

## 14. Cumulative Impacts

This chapter of the EA discusses the potential cumulative impacts of wind farm development within the locality and any potential for cumulative impacts associated with the Capital Wind Farm development.

### 14.1 Introduction

The Planning NSW Guideline states that: *“Cumulative impacts may result from a number of activities with similar impacts interacting with the environment in a region. They may also be caused by the synergistic and antagonistic effects of different individual impacts interacting with each other and may be due to temporal or spatial characteristics of the activities’ impacts.”*

The review of the cumulative impact of the wind farm has several dimensions:

- The impact of the wind farm, when added to the combined impacts of all other existing developments and environmental characteristics of the area. Such impacts have generally been addressed in other parts of the EA by reference to the existing environment and assessment of potential impacts relative to the baseline.
- The impact of this development in the context of the potential for development of wind farms in the Southern Tablelands Region and the likely growth of wind energy developments throughout Australia, in particular, in relation to the Woodlawn Wind Farm.
- The impact of developments which are ancillary to, or otherwise associated with, the proposed wind farm. Such developments include the development of transmission infrastructure.

### 14.2 Wind Farm Developments in the Southern Tablelands

Wind farm development in the Southern Tablelands commenced in 1997/98 with the planning and construction of the Crookwell wind farm at a site about 10 km south-east of Crookwell. It involved eight 660 kilowatt wind turbines that have now operated for seven years. Although a significant development at the time, it is now regarded as a small wind farm development. The Crookwell Wind Farm appears to have been well accepted by the local community despite localised opposition that occurred at the time of the Development Application.

Development of a 70 to 80 MW wind farm about 15 kilometres north-east of Gunning was approved by Upper Lachlan Shire Council in November 2004. The Gunning Wind Farm will consist of 31 turbines, each having a capacity of approximately 2 MW. This development would be approximately 50 km to the north-west of the Capital Wind Farm development.

In 2005, Department of Planning (DoP) granted development consent for the Crookwell II Wind Farm that would be located adjacent to the existing Crookwell Wind Farm as well as the Woodlawn Wind Farm to be located about five kilometres to the north-east of the Capital Wind Farm site. A development application has also been lodged for the Taralga Wind Farm to the north of Goulburn. If all these developments are constructed they will collectively represent a considerable expansion of wind energy facilities in the region.

A number of other organisations are also investigating other sites in NSW for their suitability as wind farm sites. The NSW Department of Energy, Utilities and Sustainability (DEUS) has published an atlas of wind resources for NSW that provides guidance on areas that may be suitable for development.

Investigations undertaken in the Southern Tablelands region by the various organisations have included wind resource monitoring, property owner liaison, consultations with relevant Councils, wind energy modelling, feasibility studies and initial planning studies. As a result of these further investigations there may be further wind farm developments in the Southern Tablelands landscapes. However, in all cases it is anticipated that current rural activities will be continued at the wind farm development sites.

The consultation undertaken to date for the Capital Wind Farm has encountered a variety of responses from the local community with some supporting, others objecting and some who are ambivalent. However, wind energy developments still receive much positive support from the community, though a degree of opposition is expected at most proposed locations.

### **14.3 Wind Farm Developments within Palerang and Goulburn Mulwaree LGAs**

There are no existing wind farm developments in either the Palerang or Goulburn Mulwaree Local Government Areas.

However, consent has been granted for the 50 MW Woodlawn Wind Farm near Tarago in the Goulburn Mulwaree LGA. The proposed development involves 25 turbines, each having a capacity of 2 megawatts. The closest turbines for the Woodlawn and Capital wind farms will be about 5 kilometres apart.

The proposed Capital Wind Farm development will be located at a site that comprises cleared grazing land and which is regarded as suitable for wind farm development and continued grazing. The land immediately around the site is at a lower elevation or is wooded land that is not suitable for wind farm development. These factors constrain the Capital Wind Farm site.

While there is a likelihood of future development of wind farms in the Palerang and Goulburn Mulwaree LGAs, such developments are limited to sites that have a suitable wind energy resource and satisfy a range of environmental, social and infrastructure requirements. When all these factors are considered the potential future sites are limited and much of the locality will not be suitable for wind farm development.

### **14.4 Cumulative Effects of Existing and Planned Wind Farms in the Region**

The main cumulative impact of multiple wind farm developments for the region is likely to be related to the combined visual impact of the wind farms at locations where more than one wind farm is visible.

The two Crookwell Wind Farm developments that are greater than 50 kilometres north of the Capital Wind Farm site will not be visible from the Capital Wind Farm locality. Similarly, the Gunning Wind Farm to the south west of the Crookwell Wind Farms is almost 50 kilometres distant.

The adjacent locations of the Woodlawn and Capital Wind Farms could give the appearance of a single wind farm when viewed from some directions. However, the main visual impact for a particular viewpoint will relate to the closer of the two wind farms to the viewpoint. Residences located between the two wind farms would have potential for greater visual impact than that experienced at more distant residences. For the 10 representative viewpoints around the Capital Wind Farm, for which photomontages have been prepared and provided in Appendix C, only two of those views will include Woodlawn Wind Farm. The more distant views, from Viewpoints 1 and 10 will include both wind farms however the two are likely to be perceived as a single wind farm.

Future potential wind farm developments in the region may increase visibility of turbines in the local landscapes but will not pervade all of the landscapes and there will still be significant areas of rural landscape that are unaffected by wind farm developments. It is understood wind farms are excluded from part of the range of hills on the western side of Lake George by zoning under the relevant Local Environment Plan.

Other potential environmental impacts such as heritage issues, vegetation clearing and interference to television reception are mainly site specific and the cumulative impact of future potential developments on these issues is likely to be low. Noise impact arising from the two wind farms has been assessed for residences between the Capital and Woodlawn Wind Farms and has been found to be acceptable. Some further impact on television reception may be experienced at a small number of residences and additional monitoring of reception may be needed where an impact occurs to discriminate the source of the impact. Assessments of aspects such as flora and fauna and heritage are undertaken within a broader regional context as reported in the Appendices to the EA.

When implemented with appropriate environmental management, wind farm developments can be undertaken with very low impacts on the environment and potential benefits through their delivery of a form of sustainable energy. The two wind farm developments at five kilometres spacing are in a sparsely settled area where the cumulative impacts of those developments will be within the capacity of the locality to absorb without detrimental social, environmental or economic consequences.

If the Woodlawn and Capital Wind Farms were to be under construction at the same time there could be additional disruption to traffic between the Woodlawn Bioreactor entrance and Goulburn, which would require additional coordination measures in the Project Traffic Management Plans.

#### **14.5 Other Industry in the Area with Similar Impacts**

Other nearby developments include the Woodlawn Bioreactor, located seven kilometres to the north-east of the proposed site and sand mining activity in various areas to the south. The cumulative impact of the wind farm with the sand mining activities would be limited to traffic movements and potential for dust creation during the construction phase of the development. Such impacts are considered to be minimal and will be mitigated through the project's environmental management plan. Potential cumulative impacts with the Woodlawn Bioreactor relate to traffic and associated traffic noise.

#### **14.6 Advantages/Disadvantages of Future Wind Farms in the Region**

Should development of future wind farms occur in the region, it is likely that more wind turbines would be more visible, which may be of concern to some locals. However, each such development would be subject to separate development approval process. Wind farm developments are also likely to bring additional income to properties on which the developments occur and to the local community providing a boost to the local rural economy while at the same time assisting Australia to meet its national greenhouse emission objectives. As mentioned above, the sites that are suitable for wind farm developments are limited and the locality will not be covered by such developments.

#### **14.7 Long Term Cumulative Impacts**

Significant environmental impact has occurred in the vicinity of the site over the last 180 years due to the clearing of native vegetation for grazing and subsequent settlement with its various cultural features. The development of the wind farm will result in some further change to the character of the landscape at the locality, but will otherwise have little further impact on the environment at this location. While some neighbours would argue that the wind farm represents a change to the

landscape, it may also limit the proliferation of small acre farms and rural residences, which would also change the character of the rural environment.

A wind farm development is potentially reversible. Equipment can be removed at the end of its useful life and the site restored. The potential posed for issues such as soil contamination is low for this type of development and with the proposed controls implemented it should present a very low risk.

The operation of the Capital Wind Farm will deliver net greenhouse gas emission savings of 9.75 million tonnes of carbon dioxide that, together with other renewable energy projects, support a national objective of mitigating greenhouse gas emissions. In the longer term, energy resources are likely to become more constrained and greenhouse issues will be of increased concern. Accordingly, developments such as the Capital Wind Farm are likely to receive stronger support as the value of renewable energy developments is further recognised.

#### **14.8 Short Term Cumulative Impacts**

Short term cumulative effects are mainly related to transport of equipment and materials to site. The Woodlawn and Capital Wind Farms are potentially the first developments of this type in the Palerang Shire area and it is possible that the Woodlawn and Capital Wind Farms construction periods may coincide.

If this situation did arise, then additional traffic management measures would need to be developed in consultation with the local Traffic Management Committee.

#### **14.9 Transmission Line Infrastructure**

Existing high voltage transmission lines that pass through the project locality include the following:

- 330,000 volt Kangaroo Valley to Canberra line that passes through the wind farm site
- A 66,000 volt lines that passes from north to south through the site. That line will be utilised by the Woodlawn Wind Farm and does not have the spare capacity to serve the Capital Wind Farm as well.

In addition to the above lines there is a local distribution network of lines at various voltages that supply townships and rural properties.

The wind farm will connect to the existing 330,000 volt transmission line which has adequate capacity for the connection.

A consequence of this project is the installation of about twelve kilometres of new 33,000 volt overhead line internal to the wind farm and a new 33,000volt/330,000 volt substation that will form part of the TransGrid high voltage system. The new 33,000 volt overhead transmission line will have limited visibility from the surrounding local area. The existence of this substation may offer additional benefits to the local region at some point in the future.