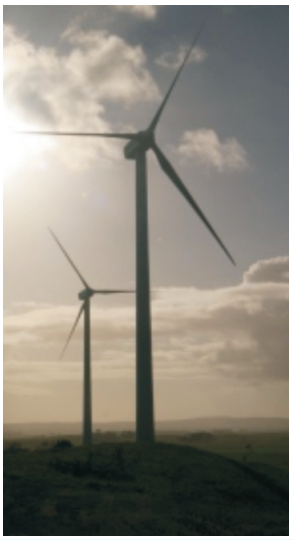
Woodlawn Wind Farm



Cumulative Impacts

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14. Cumulative Impacts

14.1 Introduction

This chapter of the SEE provides a review of the potential cumulative impacts of wind farm developments and other mining, energy and waste projects at the Woodlawn Wind Farm project locality.

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 SEE 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 existing and potential development of wind farms in the Southern Tablelands Region and the likely growth of wind energy developments throughout Australia generally and in particular, in relation to the existing Capital Wind Farm.

- The impact of developments which are ancillary to, or otherwise associated with the proposed wind farm, such as transmission infrastructure and, other developments such as mining and energy projects at the locality.

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 kilometres south-east of Crookwell. It involved eight 600 kilowatt wind turbines (total generation capacity 4.8 MW) that have now operated for over ten 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.

Subsequently, development of a 70 to 80 MW wind farm about 15 kilometres north-east of Gunning was granted consent by Upper Lachlan Shire Council in November 2004. The consent for Gunning Wind Farm allows for 31 turbines, each having a capacity of approximately 2 MW to 3 MW. This development would be approximately 50 kilometres to the north-west of the Woodlawn Wind Farm site.

The Woodlawn Wind Farm development comprising 25 turbines and having a total capacity of 50 MW was approved in 2005 but has not yet proceeded and is the subject of this SEE.

In 2005, Department of Planning granted development consent for the Crookwell II Wind Farm that would be located adjacent to the existing Crookwell Wind Farm. Crookwell II Wind Farm has been the subject of an application for modification of consent and has not yet proceeded.

The Capital Wind Farm was approved in 2006 and construction followed in 2008 with 67 turbines now installed with a total capacity of 140 MW. It is connected to an existing 330 kV transmission line via the Capital Wind Farm substation that will also be used for the Woodlawn Wind Farm grid connection.

The Cullerin Wind Farm comprising only 15 turbines and having a total capacity of 30 MW has now been constructed east of Gunning and adjacent the Hume Freeway.

The Taralga Wind Farm to the north of Goulburn has been approved but its development has been delayed by a number of appeals and modification applications and it is yet to be constructed. I

Another large wind farm development has been proposed for the Gullen locality and is yet to be constructed.

The number of wind farm development proposals within the Southern Tablelands area to the north of Canberra is testimony to the wind energy potential of the region, the suitability of parts of the region and the overall support for the development of such projects. Nevertheless these projects have experienced various degrees of local opposition but of the various projects to have been submitted for planning approval, the Woodlawn Wind Farm appears to be one of the less contentious proposals.

If all of the above wind farm developments are constructed they will collectively represent a considerable expansion of renewable energy generation facilities in the region. The wind farms are generally discrete developments and occupy only small parts of the land where they are located thereby enabling existing pastoral landuses to continue in conjunction with the wind farm developments. They are generally associated with additional transmission infrastructure and in some cases results in strengthening of existing transmission infrastructure.

14.3 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 Capital and Woodlawn Wind Farm developments are only five to ten kilometres apart and from some distant views they may appear as the one wind farm with a total 87 turbines located in four groups. At closer viewpoints the individual groups are more evident and only parts of one or both wind farms are visible for many viewpoints due to the variable terrain. Other existing wind farm developments of which Cullerin is the closest are generally not visible for viewpoints for the Capital and Woodlawn Wind Farms so the cumulative visual impact is generally a localized impact. An exception would be for people travelling through the region that may in future notice several wind farms in their travels.

Where the two wind farms are visible, 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 5 representative viewpoints around the Woodlawn Wind Farm, for which photomontages have been prepared and provided in Appendix D, only two of the viewpoints are between the Woodlawn and Capital Wind Farms. For the more distant views such as across the depressed topographic feature of Lake George from the Federal Highway the two wind farms are likely to be perceived as a single wind farm. Distant views from other directions will have significant screening of part or all of the two wind farms.

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 that 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. There has been found to be a small increase in noise levels for residences adjacent the Capital Wind Farm with the additional impact of the Woodlawn Wind Farm compared to noise levels for the Capital Wind Farm only. For other residences surrounding the Woodlawn Wind Farm there may be a slight decrease in noise levels from those reported in the 2004 EIS.

Some further impact on television reception may be possible at a small number of residences but the potential is low given the setting of the Woodlawn Wind Farm and location of neighbouring residences relative to the transmission sources that serve the locality and the positions of the respective turbine locations. Nevertheless monitoring of reception may be needed where an impact occurs to discriminate the source of the impact and where necessary corrective measures will be implemented.

Assessments of aspects such as flora and fauna and heritage are undertaken within a broader regional context as reported in the Appendices to the SEE.

When implemented with appropriate environmental management, wind farm developments can be undertaken with very low impacts on the environment and deliver potential benefits through their supply of a form of sustainable energy. The two wind farm developments at five to ten 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.

As the Capital Wind Farm has already been constructed, the traffic movements for the Woodlawn Wind Farm construction will not provide an additive impact that could result if construction had occurred simultaneously at the two sites. The Capital Wind Farm construction works have also been undertaken at the same time as activities have occurred at the Woodlawn Bioreactor. Construction of the Capital Wind Farm has demonstrated the ability to deliver the overmass and oversize loads to the locality without incident. The Capital Wind Farm construction has demonstrated the workability of the project Traffic Management Plan.

Investigations undertaken in the Southern Tablelands region by the various organisations for further wind energy sites 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. Additionally, individual developments will be generally separate and discrete facilities.

The consultation undertaken to date for the Woodlawn Wind Farm has encountered a variety of responses from the local community with some supporting, others indicating some concern 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.

14.4 Other industry in the area

Other nearby developments include the Woodlawn Bioreactor (a waste to energy project), located immediately to the north of the proposed Woodlawn Wind Farm site and small scale mining activity in close proximity to the Bioreactor. The cumulative impact of the wind farm construction and the mining activities are limited to traffic movements and potential for dust creation during the construction phase of the wind farm development. Such impacts are considered to be minimal and will be mitigated through the project's environmental management plan. Potential cumulative impacts from the Woodlawn Bioreactor and Woodlawn Wind farm relate to traffic and associated traffic noise during the wind farm construction.

It is notable that the Bioreactor and the wind farm both produce electricity without the combustion of fossil fuels and represent sustainable energy projects having a combined capacity of about 62 MW. Together with the Capital Wind Farm the locality will be able to produce over 200 MW of electricity into the NEM using sustainable energy sources.

14.5 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 parts of 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.

14.6 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. In addition, mining at the site has created a large open pit, an out of pit spoil pile and tailings dams. 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 will present a very low risk to the environment and a number of positive benefits.

The operation of the Woodlawn Wind Farm will deliver net greenhouse gas emission savings of 3.65 million tonnes of carbon dioxide equivalent over its project life that, together with other renewable energy projects support a national objective of mitigating Australia's 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 Woodlawn Wind Farm are likely to receive stronger support as the value of renewable energy developments is further recognised.

14.7 Short term cumulative impacts

Short term cumulative effects could have involved the coincidence of transport of equipment and materials to the Capital and Woodlawn Wind Farm sites. As the Capital Wind Farm has been constructed this issue will not arise and no additional traffic management measures will be needed.

14.8 Transmission line infrastructure

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

- 330 kV Kangaroo Valley to Canberra line that passes south of the Capital Wind Farm site and to which Capital Wind Farm is connected
- A 66 kV lines that passes from north to south through the site. That line was to have been utilised by the Woodlawn Wind Farm for grid connection. However, its capacity to serve the Woodlawn Wind Farm and the Woodlawn as well as the Woodlawn Bioreactor and the proponent's own review identified that the grid connection of Woodlawn Wind Farm via Capital Wind Farm substation was the most practical and cost effective option.

The amended Woodlawn Wind Farm is proposed to connect to the existing 330 kV transmission line which has adequate capacity for the connection. As a consequence, installation of about twelve kilometres of new 33 kV overhead line is proposed together with augmentation of the 33 kV/330 kV Capital Wind Farm substation. The new 33 kV overhead transmission line will have limited visibility from the surrounding local area.