011 Platts Global Energy Award in New York for the most outstanding community development programme for its Cuartel V gasification project located in Buenos Aires, Argentina. The award winning initiative was focused on improving access to public services for the neediest groups and addressing poverty in local communities where the company operates.

UFWA's goal is to use state of the art green technologies and provide sustainable sources of energy that can assist in developing rural communities.

As part of its ongoing commitment to supporting local community organisations UFWA is exploring potential options to support the community surrounding the site, including through the establishment of an Oberon Community Enhancement Fund for community groups and organisations.

Potential Future Road Upgrades

The construction of up to 55 wind turbines on agricultural land would require the mobilisation of heavy vehicles in the region to deliver materials to the development site.

A detailed traffic assessment has been undertaken as part of the EA for the project. Please refer to **Appendix 10** for the Transport Impact Assessment.

There are sections of the existing road network that provide access to the site which may require upgrading to accommodate the construction vehicles and equipment that is required to be transported to the site. The traffic report notes that the Transport

Management Plan (to be completed prior to construction) will propose any intersection and road upgrades along over-dimensional routes to safely accommodate the manoeuvrability of these vehicles, as required.

The upgrading of the roads would provide an indirect economic benefit for the region. The road upgrades would increase road safety and reduce vehicle maintenance costs.

8.4 Social impacts

8.4.1 Draft NSW Wind Farm Guidelines (December 2011)

The project is compliant with the Draft Guidelines, which address the following specific matters:

- factors to be considered in the location of a wind farm;
- issues relevant to the environmental assessment of wind farms; and
- community and stakeholder consultation to provide for an informed and transparent process.

UFWA is highly committed to understanding the full-range of community perspectives in the local area. UFWA has engaged the community in the project, through a community consultation and engagement program. An important component of the consultation program was the door-knock surveys carried out by UFWA representatives on 30 and 31 May and 1 June 2011, and again on 5 and 6 July 2011. The key issues raised by the community and stakeholders have been summarised in **Chapter 22** and are addressed in **Chapters 8 – 23** of this EA. Refer to **Chapters 22 – Consultation and 24 – Statement of Commitments** for further details.

The site is in a generally isolated location and there are no non-project involved dwellings within the 2km buffer zone from any of the proposed wind turbines. Therefore, no neighbour agreements are required for the project.

In accordance with the Draft Guidelines, UFWA are in the process of establishing a Community Consultative Committee (CCC). The purpose of the CCC is to provide a forum for discussion between the proponent, the community, Council and other stakeholders about the project. If the project is approved, the CCC will provide a forum for ongoing communication with the community during the construction, operation and decommissioning of the project.

The CCC will comprise, in accordance with the Draft Guidelines:

- an independent chairperson;
- five to seven representatives of the local community and other stakeholders;
- one representative of the local council; and
- two representatives of the proponent.

UFWA has sought nominations from local community members and/or affected stakeholders to represent the community for the CCC through a media release and advertisements in local newspapers.

To date, no nominations have been received from the community to be a member of the CCC. On 9 October 2012 Oberon Council sent a letter to UFWA nominating the council representatives for the CCC.

Following the submissions closing date, the Director-General will appoint the local community and other stakeholders' representatives.

UFWA will encourage CCC members to discuss issues and disseminate information about the project with the wider community. UFWA will keep minutes of all CCC meetings, to be presented to the Council, CCC members, and published on the website.

8.4.2 Identification of Potential Social Issues

The project is being proposed in a complex and challenging public policy context.

The project is aligned with state and federal policy commitments to shift Australia's energy supply to a greater percentage of renewable energy power sources such as wind. Reductions in electricity sources that generate greenhouse gas emissions are anticipated to have beneficial social and economic outcomes through supporting national and international efforts to reduce the potential impacts of global warming and climate change. Please refer to **Chapter 6** for more information.

Several potential social issues arising out of the proposed development have been identified in the economic and social impact assessment by:

- an analysis of the community responses during the consultation program to date;
- a literature review of similar renewable energy projects; and
- discussions with project managers and representatives of the Oberon Shire Council.

UFWA acknowledges and understands the need to effectively communicate with residents and all relevant stakeholders through a program of consultation.

UFWA has developed a community consultation and engagement program aimed at providing the community with factual information about the project and gathering feedback from the community and stakeholders about their concerns and interests. The community feedback obtained to date has been taken into account in the design of the project.

In order to meet the information needs of the community, a range of consultation strategies were adopted and undertaken, including:

- Consultation with government departments and agencies, non-government agencies, community groups and individuals.
- Direct contact with identified community groups.
- Door-knock consultation undertaken within 5km of the proposed wind farm site and along the corridor of all proposed transmission line routes.
- Community newsletter distributed to the local area and to anyone registering interest in the project.
- Community information session (to be held during the public exhibition of the wind farm application) within the project locality and advertised through the newsletter and local press.

Please refer to **Chapter 22 – Consultation** for the overview of the consultation strategy and outcomes.

The community consultation strategy and potential social impacts raised are further discussed in the socio-economic impact assessment found at **Appendix 5.**

8.4.3 Recommendations for future activities

The socio-economic impact assessment recommends measures to mitigate potential socio-economic impacts and/or enhance the benefits of the projects for the community, under the following social factor/impact headings:

- Demographics/ Economy and Livelihoods:
  - It is predicted there will be sufficient capacity in the existing local services to accommodate the 65 full-time construction jobs generated by the project and the project should therefore employ local and regional workers.
- Economy and Livelihoods:
  - Assess the viability of conducting aerial agricultural operations on properties adjacent to the site, particularly by the use of helicopters.

Refer to **Chapter 13 – Aeronautical Impacts** for details.

- Infrastructure:
  - Carry out a pre-construction road survey to determine existing conditions of local roads.
  - Carry out any upgrades and strengthening works, as required by the Transport Management Plan to be prepared before works commence, along the access road network to provide safe construction access for the project.
  - Prepare and implement a Transport Management Plan to ensure local roads are not adversely impacted by heavy vehicles.
  - Notify the local community of changed traffic conditions and proposed road works via a newsletter or information line.

Refer to **Chapter 14 – Transport Impacts** for details.

- Community Amenity – Noise Impacts:
  - To minimise potential noise impacts associated with night-time deliveries, prior notification should be provided to the affected public where night-time convoys are scheduled, and restrict use of exhaust/engine breaks in built up areas.

Refer to **Chapter 10 – Noise Impacts** for details.

- Community Amenity – Visual Impacts/Shadow Flicker/Loss of Privacy:
  - Minor adjustments to wind turbine locations or landscape screening may be required to ameliorate any identified visual impacts.
  - Transmission lines should be sited sensitively to reduce visual impacts to residents where possible.
  - Clearing for transmission lines should be kept to a minimum for safety requirements.

Refer to **Chapter 9 – Landscape and Visual Impacts** for further details.