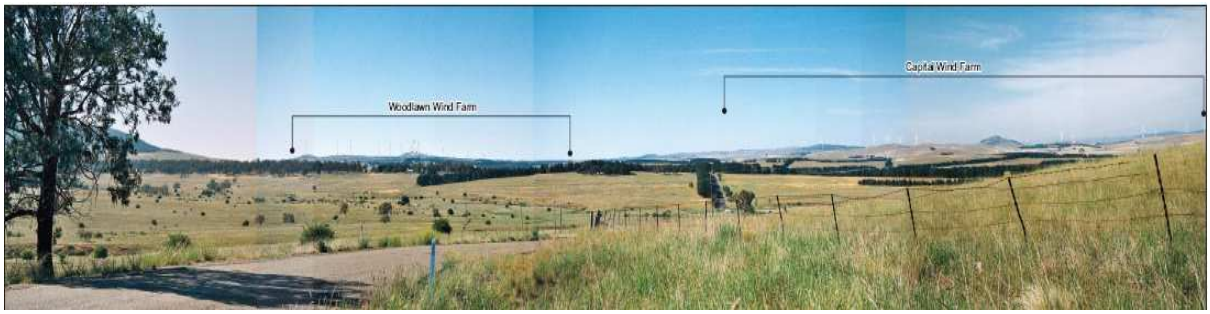
NSW GOVERNMENT | Planning

REPORT ON THE ASSESSMENT OF A MODIFICATION PURSUANT TO SECTION 96(2) OF THE *ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979*

APPLICATION (DA-250-10-2004 MOD 1) BY WOODLAWN WIND PTY LTD TO MODIFY DEVELOPMENT CONSENT GRANTED ON 4 OCTOBER 2005 FOR THE WOODLAWN WIND FARM PROJECT



April 2010

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EXECUTIVE SUMMARY

Woodlawn Wind Pty Ltd (the Applicant) has lodged an application to modify a development consent, granted on 4 October 2005 for the construction and operation of the Woodlawn Wind Farm proposal (the original proposal). The Applicant seeks to modify the development as granted, by undertaking the following changes to the scope of the proposal:

- reducing the number of turbines from 25 to 20 and increasing the hub height to 80 metres for all turbines;
- changing the location of some turbines within the original turbine envelope;
- changing the turbine type from Vestas V80, 2 megawatt turbines to Suzlon S88, 2.1 megawatt turbines;
- increasing turbine blade length from 40 metres to up to 44 metres;
- selecting an off-white colour for the turbines rather than the light grey option of the existing approval;
- reducing the wind farm capacity from 50 megawatts to 42 megawatts;
- installing generator transformers at the base of the each turbine;
- upgrading the intra wind farm collection circuit from 22kV to 33kV;
- constructing a 12 kilometre 33kV overhead transmission line from the Woodlawn Wind Farm to the Capital Wind Farm substation. This would negate the need for a substation at the project site and an overhead 66 kV electricity transmission line connecting the output of the substation to an existing 66 kV transmission line (which formed part of the original proposal);
- installing a third 33kV/330kV transformer at Capital Wind Farm substation;
- strengthening the Capital Wind Farm substation access road causeway to allow access for the new transformer;
- relocating the site office and temporary storage area;
- installing two temporary (prior to construction) and two permanent 80 metre meteorological monitoring masts;
- using an existing gravel borrow pit adjacent to Turbine 17, to source gravel for on-site access tracks;
- increasing the width of access tracks from 6 metres to 10 metres; and
- removing wind turbine lighting requirements.

The electricity generated by the development (both as originally approved and as currently proposed) will provide renewable energy under the Commonwealth government's Expanded Renewable Energy Target (RET) Scheme. The operation of the development will help meet the State's future electricity demand and the objectives of the Expanded Renewable Energy Target Scheme. The proposed modified development represents substantially the same development as applicable to the existing development consent. The wind farm is located on the same section of ridgeline as originally proposed. While it has a lesser number of turbines, the wind farm will provide a similar amount of power from the same renewable energy source (wind power). The development has a capital investment value of $90 million and will employ 80 people during construction and five people during operation. The capital investment value of the original application was $96 million and was to employ up to 25 people for construction and four people for operation (full time equivalent). This means that the capital investment value for the modified application is less than that of the original application and it will provide for a larger number of jobs.

The Department received twelve submissions in total during the public exhibition of the Statement of Environmental Effects. Six of the twelve submissions were from government agencies and the other six

were from the public. One public submission stated support for the modification application, one objected to the modification application (including the original proposal), and four submissions did not state a clear position. The key issues raised in all of the six public submissions related to community consultation and visual, noise and cumulative amenity impacts. The six submissions from government agencies were received from the Roads and Traffic Authority, the Department of Environment, Climate Change and Water, Industry and Investment NSW, the Sydney Catchment Authority, Goulburn Mulwaree Council, and the Land and the Property Management Authority. Three of these government submissions stated no objection to the modified development, subject to issues relating to road usage, mining and exploration, water quality and the obtaining of required permits be addressed by the Applicant and the Department's recommendations. The other three government submissions did not state a clear position on the project.

The Department's assessment of the modified development is detailed in Chapter 5 of this Report and finds that the modified development can be undertaken within acceptable environmental and amenity limits. The Department's assessment also finds that the predicted level of impact is substantially the same as that predicted for the originally approved development. The Department has formed key recommendations for the carrying out of the modified development. The existing conditions are generally adequate to ensure impacts are managed to an acceptable level, however these conditions have been recommended to be strengthened by the addition of operational noise criteria at receptor locations and updated information within the required Environmental Management Plans. The Department recommends the Applicant be required to prepare a Construction Noise Management Sub Plan (to be contained within the Construction Environmental Management Plan) to ensure the noise levels generated by the construction of the proposed transmission line and installation of turbines are within the approved noise criteria limitations. The Department also recommends the measures listed in the Statement of Environmental Effects for avoiding and managing cultural heritage be detailed in the Construction Environmental Management Plan.

The Department has not accepted the Applicant's proposed removal of wind turbine lighting requirements. The existing consent for the development requires for no external lighting of associated infrastructure, including wind turbines (except where required for safety purposes), other than low intensity security lighting, unless otherwise agreed by the Director-General or required by the Civil Aviation Safety Authority. The Department does not have sufficient information to determine that should lighting be found necessary but not be installed, that there will be no consequential impacts. As such, the Department recommends no change to the existing condition of the consent, relating to lighting. The Department has also recommended the deletion of existing condition 18, which required the Applicant to provide an annual return to the then Department of Environment and Conservation, in relation to the development as required by and Environment Protection Licence (EPL), because an EPL is no longer required. Other related changes have also been made to replace the former Department of Environment and Conservation's approval role with the Director-General of the Department, for example out of hours construction work is now required to be approved by the Director-General.

Based on the Department's assessment of the modification application, the Department recommends that the Minister grant consent to the modified development, subject to the recommended conditions. These recommendations have been formed for the purposes of ensuring that the development meets acceptable amenity and environmental standards and that the development is substantially the same development as that originally proposed and approved.

1 INTRODUCTION

1.1 Introduction

Woodlawn Wind Pty Ltd is the Applicant of the proposal. Previously Woodlawn WindEnergy Joint Venture, comprising EHN (Oceania) Pty Ltd, Collex Pty Ltd, ANZ Infrastructure Services, and ActewAGL had proposed the original proposal. Woodlawn Wind Pty Ltd acquired the Woodlawn Wind Farm project in 2009. Woodlawn Wind Pty Ltd (the Applicant) is seeking approval to modify the development consent of 4 October 2005, for the Woodlawn Wind Farm project, as outlined in section 1.2 and detailed in section 2 of this Report.

1.2 Background

On 4 October 2005, the then Minister for Planning granted development consent, with conditions for the Woodlawn Wind Farm development, pursuant to section 80 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act). The Applicant now proposes to reduce the number of turbines, but increase the height of some turbines. The wind farm is to be located on the same section of ridgeline as originally proposed. The Applicant has also changed the point of grid connection for the development. Listed below are the proposed changes to the original consent:

- reduce the number of turbines from 25 to 20 and increase the hub height to 80 metres for all turbines (there were two different heights for turbines in the original approval);
- change the location of some turbines within the original turbine envelope;
- change the turbine type from Vestas V80, 2 megawatt turbines to Suzlon S88, 2.1 megawatt turbines;
- increase turbine blade length from 40 metres to up to 44 metres;
- select an off-white colour for the turbines rather than the light grey option of the existing approval;
- reduce the wind farm capacity from 50 megawatts to 42 megawatts;
- install generator transformers at the base of the each turbine;
- upgrade the intra wind farm collection circuit from 22kV to 33kV;
- construct a 12 kilometre 33kV overhead transmission line from the Woodlawn Wind Farm to the Capital Wind Farm substation, negating the need for a substation at the project site and an overhead 66 kV electricity transmission line connecting the output of the substation to an existing 66 kV transmission line;
- install a third 33kV/330kV transformer at Capital Wind Farm substation;
- strengthen the Capital Wind Farm substation access road causeway to allow access for the new transformer;
- relocate the site office and temporary storage area;
- install two temporary (prior to construction) and two permanent 80 metre meteorological monitoring masts;
- use an existing gravel borrow pit adjacent to Turbine 17, to source gravel for on-site access tracks;
- increase the width of access tracks from 6 metres to 10 metres; and
- remove wind turbine lighting requirements.

1.3 Site Description

The proposed wind farm site is located on the Great Dividing Range, within the Southern Tablelands of New South Wales, approximately 50 kilometres north-east of Canberra and 37 kilometres south of Goulburn (refer to Figure 1). The project area extends from the wind farm site in the north to the Capital Wind Farm substation in the south of the region (refer to Figure 2).

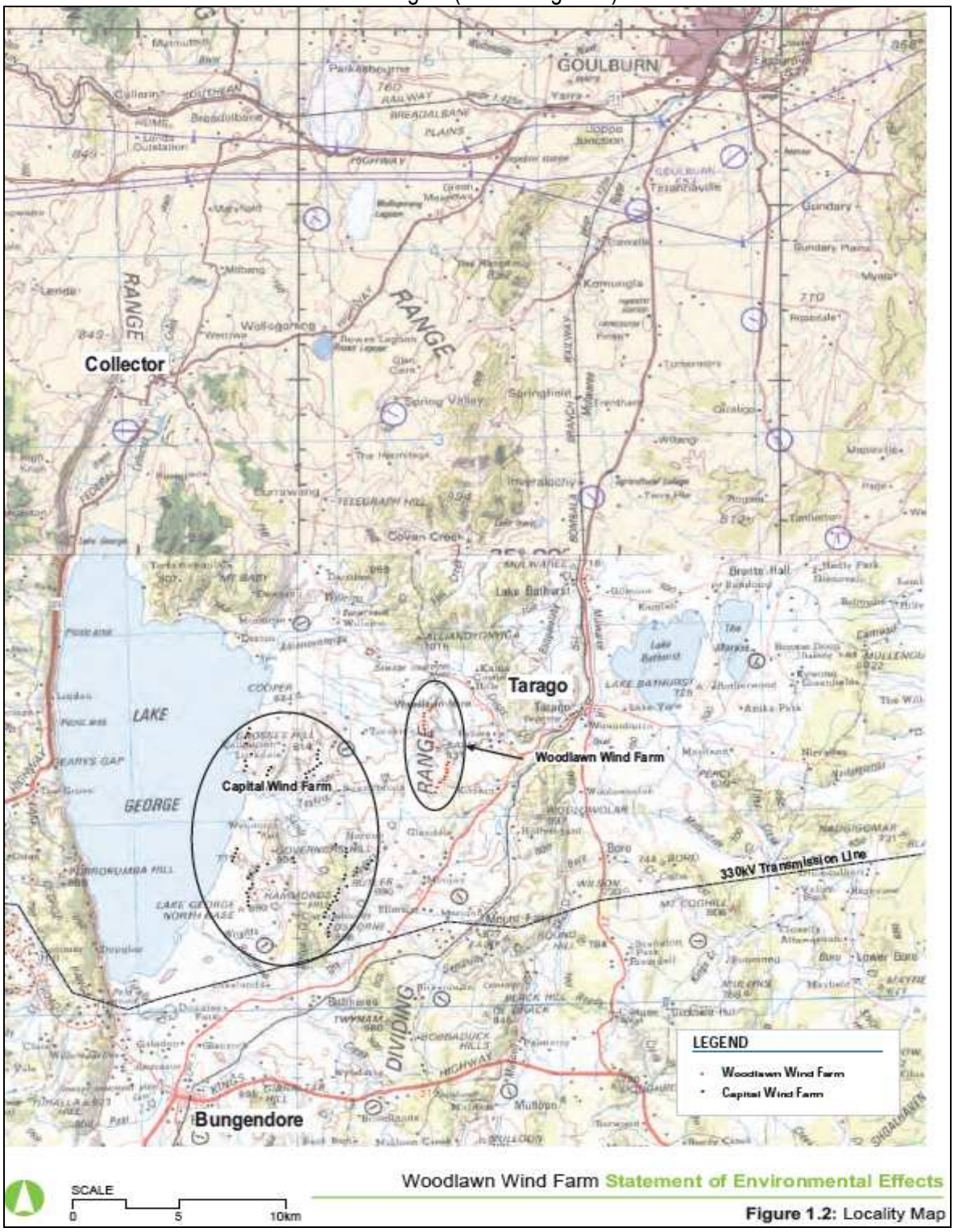

Figure 1: Regional Location of the proposal site (reproduced from the Applicant's Statement of Environmental Effects)

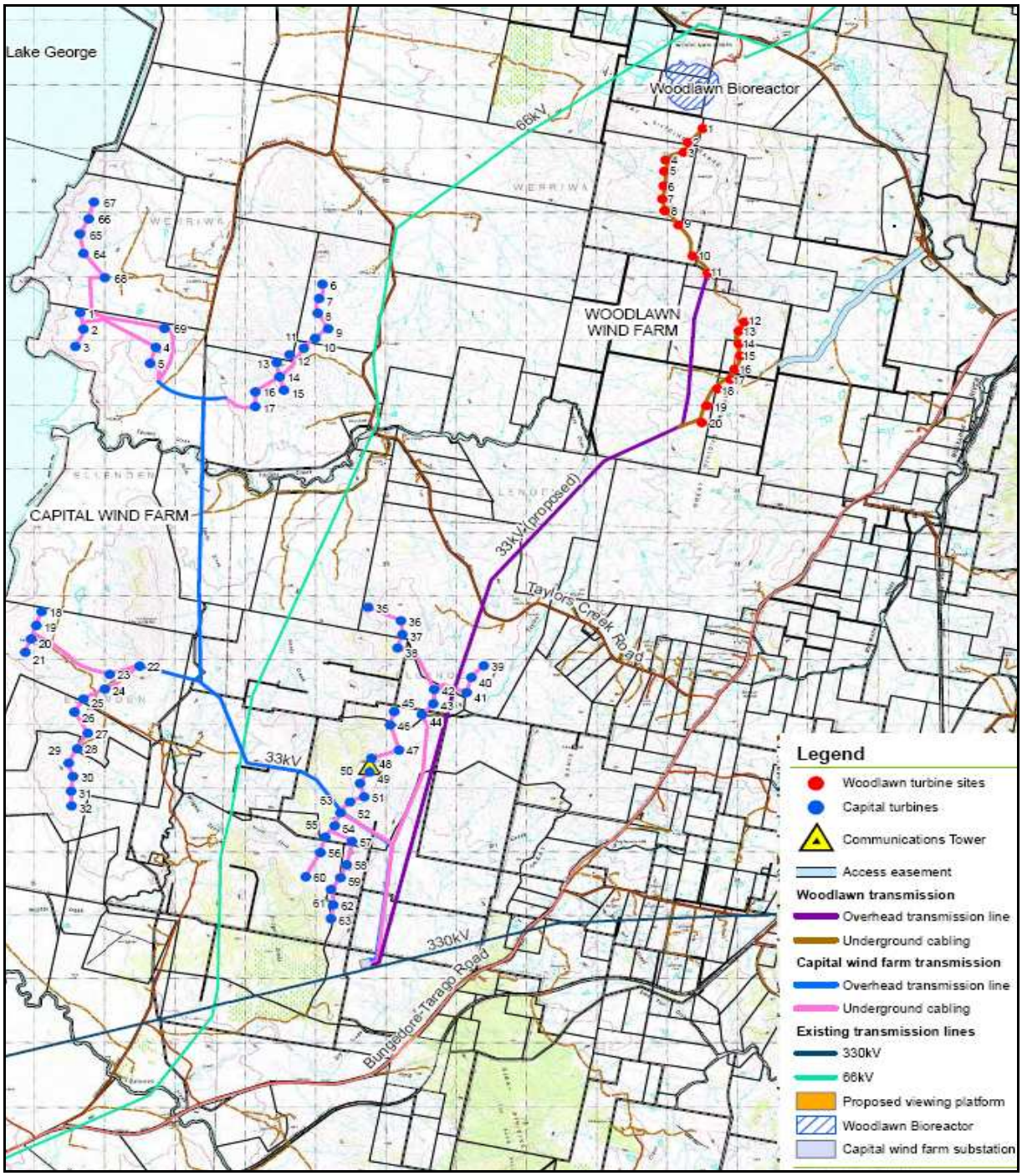

Figure 2: Proposed project site plan (reproduced from the Applicant's Statement of Environmental Effects)

1.4 Surrounding Land Use

The proposal site is close to the site of the former Woodlawn Mine and the operating Woodlawn Bioreactor, which is using waste to fill a former mine void and produce energy from the methane gas that is released from the waste. The nearest town is Tarago, located approximately seven kilometres to the east of the proposed wind farm site (refer to Figure 1). There are also possible future mining activities in the region and the recently constructed Capital Wind Farm is also situated in the region. These three surrounding land uses are briefly outlined in this section.

Capital Wind Farm

Capital Wind Farm is located to the south-west of the proposed Woodlawn Wind Farm site, it was granted project approval under Part 3A of the EP&A Act in 2006. Construction commenced in 2008 and it is now operating (and has a total generating capacity of 140 megawatts). The Capital Wind Farm includes a 33kV/330kV substation located to the south east of the wind farm (refer to Figure 2).

Woodlawn Waste Site

The Woodlawn "eco-precinct" is an area of approximately 6,000 hectares consisting of the Woodlawn and Pylara properties. The area includes the former Woodlawn Mine site, where copper and zinc were extracted from ore recovered from both open cut and underground mine works. As part of the rehabilitation of this former mine site, municipal waste is being deposited in the mine void by the landowner (Veolia Environmental Services). Solid waste that contains organic matter from Sydney is placed in the mine void. As the waste builds up, it is progressively capped to retain and direct methane gas that can be used to generate electricity. The waste to energy system is referred to as the Woodlawn Bioreactor and has been in operation since 2005.

Woodlawn Special Mining Lease (SML 20)

In late 2006, Tri Origin reached agreement with Veolia Environmental Services and the administrators of Denehurst Ltd, the mine's previous operator, for the transfer of mining lease SML 20 to TriOrigin prior to or upon completion of a feasibility study.

The Applicant has stated that Tri Origin believes that the Woodlawn Mining Lease has the potential to sustain a long-life, profitable mining and processing operation, producing a range of metals. Tri Origin is taking a long-term view of the region, and is understood to have a controlling interest in over 60 kilometres of strike length of prospective Silurian rocks within a major zinc province in the Woodlawn District.

The Applicant states that it understands that future mining may involve reworking material in the tailings dams, as well as some underground mining. The underground mining is indicated to be away from the area of the proposed Woodlawn Wind Farm site.

2 MODIFIED DEVELOPMENT PROPOSAL

2.1 The Modification Proposal

Section 1.2 of this Report lists the proposed modifications to the Woodlawn Wind Farm Project. This section will provide a description of each of these modifications proposed, including where relevant, reference to the original scope of works.

2.1.1 Wind Turbines

The approved project included the installation of 25 turbines, mostly along the elevated points of the ridgeline, south from the Woodlawn Mine Void and Woodlawn Bioreactor site to within 800 metres of the southern point of the Pylara property boundary.

The Applicant now proposes to install Suzlon S88 2.1 megawatt turbines, which have marginally different specifications to those currently approved. Table 1 below provides a summary of the turbine specifications, both for the approved and proposed modified wind farm development.

Table 1 Summary of specifications for turbine components for the approved and proposed modified wind farm (reproduced from the Applicant's Statement of Environmental Effects)

	Approved Wind Farm		**Proposed Modifications**
Manufacture	Vesta OptiSpeed V80		Suzlon S88
Number of turbines	19	6	20
Output	2 megawatts		2.1 megawatts
Turbine towers			
Height (hub)	60 metres	78 metres	80 metres
Tower height (excluding nacelle)	58.3 metres	76.3 metres	78 metres
Structure construction	Tubular steel with internal ladder and/or lift consideration of light grey colour for turbines.		Tubular steel with internal ladder, painted off-white.
Weight	134.3 tonnes	195.6 tonnes	150 to 200 tonnes (4 sections)
Diameter – top (base)	2.3 metres (4.0 metres)	2.3 metres (4.0 metres)	2.5 metres (4.5 metres)
Number of sections	3	4	4
Footings			
Footing design	Reinforced square concrete foundations		Reinforced octagonal concrete footing, secured with rock anchors
Dimensions	13 m x 13 m 2 m below ground	15.7 m x 15.7 m 2.16 m below ground	10 m diameter, 2-3 m below ground level
Rotors/Turbines			
Blade diameter	80 metres		88 metres
Sweep area	5,027 m^2		6,082 m^2
Rotation	9 –19 rpm		15.5 rpm
Construction	Closed fibre reinforced epoxy		Fibre reinforced plastic resin
Nacelle			
Dimensions	1.7 m height		6 m long x 3 m wide x 3 m high
Construction	Not stated		Steel and fibre reinforced plastic
Generator transformer			
Dimensions	–		3 m x 2.5 m x 2.2 m

2.1.2 Relocation of wind turbine sites

With the reduction in the overall number of turbines from 25 to 20, the number of turbines located on some of the properties will be varied from the original application, however all turbines will still be located within the original turbine array envelope. Most of the land parcels on which the turbines have been proposed, will now be subject to different number of turbines (from the original layout), with the highest change being a reduction of two turbines.

The maximum distance of an amended turbine site from a previously approved turbine site is 245 metres in the case of Turbine 10, which is located in an area where no turbine sites had previously been positioned. Also, none of the revised turbine sites are located in the area of the former Turbine sites 13, 14 and 15.

2.1.3 Access to site and internal access tracks

As part of the original approval for the Project, the two approved entry points to the wind farm site are both from Collector Road. Entry to the southern part of the wind farm was at Pylara Farm and the Woodlawn Bioreactor entrance provided entry to the northern section of the wind farm. Approval was also granted for upgrading the current Pylara access track and for the construction of additional access tracks where required. The access tracks were to have been six metres wide, with a top layer of gravel, with a grade that would not exceed 14 per cent and would include drainage trenches to manage rainwater runoff.

As part of the modification application, the Applicant is now proposing to only use Pylara Farm as the access point to the wind farm site. Also, the Applicant proposes to increase the width of the access tracks from 6 to 10 metres, to enable access for the large cranes required for turbine erection. The Applicant states that the final locations of tracks will be determined based on design considerations. Also, an existing borrow pit located approximately 60 metres east of Turbine 17 will be used to source gravel for the access tracks.

2.1.4 Underground cabling

As part of the original approval, consent was provided for the power output from each turbine to be connected to the onsite substation via permanent 22 kV underground cabling. Location of trenches would generally be adjacent to the access tracks between each turbine. Mechanical excavators would be used to excavate trenches 1.1 metres deep and 0.45 metres wide. Cables would be laid on sand and covered by a further layer of sand. The trench would then be backfilled with soil to surface level, and rehabilitated to prevent erosion.

Under the modification application, the routes of cable trenches will only vary slightly from those proposed under the original application, and are to still be within the area assessed under the original proposal. As such, the form of cable installation will be consistent with that described under the original application.

2.1.5 Substation and grid connection

Under the modification application, the Applicant is now proposing to connect the Woodlawn Wind Farm to the Capital Wind Farm substation, negating the need to construct the approved substation at the Woodlawn Wind Farm site. This is because since original consent, Capital Wind Farm located to the south-west of the project site has been constructed and commissioned. It provides the Applicant with the opportunity to develop this alternative connection arrangement now proposed as part of the

modification. For grid connection, it is proposed to construct 12 kilometres of a 33kV overhead line from Woodlawn Wind Farm to the Capital Wind Farm substation. The Capital Wind Farm substation access road causeway will be strengthened to allow access for the new transformer.

2.1.6 Site Office and Storage

Under the original approval, consent was granted for the establishment of a site office and adjacent raw material storage area, to be located on the ridgeline at the south end of the site. The area would be fenced off with a designated parking area, and include a water tank, office space, toilets, meeting rooms and first aid rooms. A temporary 11 kV line was to be installed from the existing power supply located at the proposed substation.

Under the modification application, the requirement for construction of a temporary site office and its general form remains unchanged to that proposed under the original application, however its location is now on the access road to the east of Turbine 18. The relocation of the site office has been proposed as it would provide a more sheltered and secure area (compared to the exposed nature of the approved site on the ridgeline), adjacent to the existing Pylara farm track providing access to the wind farm site.

2.1.7 Quarry

As part of the modification application, the Applicant proposes to use an existing borrow pit located on the ridgeline north of the proposed access track and approximately 60 metres east of Turbine 17, to source gravel for on-site access tracks (refer to Figure 3). The quarry is located on cleared, previously disturbed land and no additional vegetation clearing is proposed within this area. The Applicant states that an additional site for the sourcing of gravel is also available on the Capital Wind Farm land area, however it may not be required if there is adequate suitable material at the Woodlawn Wind Farm site. The Applicant states that should these not be suitable, then off-site sources may be used to provide gravel to the wind farm site.

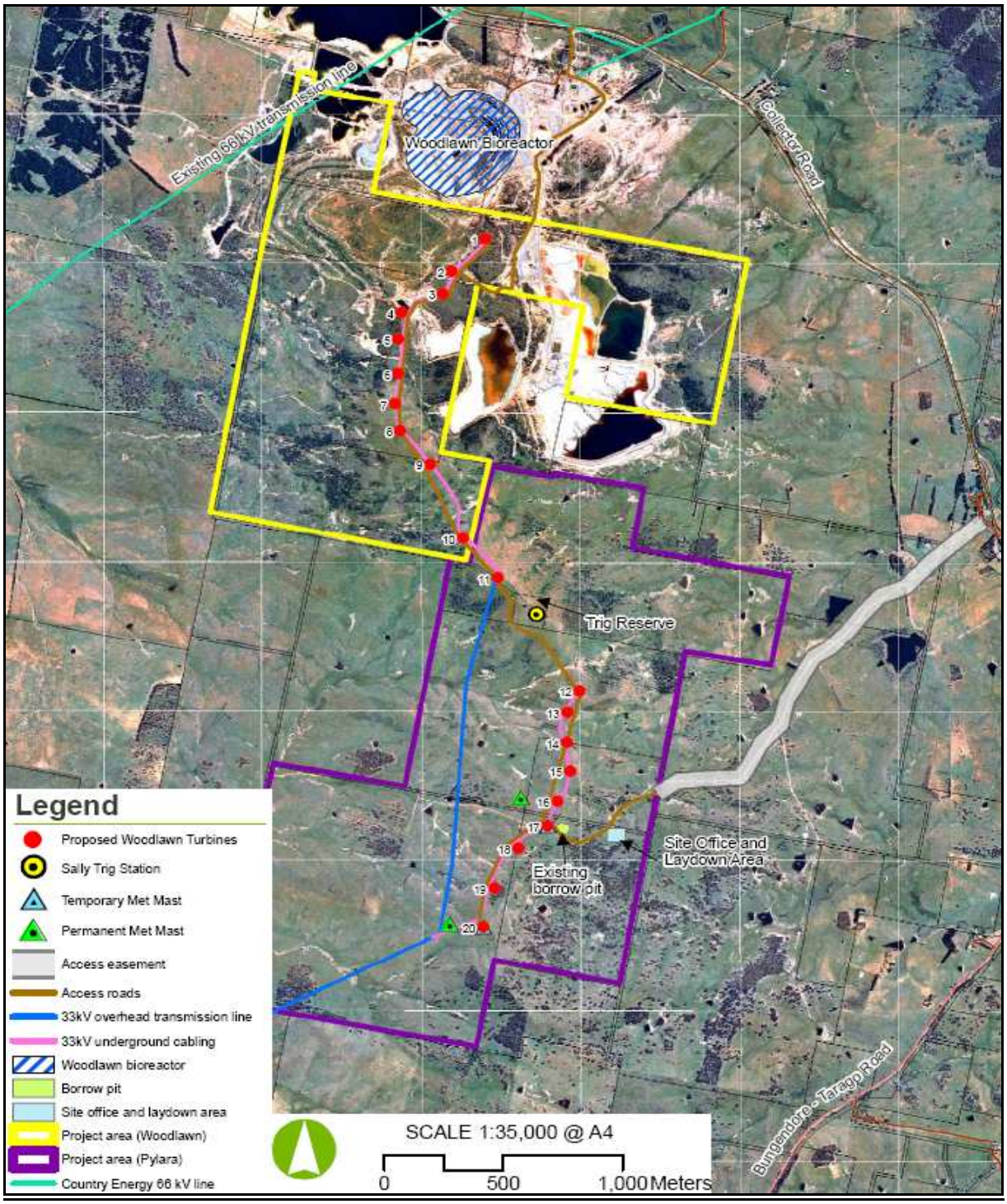

Figure 3: Proposed Amended Woodlawn Wind Farm Layout (reproduced from the Applicant's Statement of Environmental Effects)

2.1.8 Batching Plant

Under the original application, consent included allowance for a batching plant that was proposed to be located to the north of the ridgeline, near the Woodlawn mine site. The batch plant would only be used for limited times, when turbine footings are being poured and the contractor may choose to deliver concrete to the site from Bungendore. The Applicant currently states that the option to source concrete on site or from Bungendore will be determined by the contractor, prior to construction commencing.

2.1.9 Viewing Platform

The original consent for this proposal included the construction of a viewing platform, situated off Collector Road. Parking for up to 20 cars and two buses was proposed. The design of the car park and road entrance complied with the relevant Australian and New Zealand standards and guidelines.

Under the modification application, the provision of a viewing platform, its location and design criteria remain unchanged. The Applicant further states that Goulburn-Mulwaree Council will be consulted in regards to the design of works to connect the parking area at the viewing platform with Collector Road.

2.1.10 Wind monitoring masts

At the time of preparing the Environmental Impact Statement under the original application, two wind-monitoring masts were already located on the site. The Applicant proposed to remove the original two masts and construct two new masts, which were to be subject to a separate development application and were therefore not assessed as part of the original application for Woodlawn Wind Farm.

Under the modification application, the Applicant now proposes to dismantle the two existing wind-monitoring masts and construct two temporary, and two permanent, 80 metre meteorological masts. The Applicant states that the location of the new temporary masts will coincide with turbine locations 17 and 20. The temporary masts will be removed after a sufficient period of monitoring has enabled correlation of wind data from the pairs of temporary and permanent masts, and prior to construction of the turbines at the respective temporary mast sites. Figure 3 on the previous page of this Report shows the locations of the existing masts and the locations of the proposed permanent masts.

2.1.11 Transport of equipment and materials

The Applicant's review undertaken for the modified development indicates that the overall volume of vehicles using the local roads will be less than the estimated volumes in the original project application (originally it was estimated that there will be 200 trips per day during construction, comprising 100 light vehicle and 98 heavy vehicle trips per day, over a 6 month period). The combination of reducing the turbine numbers and altering the construction design of the footings has resulted in a decrease in vehicle movements to and from the site. An assessment of traffic and transport issues is provided in Section 5.5 of this Report.

2.2 Justification for the Modified Development

The modified development represents substantially the same development as approved under the existing development consent. The wind farm is located on the same section of ridgeline and while it has a lesser number of turbines, it will provide a similar amount of power from the same renewable energy source. The Applicant states that point grid connection has been modified to provide a more practical and cost effective outcome, without any significant change to the project's environmental impact. The Applicant has also stated that the modified project will provide the following overall benefits:

- net greenhouse gas emission savings of 146,000 tonnes of carbon dioxide (equivalent) per year;
- assists the Federal Government to achieve the Expanded Renewable Energy Target;
- provides an income to the landowners of properties on which the wind farm is to be located;
- provides an economic boost to the local community and employment opportunities; and
- assists the Applicant's company to fulfil its business objectives.

The project will provide renewable energy under the Commonwealth government's Expanded Renewable Energy Target Scheme (RET). The RET has been formed to encourage the generation of electricity from renewable energy sources and aims to create an additional 45,000 gigawatt-hours of energy generated by such sources by 2020 (note the target under the previous RET scheme was 9,500 gigawatt-hours by 2010). The additional renewable energy generation specified under the expanded national RET scheme has been established to meet the Government's commitment to achieving a 20 per cent share of renewable sources in Australia's electricity supply in 2020.

Generation of electricity from wind power can deliver significant benefits through savings in greenhouse gas emissions. These greenhouse gas emissions are generally quantified as the proportion of carbon dioxide that is not generated by fossil fuel power generators, thereby resulting in savings of carbon dioxide formation and release into the atmosphere. The Applicant has estimated the greenhouse gas emissions savings of the modified project, using the 2010 NSW Pool Coefficient of 0.973 tonnes $CO_{2\text{-}eq}$/MWH, to compare the savings estimated. Based on this coefficient, the Applicant has estimated that the project's output could over one year displace electricity production that would have otherwise produced 146,000 tonnes of greenhouse gasses for that given year.

The proposed modified project would result in a reduction in overall output of the wind farm from 50 megawatts to 42 megawatts, however the electricity generation would increased to 150,000 MWh/yr (from the originally proposed 140,000 MWh/yr). This means that even though the overall capacity of the wind farm has been reduced, the Applicant finds that it will be able to produce more power under the revised design specifications. The increased capacity of individual turbines (from 2 megawatt to currently proposed 2.1 megawatt turbines) and increased dimensions of the turbine structures (from 60-78 metres to currently proposed 80 metres hub height), will allow for the annual power output of the proposal to be slightly increased relative to the approved wind farm. Apart from the greenhouse gas savings benefits of the modified project, the land on which the wind farm is proposed is cleared and used for farming purposes. Minimal clearing of trees would be required for construction and the Department has found that in most cases, the site construction would avoid areas of remnant woodland.

The Department considers the project's operation will help meet the State's future electricity demand and the objectives of the Expanded Renewable Energy Target Scheme. The Department's assessment (refer to Chapter 5) has found that the predicted level of impact is substantially the same as that predicted for the originally approved development. This means that the modified project would have the ability to produce more renewable energy without any additional significant impacts.

3 STATUTORY CONTEXT

3.1 Permissibility

3.1.1 Local Government Instruments

The proposed wind farm development is located on the boundary of Palerang Shire local government area and the Goulburn Mulwaree local government area. The two shires were formed in 2004, through a process whereby the NSW Government redefined shire boundaries and amalgamated a number of former local government areas. The process of amalgamations was based on retentions of the former local government zoning provisions but with a program to develop new local environmental plans, based on the new shire boundaries. The approved Woodlawn Wind Farm development was mostly within the area of the Mulwaree Local Environmental Plan (MLEP) and the original project was assessed against the MLEP objectives. In July 2009 the Goulburn Mulwaree Shire issued the Goulburn Mulwaree Local Environmental Plan 2009 (GMLEP) that addresses the boundaries following amalgamation. The GMLEP 2009 will be applicable for the parts of the project within the Goulburn Mulwaree Shire.

The turbine sites of Woodlawn Wind Farm are partly located within Zone IN3 – Heavy Industrial and partly within RU2 – Rural Landscape under the Goulburn Mulwaree LEP. Wind farms and associated infrastructure would be a permissible use in the IN3 – Heavy Industrial Zone, with consent, in accordance with clause 3 of the GMLEP (Land Use Table, Zone IN3). Wind farms and associated infrastructure would be a permissible use in the RU2 – Rural Landscape Zone, with consent, in accordance with clause 3 of the GMLEP (Land Use Table, Zone RU2).

The proposed modified grid connection arrangement includes the construction of 12 kilometres of a 33kV transmission line, from Woodlawn Wind Farm to the Capital Wind Farm substation. The transmission line is partly located within 1(a) (General Rural) under the Yarrowlumla LEP 2002. The transmission line would be a permissible use in 1(a) (General Rural), under the Yarrowlumla LEP 2002, with consent, in accordance with Part 2, clause 11 of the Yarrowlumla LEP 2002. The transmission line is also partly located within the 1(a) General Rural Zone under the former Mulwaree LEP 1995. The transmission line would be a permissible use in this zone, with consent, in accordance with clause 9 of the MLEP (Zone Objective and Development Control Table).

The Capital Wind Farm substation is located within land zoned 1(a) (General Rural) under the Yarrowlumla LEP 2002. The works within this zoning would involve the installation of an additional 33kV/330kV transformer within the existing Capital Wind Farm substation facility for the purposes of the proposed modified development. The addition of the transformer to the existing Capital Wind Farm substation would be a permissible use in this zone, with consent, in accordance with clause 11 of the Yarrowlumla LEP 2002.

3.1.2 Minister's Approval Role and Delegated Authority

The Minister for Planning is the consent authority for modification requests under section 96(2) of the *Environmental Planning and Assessment Act 1979*, where the original project was State Significant Development. On 25 January 2010, the Minister delegated his powers and functions under section 96 of the EP&A Act to the Directors in the Major Projects Assessment Division, in cases where there are fewer than 10 public submissions objecting in respect of the modified project.

The Department received twelve submissions in total, of which six were from government agencies. The remaining six submissions were from members of the local and regional community. One public submission supports the modification application, one objects to the modification application (including the original proposal), and four submissions do not state a clear position. As such, the subject modification request complies with the above criteria of fewer than 10 public submission stating objection to the modified project. Consequently, the Director of Infrastructure Projects, Major Projects Assessment, may determine the modification request under delegated authority.

3.2 State Significant Development

The original development application was lodged with the Department on 1 October 2004 (DA 250-10-2004-i). The original proposal was classified as State significant development by virtue of a declaration made by the then Minister Assisting the Minister for Infrastructure and Planning (Planning Administration) on 4 August 2004, under section 76A(7)(b) of the *Environmental Planning and Assessment Act*. It should be noted that section 76A(7)(b) of the *Environmental Planning and Assessment Act* has now been repealed. However, the Minister for Planning is still the consent authority in respect of a modification of the then Minister's Consent.

3.3 Integrated Development

The original proposal under section 91 of the *Environmental Planning and Assessment Act,* was classified as 'integrated development' because, in addition to development consent, it required other approvals or licences from certain other government agencies. The Applicant required approvals from the then Department of Environment and Conservation under both the *Protection of the Environment Operations Act* (POEO Act) and the *National Parks and Wildlife Act* (NPW Act). It also required an approval from Goulburn Mulwaree Council under the *Roads Act*, and from the then Department of Natural Resources under the *Rivers and Foreshores Improvement Act*.

The Applicant is now seeking approval for proposed modifications to the originally approved project and consequently is seeking amendments to the development consent. Since the approval of the original project, the nature of the other approvals required under certain statutory provisions have changed. The modified project would now require approval from the Department of Environment, Climate Change and Water (formerly the Department of Environment and Conservation) under the provisions of the *National Parks and Wildlife Act 1974.* It would also still require a permit from the Goulburn Mulwaree Council under section 138 of the *Roads Act 1993.* The *Rivers and Foreshores Improvement Act 1948* has now been repealed with the *Water Management Act 2000* having effect from February 2008 in relation to the matters related to the original project. The NSW Office of Water administers the *Water Management Act 2000*. The Department's assessment report on the original project had stated that the Department of Natural Resources had issued General Terms of Approval identifying the matters that need to be addressed by the Applicant, in terms of excavation or removal of material from 'protected land' that may cause an impact to land or waterbodies, within the meaning of the *Rivers and Foreshores Improvement Act 1948.* The Department recommends that the Applicant be required to consult with the NSW Office of Water for the purposes of ensuring relevant licences and/or permits have been obtained for the crossing of watercourses and for the excavation of material that is in close proximity to waterbodies.

3.4 Designated Development

The original proposal was also classified as designated development, pursuant to schedule 3, clause 18(1)(c) of the *Environmental Planning and Assessment Regulation 2000* because the proposal is for an electricity generation station that has a generating capacity that is greater than 30 megawatts.

3.5 Relevant Planning Instruments

The following outlined environmental planning instruments are based on the matters listed for consideration under section 96(3) of the *Environmental Planning and Assessment Act* 1979 (which refers to section 79C(1) of the same Act).

Local Environmental Plans

There are three local environmental plans that are applicable to the proposed project:

(i) Goulburn Mulwaree Local Environmental Plan (LEP) 2009 – the proposed turbine sites are partly located within Zone IN3 "Heavy Industry and partly within RU2 "Rural Landscape" under the Goulburn Mulwaree LEP.

(ii) Mulwaree LEP (1995) – the proposed revised grid connection arrangement is wholly located within Palerang Shire, and is located within the former Mulwaree LEP Zone 1(a) General Rural.

(iii) Yarrowlumla LEP (2002) – Capital Wind Farm substation is located within land zoned 1(a) (General Rural) under the Yarrowlumla LEP and within Palerang Shire. Installation of an additional 180 MVA transformer and associated equipment at the Capital Wind Farm substation, forms part of the proposed modification.

Section 3.1.1 of this report details the nature of the relevant local environmental instruments. In summary, the proposed modification by nature is permissible under the provisions of the above three Local Environmental Plans. The modification is also consistent with relevant aims of the Local Environmental Plans.

The Drinking Water Catchments Regional Environmental Plan (REP) No 1

Woodlawn Wind Farm is partly located within the Wollondilly River catchment of Warragamba catchment and is part of the Sydney Outer Catchment Area. The Sydney Catchment Authority, a State Government Agency, has the task of managing and protecting Sydney's catchments and supplying bulk water to its customers. The main objective of the Sydney Catchment Authority is to ensure that the catchment areas are managed and protected to promote water quality, the protection of public health and safety, and the protection of the environment.

State Environmental Planning Policy No. 58 – Protecting Sydney's Water Supply (SEPP No. 58), was applicable to the Woodlawn Wind Farm original project, at that time of its approval. SEPP No. 58 was repealed from 1 January 2007 and replaced by the Drinking Water Catchments Regional Environmental Plan (REP) No. 1, under the EP&A Act 1979. The Department has consulted the Sydney Catchment Authority during the assessment of the modification, as the project has the potential to impact on the quality of surface and groundwater of a catchment where Sydney draws its drinking water from.

The Sydney Catchment Authority had reviewed the original proposal and was satisfied that the Environmental Impact Statement required for the original project adequately assessed the impact on water quality and was consistent with clause 10 of SEPP 58. It noted that pollutant loads and associated water quality impacts can be contained on the development site and would not reach drainage depressions, dams, or watercourses of concern to the Authority.

The Sydney Catchment Authority also reviewed the modified application compared to the original application and found that the modified proposal would have additional impacts on water quality during the construction and operation of the project (refer to section 4.4 of this Report for issues raised by the Authority). Notwithstanding, the Sydney Catchment Authority considered that the matters raised can be addressed in the Construction and Operational Environmental Management Plans of the project and also by way of conditions of the modified consent.

3.6 Assessment Requirements

The Proponent sought advice from the Department on 25 June 2009, regarding requirements for the preparation of a Statement of Environmental Effects document, to support the modification application for the Woodlawn Wind Farm proposal.

On 10 July 2009, the Director of the former Major Infrastructure Assessment's Branch of the Department (now Infrastructure Projects Branch), issued a range of general and specific requirements that the Applicant must address as part of the modification application. The key requirements related to impacts to visual amenity, noise amenity, ecology, heritage, hazards and risks, traffic and transport, telecommunications and requirements for consultation with the community and agencies.

The Applicant's modification application, submitted on 2 February 2010, addressed the abovementioned assessment requirements.

3.7 Exhibition of Statement of Environmental Effects

The Statement of Environmental Effects was placed on public exhibition from 18 February 2010 to 4 March 2010 and submissions were invited to the Department. The exhibition locations were the Department of Planning's head office in Sydney and regional office in Queanbeyan; the Nature Conservation Council; Palerang Council; and Goulburn Mulwaree Council.

The Statement of Environmental Effects was also provided for download on the Department's internet site. Notification of the exhibition period was made through two separate advertisements in the *Goulburn Post* and the *Canberra Times* (17 February 2010). The Department also notified by post, those people who lodged a submission during the exhibition of the Environmental Impact Statement of the original application, of the modification application's exhibition. The Department also notified relevant government agencies, including integrated approval bodies of the original application. The Department received both public and government submissions and has taken the matters raised in these submission into account (refer to Chapters 4 and 5 of this Report).

The Department has met all its legal obligations so that the Director of Infrastructure Projects can make a determination on the project.

4 CONSULTATION AND ISSUES RAISED

4.1 Overview of Submitters

The Department received twelve submissions in total, of which ten were lodged within the exhibition period. Of these ten, six were from the public and the remaining four were from government agencies. The two submissions received by the Department after the exhibition period were also from government agencies, the Department of Lands and Goulburn Mulwaree Council.

4.2 Applicant's Response to Submissions

On 9 March 2010, the Department had forwarded all the ten submissions received to the Applicant and on this date required the Applicant to address the issues raised. On the same date, 9 March 2010, the Applicant submitted a response to the submissions. The Department received a late submission from the Department of Lands and also the Goulburn Mulwaree Council. Due to the matters raised by the Department of Lands, the Department required additional information from the Applicant. The Applicant responded separately to the Department of Lands' submission, which was received by the Department on 19 March 2010.

The Department was satisfied that the Applicant's response to the submissions addressed those key concerns raised within the submissions. The Department proceeded to finalise its assessment upon receiving the Applicant's response to all submissions.

4.3 Issues Raised in Public Submissions

As stated in section 4.1 of this Report, the Department received six public submissions, all of which were from members of the local and regional community. One public submission stated support for the modification application, one objected to the modification application (including the original proposal), and four submissions did not state a clear position.

The key issues raised in all of these six submissions relate to community consultation and visual, noise and cumulative amenity impacts. A summary of the key issues raised is provided below.

Public Submission 1 (supports subject to conditions)

- States that although supports wind farm technology, due consideration should be given to the visual landscape. Also compares views of the proposed wind farm from the Federal Highway (from Lake George) to the view from Canberra-Bungendore Road, noting that the view from the latter seems to negatively impact the visual landscape.
- Overall supports the project with conditions to address visual impacts of the project from major transport corridors.

Public Submission 2 (no clear position stated)

- Stated that contrary to the SEE, it has not been consulted either directly or through a community forum and therefore asks why this is so. Also questions why the website of the project has not been updated to reflect the modification.
- Recommends provisions, in particular noise, be included by the Department and the Applicant make available monitoring equipment for regulatory authorities once the project is in operation.
- Questions why no noise limits are in place for the commissioning phase of the project.

- Raises concern of cumulative noise impacts on his residence (from existing Capital Wind Farm and proposed Woodlawn Wind Farm ancillary facilities, i.e. additional transformer), including the mechanisms for monitoring noise and ensuring compliance.
- Questions whether conditions will be imposed regarding extending the off-site landscape plans to those who are visually impacted by the overhead power transmission and connection to Capital Wind Farm substation.
- Questions whether the road dilapidation requirements under the original approval will be extended to cover the full extent of Tarago and Bungendore roads.
- Recommends conditions that require the Applicant to install double-glazing or other forms of sound insulation for all affected receivers.

Public Submission 3 (no clear position stated)

- Raises concern for the potential of out of hours construction work.
- Questions why the advertisement for the modification was not placed in the *Bungendore* or *Tarago Times*, as these are the papers local to the submitter. Also questions why no other forms of consultation was undertaken, such as letter box drops or announcements.
- Believes that the modified project should be regarded as a new, rather than modified, application as it bears no resemblance to the original application.

Public Submission 4(no clear position stated)

- Questions if noise monitoring, as required under the original approval, will still be required at their house.
- Requests assistance with the planting of screen trees or compensation, as they will now be faced with turbines for most of their horizon.

Public Submission 5 (no clear position stated)

- Questions why it, including other neighbours, was not directly contacted by the Applicant and notes that the SEE is misleading in this regard.
- Notes that it, along with others, is situated between the existing Capital Wind Farm and the proposed Woodlawn Wind Farm (this proposal). As such, will have direct and unobstructed views of the proposed turbines and thus questions the steps taken to minimise or screen such impacts. Similarly, notes that there will be cumulative noise from the operation of both wind farms and thus questions how noise levels and complaints will be managed.
- Questions what effects the proposal will have on their communication links (television and mobile phone coverage) and how will complaints of this nature be managed.
- Questions how traffic and transport safety will be managed during the construction of the proposal, especially during the operation of school buses.
- Notes that they can see Cullerin Wind Farm at night due to its lighting and are pleased that the lighting requirements of the originally approved Woodlawn Wind Farm are proposed to be deleted from the project scope by the Applicant.
- Attaches a copy of its previous submission for the original application and also information relating to visual impacts at their property, for the Department's information.

Public Submission 6 (objects to both original and modified proposal)

- Identifies itself as a family company and owner of property located in close proximity to the proposal site. States that their long term plan has been to subdivide their property into smaller blocks for rural residential purposes. Notes that have not formally lodged an application for rezoning with the relevant Council, as it would wait until it is economically viable to do so. Now finds that given the increasingly mixed land uses in the area, that their plan for subdivision is becoming economically

viable. However finds that as the proposal will be built at a close distance to their property, the proposal will cause a significant impact upon the saleability of rural residential blocks, and in turn, the overall value of their property will be adversely impacted. For these reasons, holds strong objections to the proposed development, including the proposed modifications.

- States that the premise in the SEE in relation to noise and visual impacts, that there will be no changes to current land use in relation to properties located near the proposed wind farm site and that the location and number of residences will remain as is, is a narrow view, considering the 25 year life span of the proposal.
- States that whilst there have been some significant changes in the turbine locations to the north of the wind farm site, this is not the same for the turbines located at the southern end of the proposal site, as no substantial change has occurred. Thus finds impacts to their property (including impacts to visual amenity) will be further increased from the proposed modifications of the proposal.
- Believes that there will be a considerable loss of rural amenity due to the proposal (in particular from noise and visual impacts, noting even if noise levels comply with relevant guidelines, noise perception and impact is different from one individual to another).
- Indicates that the noise assessment may underestimate noise impacts, as it was based on predictions and sound level readings were taken at the edge of their property. Also raises health concerns about the effect of low frequency noise or infrasound from the wind turbines.
- Apart from noise and visual impacts, states that impacts associated with electromagnetic field levels, electromagnetic interference and shadow flicker will be issues detrimental to the future subdivision of their property.

4.4 Issues Raised in Government Submissions

The Department received in total six submissions from government agencies. These being submissions from the: Roads and Traffic Authority; the Department of Environment, Climate Change and Water; Industry and Investment NSW; Sydney Catchment Authority; Goulburn Mulwaree Council; and the Department of Lands. As noted in section 4.1 of this Report, Goulburn Mulwaree Council, and the Department of Lands had lodged their submissions after both the exhibition period and the time at which the Applicant had submitted a response to all other submissions received (within exhibition period). However the Department further liaised with the Applicant and received additional information clarifying relevant matters raised in these two submissions.

A list of the issues raised in the government submissions is provided below.

<u>Roads and Traffic Authority (no objection subject to conditions)</u>

- States it will not object to the modification application subject to the Applicant being required (by way of a condition) to obtain a permit for an oversized and over mass load from the Roads and Traffic Authority Special Permits Unit in Glen Innes.
- Notes that conditions of consent relating to road work, traffic control facilities and other structures on the classified road network contrary to those outlined in the above-mentioned permit are unlikely to receive the Roads and Traffic Authority's consent under the *Roads Act 1993*.
- States that in accordance with section 79C(I)(b) of the EP&A Act, the Department is responsible to consider any likely impacts on the natural and built environment in the road reserve fronting the proposed development. Further states that it will not make a separate Part 5 environmental assessment of the environmental impacts in the road reserve.

<u>Department of Environment, Climate Change and Water (no clear position stated)</u>

- Notes that the proposed route of the transmission line does not appear to have any impacts on threatened species or endangered ecological communities.

- Agrees with the recommendations in the Aboriginal Heritage Report of the SEE, regarding Aboriginal sites WLTL-C PAD3 and WLTL-C 1-3. However notes that if direct development impacts cannot be avoided, it will require a section 87/90 permit application under the *National Parks and Wildlife Act 1974*.
- States that in general the SEE adequately describes the potential environmental impacts of the proposed modification and the measures necessary to minimise or mitigate those impacts.
- Notes that the former Environment Protection Authority was an approval body under s91 of the EP&A Act during the original development assessment process for this proposal. States that as Environment Protection Licences are no longer required to be held in relation to wind farms, it (including EPA) provides the comments in its submission as an interested party. It further notes that its statutory role for this proposal appears to be limited to the potential assessment of an Aboriginal Permit Application, under sections 87/90 of the *National Parks and Wildlife Act 1974*.

NSW Industry and Investment (does not object subject to its concerns being addressed)

- Notes that the northern part of the proposal site covers part of the sequence of Silurian felsic volcanic rocks, within which the Woodlawn Mine is located (and is currently covered by a Special Lease and an Exploration Licence).
- States that the SEE makes no reference to exploration and possible future mining activities within the part of the surrounding Exploration Licence that falls within the project area.
- Enquires whether consultation has been undertaken with TriOrigin Minerals regarding future mineral exploration.
- States it has no objections to the proposed modification, subject to the clarification of the issues it has raised (above points). Also states that any approval should include a requirement for on-going consultation with exploration and mining title holders.

Sydney Catchment Authority (no clear position stated)

- Finds that the main Pyrala access entry up to the proposed site office, according to the SEE, appears to be wider than 10 metres. It states its concern of the widening of the access tracks, as this could have significant water quality impacts during construction. Therefore, it recommends that the construction of access tracks be carried out consistent with the Austroads and NSW Department of Environment and Climate Change guidelines.
- Finds that the relocation of the construction site office and equipment laydown area means that this area will now be within the Sydney's Drinking Water Catchments. However it notes that the SEE does not provide details about the area to be disturbed and associated water quality impacts.
- Notes that the use of Capital Wind Farm amenities during the operational stage of the proposal will negate the requirement for an on-site wastewater management system on the proposal site.
- Finds that notwithstanding its concerns listed above, it considers that the matters can be addressed in the Construction and Operational Management Plans (already required as part of the original approval). However also recommends modifications to condition 30 and 73 of the original consent.

Goulburn Mulwaree Council (does not object)

- States that Council considered the proposed modifications to the proposal at its General Purpose meeting. At that meeting, it had resolved that the Department be advised that Council has no objections to the modification application.

Department of Lands (no clear position stated)

- Finds that the proposal impacts upon some Crown public roads within the project areas, and notes that there is no reference in the SEE to such impacts.
- Notes that access tracks and buried and overhead cables will be located on or over some Crown roads. In this regard, it noted that relevant consents must be obtained by the Applicant.

5 CONSIDERATION OF ENVIRONMENTAL ISSUES

The key environmental issues associated with the project are potential noise and visual amenity impacts from the operation and installation of the wind turbines respectively.

5.1 Noise Impacts

The modifications to the proposal that are relevant to the generation of noise are:
- the reduction of wind turbines from 25 to 20;
- change to the turbine model, from Vestas V80 2 megawatt to Suzlon S88 2.1 megawatt turbines;
- relocation of four wind turbines of between 100 metres and 250 metres from the previously approved turbine locations;
- different turbine dimensions (increased hub height of all turbines to 80 metres and increased blade length from 40 metres to 44 metres); and
- addition of one transformer to the existing two transformers at Capital Wind Farm substation (as an additional 33kV/330kV transformer will be required).

There are 33 receiver locations that are not on the properties on which the wind farm is proposed (i.e. not associated receptors), that are located between two and five kilometres of a proposed turbine. Of these 33 receivers, three are located within three kilometres of the project site. There are four resident locations, whom own property that forms part of the project (i.e. associated receptors), that are located between two to three kilometres from the project wind farm site. There are no receivers located with 2.5 kilometres of a wind turbine. Figure 4 shows the locations of the receivers.

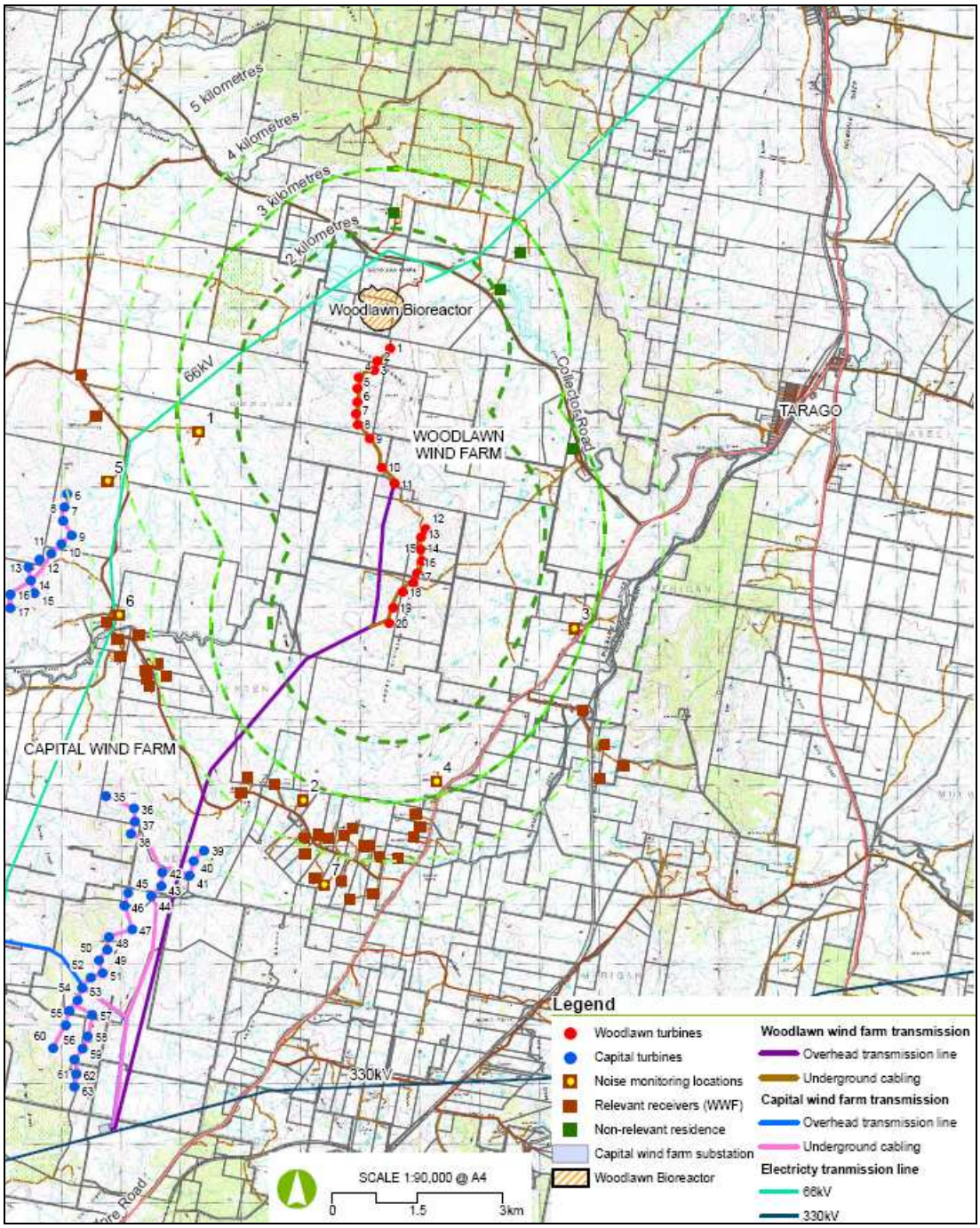

Figure 4: Receiver locations and surrounding features (reproduced from the Applicant's Statement of Environmental Effects)

5.1.1 Wind Turbine Operational Noise

Issue

The assessment of operational noise impacts of the modified project, was undertaken by the Applicant using the South Australian EPA Guideline 'Environmental Noise Guidelines: Wind Farms' (February 2003), as this document was also used for the assessment of the original proposal. It was found in the previous assessment of the original (approved) project, that the operation of the wind farm would meet the SA Guideline criteria, which specifies that t*he predicted equivalent noise level (LAeq,10) adjusted for tonality in accordance with these guidelines should not exceed: 35dB(A); or the background noise*

(LA90,10) by more than 5 dB(A). Whichever is the greater, at all relevant receivers for each integer wind speed from the cut-in to rated power of the turbine.

Background noise was defined by the results of the background noise monitoring conducted for the original proposal at four representative property locations, being Torokina, Boonie Doon, Kildare and Glendale (detailed in the Applicants 2004 SEE) and also the results of additional background noise monitoring that was undertaken for the Capital Wind Farm, at properties titled Euroka, Sunnybrook and Gray. The Applicant grouped the background noise levels and associated noise criteria of the four representative locations to other residence locations. The grouping of sites was based on the location and degree of exposure to prevailing meteorological conditions and similarities in characteristics that contribute to the ambient noise environment.

Noise levels due to the operation of the Woodlawn Wind Farm project only has been predicted to be less than the relevant noise amenity criteria at the closest receptors and under all wind speeds (wind speed of 4 to 12 m/s). However predicted noise levels from the operation of both proposed Woodlawn Wind Farm and Capital Wind Farm, will exceed the derived South Australian EPA Guideline criteria at three receptor locations (being Nardoo, Sunnybrook and Kullingrah) and shown in Table 2. However these properties are already affected by similar levels of noise impact from the Capital Wind Farm, as shown in Table 2. This means that the operation of the Woodlawn Wind Farm project would not be producing additional adverse levels of noise at other receptor locations.

Table 2: Noise Predictions - Exceedances of Criteria under Operation of both Woodlawn and Capital wind farms

Receivers predicted to experience exceedances	**Predicted noise levels (LAeq) – Woodlawn and Capital wind farms at integral wind speeds (m/s)**								
Wind speed (m/s)	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Criteria dB(A) Bonnie Doon	35	35	35	37	40	43	46	50	53
Nardoo (non-relevant)	35	35.5	37	37	37.5 (38 for Capital WF only)	37.5	38	38	37.5
Criteria dB(A) Sunnybrook (G8)	35	35	35	36	37	39	40	42	43
Sunnybrook G8 (non-relevant)	36	37	38	38	38.5 (38 for Capital WF only)	39	39	39	39
Sunnybrook G9 (non-relevant)	37	37.5	39	39	39.5 (39 for Capital WF only)	39.5	40	40	39.5
Criteria dB(A) Kullingrah	35	35	35	36	37	38	40	41	43
Kullingrah (non-relevant)	39	40	41	41.5	42 (42.5 for Capital WF only)	42	42	42	42

Note: Nardoo, Sunnybrook and Kullingrah are non relevant receivers as they are associated receptors of Capital Wind Farm and exceedances are addressed by the existing noise agreements with respective landowners. A noise level denoted in red text shows predictions that are at or above the noise criteria.

Consideration

Operational Noise

Woodlawn Wind Farm Operation Only

For the assessment of operational noise impacts under the operation of the Woodlawn Wind Farm only, the Applicant has sourced the noise criteria for the four representative locations (Torokina, Bonnie Doon, Kildare and Glendale) from the noise assessment contained in the 2004 EIS. Although the Department found that there were some inconsistencies with the noise goals stated in the modification SEE and the EIS, where for two of the four locations contained a difference of 1dB(A) less or more than

that stated in the EIS, it finds that these are minor in nature. The Department noted that the Applicant's predictions indicate that the operational noise levels generated by the Woodlawn Wind Farm at surrounding receiver locations (seven representative locations) are less than the SA EPA criteria at all wind speeds (4 to 12 m/s). For example, the highest noise level predicted was 30.5 dB(A) at wind speeds of 9 to 12 m/s, whereas the noise criteria at this location has been determined to be 39 dB(A), 40 dB(A), 42 dB(A) and 44 dB(A) at these respective wind speeds. This means that the operational noise levels will not be significant noise sources at surrounding receivers. Condition 49 of the original consent is still valid as it includes appropriate noise limits at the four closest receptors, being Torokina, Bonnie Doon, Kildare and Glendale. Although the Applicant's SEE includes additional representative background locations (Sunnybrook, Gray and Kullingrah), the Department is satisfied that noise levels at these further away receptors, from the proposed wind farm only, will be less than the criteria and therefore do not need to be included in condition 49. However, noise impacts from the simultaneous operation of the Woodlawn and Capital Wind Farms were also assessed, indicating higher noise level predictions. These noise levels are not due to the addition of the Woodlawn Wind Farm, rather would have existed without the Woodlawn Wind Farm operation. This is further discussed and considered in the following subsection.

Woodlawn and Capital Wind Farms

The assessment of noise levels found that four receptors would experience noise levels above the criteria, as shown in Table 2 above. The distance to the nearest Woodlawn Wind Farm turbine would be approximately 3.7 kilometres from Nardoo, 4.5 kilometres from Sunnybrook (G8), 4.7 kilometres from Sunnybrook (G9) and 4.2 kilometres from Kulingrah. The distances of these receptors to the nearest Capital Wind Farm turbines is much closer compared to Woodlawn Wind Farm, with Nardoo, Sunnybrook (G8), Sunnybrook (G9) and Kulingrah, being approximately 1.3 kilometres, 1.4 kilometres, 1.3 kilometres and 1.4 kilometres away respectively.

The highest exceedance has been predicted to be 5.5 dB(A) above the criteria and other predicted noise levels are either at or up to 5 dB(A) above the criteria. These four receptors are non-relevant receivers in respect of Capital Wind Farm (meaning they are residences located on the properties on which the Capital Wind Farm is located). Under the Capital Wind Farm assessment, these receptors were predicted to experience noise levels of 36.6 dB(A) at Kulingrah, 38 dB(A) at Sunnybrook (G8), 39 dB(A) at Sunnybrook (G9) and 38 dB(A) at Nardoo, at 8 m/s wind speed. The Department notes that the Environmental Assessment for Capital Wind Farm has stated that Renewable Power Ventures will enter into agreements with non-relevant receptors that exceed background plus 5 dB(A). Also the Applicant for this proposed modification states that such exceedances are addressed by the existing noise agreements with these receptors. The Department therefore finds that these four receivers have been addressed by the agreements relevant to Capital Wind Farm. This is because although the Capital Wind Farm assessment did not take into account the operation of Woodlawn Wind Farm, the Applicant's noise assessment shows that the operation of the Woodlawn Wind Farm alone would not cause noise impacts on these receptors.

The Department is satisfied that the proposed modification to the development will meet the noise limits for non-associated receptors, set under the original conditions of consent of 4 October 2005.

With regards to associated receptors of the proposed Woodlawn Wind Farm Project (receptors whose lands form part of the project site), there are four non-relevant receivers. These associated receptors are Woodlawn Farm, Kalua, Cowley Hills and Pylara. The noise amenity criteria (at wind speed of 8 m/s) derived according to the SA EPA Guideline for nearby relevant receivers of Kildare and Glendale (properties closest to the associated receptors) is 39 dB(A) and 40 dB(A) respectively. It was found that the predicted noise levels at wind speeds of 8 m/s for both neutral and worse case meteorological

conditions for these Woodlawn wind farmer residences (under the operation of the Woodlawn Wind Farm project only) are well within the SA EPA Guideline criteria and all predicted values are 30 dB(A) or less. The Applicant has stated that receivers to the north (the associated receptors), east and south-east of the Woodlawn Wind Farm are expected to be relatively unaffected by Capital Wind Farm and any wind farm noise impact would be attributed to the Woodlawn Wind Farm. As such, the Department is satisfied that noise levels would not be significant at these locations and subsequently it would not be necessary to consider noise agreements for these locations.

The Department is satisfied that the predicted noise levels generated by the modified project's operation would meet the existing noise criteria of the original consent and would not be significant in terms of adversely contributing to the ambient environment.

The Applicant is already required, as part of the consent, to prepare a Noise Compliance Assessment Plan for the project, prior to the commissioning of the wind turbines. This Plan is required to address noise compliance monitoring and reporting and an assessment of the performance of the wind farm against the specified noise criteria.

5.1.2 Substation Operational Noise

Due to the proposed modified project, the installation of a 22 kV/66 kV substation on the Woodlawn wind farm site and associated 66 kV overhead line for grid connection is not required. It is now proposed as part of the modified project that grid connection occurs via the existing 33 kV/330kV Capital Wind Farm substation, which would therefore be augmented for this purpose (installation of a third transformer). By installing this third transformer and a 33 kV overhead line between the Woodlawn Wind Farm and the Capital Wind Farm substation, it will be possible to export the Woodlawn Wind Farm power via the existing 330kV TransGrid switchyard within the Capital Wind Farm substation.

The assessment for the Capital Wind Farm project had included a cumulative noise impact assessment for the addition of an extra 33kV/330kV transformer, rated at 180 MVA at the Capital wind Farm substation. The sound power level for the entire augmented substation has been estimated to be 101 dB(A). The Capital Wind Farm substation is approximately 1200 metres from the nearest residential receivers. The potential noise levels at the closest receivers following augmentation of the substation has predicted to be 32 dB(A) and up to 34 dB(A) in certain meteorological conditions. The combined noise levels of the substation and wind turbines at the receiver locations were estimated to be up to 35 dB(A).

The Department reviewed the noise assessment contained within the Capital Wind Farm Environmental Assessment (dated 2006) and identified the closest receptor (estimated to be 1200 metres from the substation) to be receptor H27, which has an estimated background noise level of 35 dB(A). The Department finds that the noise generated from the operation of the augmented substation can be within the existing background noise levels. To ensure that no significant noise impacts occur however, the Department has recommended the Applicant be required to monitor the operational noise levels of the substation.

5.1.3 Construction Noise

The 2004 Environmental Impact Statement predicted that the construction of the Project would meet the 35 to 36 dB(A) noise criteria and have no adverse impacts to the existing amenity. The key proposed modification relevant to noise impacts is the construction of the overhead transmission line from Woodlawn Wind Farm to the Capital Wind Farm substation. As noted earlier in this Report, this new

overhead line will replace the previously proposed and approved substation at the wind farm site and the overhead 66kV transmission line connecting the output of the substation to an existing 66kV transmission line.

The Applicant has stated that the construction noise associated with the overhead transmission line from Woodlawn to the Capital Wind Farm substation is not likely to significantly differ from the predicted noise levels for the 66kV line estimated in the 2004 Environmental Impact Statement. The Applicant has further stated that the transmission line route is well away from neighbouring residential locations and its construction is not expected to result in any noise impacts.

The Department finds that noise impact associated with the construction of the transmission line is unlikely to be significant. However the Department has recommended Applicant be required to prepare a Construction Noise Management Plan, for the purposes of the construction of the transmission line. This is because the Applicant has not quantified the potential construction noise levels for the proposed new transmission line at the closest sensitive receptors. The recommended Construction Noise Management Plan would need to address the management of potential noise impacts and include a review of the assumptions made in the Statement of Environmental Effects to the determined calculated noise levels for the construction of the transmission line. The Construction Noise Management Plan would also include details of the measures to avoid and/or mitigate the actual noise levels and details of the construction process for noise mitigation measures with any affected residences.

5.1.4 Out of Hours Construction

The Applicant states that the adherence to the normal construction hours (those required under the current consent) for the turbine installation activities could significantly affect the progress of construction activities, increase construction costs, and may indirectly adversely affect the safe and efficient conduct of construction. The Applicant further states that due to the significant set back of neighbouring relevant receivers from the turbine sites, it seeks the amendment of the normal construction hours in respect of turbine installation.

The Department does not have sufficient information to determine whether or not increased hours of construction for the installation of wind turbines will have a negative impact on the receptor locations. More importantly, the Department does not have information that quantifies what the change in noise levels will be due to extended construction hours. As such, the Department has recommended that the Applicant be required to detail the nature of 'out of hours' work, including a work schedule and provide an assessment of the potential noise impacts that may result from this extended construction period. The Department recommends this information be contained within the Construction Environmental Management Plan, as the Applicant has stated its intensions to carry out such work.

5.2 Visual Impacts

The Department's assessment and determination of the original project found that the proposal would change the broader landscape views, however the large distances to views for the four closest residents not associated with the proposal, the relative low number of short distance static viewers (that is, 33 residences within the visual catchment including 22 residences located within 6 kilometres), the short duration for transient viewers, and the cumulative modifications that have already taken place within the view catchment, would lessen its overall visual intrusiveness.

The Department's previous assessment also identified that the scale of the turbines is substantially greater than other vertical structures within the landscape, therefore the four residences closest to the turbines would be subject to the greatest visual intrusion. Mitigation measures were proposed which

would reduce the visual impacts of the wind farm by moderating its visibility. These included appropriate colouring of turbines, designing the project components to fit in with the rural setting and maintaining tracks to avoid erosion. The existing consent also requires that the Applicant negotiate individual landscaping treatments with owners whose residences are within 4 kilometres of any turbine with a view to that turbine (at the request of these land owners). The Department had found that this measure may help to soften the visual impacts, if taken up by the land owners, by blocking or disrupting the view to the wind farm from their dwellings.

The Applicant has now undertaken an assessment of the proposed modifications to the Woodlawn Wind Farm project, in respect of the existing development consent. The Applicant reviewed the visual impact of the revised turbine layout, reduced number of turbines and changed dimensions for turbines, as well changes to the required associated infrastructure including access, overhead line works and changed substation arrangement.

The modified project is proposed to comprise 20 turbines, with each having a marginal increase in dimensions for hub height (all 80 metres) and rotor diameter (88 metres), as well as changed grid connection arrangement. Table 3 below shows the key features of the project relevant to potential visual impacts.

Table 3: Features (reproduced from the Applicant's Statement of Environmental Effects)

Project Component	**Visual Feature**
Turbines	
Number of turbines	20
Tower and hub height	- Steel tubular supporting towers - 80 metres hub height - Tower 4.5 metres at base and 2.5 meters at top
Turbine description	- Three bladed - Rotor diameter of 88 metres (44 metres blades)
Turbine rotation (rpm)	15.5 revolutions per minute
Colour	Matt white or similar light neutral colour
Generator transformer	To be located near the base of each turbine – green/tan
Electrical Works	
Electrical connection	Underground power and control cables will interconnect the individual turbines and have minimum visibility once easements are replanted.
Grid connection	Proposed 33kV overhead double circuit transmission line supported on single poles, which will be mainly visible to the public where it crosses Taylors Creek Road.
Access Tracks	
Site entrance	Signposted, gate setback from Collector Road
Access tracks	Up to 10 metres wide and unsealed

The approved wind farm location is on a visually prominent north-south ridgeline elevated above the adjacent rural lands. The proposed modified wind turbine array is located on the same section of the ridgeline as for the approved array. The maximum height of the ridgeline is 930 metres with the highest wind turbine having its footing at a height of about 942 metres.

The Applicant prepared photomontages of five points with views of the proposed wind farm (known as viewing points). Current photos of the four view points used in the original assessment were taken by the Applicant and an additional viewpoint (point 5) was obtained to cover the southern part of the wind farm site. These photomontages were prepared to determine the visual impact of the proposed modifications relative to the approved project. Figure 5 shows the viewing points, including the viewing catchment of the proposal.

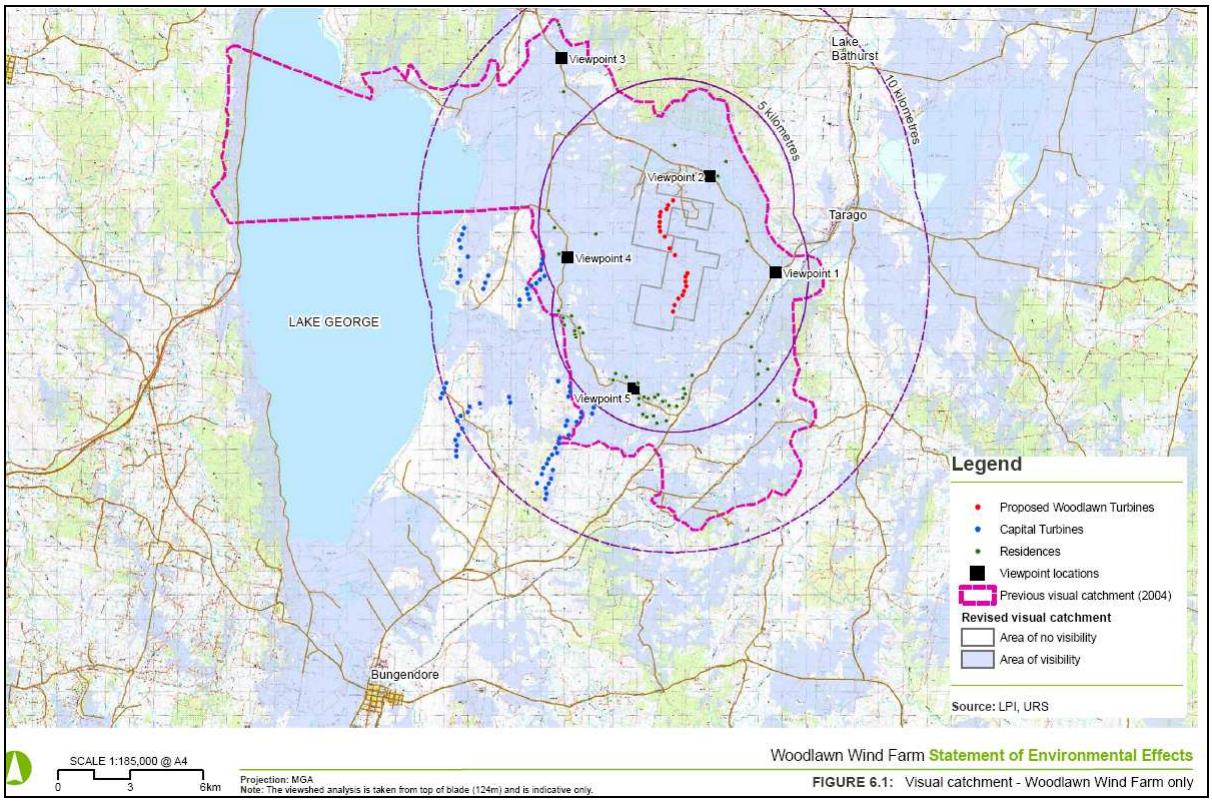

Figure 5: Visual Catchment of the proposed Woodlawn Wind Farm Project (reproduced from the Applicant's Statement of Environmental Effects)

The Applicant reviewed the visibility of the proposed wind farm against the distance from the wind farm (for the nearest wind turbine), the spatial extent of the visible turbines (referred as the wind farm view angle), and the number of turbines visible. Table 4 of this Report shows the results of the visibility review of the turbine site.

Table 4: Visibility assessment results of representative viewpoints (reproduced from the Applicant's Statement of Environmental Effects)

Ref site	Viewpoint location	Number of visible turbines			Visibility criteria		
		Mid-ground	Background	Background	Distance to nearest turbine	Wind farm view angle	Visibility class
		1-3km	3-5 km	>5 km	Kilometres	Degrees	
1	Intersection of Collector and Bungendore Roads	0	12	8	3.6	65	Moderate
2	Collector Roads, near Cowley Hills residence	7	9	4	1.8	55	High
3	Collector Road near Willeroo residence	0	0	20	7.5	17	Low
4	Taylors Creek Road, near Sunnybrook residence	0	19	1	4	65	Moderate
5	Taylors Creek Road, near Bonnie Doon residence	0	7	13	3.6	25	Moderate

Note: The reference sites, for which the Applicant obtained current photographs of, reflect the viewing locations that were assessed under the Environmental Impact Statement.

Consideration

Wind Turbines

The Department finds that the majority of locations within the closest township to the wind farm, Tarago, would not have direct views of the wind farm. This is because the Tarago township is located at an elevation of approximately 700 metres and 6.5 kilometres north-east of the wind farm site. As the spatial extent of the visible turbines increases from the town, then the visibility will decrease or diminish, as in this situation.

The Department notes that there are not many trees on the ridges where the turbines will be relocated, and therefore the existing trees will do little to reduce the visibility of turbines at the five representative viewpoints. Overall, the modified layout of the turbine site will not be significant when compared to the original layout, as although there are now five less turbines proposed, there is a slight increase in the dimensions of the turbines and the placement of the turbines follows the same pattern as the approved layout. The Department finds that the overall impact to the landscape is unchanged from the approved project.

With regards to impacts to receptors, the Department notes that the closest properties not associated with the proposal are Torokina, 2.6 kilometres west of the nearest turbine, followed by Glendale (2.7 kilometres south), Kildare (2.8 kilometres south-east), and Wroxham, 3.3 kilometres to the south. From the information provided by the Applicant, Torokina has been found to have a potentially high visibility of the wind farm (this was the same finding for the original project). There is existing tree screening in place which may filter views of the wind farm at this location, however the Applicant has stated that should the landowner agree, it would provide further tree screening at the location. Neighbouring residences Kildare and Glendale will potentially have moderate visibility of the wind farm. The Department is satisfied that the conditions contained in the existing consent for the project relative to visual impact do not need to be amended. This is due to the existing condition that requires the Applicant to develop and implement a Off-site Landscape Plan (as part of the required Operational Environmental Management Plan), to address visual impacts of the development for any owner of an existing or approved residential dwelling with views of the turbine(s) located within four kilometres of their dwelling.

Ancillary Works

Ancillary works will include variations to existing access tracks, the installation of underground cables and construction of a 33 kV overhead transmission line from the Woodlawn Wind Farm to the Capital Wind Farm substation. The overhead 33kV transmission line will be a double circuit line. The Applicant has stated that it would remove any temporary access tracks not required for operation and/or maintenance and they would be re-grassed after construction is complete. With regards to the trenches for the underground cabling, to link the turbines within the two groups, they will be back-filled once cables are installed, and the disturbed area will be restored with topsoil and grass. The Department is satisfied with this approach. The overhead transmission line route will be located in rural land and be distant from neighbouring residences. The visibility of the line reduces with distance and it is found that the visual impacts to residential receivers would not be significant. Figure 6 shows the design of the proposed line.

Plate 6.6 – Double circuit 33 kV overhead line crossing Capital Wind Farm access track

Plate 6.7 – Double circuit 33 kV overhead line from Ellenden to Groses Hill. Visibility of the line reduces with distance.

Figure 6: The proposed overhead transmission line (reproduced from the Applicant's Statement of Environmental Effects)

Shadow Flicker

Shadow flicker is a visual effect that occurs when rotating turbine blades cause intermittent shadowing as the blades momentarily block the sun's path. Shadow flicker is likely to be significant if the distance between a proposed turbine and the receptor is less than 500 metres. The closest windfarmer residence (Cowley Hills) is located 2 kilometres away from the nearest turbine and the closest neighbouring residence (Torokina) is 2.6 kilometres to the west of the project site. The Department finds that the potential impacts from shadow flicker to receptors would be negligible.

Blade Glint

Blade glint is the reflection of the sun off one or more rotating turbine blades. Blade glint is dependant on the orientation of the nacelle, angle of the blade and angle of the sun. The reflectivity of the surface of the blades is also a contributing factor. Blade glint may be a potential distraction to drivers. The Department notes that the Applicant has chosen off-white colouring (rather than the light grey option of the existing consent) for the wind turbines and a matt finish would be applied on the blades if practicable. The Department finds that should the Applicant use a matt finish on the wind turbines, it would reduce the reflectivity of the turbines. However the Applicant has not committed to the application of the matt finish on the turbine blades. For this reason, the Department recommends that the Applicant review the colour specifications of the turbines, to ensure turbine blades do not pose a safety risk to drivers that use the roads within the district of the project site. The review shall determine whether the colour specifications can minimise blade glint and whether any additional measures may be required to manage occurrences of blade glint, such as public signage for road user awareness.

The Department is satisfied that the Applicant has demonstrated that the proposed modification would not significantly change the visual amenity impacts from that predicted for the approved development.

5.3 Flora and Fauna Impacts

Issue

The Applicant prepared a revised assessment of the potential for impact on flora and fauna from the proposed modification, addressing the 33kV transmission line route and relocation of access tracks and turbines. No threatened plant or animal species were recorded in the study area during the Applicant's survey for the modified project. The areas in which these species are known to occur, as described in literature, are not those compatible to the project footprint areas. Threatened bird species, Diamond

Firetail and Freckled Duck, have potential to occur in grassland without trees and in areas where water is available respectively (Lake George which is immediately west of the project site and Lake Bathurst). The Applicant states that Lake George is usually dry and therefore occurrence of this species would be rare. Also the occurrence of threatened bat species in the location of the transmission line would be incidental, as most of the transmission line route is treeless.

Consideration

Construction

The Department finds that the proposed construction of the transmission line is unlikely to have a significant impact on threatened flora. However the Department notes that although the transmission line would almost totally traverse through treeless land, it would contain cover of native grassland (and exotic grassland and improved pasture). The Applicant has proposed mitigation measures for the avoidance of any significant impacts, which include avoiding patches of woodland at the southern end of the project site, locating access tracks in cleared areas where possible and preventing significant erosion. The Department supports these measures. However it notes that although it has been determined that no significant vegetation impacts would occur, the Applicant has not quantified the amount of vegetation that is to be removed. For example the amount in hectares of grassland that is to be removed. As such, the Department recommends that the Applicant quantify the total removal of vegetation, as part of the Flora and Fauna Management Sub Plan, required in the existing consent. The Department also requires the recommended mitigation measures in the Applicant's assessment be applied during the construction of the transmission line.

Operation

The Department's assessment of the original project had identified that the operation of the turbines would pose the greatest risks to birds and bats. The risks arise from the potential for birds, particularly waterbirds, and bats to collide (that is strike) with the moving blades. It was also noted that the number of waterbirds could increase when Lakes George and Bathurst fill with water. Also several species of Honeyeater are known to migrate through this area in flocks during the autumn. The migratory paths however are not known but could overlap with the wind farm array. The Department notes that the existing consent requires the Applicant to undertake bird and bat monitoring surveys post operation of the wind farm. This existing condition will allow the monitoring of bird and bat movement during and after the filling of Lakes Bathurst and George and assist in assessing whether waterbirds and bats are likely to move between these two waterbodies in a path through the turbines. The Department finds that this condition is still relevant to the proposed modified project, because it addresses the issue of both Lake George and Lake Bathurst being dry at the time of the original assessment.

The Department finds that the modified project is unlikely to impact upon the long-term viability, or contribute to the extinction, of any threatened species and notes that this finding is also the same for the original project. The Department is satisfied that the relevant conditions of the existing consent do not require to be changed, as those conditions comprehensively address bird and bat management during the operation of the project. The conditions provide for adaptive management of the potential impacts to fauna.

5.4 Heritage Impacts

Issue

Summary of original proposal's assessment findings

Under the assessment of the original proposal, the Applicant found no registered Aboriginal archaeological sites in the Woodlawn study area. However, the Applicant's models of Aboriginal settlement and archaeological site distribution for the region suggested that stone artefact sites were the most common archaeological sites and these were likely to occur on lower slopes or alluvial landforms. The then Department of Environment and Conservation had advised the Applicant to undertake consultation with the Pejar Local Aboriginal Land Council (LALC) and the Buru Ngunawal Aboriginal Corporation (representing the Ngunawal People Native Claim NC00/1). Representatives from both the Buru Ngunawal and Pejar LALC participated in separate archaeological surveys of the study area. It was found that the proposal would directly impact on eight out of the 15 Aboriginal archaeological sites identified in the surveys. These eight sites are within five metres of construction activities, and disturbance to these sites was considered unavoidable.

The Applicant undertook to obtain a Consent to Destroy with Salvage permit from the then Department of Environment and Conservation in accordance with Section 90 of the *National Parks and Wildlife Act* for those sites which would be directly affected by the construction. The then Department of Environment and Conservation had reviewed the information of the original proposal and advised the Department that it was able to issue its General Terms of Approval in relation to Section 87 and Section 90 of the *National Parks and Wildlife Act* for the proposed development, subject to conditions. With regards to the originally approved 3.6 kilometre transmission line, no non-indigenous archaeological items were identified. However one Aboriginal archaeological site, an artefact scatter, and one area of archaeological sensitivity, a large body of sand and soft sediment, were identified along the route. A number of mitigation measures were proposed to avoid any impacts to these sites due to construction. The Department's consent required the Applicant to prepare an Indigenous Heritage Management Sub Plan for the project.

Proposed modification and implications to cultural heritage

The Applicant engaged consultants to undertake an Aboriginal archaeological and cultural heritage assessment of the route of the 33kV transmission line, from the wind farm to the Capital Wind Farm substation. The field assessment undertaken on 11 and 12 November 2009, included a 15 metre easement along each side of the transmission line route. The Department of Environment, Climate Change and Water's Aboriginal Heritage Information Management System (AHIMS) register has shown that 26 Aboriginal archaeological sites exist within proximity to the proposed transmission line, including open artefact scatters and isolated finds. The field assessment was attended by the Aboriginal Land Council, Pejar Local Aboriginal Land Council, Buru Ngunawal Aborginal Corporation and the Gundungurra Tribal Council Aboriginal Corporation.

Three survey units were covered in the field assessment, comprising northern, central and southern sections of the proposed transmission line route. Two isolated finds and three open artefact scatters were visible in the study area. Seven areas of archaeological potential were identified in the study area, two of which were in association with the surface material, while the remainder were determined based on landform characteristics alone. One particular site (WLTL-C SITE 3) was estimated as having 80 to 100 artefacts scattered across the surface, such as ground edge axes and nodules. It was found that most of the individual sites assessed in the study area had a low potential for new information, except for WLTL-C SITE 3 (moderate) and WLTL-C PAD 3 (high). The rarity of the findings at each individual site were assessed as low in most of the sites, except for WLTL-C SITE 2 (moderate), WLTL-C SITE 3

(moderate to high) and WLTL-C PAD 3 (moderate). These three sites also contained a moderate to high research potential. The recommendations made by the Applicant's consultants are to avoid impact to all these sites, and in addition apply for a section 87 Preliminary Research Permit for WLTL-C PAD 3, to characterise archaeological resources if avoidance is not possible for this site. Refer to Figure 7 of this Report.

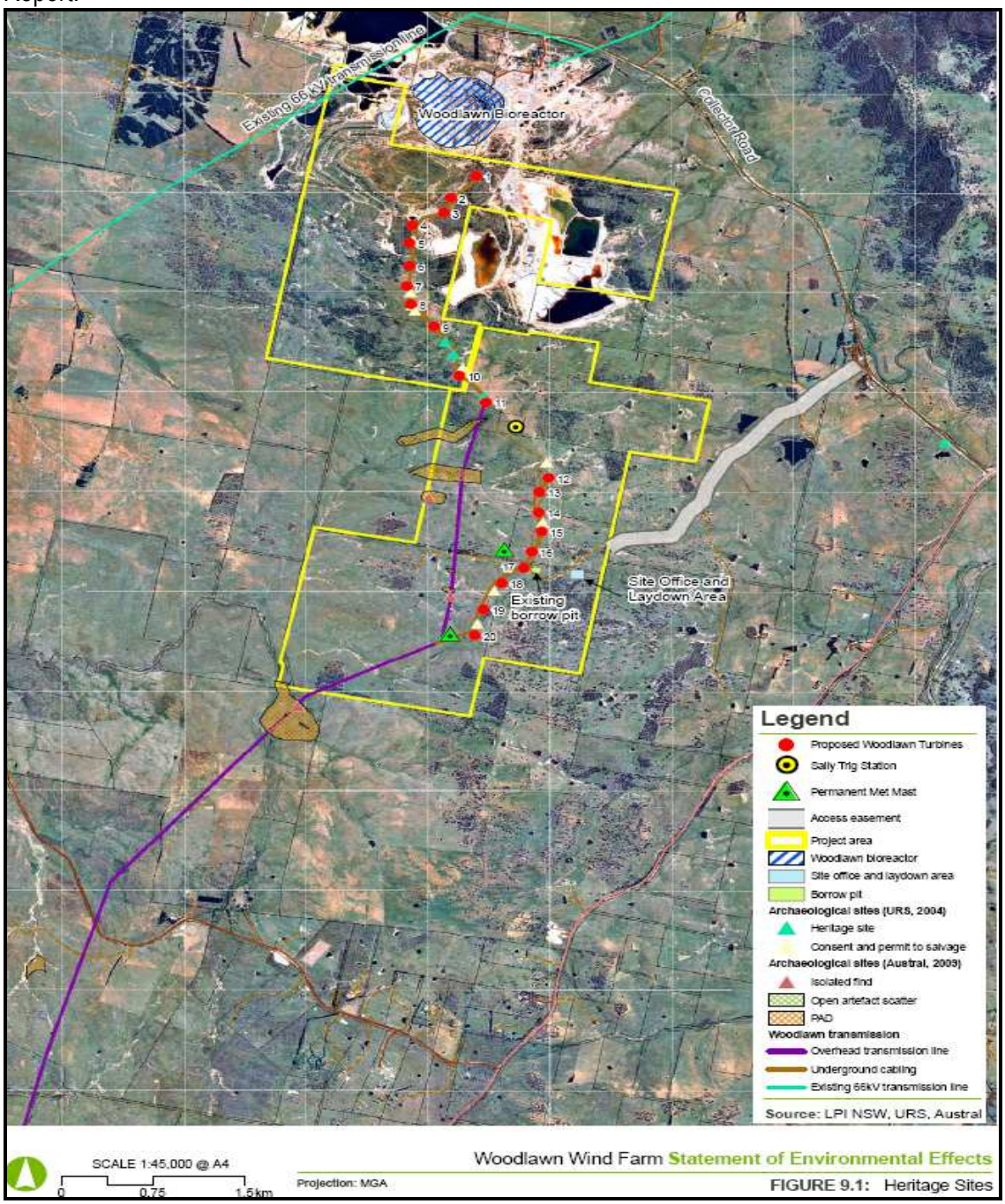

Figure 7: Overview of culturally significant sites (reproduced from the Applicant's Statement of Environmental Effects)

Consideration of the Transmission Line Construction

The Department notes that the construction of the transmission line would be able to avoid most of the Potential Archaeological Deposits, apart from WLTL-C PAD 3, however may not be able to avoid artefact sites. The Department notes the recommendation made by the Applicant's consultant that an methodology be developed by a qualified archaeologist to allow the test excavation of WLTL-C PAD 3

and collection of sites WLTL-C SITE 1, WLTL-C SITE 2, and WLTL-C SITE 3, should it be determined that direct development impacts cannot be avoided. This methodology is to be developed in consultation with the Applicant and the participating Aboriginal stakeholders (Pejar Local Aboriginal Land Council, Ngunnawal/Ngambri Local Aboriginal Land Council, Buru Ngunawal Aborginal Corporation and the Gundungurra Tribal Council Aboriginal Corporation). The Department finds this approach would ensure that the removal of these artefact sites is done in accordance with the requirements of the appropriate bodies. The Department has recommended the Applicant be required to incorporate the mitigation measures identified in its consultant's assessment as part of the Indigenous Heritage Management Sub Plan (part of CEMP).

The Department notes that the then Department of Environment and Conservation was an integrated approval body for the project (*Protection of Environment Operations Act*, and *National Parks and Wildlife Act*). It is to be noted that at present the Department of Environment, Climate Change and Water's statutory role, as advised by itself, for the proposed modification is limited to the potential assessment of an Aboriginal Heritage Permit Application, under section 87/90 of the *National Parks and Wildlife Act 1974*. The Department of Environment, Climate Change and Water has stated to the Department that it agrees with the recommendations regarding Aboriginal sites WLTL-C PAD 3 and WLTL-C 1-3. It has also stated that if direct impacts cannot be avoided, it will require a section 87/90 permit application under the *National Park and Wildlife Act 1974*. The Department notes that condition 3 of the existing consent of the project addresses this permit application requirement. Condition 3 requires the Applicant to ensure that all necessary licences, permits and approvals are obtained and kept up-to-date, as required throughout the life of the development.

Consideration of wind turbine site

The Applicant has stated that the wind farm site has been previously extensively investigated, including the carrying out of subsurface investigations and salvage activities. It further states that as a consequence, the relatively minor variations to turbine sites within the previously assessed turbine envelope and following the proposed salvage activities, do not appear to warrant further surface or sub-surface investigations at the wind farm site (other than in response to any additional items observed during construction works which have not been previously identified).

The Department notes that most of the turbine locations are within 60 metres of the original locations. Five turbines have moved between 100 metres and 250 metres. However as stated by the Applicant, the 'new' areas in which the turbines are now proposed, were included under the Applicant's original assessment of the project. Also it is noted that the Applicant has obtained Aboriginal Heritage Permits in 2005, under the *National Park and Wildlife Act 1974* for the construction of the project. To ascertain that these 'new' areas have been addressed under existing permits and commitments, the Department recommends that the Applicant provide an outline of existing measures (including existing permits) that address the management of cultural heritage sites within the construction footprint areas of the wind turbines. This information is required to be included within the Construction Environmental Management Plan for the project.

The Department is satisfied that the impacts to indigenous heritage from the modified project can be mitigated and/or managed in consultation with the appropriate Aboriginal stakeholders and the adherence to requirements of existing permits for the development with regards to indigenous heritage. The Department has recommended amendments to the existing consent to address the modified wind turbine layout and the transmission line route.

5.5 Traffic and Transport Impacts

Issue

Large and/or heavy components of the project are expected be delivered by road using over-mass and over-size vehicles or restricted access vehicles (RAV). Road transport is considered the only practical option for transporting the components due to the vertical and horizontal clearances required on the rail system. Figure 8 of this Report shows the existing road transport infrastructure for the area surrounding the proposed wind farm site. The Applicant states that several routes were previously reviewed as part of the original proposal and addressed in the Environmental Impact Statement and also within the Environmental Assessment for the Capital Wind Farm project. The Applicant states that the route used during the delivery phase of the Capital Wind Farm is suitable for transport of equipment to Woodlawn Wind Farm. The Applicant states that the traffic and transport management plan that was produced for Capital Wind Farm is readily applicable to assist in addressing the transport issues associated with Woodlawn Wind Farm, except in respect of the additional entry point at Pylara Farm. Specific consultation will be required in relation to these works.

Figure 9 of this Report shows a breakdown of the components and materials required for construction and the numbers of vehicles or vehicle movements (one way) associated with their delivery. The figure includes estimated traffic movements that were determined for the original project and updated estimations for the modified project. The updated estimations are based on the experience gained from the construction of the nearby Capital Wind Farm.

Consent was granted for approximately 200 trips per day, comprising approximately 90 light vehicle and 98 heavy vehicle trips per day, occurring through the construction period. The proposed reduction in the number of turbines to be installed will reduce the number of over-size and over-mass vehicles required. Also the Applicant expects to use the anchored footings design in place of the previously used gravity footings. Anchored footings were installed at Capital Wind Farm and use less concrete volume and less reinforcing steel compared to gravity footings. Hence this will result in a substantial decrease in vehicle movements. From Figure 8 it can be seen that approximately 1352 trucks including 200 over-size (longer than 19 metres) or over-mass (gross mass in excess of 42.5 tonnes) would need to access the site during the eight month construction period. Over-size or over-mass vehicles are referred to as Restricted Access Vehicles.

The intensity of truck movements would vary during the construction stage. Events such as pouring concrete for a turbine can generate up to 20 one way trips per day over a period of about eight hours. The approved project included a batching plant to be located to the north of the ridgeline, near the Woodlawn Mine. The use of the batching plant would reduce the need for concrete carrying vehicles to use local roads, however the Applicant states that the option to source concrete from a fixed batch plant or elsewhere may be considered during the construction phase, due to the limited number of times the batch plant would be used.

The main entrance to the wind farm site will be from Collector Road through the Pylara Farm entrance. Access to the Capital Wind Farm substation site will be from Bungendore Road via the entry that has already been upgraded as part of the construction of the Capital Wind Farm. Once on site, approximately 10 kilometres of access tracks will be required to access the turbine sites.

Figure 8: Existing road transport infrastructure network surrounding the proposed wind farm site (reproduced from the Applicant's Statement of Environmental Effects)

Material	2004		2009		Vehicle Type
	Quantity	No of vehicles	Quantity	Actual one way vehicle Movements	
Foundation Materials / anchors					
Concrete	8,333 m^3	2,200	2,000 m^3	400	4 axle concrete truck
Reinforcing steel	757 m^3	95	230 t	12	Semi-trailer
Sand / aggregate	6,250 m^3	625	200 m^3	20	2004 – batch on site
Water	696 m^3	50	see below – dust control		2009 – deliver to site
Cement (grout)	1,387 m^3	231	230 t	12	Semi-trailer
Stand (anchors)			63 t	4	Semi-trailer
Duct (anchors)			22 m^3	1	Semi-trailer
Miscellaneous (anchors)			24 t	2	Semi-trailer
Track construction and other items					
Aggregate for tracks	Not specified		4,000 m^3	400	Truck
Water for dust control	Not specified		1 ML	100	Tanker
Misc equipment			Nominal	60	Semi-trailer
Misc materials			Nominal	15	Semi-trailer
Wind Turbine Components					
Tower sections	81	81	80	80	RAV
Nacelles	25	25	20	20	RAV

Figure 9: Estimated Traffic Movements for both the approved and modified project (reproduced from the Applicant's Statement of Environmental Effects)

Consideration

The Department finds that the methods to manage traffic and transport movements for the construction of the project need to be finalised and outlined as part of the Construction Environmental Management Plan. The Department notes a Traffic and Transport Management Sub Plan is already required as part of the existing consent. However the Department recommends that this sub plan also include the further mitigation measures outlined in the Applicant's Statement of Environmental Effects for traffic and transport management.

The Department notes that the Roads and Traffic Authority has stated to the Department that the Applicant should be required (by way of a condition) to obtain a permit for an oversized and over mass load from the Roads and Traffic Authority Special Permits Unit in Glen Innes. The Department recognises this requirement and therefore has recommended the Applicant be required to consult with the Roads and Traffic Authority for the purposes of obtaining the permit.

The Department is satisfied that the modified project would not result in significant impacts to traffic volumes and the road network. The recommended conditions will ensure that measures for ensuring traffic safety and the management of roads to be used would be detailed in the Construction Environmental Management Plan for the Project, which requires the Director-General's approval prior to construction.

6 CONCLUSION

The Department has assessed the Statement of Environmental Effects, submissions received and the Applicant's response to submissions, and is satisfied that the modified development represents substantially the same development as applicable to the existing development consent. The wind farm is located on the same section of ridgeline as originally proposed. Also while the proposed development would now have a lesser number of turbines, the wind farm will provide a similar amount of power from the same renewable energy source. The Department is also satisfied that the modified development can be designed in a manner which mitigates or manages the predicted impacts, as similarly determined by the Department by its then assessment of the original development application.

The Department is satisfied that the proposed modified development would not significantly change the visual amenity impacts from that predicted for the approved development. The Department is also satisfied that the proposed modification to the development is capable of achieving the noise limits set under the conditions of consent for the development dated 4 October 2005. The Department is also satisfied that all other issues associated with the modified development, including ecology, heritage and traffic and transport concerns, can be adequately managed to ensure no significant impacts occur as a result of the development's construction and operation.

The Department recommends that the Director of the Infrastructure Projects branch, Major Projects Assessment Division of the Department, under delegated authority (granted by the Minister under section 23 of the *Environmental Planning and Assessment Act 1979* (the Act), dated 25 January 2010), consider the findings and recommendations of this Report and approve the modified development in relation to section 96(2) of the Act, subject to the recommended conditions.