



Planning &  
Infrastructure

**MAJOR PROJECT ASSESSMENT:  
Capital II Wind Farm  
Southern Tablelands of NSW  
(MP 10\_0135)**



Director-General's  
Environmental Assessment Report  
Section 75I of the  
*Environmental Planning and Assessment Act 1979*

October 2011

## ABBREVIATIONS

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CIV	Capital Investment Value
Department	Department of Planning & Infrastructure
DGRs	Director-General's Requirements
Director-General	Director-General of the Department of Planning & Infrastructure
EA	Environmental Assessment
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPI	Environmental Planning Instrument
MD SEPP	<i>State Environmental Planning Policy (Major Development) 2005</i>
Minister	Minister for Planning & Infrastructure
PAC	Planning Assessment Commission
Part 3A	Part 3A of the <i>Environmental Planning and Assessment Act 1979</i>
PEA	Preliminary Environmental Assessment
PPR	Preferred Project Report
Proponent	Capital Wind Farm 2 Pty Ltd

Cover Photograph: Cover Page of *Environmental Assessment Capital II Wind Farm Bungendore* (Monteath & Powys Pty Limited, December 2010)

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## **EXECUTIVE SUMMARY**

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Capital Wind Farm 2 Pty Ltd has sought project approval to construct and operate the Capital II Wind Farm. The project comprises the development of an approximately 100 megawatt capacity wind farm, adjacent to the existing Capital Wind Farm and connecting to the existing Capital Substation. The subject site is located on Tarago-Bungendore Road, approximately six kilometres from Bungendore, within the Palerang Local Government Area (LGA).

The project consists of 41 wind turbines, arranged in linear rows and connected to kiosk transformers, the substation, electrical connections, access tracks, operations and maintenance building and other ancillary infrastructure. The project would promote renewable energy generation and thereby limit greenhouse gas emissions associated with energy production. This is consistent with the Federal Government's promotion of renewable energy and the targets listed under the State Plan, including the Renewable Energy Target (RET) to ensure 20 per cent of Australia's electricity supply comes from renewable energy by 2020. The project has a capital investment value of \$180 million and is expected to generate 100 full-time construction jobs and five full-time operational jobs.

The project Environmental Assessment (EA) was placed on public exhibition between Wednesday 15 December 2010 and Monday 7 February 2011. Submissions were received from seven public authorities. The Office of Environment and Heritage (OEH) raised several matters in relation to the Proponent's flora and fauna assessment and heritage assessment, that needed to be further addressed prior to determination. Other agencies (Roads and Traffic Authority, the then Land and Property Management Authority, NSW Office of Water, Palerang Council, the then Industry and Investment NSW and Civil Aviation Safety Authority) raised matters for the Department's consideration in its assessment. Five public submissions were received and four of these raised objections to the project and the remaining submission raised matters for the Department's consideration. The key issues raised in the public submissions related to cumulative noise and visual impacts (with the simultaneous operation of the existing Capital I and under construction Woodlawn wind farms), ecological impacts and the level of consultation undertaken by the Proponent.

On 19 April 2011, the Proponent's Preferred Project Report and Submissions Report for the project was accepted by the Department, which included responses to issues raised in submissions received during the public exhibition of the EA. The main changes to the exhibited EA is the reduction of the number of wind turbines proposed (from up to 55 to 41 wind turbines), and the relocation of access roads and wind turbines to avoid disturbance to potential native vegetation and identified items of archaeological significance.

The Department has undertaken a comprehensive assessment of the merits of the project and considers that the project is required to help meet Australia's RET and the predicted growth in electricity demand. The Department also considers that the Proponent's nominated environmental commitments, its impact avoidance and minimisation measures contained in the EA and the Department's recommended conditions would ensure that the impacts associated with the construction and operation of the project, including cumulative impacts, can be minimised and managed to acceptable levels. The key recommended conditions include specific requirements to limit hours of construction to acceptable times and a requirement to prepare a revised operational noise assessment to mitigate noise amenity impacts. It is also recommended that the Proponent be required to minimise the clearance of the Natural Temperate Grassland community, and where removal is required, it is to be appropriately offset. The Proponent is also required to implement a Bird and Bat Adaptive Management Program, to ensure the management of potential impacts on avifauna during operation of the project.

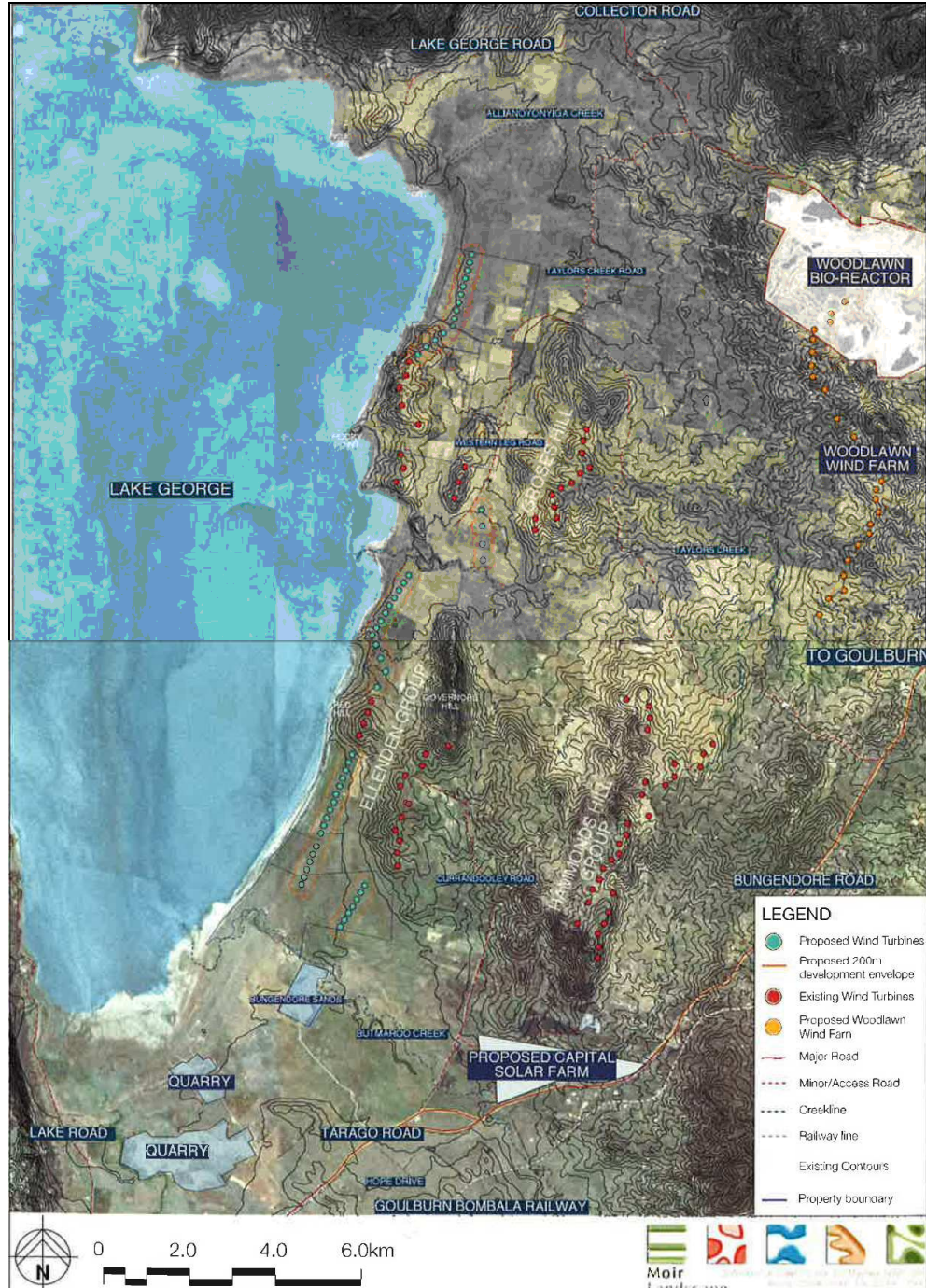
The Department therefore recommends that the project be approved, subject to conditions.

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# 1. BACKGROUND

Capital Wind Farm 2 Pty Ltd proposes to construct and operate an approximately 100 megawatt (MW) capacity wind farm (referred to as Capital II Wind Farm), with a site area of 50 square kilometres, adjacent to the existing Capital Wind Farm (referred to as Capital I Wind Farm) and associated substation, 10 kilometres north of Bungendore. The project is to be situated on 12 properties of predominately cleared agricultural land and is located within the Palerang local government area. The project location is shown in Figure 1.



**Figure 1: Project Location**

The project is adjacent to the operating Capital I Wind Farm, the Woodlawn Wind Farm (under commissioning) and the approved Capital Solar Farm. The existing Capital I Wind Farm (comprising 67 wind turbines) was granted project approval under Part 3A of the *Environmental Planning and Assessment Act 1979* in November 2006 and became operational in October 2009. The proposed wind turbines would be linked by underground cables and an overhead transmission line, which would then connect to the existing substation at Capital I Wind Farm. The existing substation connects to the national electricity grid. Woodlawn Wind Farm (comprising 23



## 2. PROPOSED PROJECT

### 2.1. Project Description

The project comprises of the installation and operation of up to 41 wind turbines, each with a capacity of up to 3 megawatts (total generating capacity of approximately 100 megawatts). The project would utilise the existing Capital I Wind Farm 330 kilovolt grid connection and substation infrastructure. The proposed turbines are located both north and south of the existing Capital I wind turbines and are generally situated between groups of these existing turbines. The project layout is shown in Figure 3. The key components of the project are listed in Table 1.

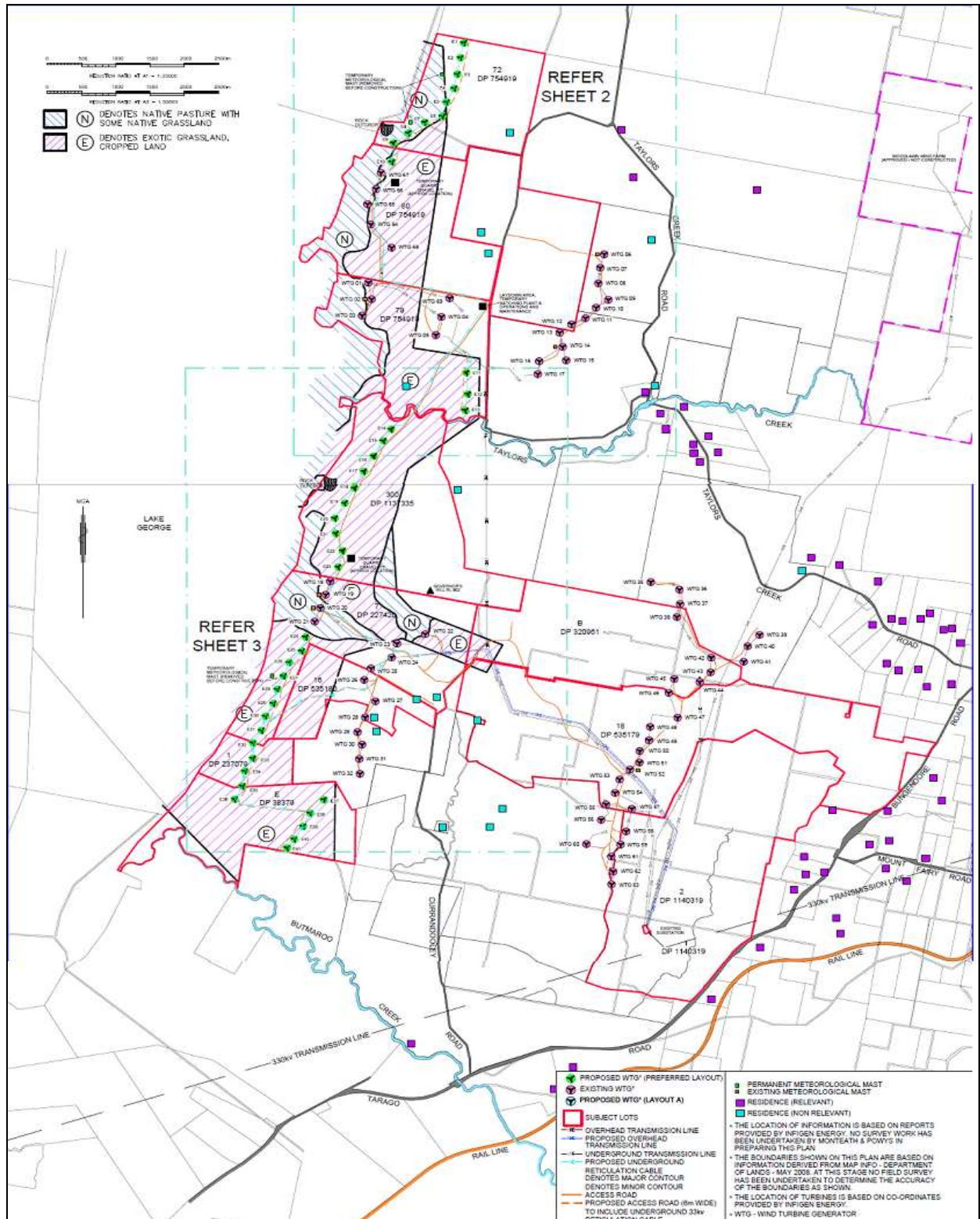


Figure 3: Project Layout (Reproduced from the Proponent's Preferred Project Report)

Table 1: Key Project Components

<i>Aspect</i>	<i>Description</i>
<b>Project Summary</b>	<b>Construction and operation of a new wind farm and associated infrastructure, adjacent to the existing operational Capital I Wind Farm, near Lake George, comprising of 41 wind turbines, with a generating capacity of approximately 100 megawatts. The project would utilise the existing Capital I Wind Farm 330 kilovolt grid connection and substation infrastructure.</b>
<i>Wind Turbines (41)</i>	Each wind turbine would be powered by three blades (blade diameter of 114 metres) and a nacelle, mounted on top of each tower. The nacelle encloses the generator, gearbox and control gear. Each tower would be attached to a concrete footing and would be connected to a pad mounted transformer. The transformer would raise the output voltage to 33,000 volts. The maximum tip height of the wind turbine structure would be 157 metres (tower height of 100 metres and each blade having a length of 57 metres). The final turbine model would be selected upon determination of the Project Application. Each wind turbine would have a rated capacity of up to 3 megawatts (MW).
<i>Connection to Existing Electrical Substation</i>	The project would connect to the existing 33kV/330kV Capital I Wind Farm substation, negating the need to construct a new substation at the project site. The existing substation would convert power from on-site reticulation voltage of 33,000 volts to 330,000 volts, suitable for connection to the existing TransGrid 330kV transmission line. As part of construction of the Woodlawn Wind Farm, an additional (third) 33kV/330kV transformer has been installed at the Capital I Wind Farm substation. The project would be able to utilise the additional available capacity of this transformer. Therefore, minor upgrades to the transformer, control room and 33,000 switchyard at the existing substation would only be required.
<i>Onsite Electrical Reticulation</i>	Underground cabling network would connect the proposed wind turbines to one another. The cable trenches would be approximately one metre deep and 0.5 to 0.75 metres wide, and would include both power and control cables within the one trench. The cable trenches would be dug close to the access roads on the project site.
<i>Concrete Batching Plants</i>	The Project Application includes the possible installation of two temporary concrete batching plants, however, the Proponent has stated that the need would be subject to a decision of the construction contractor. The plants would consist of a trailer mounted concrete mixer, cement bins, sand and aggregate stockpiles and a storage container for equipment and tools. The batch plants would be powered by diesel generators and would have a capacity of 50m <sup>3</sup> per hour.
<i>Access Tracks</i>	The proposed wind turbines are to be interconnected by unsealed internal site access tracks, which would also connect to the substation. Existing access tracks that were constructed as part of the existing Capital I Wind Farm would be used, plus new tracks would be constructed for the project. The internal access tracks would be approximately six metres wide and would be graded to allow for controlled run-off.
<i>Meteorological Masts</i>	Up to three permanent meteorological monitoring masts would be installed.
<i>Temporary construction infrastructure</i>	Staff lunch rooms and facilities, including a construction site office, would be constructed for use during construction.

## 2.2. Project Need and Justification

Demand for electricity in NSW is predicted to increase and exceed reserves unless new generation capacity becomes available. The Australian Energy Market Operator (AEMO) Electricity Statement of Opportunities 2010 report states that the NSW average annual growth rate of energy consumption and maximum demand (based on medium economic growth forecasts) over the next ten years is 2.6 per cent, which in five years is predicted to surpass the NSW summer 2010/11 summer aggregate scheduled and semi-scheduled generation capacity of 15,950 megawatts. AEMO predicts that low reserve conditions (LRC) may occur in NSW as early as 2016/2017 (with a predicted shortfall of 27 megawatts) but more likely in 2017/2018 (with a predicted shortfall of 416 megawatts). This shortfall is predicted to further increase to 1,335 megawatts by 2019/2020. The LRC is the point at which the network reliability standard may not be met, and therefore, loadshedding may be required and brownouts may occur in some areas. It should be noted that based on AEMO's prediction, should the increase in demand not be met, loadshedding and frequency of brownouts would be increased, thereby reducing the quality and reliability of electricity supply in NSW.

Apart from the identified need for additional electricity capacity, both the Federal and State Governments have promoted the generation of electricity from renewable sources, for example: the Commonwealth Government's Renewable Energy Target (RET) of sourcing 20 per cent of electricity from renewable sources by 2020; and the State Plan's target of achieving 20 per cent renewable energy consumption by 2020 in light of the RET.

The project would help cater for the identified shortfall of energy generating capacity and is in line with the associated renewable energy government policies. The project would produce approximately 315,000 megawatt hours (MWh) of renewable electricity per annum, providing a net greenhouse gas emission savings of up to 315,000 tonnes of carbon dioxide per year. Also, compared to a typical coal-fired power station, the project would provide for large savings in water consumption (for example, there would be no need for feed water or water losses via evaporation). Also, apart from carbon dioxide, the project would provide for reductions in other air pollutants, including oxides of nitrogen and sulphur and particulate matter. As such, the proposed generation of wind energy for electricity generation is considered to be appropriate for the purposes of addressing government policy on renewable energy generation. In NSW, approximately 90 per cent of the State's electricity needs are provided by non-renewable coal-fired power stations and as such, contribute the greatest share of base load production and carbon dioxide emissions. The remaining 10 per cent is produced from alternative sources including gas/distillate power stations as well as hydro electric power. The project would contribute to the increasing use of renewable, rather than non-renewable, sources of electricity generation.

It is to be noted that although ancillary infrastructure is required to support wind farms, the operational Capital I Wind Farm and under construction Woodlawn Wind Farm, would provide for the majority of such infrastructure, including a substation and access tracks. The project would connect to the existing substation at Capital I Wind Farm, which is also being shared with Woodlawn Wind Farm. This shared use of existing ancillary infrastructure would allow for a smaller construction footprint, than what would have otherwise been required.

The Department is satisfied that project is in the public interest, as it would help meet the predicted electricity demand shortfall through the production of renewable electricity. The proposed establishment of a commercial wind resource would also provide for greenhouse gas saving benefits.

## 2.3. Critical Infrastructure

The project is classified as critical infrastructure in accordance with section 75C of the *Environmental Planning and Assessment Act 1979*, by virtue of the then Minister for Planning's

declaration of 11 November 2009 with respect to development for the purposes of a facility for the generation of electricity derived from renewable fuel sources (including wind energy), which has the capacity to generate at least 30 megawatts.

### 3. STATUTORY CONTEXT

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#### 3.1. Major Project

The proposal is a major project under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act) because it is development for the purpose of a facility for the generation of electricity or heat or their co-generation (using any energy source, including gas, coal, bio-fuel, distillate and waste and hydro, wave, solar or wind power), being development that has a capital investment value of more than \$30 million, under clause 24 of Schedule 1 of *State Environmental Planning Policy (Major Development) 2005*.

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and pursuant to Schedule 6A to the EP&A Act, continues to apply to *transitional Part 3A projects*. Director-General's environmental assessment requirements (DGRs) were issued in respect of this project prior to 1 October 2011, and the project is therefore a *transitional Part 3A project*. Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister for Planning and Infrastructure (or his delegate) may approve or disapprove of the carrying out of the project under section 75J of the Act.

#### 3.2. Permissibility

The proposed wind farm would be located within the Palerang Council area, which is made up of the former Tallaganda Shire and parts of the former Yarrowlumla, Mulwaree and Gunning Shires. However, in the absence of a Palerang local environmental plan, the provisions of the local planning instruments that prevailed over the land, prior to the amalgamation into Palerang Council, apply.

The turbines and part of the transmission infrastructure to connect to the existing electrical substation are to be located within areas covered by the former *Mulwaree Local Environmental Plan 1995* (MLEP). Similarly, parts of the proposed transmission line and associated infrastructure are to be located in the former Yarrowlumla Shire. Therefore, the provisions of the Mulwaree LEP and Yarrowlumla LEP (2002) apply to the proposed project site.

The proposed wind turbines are to be within the 1(a) General Rural Zone under the Mulwaree LEP. Wind farms and associated infrastructure would be a permissible use in this zone, with consent, in accordance with clause 9 of the Mulwaree LEP (Zone Objective and Development Control Table, 1 (a) (i), (ii), (v) and (viii) and 1 (c)). Consistent with these objectives, the construction and operation of the project would not impact upon existing grazing activities and the Proponent has committed to the implementation of soil erosion mitigation measures during construction so as to enhance and conserve the soil stability of the area. No trees are to be cleared for construction activities and any removal of native grassland vegetation is required to be offset to ensure the ecological values of the vegetation are maintained or improved (refer to section 5.3). The construction of the project would avoid disturbance to items of heritage significance and the Proponent is required to implement specific management measures to ensure the avoidance of such impacts (refer to section 5.6). The project is also a development of non-agricultural purposes which would help meet the predicted electricity demand shortfall through the production of renewable electricity (refer to section 2.2).

The components of the project subject to the Yarrowlumla LEP are all within the General Rural 1(a) zone. Infrastructure associated with the transmission line is consistent with the zone objectives and therefore permissible in this zone (key objectives being clause 10 (1) (d), (e) and (i)). Consistent with these objectives, the location of the proposed wind farm is suitable for its purpose, as the site has a high average wind speed profile and is immediately adjacent to the existing Capital I Wind Farm. Also, landholder agreements have been developed between the Proponent and landholders of the properties on which the project is to be situated. The agreements include lease fees and access arrangements which would be a supplementary income source for the life of the project. The landholders would have access to the project site for the purposes of ongoing grazing and pastoral activities and therefore conflicting uses of the land would be avoided.

Notwithstanding the LEP provisions, the *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) also applies to the project. Division 4 of the Infrastructure SEPP relates to electricity generating works with Clause 34(1) stating that development for the purpose of electricity generating works may be carried out by any person with consent on land in a prescribed zone. Therefore, as the proposal is for the purpose of generating electricity in a prescribed zone, it is permissible with consent.

### 3.3. Environmental Planning Instruments

There are no other environmental planning instruments that substantially govern the carrying out of the project.

### 3.4. Objects of the EP&A Act

Decisions made under the EP&A Act must have regard to the objects of the Act, as set out in Section 5 of the Act. The relevant objects are:

- (a) *to encourage:*
  - (i) *the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*
  - (ii) *the promotion and co-ordination of the orderly and economic use and development of land,*
  - (iii) *the protection, provision and co-ordination of communication and utility services,*
  - (iv) *the provision of land for public purposes,*
  - (v) *the provision and co-ordination of community services and facilities, and*
  - (vi) *the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and*
  - (vii) *ecologically sustainable development, and*
  - (viii) *the provision and maintenance of affordable housing, and*
- (b) *to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and*
- (c) *to provide increased opportunity for public involvement and participation in environmental planning and assessment.*

The most relevant objects of Section 5 of the EP&A Act are those under 5(a) in particular those objects under 5(a) (i), (ii), (iii), (iv), (vi), (vii) as these objects form key areas of assessment within the environmental assessment and are of particular relevance to the eventual determination of the subject project application by the PAC and are considered further in section 5 of this report. Sections 5(a) (v) and (viii) are not relevant to this proposal as the proposal does not raise significant issues relating to community services and facilities or affordable housing. With respect to ecologically sustainable development, the EP&A Act

adopts the definition in the *Protection of the Environment Administration Act 1991*, including the precautionary principle which is discussed in Section 3.5 of this report.

In addition to the above, the agency and community consultation undertaken as part of the assessment process (see Section 4 of this report), address objects 5(b) and (c) of the EP&A Act.

### **3.5. Ecologically Sustainable Development**

The EP&A Act adopts the definition of Ecologically Sustainable Development (ESD) found in the *Protection of the Environment Administration Act 1991*. Section 6(2) of that Act states that ESD requires the effective integration of economic and environmental considerations in decision-making processes and that ESD can be achieved through the implementation of:

- (a) *the precautionary principle,*
- (b) *inter-generational equity,*
- (c) *conservation of biological diversity and ecological integrity,*
- (d) *improved valuation, pricing and incentive mechanisms.*

The Department's assessment of the ecological impacts of the project (Sections 5.3 and 5.4 of this report) is based on a conservative and rigorous assessment of the likely extent of ecological impacts and of likely offset requirements to ensure that appropriate and adequate measures are put in place to prevent the threats of serious or irreversible environmental damage, consistent with the precautionary principle and the principle of conservation of biological diversity and ecological integrity. The majority of the potential impacts of the proposal are likely to be localised and would not diminish the options regarding land and resource uses and nature conservation available to future generations. The project has significant social and environmental benefits on a local, state and federal level and can be argued to have global environmental benefits on the basis that the project would produce electricity without the production of greenhouse gases. The Department has assessed the benefits of the project and assessed the potential impacts. The Department considers that the project's impacts on the environment can be adequately mitigated and the residual impacts can be managed to an acceptable level (see Sections 5.3 and 5.4). As such, it is considered that the development would be ecologically sustainable within the context of the above principles.

### **3.6. Statement of Compliance**

In accordance with section 75I of the EP&A Act, the Department is satisfied that the Director-General's environmental assessment requirements have been complied with.

### **3.7. Planning Assessment Commission**

On 14 September 2011, the Minister for Planning and Infrastructure delegated his approval functions under Section 75J of the EP&A Act to the Planning Assessment Commission (PAC) in the cases where applications have been made by private companies (including reportable political donation applications).

The Proponent is a private company and has provided, with its project application for the subject proposal, a statement indicating it has made a reportable political donation (refer to Appendix D). Consequently, pursuant to the Minister's delegation of 14 September 2011, the project application is subject to determination by the PAC.

## 4. CONSULTATION AND SUBMISSIONS

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### 4.1. Exhibition

Under section 75H(3) of the EP&A Act, the Director-General is required to make the Environmental Assessment (EA) of an application publicly available for at least 30 days. After accepting the EA, the Department publicly exhibited the EA from 15 December 2010 until 7 February 2011 (55 days) on the Department's website, and at the: Department of Planning; Nature Conservation Council; and Palerang Council. The Department also advertised the public exhibition in the *Goulburn Post*, *Bungendore Mirror* and *Canberra Times* on 15 December 2010. Relevant State and local government authorities were notified of the exhibition in writing.

The Department received nine submissions during the exhibition of the EA – five submissions from public authorities and four submissions from the general public. A further three submissions were received after the exhibition period – two from public authorities and one from the public.

A summary of the issues raised in submissions is provided below.

### 4.2. Public Authority Submissions

Seven submissions were received from public authorities. None of the authorities objected to the project, however all raised issues regarding the project.

**Roads and Traffic Authority** did not provide a clear position on the project and stated that it cannot make an informed comment, until it receives information on determined daily and peak hour traffic volumes, and vehicle type, predicted to be required for construction.

**Land and Property Management Authority** (now part of the Department of Trade and Investment, Regional Infrastructure and Services) did not state a clear position on the project and raised the following matters for the Department's consideration:

- stated that any development should not interfere with the usage of Trigonometric Reserves;
- noted that Crown roads may be traversed by the project works. Therefore, it listed relevant matters of consideration, including ensuring the roads are adequate for usage by construction vehicles;
- stated that impacts of any works must not adversely affect: the bed or banks of waterways; water quality; and must not restrict flows; and
- stated that given Lake George is Crown land, its visual amenity should be preserved, and that the project is likely to have a considerable impact on its visual amenity. The authority also however noted that the visual impact would be reduced under a smaller layout (less than 55 turbines), due to wider spacing between the turbines, which would be consistent with the existing Capital Wind Farm layout.

**NSW Office of Water** does not object to the project and recommended that the Proponent be required, through conditions, to obtain approval from the Office for any groundwater works and the Construction Environmental Management Plan be provided to the Office for review.

**Department of Environment, Climate Change and Water** (now part of the Office of Environment and Heritage) did not state a clear position on the project and raised the following matters for the Department's consideration:

- stated that the Proponent's assessment of Indigenous heritage does not contain enough information to consider the project, in terms of impacts and mitigation measures. This is because the authority considers that the assessment does not provide an adequate review of previous archaeological work surrounding the site area. This includes recent archaeological reports and test excavations. Therefore, it recommended that additional

archaeological background assessment be undertaken and further information on the potential Indigenous heritage impacts of the project, including outcomes of consultation with the local Aboriginal community, be provided. It is suggested that this further information be provided prior to the determination of the project; and

- stated that the limited information provided in the EA does not allow the authority to fully determine the nature and extent of potential biodiversity impacts. It noted that the project site is mostly cleared, however, the site does contain suitable habitat for grassland flora species, which must be surveyed during specific times and using specific methodologies to understand with confidence the species presence/absence. It considered that the survey effort is inconsistent with this approach and therefore additional survey work should be undertaken. Also stated that a biodiversity offset package should be implemented.

**Palerang Council** did not provide a clear position on the project but raised the following matters for the Department's consideration:

- stated that the local community would bear the impacts of the development, however, the project would provide benefits to the region and State, rather than the local area only. As such, the project should include a financial contribution towards the upgrade of local community facilities. Council noted that the Proponent has agreed to a once only contribution of a fixed amount per wind tower installed, although it is unable to disclose this amount, as the Proponent considers the amount to be "commercial-in-confidence". Council therefore requested, in relation to the amount discussed with the Proponent, the requirement for a contribution towards community facilities be recommended as a condition by the Department or achieved via a planning agreement;
- requested that conditions be imposed to ensure that Western Leg Road is upgraded to an adequate standard to address any potential impacts from the use of this road by construction traffic;
- requested that conditions be imposed to ensure the implementation of adequate landscape buffers around the project works;
- requested that the Department consider the cumulative noise impacts, including the outcomes of the review of Capital I Wind Farm's Noise Compliance Assessment Report; and
- requested that conditions be recommended to ensure that the project site is adequately managed in order to reduce the spread of weeds and to encourage the growth of native ground cover.

**Industry and Investment NSW** (now part of the Department of Trade and Investment, Regional Infrastructure and Services) stated that it does not support the project in its current form, because:

- it considered that the EA has not adequately assessed the impact of the project on potential sand and gravel resources within the project area. It requested that the proposed turbine locations be reviewed, and where possible, relocated, in order to minimise potential resource sterilisation. It however also noted that the turbine layout would not directly affect existing sand extraction operations in the region;
- the authority also raised the following additional matters for the Department's consideration:
  - stated that it is the authority's policy that all developments should aim to achieve no net impacts on receiving waterways;
  - noted that parts of Taylors Creek and Butmaroo Creek are located within the proposal site, which drain to Lake George and have the potential to be impacted by the project. However, it concurred with the Proponent's identified safeguards and mitigation measures for flora and fauna, water quality and hydrology. Therefore, the authority stated that those measures be included in any project approval, to ensure the implementation of the measures; and
  - recommended that any project approval require that the design and construction of any new or upgraded access track crossings of Taylors Creek or Butmaroo Creek, be

undertaken in accordance with *Policy and Guidelines for Fish Friendly Waterway Crossings* (NSW Department of Primary Industries, 2004) and *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (NSW Fisheries, 2004).

**Civil Aviation Safety Authority** did not provide a clear position on the project and:

- noted that it has no specific authority to require action for the obstacle marking and lighting of tall structures, including wind farms, located away from aerodromes;
- recommended, notwithstanding the above, due to the height of the turbines, and the cumulative impact of other adjacent wind farms, that the Proponent consider its duty of care in deciding whether or not the wind farm should be obstacle lit or otherwise marked; and
- stated that if the Proponent should choose to provide obstacle lighting to indicate the presence of this wind farm, it should conform to the authority's Manual of Standards Part 139, paragraph 9.4.3.4A.

### 4.3. Public Submissions

Five submissions were received from the public. Of the five public submissions, four (80%) objected to the project and one (20%) did not object but raised concerns for the Department's consideration. The key issues raised in the public submissions are listed in Table 2.

**Table 2: Summary of Issues Raised in Public Submissions**

Issue	Number of submissions
Majority of the public submissions raised issues regarding the operational cumulative impacts of the project, noting that Capital I Wind Farm is operating and Woodlawn Wind Farm is being constructed. The key potential impacts are noise, visual amenity, impacts on birds due to potential blade-strike and the potential flying barrier created by the turbines, at the eastern side of Lake George.	4
Public submissions also raised issues regarding the potential biodiversity impacts of the project. These issues related to the removal of native grassland habitat as a result of construction and the potential impact on bird migration, due to the short distance between Lake George and the proposed array of turbines.	3
Two public submissions stated that the Proponent has not clearly outlined the management of Indigenous heritage sites and artefacts during construction. It is therefore not certain whether significant impacts to Indigenous heritage would be avoided.	2
Two public submissions questioned the need for the project, claiming that it would have a net negative impact on Bungendore's growth, given there are no job shortages in Bungendore and the project would reduce the land available for housing along Tarago Road. Also, stated that the Proponent has not provided information showing how much useful power has been generated by the existing Capital I Wind Farm and at what cost, and how much greenhouse gas abatement has occurred.	2
Two public submissions indicated that the community consultation undertaken by the Proponent to date has not been adequate.	2
One public submission stated that no plan on how the Proponent would decommission and remove the wind turbines has been provided, particularly in the event that the project is found to be cost-ineffective.	1
One public submission outlined potential issues regarding the silting of creeks (tributaries of Taylors Creek), as a result of the project's construction.	1

The Department has considered the issues raised in submissions in its assessment of the project.

#### 4.4. Proponent's Response to Submissions

The Proponent provided a response to the issues raised in submissions (see Appendix C). The response included a Preferred Project Report which includes four key proposed changes to the project (from what was originally proposed):

- 1) a reduction in the number of turbines proposed and the removal of the two project layouts. The Proponent is now seeking approval for the construction and operation of one layout only, which is to include 41 wind turbines, rather than 55 wind turbines as originally proposed;
- 2) relocation of access roads to avoid disturbance to potential native grasslands. This proposed change has been determined through consultation with the Office of Environment and Heritage. This is because it was found that the originally proposed access track that started from Capital I Wind Farm (existing turbine 23) and traversed a gully to access the project may potentially include native grassland. As such, the access track has been removed from the project scope and access to that section of the project would be provided by an existing access track;
- 3) relocation of proposed wind turbines to further minimise the disturbance to agricultural land. The location of the wind turbines along the centre of the project site (proposed turbines E14 to E19) have been moved further to the east, to allow the usage of an existing access track, thereby reducing the area to be disturbed by the project. As such, the initially proposed access track parallel to the wind turbines, at this section, has been removed from the project scope; and
- 4) relocation of wind turbines to ensure the avoidance of impacts on identified items of archaeological significance.

## 5. ASSESSMENT

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After consideration of the Environmental Assessment, submissions received and the Submissions Report and Preferred Project Report, the Department has identified the following key environmental issues associated with the proposal:

- noise impacts (construction and operation);
- ecological impacts (construction and operation);
- visual impacts (operation); and
- Indigenous heritage impacts (construction).

The following other issues associated with the proposal have also been identified:

- agricultural impacts (construction and operation);
- Crown Land impacts (construction);
- mineral resources impacts (construction and operation);
- community benefits and contributions; and
- community health concerns.

All other issues are considered to be minor and have been addressed as part of the Proponent's Statement of Commitments and the Department's recommended conditions.

### 5.1. Noise Impacts – Operational

#### Issue

##### Operational Noise – Wind Turbines

The Proponent assessed the potential operational noise impacts of the project using the South Australian EPA Guideline 'Environmental Noise Guidelines: Wind Farms' (February 2003), referred to as the SA Guidelines. The SA Guidelines require that the noise generated by the operation of wind turbines does not exceed a noise level of 35 dB(A)  $L_{Aeq}$  or the background noise level by more than 5 dB(A) (whichever is greater) at surrounding "non-

associated" landowners for each integer wind speed from cut-in to rated power of the wind turbine. The SA Guidelines do not identify specific noise limits for "associated" landowners, noting that this is subject to agreement between parties, as part of commercial negotiations.

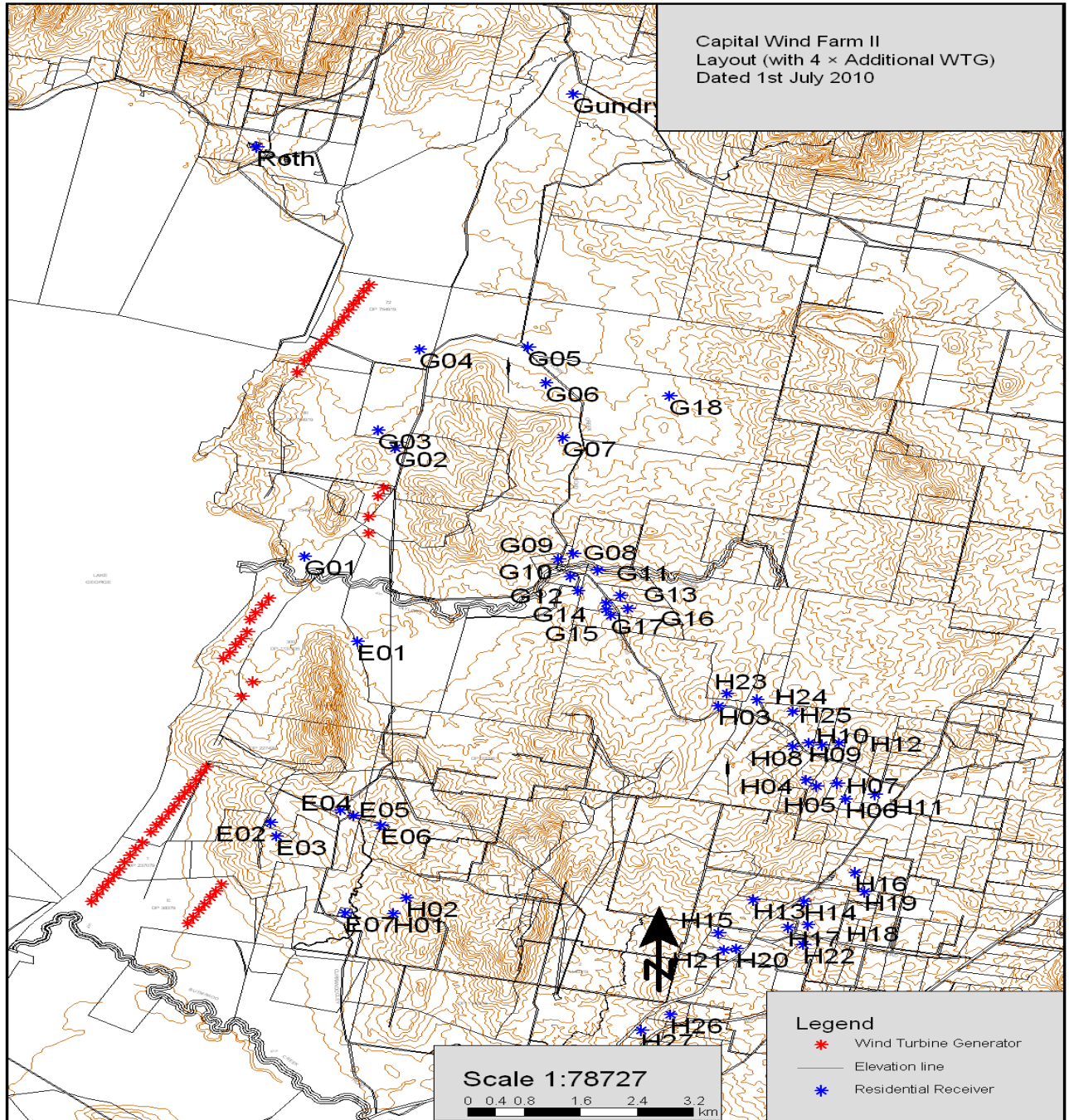
The Proponent has proposed a noise limit of 45 dB(A) for associated receivers, consistent with the World Health Organisation (WHO) recommendations for external noise levels. The Proponent has stated that it has reached noise agreements with each of the associated landowners that surround the project site. The noise agreements for those landowners associated with the existing Capital I Wind Farm address the predicted cumulative noise levels to be generated by the simultaneous operation of Capital I, Woodlawn and proposed Capital II wind farms.

Background noise was defined by the results of the background noise monitoring conducted for the Capital I Wind Farm proposal (i.e. prior to any wind farm noise), at six representative property locations, being Luckdale (G02), Euroka (G07), Sunnybrook1 (G08), L'Orizon (E02), Currandooley (H02) and Wyoming (E01) (as detailed in the Environmental Assessment for the Capital I Wind Farm, dated 2005). Figure 4 shows the locations of the receivers. The Proponent grouped the background noise levels and the associated noise criterion of the six representative locations to other residence locations that are closest to the proposed Capital II Wind Farm. 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.

There are a total of 29 residential receivers that are within five kilometres of the proposed wind farm, of which four are to have turbine(s) on their properties and therefore are associated receivers (non-relevant). Of the 29 residential receivers, 13 are relevant receivers as no wind turbines (Capital I or Capital II wind farms) are located or proposed to be located on their properties. The nearest associated receiver (that would have Capital II turbines on its property) is approximately 960 metres from the nearest proposed wind turbine (G01). The nearest associated receiver that has only Capital I turbines on its property, is 1.2 kilometres away from the nearest proposed wind turbine (E01). The nearest non-associated receiver to the closest proposed wind turbine (i.e relevant receiver as it does not have either Capital I or II turbines on its property and therefore no cumulative noise agreement has been established) is approximately 2.5 kilometres away (G05).

With respect to wind farm planning, the Department is preparing, in consultation with key agencies, draft wind farm planning guidelines. It is expected that the draft guidelines will take a precautionary approach to the development of turbines within 2 kilometres of non-associated dwellings. It is noted that given the distance between the proposed turbines and the closest non-associated dwelling is more than 2 kilometres, the proposed turbine layout is consistent with this approach.

Although the Proponent is seeking Project Approval for a 41 wind turbine layout (rather than 55 wind turbines as originally proposed), it did not remodel noise levels based on the reduced number of turbines. However, the Proponent's noise modelling of the previously proposed layout had used the highest sound power level of the Suzlon S88 2.1 MW WTG and the Sinovel 3 MW WTG model, at each integer wind speed (noting that the final turbine model would be selected upon the detail design stage of the project). The Department considers that the results of the Proponent's noise assessment are still relevant to the current proposal because the number of turbines proposed has decreased from that modelled (rather than increased) and the alignment of the currently proposed turbines is similar to that originally proposed. The Department also considers that the noise predictions are based on an overly conservative scenario, noting that in practice the noise levels would be less than those predicted.



**Figure 4: Locations of the Residential Receivers (Reproduced from the Proponent's Environmental Assessment)**

Note:

- the layout has been reduced to 41 turbines, as proposed under the Preferred Project Report, however, the linear turbine arrangement remains the same; and
- G05, G06, G10, G11, G12, G13, G14, G15, G16, G17, G18, Gundry and Roth are the identified non-associated receivers.

Operation of proposed wind farm only (without simultaneous operation of existing Capital I Wind Farm and currently under construction Woodlawn Wind Farm)

The predicted noise levels from the operation of the proposed wind farm only, at all non-associated residential receiver locations, would be within the relevant noise criteria derived from the SA Guidelines (noise criteria). Three associated receivers, E01, E02 and E03, are predicted to experience exceedances of 0.5 dB(A), up to 6.5 dB(A) and up to 6 dB(A) above the noise criteria respectively.

Cumulative noise levels (simultaneous operation of the proposed wind farm, existing Capital I Wind Farm and Woodlawn Wind Farm)

One non-associated receiver, being LaGranja (G10), has been predicted to experience up to a 1 dB(A) increase above the relevant noise criteria, under the cumulative operating scenario.

L'Orizon (E02) and E03 are the only associated residential receivers that are predicted to experience cumulative noise levels above the adopted WHO criteria. L'Orizon (E02) is predicted to exceed the 45 dB(A) WHO criterion by 11 dB(A) to 13 dB(A), under wind speeds of 4 to 10 m/s (lowest being 56 dB(A) and highest being 58 dB(A)). Similarly, E03 is predicted to exceed the 45 dB(A) WHO criterion by 6 dB(A) to 8.5 dB(A), under wind speeds of 4 to 10 ms<sup>-1</sup> (lowest being 51.0 dB(A) and highest being 53.5 dB(A)). However, exceedances of the WHO criteria at both L'Orizon (E02) and E03 were also previously predicted by the operation of Capital I Wind Farm only, which is also found to be the dominant source of noise at these receivers (refer to Table 3). For example, the proposed Capital II Wind Farm only would generate a noise level of 42.5 dB(A) and 42 dB(A) at E02 and E03 respectively, whereas a cumulative noise level of 58 dB(A) and 53 dB(A) would be generated at these respective landowners, under a wind speeds of 8 m/s. Given the previous predicted exceedances of the WHO criteria at both L'Orizon (E02) and E03, these two associated dwellings have been leased by Renewable Power Ventures, a group that is part of the Proponent's team.

The Proponent has stated that the hub height of the proposed wind turbines is likely to be 100 metres above ground level (subject to final turbine model selection), however, the Proponent's noise model incorporates a hub height of 80 metres above ground level. The Proponent has stated that the modelling, which included the lower hub height, was undertaken to ensure conservatism and took place before final hub height selection. The Proponent's modelling has not taken into account the "whooshing" sound caused by different wind speeds or wind gradients that form between the top and bottom of the rotor blades during stable atmospheric conditions (also commonly referred to as the "Van Den Berg effect"). This is because the Proponent states that based on the wind speed profiles given for the project area, there has been no evidence for the stable atmospheric conditions required to trigger the "Van Den Berg effect".

The Proponent states that there is not likely to be any detectable or perceptible impact due to vibration, infrasound or low frequency noise.

Overhead Transmission Line

A 33,000 volt overhead transmission line would be used to connect the proposed wind turbines to the existing substation at Capital I Wind Farm. The existing substation would then connect to the national electricity grid. The proposed overhead transmission line would be approximately 10 kilometres in length and include a 30 metre wide easement. The Proponent states that transmission line noise, due to corona noise (the faint buzzing or crackling noise heard along the lines under mild rain conditions or following a long dry spell from dust build up) or aeolian noise (harmonic hum produced from vibration due to wind across lines and insulators) would not be significant or annoying at distances greater than 100 metres from the lines. The nearest residential receiver from the proposed overhead transmission line is approximately 500 metres away. As such, the Proponent states that noise from the transmission line would not be significant.

Wind Speed	4	5	6	7	8	9	10
E01	36 35.5(35)	36 35.5 (35)	36.5 35.5 (35)	37.5 36.5 (36)	37 36 (37) 30	36 35 (39)	36.5 35 (40)
E02	56 41.5 (35)	56.5 41.5 (35)	57 41.5 (35)	57.5 42.5 (38)	58 42.5 (40) 59	58 41.5 (43)	58 41.5 (45)
E03	51 41 (35)	51.5 41 (35)	52.5 41 (35)	53 42 (38)	53 42 (40) 50	53.5 41 (43)	53.5 41 (45)
E05	40.5 34.5 (35)	41 34.5 (35)	42.5 34.5 (35)	42.5 35.5 (37)	43 35.5 (38) 41.5	42.5 34.5 (39)	43 34.5 (40)
E06	37.5 32.5 (35)	38.5 32.5 (35)	39 32.5 (35)	39.5 33.5 (38)	40 33.5 (40) 39.5	40 32.5 (43)	40 32.5 (45)
E07	37.5 35 (35) 33.5	37.5 35 (35) 34	38.5 35 (35) 35.5	39 36 (37) 36	39 36 (38) 36	39 35 (39) 36.5	39 35 (40) 36.5
G03	41.5 39 (35)	42 39 (36)	42.5 39 (38)	43 40 (39)	43 39.5 (41) 36.5	42.5 38.5 (42)	42.5 38.5 (43)
G05	32.5 31.5 (35) 25	33 31.5 (35) 26	33 31.5 (35) 27	34 32.5 (36) 27.5	34 32.5 (37) 27.5	33.5 31.5 (38) 27.5	33.5 31.5 (40) 28
G06	34 29 (35) 31.5	34 29 (35) 32	35 29 (35) 33.5	35.5 30 (36) 34	36 30 (37) 34	35.5 29 (38) 34	35.5 29 (40) 34.5
G07	40 25 (35)	40.5 25 (35)	42 25 (35)	42 26 (36)	42.5 26 (37) 42.5	43 25 (38)	43 25 (40)
G08	36 23.5 (35)	36.5 23.5 (35)	38 23.5 (35)	38 24.5 (36)	38.5 24.5 (37) 38	39 23.5 (39)	39 23.5 (40)
G09	37 22 (35)	37.5 22 (35)	39 22 (35)	39 23 (36)	39.5 23 (37) 39	40 22 (39)	40 22 (40)
G10	34.5 23 (35) 34	35 23 (35) 34.5	36 23 (35) 36	36.6 24 (36) 36	36.5 24 (37) 36.5	37 23 (39) 36.5	37 23 (40) 37
G11	33 22.5 (35) 32	33.5 22.5 (35) 33	35 22.5 (35) 34	35 23.5 (36) 34.5	35.5 23.5 (37) 35	35.5 22.5 (39) 35	35.5 22.5 (40) 35
G12	32.5 24.5 (35) 32	33.5 24.5 (35) 33	34.5 24.5 (35) 34	35 25.5 (36) 34.5	35.5 25.5 (37) 35	35.5 24.5 (39) 35	35.5 24.5 (40) 35
G13	30 21 (35) 29.5	30.5 21 (35) 30.5	32 21 (35) 31.5	32 22 (36) 31.5	32.5 22 (37) 32	33 21 (39) 32	33 21 (40) 32
G14	30.5 22 (35) 30	31 22 (35) 31	32.5 22 (35) 32	32.5 23 (36) 32.5	33 23 (37) 33	33.5 22 (39) 33	33.5 22 (40) 33
G15	30.5 22 (35) 30	31 22 (35) 30.5	32.5 22 (35) 32	32.5 23 (36) 32	33 23 (37) 32.5	33 22 (39) 32.5	33.5 22 (40) 32.5
G16	30 19.5 (35) 29	30.5 19.5 (35) 29.5	32 19.5 (35) 31	32 20.5 (36) 31	32.5 20.5 (37) 31.5	32.5 19.5 (39) 32	32.5 19.5 (40) 32
G17	30 21 (35) 29.5	31 21 (35) 30.5	32.5 21 (35) 32	32.5 22 (36) 32	33 22 (37) 32.5	33 21 (39) 32.5	33 21 (40) 33
G18	30.5 21.5 (35) 26	31.5 21.5 (35) 26.5	32.5 21.5 (35) 28	33 22.5 (36) 28	33.5 23 (37) 28.5	33.5 21.5 (39) 28.5	33.5 21.5 (40) 28.5
Gundry	15.5 15.5 (35)	15.5 15.5 (36)	15.5 15.5 (38)	16.5 16.5 (39)	16.5 16.5 (41)	15.5 15.5 (42)	15.5 15.5 (43)
H01	35.5 31.5 (35)	36.5 31.5 (35)	37 31.5 (35)	37.5 32.5 (37)	38 32.5 (38) 36.5	37.5 31.5 (39)	37.5 31.5 (40)
H02	36.5 31 (35)	37 31 (35)	38 31 (35)	38.5 32 (37)	38.5 32 (38) 38	39 31 (39)	39 31 (40)
Roth	27 27 (35)	27 27 (36)	27 27 (38)	28.5 28.5 (39)	28.5 28.5 (41)	27 27 (42)	27 27 (43)

**Table 3:** Predicted Cumulative Noise Levels (Capital I, Capital II and Woodlawn) at All Receiver Locations

\* Receivers G01, G02, G04 and E04, all of which are to have proposed Capital II wind turbines on their properties, are excluded from this table.

Note:

- criteria dB(A) is in brackets;
- black number represents the predicted noise level under the cumulative scenario (within noise criterion);
- blue number represents the predicted noise level under the cumulative scenario (exceeds noise criterion);

- pink number represents predicted noise level data available for Capital I wind farm operation only (data for all wind speeds was not available);
- green number represents predicted noise level data for Capital II wind farm only; and
- blue shaded represents associated receivers of Capital I wind farm and unshaded are non-associated receivers.

## Consideration

### Wind Turbines

Table 3 identifies the cumulative and Capital II Wind Farm only noise levels to be generated during operation of the project.

The Department notes that the noise levels generated by the operation of the proposed Capital II wind turbines alone, would be within the relevant criteria at all of the non-associated residential receivers located within five kilometres of the Project site. The Department also notes that as a result of the operation of Capital II Wind Farm only, no exceedance of adopted WHO criteria would occur at any associated receivers within this distance.

The Department notes that Capital I Wind Farm has been approved and is operational. The South Australian Environmental Protection Agency's *Wind Farms - Environmental Noise Guidelines* (SA Guidelines, 2003) indicate that the noise criteria for any additional wind farm should be based on the 'background noise levels as they existed before the original wind farm site development'. Nevertheless, the Department considers that any potential significant increases in noise levels, under the cumulative noise scenario, should be addressed.

Under the simultaneous operation of all three wind farms (proposed Capital II wind farm and approved Capital I and Woodlawn wind farms), one non-associated residential receiver (being LaGranja (G10)) and two associated residential receivers (being L'Orizon (E02) and E03) would experience noise above the relevant criteria.

At LaGranja (G10), noise levels generated by the operation of proposed Capital II wind farm alone would be between 23 dB(A) and 24 dB(A) for wind speeds between 4 and 10 m/s, which are well below the relevant criteria (criteria being: 35 dB(A) for wind speeds between 4 and 6 m/s, given the background was measured to be less than 35 dB(A); and 36 dB(A), 37 dB(A), 39 dB(A) and 40 dB(A) for wind speeds of 7 m/s to 10 m/s respectively). However, under the cumulative operating scenario, the noise criteria would be exceeded by 1 dB(A) (at a wind speed of 6 m/s) and 0.6 dB(A) (at a wind speed of 7 m/s).

LaGranja (G10) is located between two separate (north and south) sets of the existing Capital I wind farm turbine arrays, with the closest north and south Capital I turbines being approximately 1.5 kilometres and 2.5 kilometres from this receiver, respectively. Conversely, the closest proposed Capital II wind turbine would be approximately 3 kilometres and located to the west of the receiver.

Also, with regards to LaGranja (G10), the noise predictions made under the assessment for Capital I wind farm had identified that at a wind speed of 6 metres per second, a noise level of 36 dB(A) (criteria being 35 dB(A)) would be generated (this is the same noise level also predicted under the cumulative scenario, although Capital II wind farm alone has been predicted to generate a noise level of 23 dB(A) at this wind speed). This means that the 1 dB(A) increase above the relevant noise criteria at this wind speed was previously predicted for Capital I Wind Farm. At a wind speed of 7 metres per second (criteria being 36 dB(A)), a noise level of 36 dB(A) was predicted for Capital I wind farm (whereas Capital II wind farm alone has been predicted to generate a noise level of 23 dB(A) at this wind speed, and the cumulative noise level is predicted to be 36.6 dB(A)). It is noted that under this wind speed, the noise criteria is predicted to be exceeded by 0.6 dB(A). However, the Department considers that this exceedance of the noise criteria, if found to occur in practice, could be mitigated. Mitigation measures include the modification of sound power levels by de-rating the turbines (by reducing the rated speed of the wind turbines) or the application of wind sector management so as to vary the operation of a subset of the turbines.

It is to be noted that a Noise Compliance Assessment was prepared for the Capital I Wind Farm, by its Proponent, pursuant to condition 58 of that Project Approval. That report assessed the performance of the wind farm against noise limits outlined in condition 53. The Department undertook a review of the report and concluded that the measured noise levels at all non-wind farm associated residences, complied with the operational noise criteria. This included LaGranja (G10), where it was found reasonable to conclude that measured noise levels at G10 are complying with the noise criteria at all operational wind speeds (refer to Review of Noise Compliance Report – Capital Wind Farm, at <https://majorprojects.affinitylive.com/public/b4eb53b3687d98fff56b1ea81b52b2b3/Capital%20Wind%20Farm%20Noise%20Compliance%20Review.pdf>).

As such, the Department considers that the occurrence of the potential 1 dB(A) and 0.6 dB(A) exceedances under the cumulative scenario would be unlikely, noting that Capital I wind farm turbines are closer to G10. The Department's consideration is based on the minor nature of the predicted exceedances and the conservative nature of the noise model that has the potential to over-estimate the impacts. Also, the Proponent has stated that it would apply sector management measures to deal with such circumstances where exceedances of the relevant noise criteria are found to occur. Such measures include restrictions on turbine operation with respect to wind speed or direction if noise monitoring detects actual or potential noise impacts above established noise criteria.

To ensure the avoidance of amenity noise impacts, the Department recommends that once operational, the Capital II Wind Farm noise levels at the closest residences be assessed for compliance with the criteria. The Department also recommends a condition that requires the Proponent to design, operate and maintain the project to ensure that the noise level from the project (which takes into account cumulative operation) does not exceed the relevant criteria at the non-associated receivers (G05, G06, G10 to G18, Gundry, and Roth).

Also, the Department's recommended conditions require the Proponent to conduct a revised noise assessment of the final turbine layout and type to be used. The purpose of this condition is to demonstrate compliance with the relevant noise criteria. A Noise Compliance Plan is also recommended to be prepared by the Proponent, so as to describe in detail management measures, including remedial measures, required to manage noise, as well as to discuss how the stipulated criteria are being met. For example, removal or relocation of turbines, adaptive management measures, such as switching off impacting turbines during conditions which cause noise criteria to be exceeded (lower wind speeds that correlate with higher noise levels as background noise is lower), or building treatments subject to the landowner's approval. This would also address any potential findings of Van Den Berg effects occurring due to the project's operation.

The Department also recommends that requirements for ongoing and long term compliance with the operational noise limits be described in a Noise Management Plan, as part of the Operational Environmental Management Plan for the project. This recommended plan would provide procedural details for ensuring compliance and corrective actions in response to incidences of noise exceedances that may arise.

The Department is satisfied that the operation of the proposed wind farm, with the inclusion of cumulative noise levels from the surrounding wind farms, would not significantly impact upon the noise amenity of non-associated receivers. The Department is also satisfied that existing noise agreements are in place between the associated receivers and the Proponent, which address cumulative noise. The implementation of the recommended conditions would ensure the avoidance of any significant noise impacts and the management of any residual noise impacts.

### Transmission line

The Department notes that noise generated by overhead transmission lines is generally intermittent and in most cases not high enough to be audible above background noise. With regards to the proposed overhead transmission line, the Department notes that the line would be located approximately 500 metres away from nearest receiver, which is also associated with the project (receiver E06). The nearest non-associated receiver would be located approximately 1350 metres away from the proposed transmission line (H27). Whilst the Proponent has not specifically predicted noise levels under specific weather conditions (such as rain or fog during high humidity conditions), the Department considers that the risk of potential noise levels being at or above the background noise at the closest receiver (35 dB(A)) is low to negligible. Notwithstanding, the Department has recommended conditions requiring the transmission line to be designed and installed with consideration to the protection of the noise amenity of surrounding receivers.

## **5.2. Noise Impacts – Construction**

### **Issue**

The Interim Construction Noise Guideline (DECC, 2009) sets out the management levels of noise at residences, which distinguishes between the Noise Affected Level, which is the point where there may be some community reaction to noise (being the Rating Background Level plus 10 dB(A)) and the Highly Noise Affected Level, which is the point above which there may be strong community reaction to noise (being 75dBA)).

The construction programme is approximately eight months long and proposed to occur during normal working hours, as outlined in the Interim Construction Noise Guideline (7:00 am to 6:00 pm Monday to Friday and 8:00 am to 1:00 pm on Saturday). Construction activities would involve the operation of equipment and machinery, which has the potential to cause impacts to the noise amenity of the closest receivers.

There are four associated receivers predicted to experience an increase in noise levels due to construction noise (G01, G02, G04 and E04). All of these receivers are to have Capital II wind farm turbines on their properties. Receivers G01 and G02 would experience noise of up to approximately 46 dB(A), as they are located approximately one kilometre away from the construction area that is nearest to these two receivers. Although the Proponent indicates that this noise level meets the Noise Affected Level for these two receptors of 46 dB(A), the background noise level at G02 has been assumed to be the same background as G01 (average background is 36 dB(A)). However the Department notes that G01 is approximately 2.5 kilometres south of G02, therefore it is not certain that the Noise Affected Level and the predicted noise level for G01 reflects the actual construction noise to be experienced.

The predicted construction noise level at E04 is stated to be less than 40 dB(A), which is below the Noise Affected Level of 41 dB(A). Similarly, the Proponent has predicted that the construction noise level at G04 would be meet the Noise Affected Level of 46 dB(A). The Proponent states that the nearest non-associated receiver, G03, is located approximately 1.6 kilometres from the nearest construction activities. The predicted construction noise at this receptor is 39 dB(A), which is within the Noise Affected Level of 46 dB(A) for this receptor. However, other non-associated receivers are also located at this approximate distance and it is not clear whether the construction noise at these receivers would also be 39 dB(A), noting that the background noise level may potentially be different.

### **Consideration**

The Department considers that although the Proponent should be required to ascertain the Noise Affected Level for G01 and for the closest relevant receivers, the area surrounding the proposed wind farm is primarily used for agricultural purposes with an ambient noise background dominated by natural sources. This is reflected in the Average Background Noise Levels, ranging from 31 dB(A) to 36 dB(A). Therefore, the Department considers that

the ascertained Noise Affected Levels would not be significantly different from those predicted. The Department also notes that the impacts are likely to be intermittent as works would be undertaken at different parts of the site for varied periods. However, to ensure avoidance of significant construction noise impacts, the Department has recommended conditions that require the Proponent to prepare and implement a range of noise mitigation and management measures, including the preparation of a Construction Noise Management Plan. This Plan is to include noise management measures, including community notification, noise monitoring and complaints management requirements.

The Department considers that subject to the implementation of the recommended conditions, significant construction noise impacts can be avoided and residual noise impacts can be adequately managed.

### 5.3. Visual Impacts – Operation

#### Issue

##### *Visual impacts of the Project*

The Proponent's assessment of the potential visual impacts of the project included consideration of the cumulative impact arising from the location of the proposed wind turbines and those that form part of the existing Capital I and Woodlawn Wind Farms.

The proposed wind farm is to comprise up to 41 wind turbines, predominately situated to the west of the existing Capital I Wind Farm (with ten of the proposed turbines situated to the north of Capital I Wind Farm), within two kilometres to the east of the shores of Lake George. Existing receivers that would have potential views of the proposed wind farm also have views of the existing Capital I Wind Farm. This is because the proposed turbines are located adjacent to the existing northern and southern groups of Capital I Wind Farm. As such, the proposed wind farm would be seen as an extension of the existing Capital I Wind Farm (refer to Figure 5).

The Proponent's assessment of the visual impact of the project was guided by the document *Wind Farms and Landscape Values: National Assessment Framework* (Australian Wind Energy Association and Australian Council of National trust, June 2007). The Proponent assessed the level of visual sensitivity (how visible a change to the existing landscape would be) and the visual effect of the project (how well the project would blend with the existing visual environment). The visual impact of the project is the combined effect of the visual sensitivity and visual effect, which can be assessed by its combined rating, being either a high, moderate or low overall visual impact. For example, a high visual sensitivity level and a high visual effect zone would give an overall high visual impact.

The wind turbines are to be sited in generally linear groups, with even spacing (approximately 150 metres) between each of the turbines. For the purposes of the assessment, the groups have been divided into three: the northern group; the central group; and the southern group. The northern group of proposed wind turbines is within the Lake George Landscape Character Unit (LCU), which includes the open expanse of Lake George, the Federal Highway and public rest areas (refer to Figures 6 and 7). The existing Capital I Wind Farm is located on the eastern side of Lake George and this LCU. The northern group would consist of ten proposed wind turbines (14 turbines were originally proposed here, however, four have now been removed, as detailed in the Preferred Project Report), located along the north-eastern shore of Lake George.

The central group and southern group of turbines are within the Grose/Governors Hill LCU (refer to Figure 6) and are visible from most aspects within the project area. From the Federal Highway, the Lake George LCU is visible, and the existing Capital I Wind Farm turbines situated on the eastern edge of Lake George can also be seen. This is due to the elevated topography and ridge lines along Lake George. The central group is comprised of 13

proposed wind turbines (17 turbines were originally proposed), arranged in two groups. A lineal arrangement of seven turbines would be sited immediately south of Taylors Creek, running along low-lying topography on the shores of Lake George, in a south-west direction. Three additional turbines would extend from the south of the row in a south-eastern direction, aligning with the existing four Capital I Wind Farm turbines. A smaller group of three turbines would be located adjacent to Western Leg Road and would run in a south-north direction, towards Taylors Creek.

The southern group of proposed turbines is the largest of the groups, consisting of 18 turbines (24 turbines were originally proposed). The group consists of two distinct sub groups, where the larger of the two would include 13 turbines, sited in a linear arrangement, which would extend from the existing Capital I wind turbines sited along the ridge line of Red Hill. Red Hill is one of the several hills within the Groses/Governors Hill LCU, which are the high points of the landscape. The other hills include Governors Hill and Groses Hill. The second sub group would be smaller, consisting of five turbines, and to be sited one kilometre south-east of the larger sub-group.

The proposed wind farm is sited on comparatively low land, compared to the existing Capital I Wind Farm. The existing Capital I Wind Farm turbines are generally located on 750 metres to 935 metres high ridges, while the proposed Capital II Wind Farm turbines would be located on lower lying land, ranging from 680 metres (on the shores of Lake George) and up to 710 metres (on Red Hill).



**Figure 5: Proposed Wind Farm Layout**  
**(Reproduced from the Proponent's Environmental Assessment)**

*Note: the layout has been reduced to 41 turbines, as proposed under the Preferred Project Report, however, the linear turbine arrangement remains the same.*

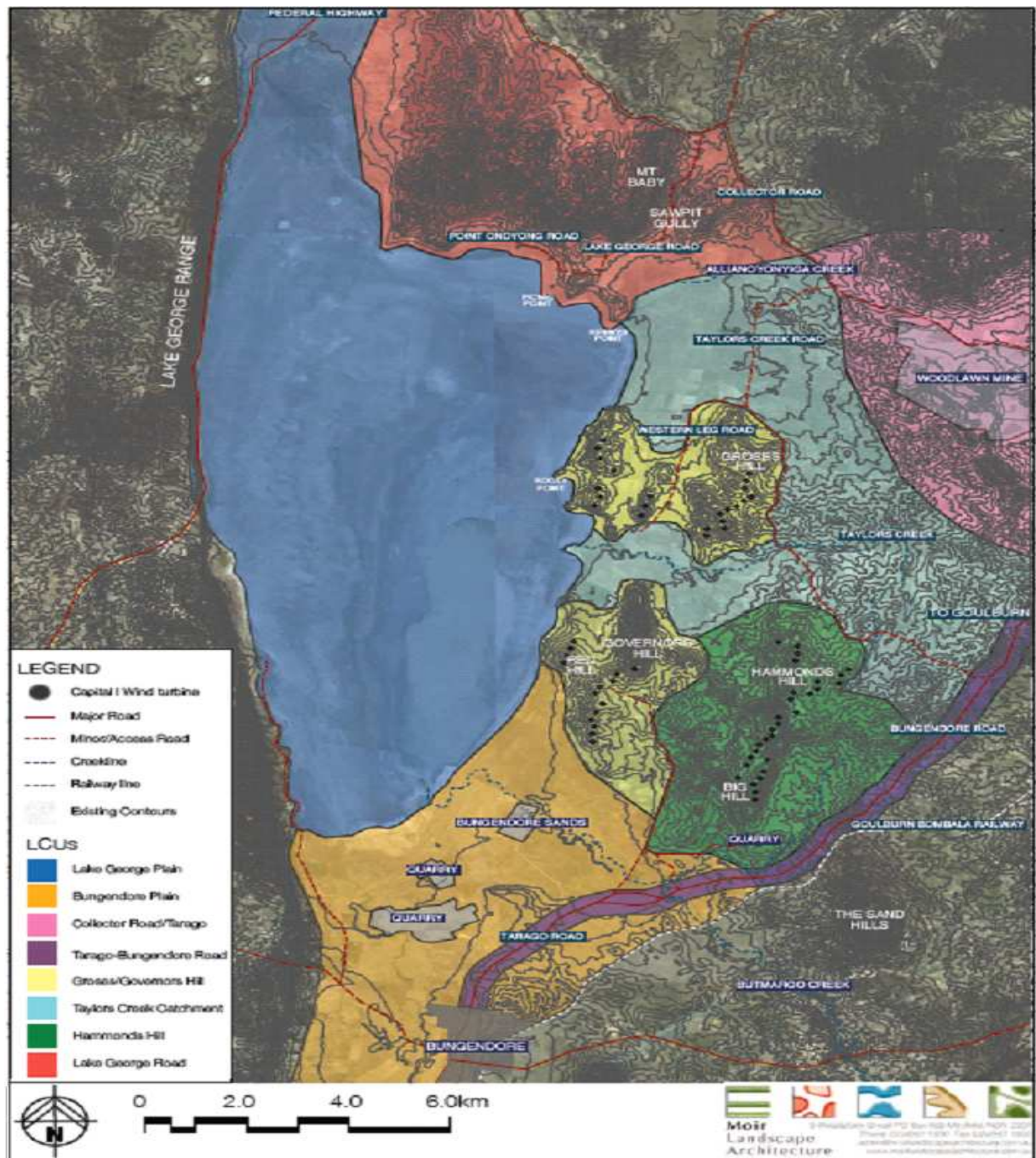
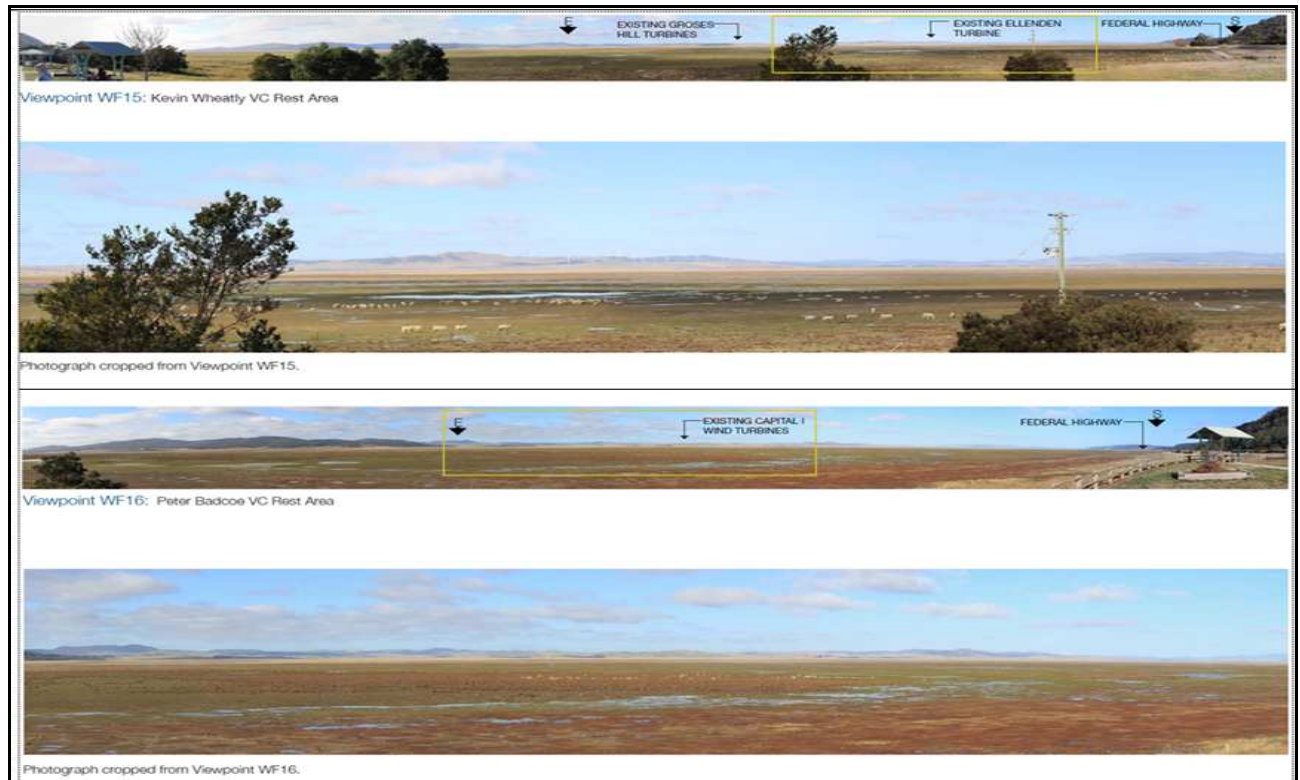


Figure 6: Identified landscape Units and the Federal Highway (Reproduced from the Proponent's Environmental Assessment)



**Figure 7: Viewpoints at the Rest Areas Located on the Federal Highway (Reproduced from the Proponent's Environmental Assessment)**

### *Shadow Flicker*

Shadow flicker is the pulsating shadow created by the moving blades, when the sun is low in the sky. The effect of shadow flicker reduces with distance and is generally not noticed beyond a distance of approximately 500 to 1000 metres from a turbine. Although there are no specific NSW guidelines to assess how shadow flicker is generated by wind turbines, the Department has previously considered the Victorian Policy Guidelines (2003), which adopts the Danish Wind Energy Association standard. This standard is that no dwelling, on a non-associated property, should be subject to more than 30 hours of shadow flicker, in any 12 month period. The distance between the nearest non-associated receiver to the closest proposed wind turbine is approximately 2.5 kilometres (G05). As such, shadow flicker at this receiver would not be noticeable. However, it is not clear from the Proponent's assessment, whether the project would be designed and operated in a manner to ensure the avoidance of such shadow flicker impacts.

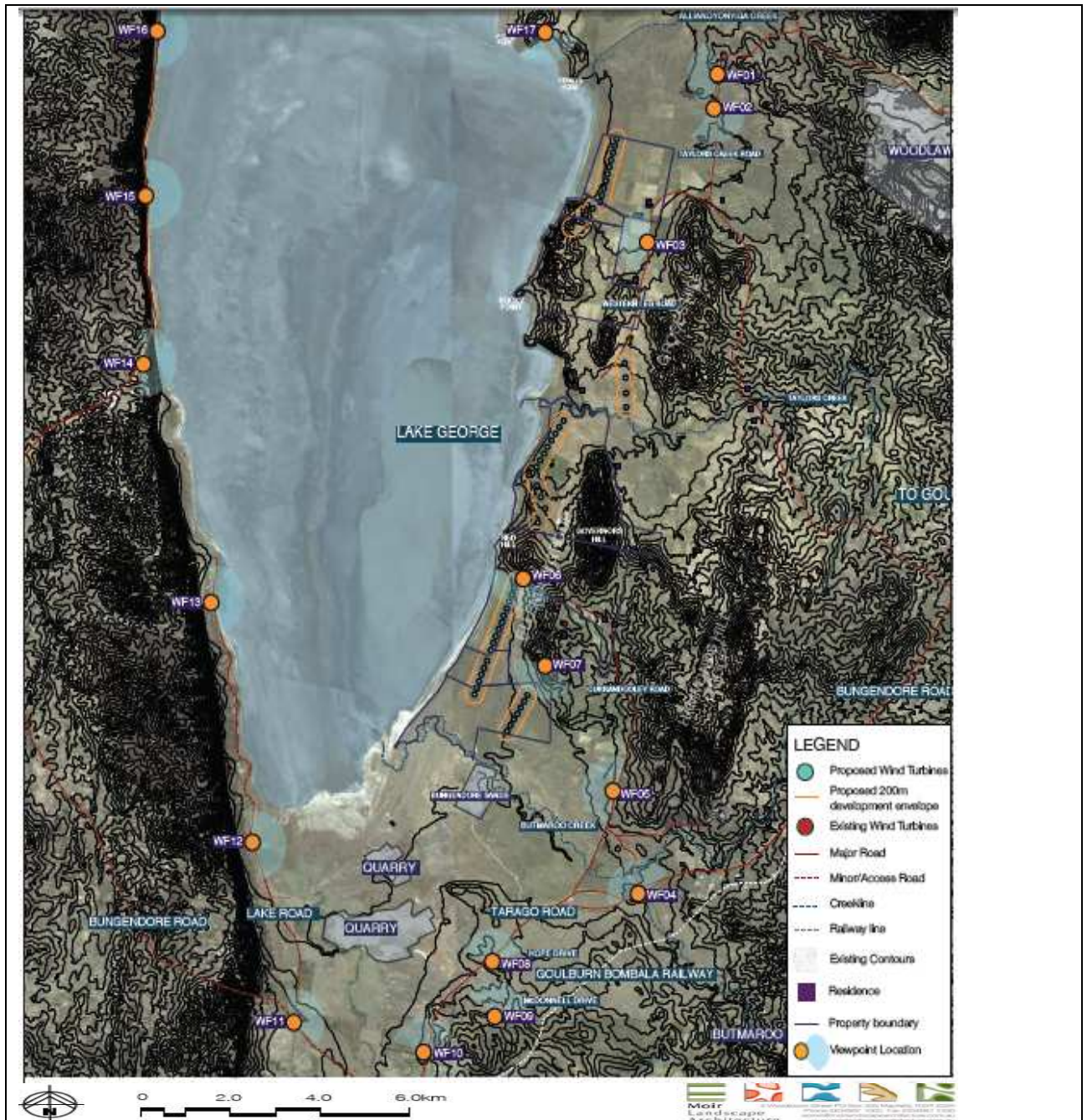
### *Woodlawn Wind Farm and Capital Solar Farm*

Apart from the existing Capital I Wind Farm, the Woodlawn Wind Farm and the Capital Solar Farm have the potential to contribute to the cumulative visual amenity impacts associated with the project (refer to Figure 1). Woodlawn Wind Farm (currently under construction) is located approximately five kilometres to the east of the existing Capital I Wind Farm (and 6.5 kilometres to the east of the proposed wind farm). Also, the approved Capital Solar Farm is to be located approximately four kilometres south-east of the proposed wind farm and 2.5 kilometres south of the existing Capital I Wind Farm.

### **Consideration**

The zone of visual influence (ZVI) identifies the areas of surrounding land from which the proposed wind farm may be partially or completely visible. As the ZVI is determined using topographic data only, rather than height and coverage of vegetation and buildings, the ZVI is considered to be the worst case scenario. The Proponent analysed the potential visual impact from 18 viewpoints, as shown in Figure 8 below. These viewpoints represent the areas from where the project would appear most visually prominent.

The Department considers that five of the 18 viewpoints represent the key viewing points for the purposes of the assessment, due to either the number of people that may have views of the project or the close distances between receivers and the project site. These viewpoints are 1, 2, 3, 5 and 8 and are discussed below.



**Figure 8: Plan of the Viewpoints (Reproduced from the Proponent’s Environmental Assessment)**

Viewpoint 1 (refer to Figure 9) – this viewpoint is located at a high elevation (at 739 metres, while the average elevation of the viewpoints is 715 metres) and the landuse within this area includes a rural access road. However, there are no residences situated within this view. Partial screening of the turbines within this view would be provided by the combination of topography and dense pine vegetation screening. As such, both the visual sensitivity and the visual effect of this viewpoint are considered to be low, resulting in an overall low visual impact.



Viewpoint WF01

**Figure 9: Viewpoint 1, looking SW from Taylors Creek Road. The existing Capital I Wind Turbines are Visible and the Proposed Northern group of Wind Turbines would also be Visible within the existing Viewing Boundary (Reproduced from the Proponent's Environmental Assessment)**

Viewpoint 2 (refer to Figure 10) – motorists on Taylors Creek Road would be able to see the proposed northern group of wind turbines (ten in total). The turbines would be seen as an expansion of the existing Capital I Wind Farm turbines on Grose Hill, continuing from the ridge line and along the shore of Lake George. Both the visual sensitivity and visual effect from this viewpoint are considered to be moderate, resulting in an overall moderate visual impact. However, the Department considers that given there are no permanent stationary viewing receivers (viewers will be motorists), there would not be any significant visual impact at this viewpoint.



**Figure 10: Photomontage - View from Taylors Creek Road - Top Photo is the Existing View (Reproduced from the Proponent's Environmental Assessment)**

Viewpoint 3 (refer to Figure 11) – from this viewpoint, two associated receivers may have partial views of the northern group of proposed turbines. However, the turbines are to be sited on the low lying land, adjacent to the shoreline of Lake George, approximately 1.2 kilometres west of the nearest homestead (associated receiver). Both the visual sensitivity and visual effect are considered to be moderate, resulting in an overall moderate visual impact.



Viewpoint WF03

**Figure 11: Viewpoint 3, from Western Leg Road, near the entry to an existing associated property and looking in a westerly direction towards Lake George. The existing Capital I Wind Turbines are Visible and the Proposed Northern group of Wind Turbines would also be Visible within the existing Viewing Boundary (Reproduced from the Proponent's Environmental Assessment)**

Viewpoint 5 (refer to Figure 12) – this viewpoint is looking west from Currandooley Road, adjacent to a rural landing strip. A group of the existing Capital I Wind Farm turbines are visible in the background. From this viewpoint, the proposed southern extent of the wind turbines would be visible, with a viewing distance at 2.8 kilometres. The visual sensitivity from this viewpoint is considered to be low because those proposed turbines that would be visible from this viewpoint would be in the middle-ground (sub-regional setting) and there would be no direct views of the turbines from residential receiver locations. The visual effect from this viewpoint is considered to be high because the change to the landscape would be

easily recognisable and, unlike the group of the existing Capital I wind turbines, the proposed turbines would not be partially screened by existing vegetation. Therefore, the overall visual impact from this viewpoint is considered to be moderate.



View across landing strip off Currandooley Road, towards Lake George



Photomontage of proposed view of the Capital II Wind Farm from Currandooley Road.

**Figure 12: Photomontage – View from Currandooley Road – Top Photo is the Existing View (Reproduced from the Proponent's Environmental Assessment)**

Viewpoint 8 (refer to Figure 13) – this viewpoint is looking north from the entry to Hope Drive, off Tarago Road. From this viewpoint looking east up Tarago Road, the existing Capital I wind turbines on Hammonds Hill are visible in the background. The southern group of proposed turbines would also be visible. There is an existing exotic pine planting on the perimeter of Tarago Road, which provides a visual buffer for residents on Hope Drive (such as receivers H26 and H27). Direct views to the proposed southern group of turbines would be visible to motorists only, and the central and northern group of turbines would be obstructed by the topography. However, the motorists would not see the entire structure of the southern turbines, rather the top sections of the blades, due to the topography. Therefore, both the visual sensitivity and visual effect from this viewpoint are considered to be low, resulting in an overall low visual impact.



Photograph of existing view towards the Site, from Tarago Road.



Photomontage of proposed view of the Wind Farm from Tarago Road.

**Figure 13: Photomontage - View from Tarago Road - Top Photo is the Existing View (Reproduced from the Proponent's Environmental Assessment)**

Of the 18 viewpoints, only three (viewpoints 2, 3 and 5) are considered to have a moderate visual impact, with all others having a low visual impact. It is to be noted that the entire proposed project area may be seen from vantage points along the Federal Highway, from the western side of Lake George, however, there are large distances (approximately eight to ten kilometres) between the turbines and the viewpoints (refer to Figure 7). As such, the turbines would blend in with the background to a greater degree and, therefore, the visual prominence of the project would be low. Although viewpoints that are located close to the proposed wind turbines, e.g. Taylors Creek Road, would have a large vertical line of sight (rather than large horizontal line of sight), generally a much smaller array of the turbines would be visible at these points, due to obstruction by topography and existing vegetation. This can be seen in the photomontages developed by the Proponent. Figure 10 shows the viewing point from Taylors Creek Road, and it can be seen that a greater number of turbines would be visible as a result of the proposed project (from those previously visible due to the existing Capital I Wind Farm). However, the proposed visible turbines would be partially screened by existing

vegetation and are to be located approximately 2.5 kilometres from the nearest non-associated receiver (G05).

It is noted that the only receivers that would have direct and close views of the proposed turbines are those that are associated with the project. Furthermore, there are 24 non-associated residential receivers that are located within five kilometres of the proposed wind farm. These would have partially screened views of the project and the existing Capital I Wind Farm, due to existing vegetation, including screen planting and wind break planting, and the topography of the landscape. Therefore, the Department considers that vegetation planting around the perimeter of these residences should be implemented to reduce the cumulative visual prominence of the turbines, should the landowners request such screen planting. Accordingly, the Department has recommended that the Proponent be required to, at the request of any owners of residential dwellings or businesses with views of a turbine(s) located within five kilometres of their dwellings, provide and bear the full cost of landscaping treatments to visually screen these dwellings. Such a request can be made within six months from the commencement of operation of the project.

To ensure that the detailed design phase of the project takes into account its low to moderate potential visual impacts, the Department recommends a condition that requires the Proponent to prepare and implement a Design and Landscaping Plan, as part of the Construction Environmental Management Plan (CEMP). The Design and Landscaping Plan is to be included as part of the CEMP, so as to ensure that the project design and landscaping requirements are comprehensively considered, prior to construction taking place. It is also recommended that this Plan include an outline of the additional landscaping measures available for requested landscaping treatments, as stated above.

In addition to the above recommendations, the Department also recommends that the Proponent be required to ensure all residents, business owners or public authorities, whose dwelling, business or public area respectively, may be subject to a moderate visual impact, is consulted regarding impact minimisation measures, and the outcomes of this consultation process are used to inform the required Design and Landscaping Plan. The Department considers that these recommended conditions would ensure that those receivers with potential views of the turbines (including cumulative views) are given adequate opportunities to contribute to the design and landscaping treatments for the project.

The Department considers that the potential visual impacts from the installation of the overhead transmission line and associated infrastructure, including access tracks, would be negligible, subject to the implementation of the Design and Landscaping Plan.

#### *Shadow flicker*

The Department notes that the nearest associated receiver is approximately 960 metres from the nearest proposed wind turbine (G01) and the nearest non-associated receiver is approximately 2.5 kilometres from the nearest proposed wind turbine (G05). Therefore, given these distances, the Department considers that the project's operation would achieve the standard of no more than 30 hours of shadow flicker at non-associated receivers.

#### *Woodlawn Wind Farm and Capital Solar Farm*

The largest combined presence of wind turbines (associated with Capital I, Woodlawn and proposed Capital II wind farms) would likely be visible from dwellings and public areas located between the existing southern group of Capital I wind turbines and the Woodlawn Wind Farm, as they would appear as two separate wind farms (Capital I and II Wind Farm and Woodlawn Wind Farm). However, the proposed Capital II Wind Farm turbines are to be situated predominately on the lower slopes to the west of the ridgelines associated with the southern group of Capital I Wind Farm turbines. Therefore, the visual dominance of the proposed Capital II Wind Farm turbines would be absorbed by the background and the

cumulative impact (with respect to those receivers located between Capital I and Woodlawn wind farms) would be negligible.

The Department also considers that given the existing and proposed Capital I and II wind farms respectively are located on higher-lying land, compared to the approved Capital Solar Farm, and the solar farm is to cover an area of approximately 0.6 square kilometres (whereas the proposed wind farm is to cover an area of approximately 50 square kilometres), there would be no significant cumulative visual impacts as a result of the combined presence of the proposed wind farm and the approved solar farm.

## 5.4. Flora and Fauna – Construction

### Issue

Due to ongoing sheep grazing activities within the project area, the original native woodland which previously existed has mostly been cleared. The land has been pasture improved, seeded with pasture plant species and fertilised. Remnant woodland is largely restricted to small areas on the higher ridges that surround the project area. Natural Temperate Grassland is the one vegetation community to be impacted by the construction of the project. It is a community that comprises few or no trees, in which its dominant species are native grasses. This community is part of the vegetation originally present within the project area, being the listed endangered ecological community known as White Box Yellow Box Blakely's Red Gum Woodland (under the *Threatened Species Conservation Act 1995*) and as part of the Commonwealth listed White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (under the *Environment Protection and Biodiversity Conservation Act 1999*). There is a possibility that the grassland is Natural Temperate Grassland of the Southern Tablelands of NSW and ACT, listed under the *Environment Protection and Biodiversity Conservation Act 1999* but not under the *Threatened Species Conservation Act 1995*.

Approximately 0.94 hectares of Natural Temperate Grassland has been estimated to be directly disturbed by the project's construction. This is due to the disturbance or removal of up to:

- 0.45 hectares as a result of the partial encroachment on vegetation from works associated with proposed turbines E7, E8 and E9;
- 0.37 hectares for the proposed access tracks; and
- 0.12 hectares for the proposed underground transmission line cables.

However, due to future optimisation and micro-siting of each turbine, the Proponent has provided a commitment in its Preferred Project Report, that no greater than two hectares of Natural Temperate Grassland would be impacted by the project. Therefore, removal of up to two hectares of Natural Temperate Grassland would be the worst case scenario. The Proponent has also stated that upon confirming the area of vegetation to be cleared (post detailed design phase and prior to construction), the Proponent would implement conservation measures to mitigate the removal of an area of the Natural Temperate Grassland community. This includes the design and implementation of a biodiversity offset that is reflective of the quality of vegetation to be impacted and offset, at a ratio of 10 to 1. The offset is to include weed control measures, management of grazing regimes and fencing off areas to prevent grazing. The Proponent has further committed to implement these conservation measures in consultation with the Office of Environment and Heritage (former Department of Environment, Climate Change and Water). No trees are to be cleared for construction.

Information from previous studies of the surrounding project area and online database record searches, indicates that the following animals listed as threatened under the *Threatened Species Conservation Act 1995*, may potentially occur around the project area:

- one mammal (the koala);

- 13 bird species (Brown Treecreeper, Hooded Robin, Speckled Warbler, White-fronted Chat, Little Eagle, Flame Robin, Scarlet Robin, Diamond Firetail, Regent Honeyeater, Freckled Duck, Gang-gang Cockatoo, Glossy Black-Cockatoo, and Magpie Goose);
- four reptiles (Little Whip Snake, Striped Legless Lizard, Pink-tailed Worm-lizard, and Grassland Earless Dragon);
- one frog species (Green and Golden Bell Frog); and
- one invertebrate (Golden Sun Moth).

However, the Proponent stated that none of these species have the potential to occur within the project site, apart from seven of the woodland birds and the Golden Sun Moth.

### **Consideration**

The Department has defined Natural Temperate Grassland as native grasslands, derived from previously existing native woodland and forest communities within the project area, and developed as stand-alone grassland communities over time. The Department considers that this definition reflects the changed nature of the native vegetation that is present within the project area (from woodland to currently present grasslands).

The Department notes that the majority of the project area comprises of cleared open paddocks, which are used for grazing purposes. The extent of proposed works within native vegetation areas would be limited, thereby reducing the amount of vegetation and potential fauna habitat to be impacted. The Department also notes that the condition of the vegetation to be cleared is moderate to low, and that the Proponent has committed to develop and implement methods to manage impacts on flora and fauna. Also, the Proponent has stated that no more than two hectares of Natural Temperate Grassland would be impacted by the project. The Department considers that this statement should be reflected in the recommended conditions, so as to ensure that the detailed design stage of the project limits the amount of vegetation to be cleared. Therefore, the Department recommends a condition that restricts the vegetation removal to no more than two hectares of Natural Temperate Grassland.

The Department also considers that the adequate management of construction activities would ensure the avoidance of significant ecological impacts. Therefore, although the Proponent has committed to developing construction management measures, this commitment should be reinforced so as to ensure the measures are developed in consultation with the appropriate public authority and are approved by the Director-General. Therefore, the Department has recommended a condition that requires the Proponent to develop, in consultation with the Office of Environment and Heritage, a Flora and Fauna Management Plan. This Plan is to outline measures to be implemented during construction, to ensure the protection and minimisation of native vegetation (and habitat) loss. The Plan is to be included within the Construction Environmental Management Plan, and would require the approval of the Director-General prior to the commencement of construction works. The Plan is required to include finalised plans that illustrate all terrestrial vegetation communities and those areas to be cleared for construction. Specific methods to manage the potential impacts on flora and fauna species and their habitat (due to the removal of the limited native vegetation present within the project site) are also to be included in the Plan. Importantly, the Plan is to include a procedure for the review of management methods, in an event where such methods are found to be ineffective.

The Department also recommends a condition requiring the Proponent to prepare and implement an appropriate biodiversity offset package, which includes offsetting impacts to the Natural Temperate Grassland ecological community. The Package is to be developed in consultation with the Office of Environment and Heritage. It is also required to be submitted to the Director-General for approval, and approval must be obtained prior to the commencement of any construction works. The recommended package is also to include relevant ongoing ecological monitoring methods so as to ensure that potential impacts to

habitats and threatened species adjacent to the project site are taken into account and avoided during construction.

With regards to specific fauna impacts, the Department considers that construction is unlikely to cause any significant impacts, given the native vegetation within the project site is degraded and no woodland and habitat corridors exist within the site. However, the Department concurs with the Office of the Environment and Heritage, that there is the potential for native fauna to occur within or close to the project site. This is due to the presence of native vegetation and habitat areas surrounding the project site. As such, the Department recommends that the Proponent consider, develop and include specific fauna management measures within the Flora and Fauna Management Plan.

The Department also recommends a condition that requires the Proponent to survey, prior to construction, the finalised construction area, during optimal times, for the detection of fauna, including the Pink-tailed Worm Lizard and the Striped Legless Lizard. Should fauna be detected, the Proponent is to implement management measures identified in the Flora and Fauna Management Plan. These measures are to address any sightings of the threatened fauna predicted to occur within or surrounding the project area, both during the pre-clearance survey and during construction. These measures are directed towards ground dwelling fauna, rather than avifauna and moths, given there are no nesting or roosting sites within the project area and birds and moths would fly through, rather than dwell within, the project site. The Proponent is also required to ensure that construction personnel are made aware of the fauna species that have a potential of occurring within the project site and details of those specific measures that should be implemented to avoid significant ecological impacts.

The Department considers that subject to the implementation of the recommended conditions, the potential ecological impacts as a result of construction of the project would not be significant and are likely to be adequately managed.

## 5.5. Fauna – Operation

### Issue

The rotation of the wind turbines has the potential to injure or kill flying birds and bats, as a result of blade strike or barotrauma (the change in air pressure at the blade tips which can be fatal to bats). The Hooded Robin, White-fronted Chat, Little Eagle, Flame Robin, Scarlet Robin, Diamond Firetail, and the Freckled Duck, which are all listed as Vulnerable under the *Threatened Species Conservation Act 1995*, have the potential to occur within the project area. The Proponent commissioned a field survey of the project area and surroundings in 2010, to identify the presence of particular bat species. The following bat species were recorded by the Proponent: Southern Forest Bat; Southern Freetail Bat; White-striped Freetail Bat; Gould's Wattled Bat; Longeared Bats; Chocolate Wattled Bat; Large Forest Bat; Little Forest Bat; Eastern Broad-nosed Bat; and Eastern Bentwing Bat. The Eastern Bentwing bat is the only recorded species that is listed as threatened (Vulnerable under the *Threatened Species Conservation Act 1995*).

### Consideration

The Hooded Robin is a woodland bird, as it prefers woodland habitat, mainly comprised of acacia and eucalypts plants. No individuals of this animal were observed during the Proponent's 2010 surveys. Therefore, the Department considers that this bird species is unlikely to be present within the project site. The White-fronted Chat occurs in moist areas with low vegetation cover and can occur on the edges of lakes, such as Lake George. Therefore, the Department considers that there is a possibility that the White-fronted Chat does reside within the project area, although it was not observed or heard during the 2010 surveys of the site. The Little Eagle dwells in woodland and open country areas. Therefore, although not observed during the 2010 bird surveys, the Department considers that it may also occur within the project area.

The Flame Robin prefers woodland and forested areas, however it was observed during the 2010 bird surveys. The Scarlet Robin prefers open forested and woodland areas, however is known to visit grassland areas during the winter. Apart from breeding in tall open wet sclerophyll forests, these bird species also breed in woodland areas. The Department therefore considers that it cannot conclude that there is no breeding habitat for the Flame Robin or the Scarlet Robin within and surrounding the project area. The Diamond Firetail, which was observed during the 2010 bird surveys, prefers to dwell in open grassy woodland or grassland with few trees. The Department therefore considers that this species does generally reside within the project area. The Freckled Duck prefers freshwater areas, such as creeks and lakes. The Department therefore considers that this species may occur within Lake George.

The maximum tip height of the wind turbine structure would be 157 metres (tower height of 100 metres and each blade having a length of 57 metres). Data on the heights at which the detected bird species were flying were recorded. The Flame Robin (a pair) and the Diamond Firetail (5 birds) were flying between 0-10 metres, which is below the lower tip of the blade (approximately 50 metres). Although the other bird species that are considered to have a likelihood of occurrence within the project area were not observed during the surveys, their manner in which they feed can indicate general flying heights. The White-fronted Chat and the Scarlet Robin are both insectivorous and feed from, or close to, the ground (sometimes flying down to the ground after perching on tree branches). The Freckled Duck is known to fly low (generally circling around wetlands) and feeds on aquatic flora and small invertebrates. It can be seen that these bird species (based on their general flying and feeding characteristics) would have a low potential of being impacted by the project. Although the Little Eagle is known to fly at great heights and then fly down, in a diving motion, to catch its prey, it was not detected during the Proponent's field surveys. Also, the project site contains no suitable breeding habitat (matures trees in open woodland) for the Little Eagle. As such, impacts on the Little Eagle are considered to be negligible.

Apart from birds, flying bats may also collide with the rotating blades or be affected by the rapid change in air-pressure near moving turbine blades (barotrauma). Barotrauma is where the physical collision with the turbine blade does not occur however, the change in air pressure at the blade tips (low air pressure or sudden decompression), can be fatal to bat species.

Apart from the Eastern Bentwing bat, the other detected bat species have been documented to be of lesser ecological concern in literature and are not threatened. Also, the project site is open pasture with only small native grassland patches. Therefore, the Department considers that any impact on these species would not be significant and able to be managed. There is the potential for groups of Eastern Bentwing Bat to migrate across the project site when they leave their breeding cave at Wee Jasper (located approximately 70 kilometres west of the proposed project site) to wintering caves in the Great Dividing Range or South Coast of the State. The wintering cave is located at Mt Fairy, in the Great Dividing Range (with the project located between Lake George and Mt Fairy). The wintering cave at Mt Fairy is one of numerous caves that the Eastern Bentwing Bat utilises during winter and therefore it is unlikely that the entire breeding colony of the Wee Jasper population would pass through the project site. For example, during the Proponent's 2010 Bat survey, conducted between March and April 2010 (noting that dispersal period of this species is between March and April), a total of 11 definite calls and 12 possible calls were recorded, whereas more calls were recorded for the other potentially occurring species, such as 836 calls from the Southern Forest Bat and 779 calls from the Southern Freetail Bat. This indicates that very few numbers of the Eastern Bentwing Bat would fly through the Project site. However, the operating turbines could pose an obstruction or threat to any such bats (and birds) passing through. Therefore, the Proponent has committed to a Bird and Bat Adaptive Management Program to monitor the project area. The Department notes that the objective of the

committed Bird and Bat Adaptive Management Program is to monitor the project area at the relevant time when birds and bats travel through the wind farm site.

The results from the ongoing monitoring conducted at the Capital I Wind Farm site indicate that the bat carcasses found at that wind farm showed signs of barotrauma. This is because some of the bat carcasses did not have visible injuries and therefore may have suffered from sudden decompression. It is noted that this monitoring is part of an ongoing monitoring and adaptive management program for Capital I Wind Farm and therefore an accurate conclusion regarding the significance of barotrauma effects cannot be made. The measures implemented as part of the adaptive management of the existing wind farm include discouraging bats roosting within surrounding remnant woodland vegetation by improving existing habitat corridors and thereby directing foraging and commuting routes away from the turbine collision zones. It is acknowledged that some level of bat mortality may occur due to the operation of the proposed wind farm. Therefore, the Department has recommended a condition that requires the Proponent to prepare and implement a Bird and Bat Adaptive Management Program, which includes environmental monitoring and response mechanisms.

The Department therefore considers that the risks associated with potential bird and bat impacts to be moderate and manageable, subject to the preparation and implementation of the recommended Bird and Bat Adaptive Management Program. This approach would ensure the implementation of immediate responses to detected issues, so as to avoid significant strike impacts that could affect the ecology and spatial distribution of potentially occurring bird and bat species. The Program would also address the level of uncertainty associated with the results of the Proponent's survey.

The Department's consideration is based on the understanding that the project site is predominantly open pasture land, with no roosting sites present. However, the Bird and Bat Adaptive Management Program would allow for the management of any potential sightings of birds and bats within the project area. The Department notes and concurs with the Office of Environment and Heritage that although Lake George rarely reaches its capacity, due to recent rain events, significant fillings in some parts have occurred (January to March 2011). As such, water birds and raptors have a higher potential for blade strike and, therefore, the Department has recommended that the monitoring requirements of the Bird and Bat Adaptive Management Program take into account natural (and human) changes to the surrounding environment that might influence bird and bat behaviour, such as changes in land use practices and significant changes of water levels of Lake George.

The Department is satisfied that the proposed operation of the wind farm would not have a significant impact on fauna, provided the Proponent implements the measures it has committed to undertake and subject to the recommended Bird and Bat Adaptive Management Program.

## **5.6. Heritage Impacts – Construction**

### **Issue**

The project is located in the south-eastern region of NSW, within the Pejar Local Aboriginal Land Council boundary. Gundungurra Tribal Council Aboriginal Corporation was identified as the Native Title Holder for the project area. Buru Ngunnawal Aboriginal Corporation is also listed as a Native Title Claimant for the region surrounding the project area.

The Proponent's archaeological survey found three site types, being isolated finds, open artefact scatters and Potential Archaeological Deposits (PADs). There were 31 sites of isolated finds, 30 sites of open artefact scatters and two sites were PADs (CWF2-PAD01 and CWF2-PAD02). Therefore, 63 previously unidentified new sites were found. PAD1 is in close proximity to Wrights Creek and has ten associated sites within its boundary. These sites are five isolated finds and five open artefact scatters. PAD2 is in close proximity to Taylors Creek

and has 12 associated sites within its boundary. These sites were comprised of three isolated finds and nine open artefact scatters. Also, 218 artefacts were found, comprising of 158 flakes, 39 cores (sedimentary objects from the earth) and 21 tools.

Also, apart from the survey of the project site, the Proponent searched the NSW DECCW's Aboriginal Heritage Management System register (AHIMS), covering an area of approximately 20 square kilometres, which included the area surrounding the project. A total of 74 Aboriginal objects and places (sites) have been recorded, of which 62 are artefacts and 12 are PADs. Of the 74 recorded sites, two sites fall within the project footprint area, being site 57-2-2007 and 57-5-0060. Site cards for these two sites were previously recorded in 1968 and 1987 respectively.

The Proponent states that the results of the survey have informed the layout of the project, with all infrastructure placements avoiding all identified PAD and surface archaeological sites. The Proponent's assessment recommends that the CEMP should include a final review of the project layout, to ensure the protection of all identified Aboriginal sites. If during the finalisation of design, it is found that impacts would likely occur, then the CEMP is to include requirements for collection of surface material, as well as subsurface investigation requirements of the PAD sites.

### **Consideration**

Although the recorded and observed sites occur throughout the area investigated (within and surrounding the project), they are concentrated in areas along both Wrights Creek and Taylors Creek. It has been noted that several forms of land-use impacts have had an effect on the ability to find the sites and an effect on their condition. These impacting land-use activities include native vegetation clearance for pastoral activities, operation of agricultural activities (such as lucerne crops) and construction of roads. Therefore, the Department considers that the avoidance of any significant impacts on the existing heritage sites is important, so as to ensure the avoidance of any further deterioration of the sites.

Of the finds, only CWF2 PAD 01 and CWF2-PAD02, have a high archaeological potential, with CWF2-S-14 having a medium archaeological potential. All other sites have a low archaeological potential. PAD01 is considered to be of high archaeological potential as several surface sites have been located within its locale. Specifically, camp fire sites and axe heads were previously uncovered during sand mining within the area. PAD02 also represents an area of potential high significance, as it is the location for artefact material, including several tools. This means that there is a higher potential for further material to be present in close proximity to the area. The other observed sites were found to be of low archaeological potential because of their small size, the lower potential of the area in which they were found (based on past land use and condition), and the number and variety of associated artefact types and raw material. With regards to the research potential of the sites, sites CWF2-S05, CWF2-S-06, CWF2-IF-07, CWF2-S-14 and CWF2-IF-20, all have a moderate level of research potential, with CWF2-PAD02 having a high potential.

The Proponent has consulted representatives of Pejar Local Aboriginal Land Council and Buru Ngunnawal Aboriginal Corporation, with regards to the cultural significance of the Aboriginal sites found during the survey. Lake George is considered to be the home of the creator spirit for the Indigenous people and as such the project area and the area surrounding the project is considered to hold significant ancestral connection with Aboriginal people. Therefore, the aim of the consultation process was to ensure the avoidance of impacts on the identified Aboriginal sites.

The Proponent also discussed with representatives of Pejar Local Aboriginal Land Council and Buru Ngunnawal Aboriginal Corporation, the possibility of salvage, through surface collection, of the low archaeological potential sites, should it be determined at the detailed design stage that impacts would occur. The Department notes that upon finalising the

detailed design stage of the project, the Proponent would be in a position to confirm whether or not these sites would be impacted by the project, and therefore require removal. As such, the Department recommends a condition that requires the Proponent to prepare an Indigenous Heritage Management Plan, as part of the CEMP, to outline the final measures that would be implemented, to ensure the avoidance of construction impacts on Indigenous heritage sites and associated objects. The Indigenous Heritage Management Plan is to be developed in consultation with the relevant Aboriginal stakeholders (being Pejar Local Aboriginal Land Council, Buru Ngunnawal Aboriginal Corporation and Gundungurra Tribal Council Aboriginal Corporation) and the Office of Environment and Heritage.

The Department notes that the Proponent has stated that the project's placement would aim to avoid significant impacts to the identified Indigenous sites. Where direct avoidance is not practicable, the Proponent would implement mitigation measures, including the salvage of the sites. The Department has recommended additional conditions that ensure no significant impacts occur on heritage items. The Department has recommended a condition that requires the Proponent to avoid, for the life of the project, any disturbance to the Aboriginal objects CWF2-PAD-01, CWF2-PAD02, CWF2-S-05, CWF2-S-06, CWF2-IF-07, CWF2-S-14 and CWF2-IF-20. This is because these sites may contain further artefacts and have a moderate to high archaeological and research potential. The Department has also recommended a condition that requires the Proponent to consider and implement mitigation strategies for each known and identified Indigenous site within, and immediately surrounding, the project area. This information is required to be prepared in consultation with the Office of the Environment and Heritage and be included in the project's CEMP.

The Department notes that the Proponent's Aboriginal heritage assessment was informed by previous heritage studies conducted for the areas immediately surrounding the project area, including the results of the studies undertaken for Capital I Wind Farm (2005) and Woodlawn Wind Farm (2010). However, as identified by the Office of the Environment and Heritage, more recent archaeological surveys and test excavations in the properties adjacent to the project area have been undertaken, which have not been considered in the Proponent's Environment Assessment. The Department concurs with the Office of the Environment and Heritage that an adequate review of such recent literature and work would further inform the final avoidance and management approach to be implemented for the project. Therefore, the Department recommends a condition that requires the development process of the Indigenous Heritage Management Plan be informed by the recent archaeological surveys and test excavations that were conducted on the properties adjacent to the project site.

The Department is satisfied that the potential impacts on Aboriginal sites have been addressed by the Proponent and subject to the implementation of the Department's recommended conditions, the construction of the project would avoid significant impacts on Aboriginal heritage.

## **5.7. Other Issues**

### **5.7.1. Agricultural Impacts**

#### **Issue**

Agriculture is the main land use in the Southern Tablelands of NSW. The dominant land class of the project area is Class 3 Agricultural Land. Based on this class type, the suitable land use within the project area would be grazing or pasture improvement. The land may be cultivated or cropped in rotation with sown pasture, however, overall crop and pasture production capability would be moderate due to the limiting physical and chemical properties of the soil (differing proportions of mineral particles).

The project is to be spread over approximately 50 square kilometres of predominately cleared agricultural land. However, the Proponent has stated that existing agricultural

activities, such as grazing, would continue to occur during the operation of the project, as areas both between and surrounding the project infrastructure would be available for access by landowners. For example, the existing Capital I Wind Farm site includes the integration of the operating wind farm and existing agricultural activities. The Proponent has stated that a similar approach would be followed during all stages of the project.

### **Consideration**

The Department of Trade and Investment, Regional Infrastructure and Services has advised the Department that it has developed draft guidelines, titled *Infrastructure Proposals on Rural Lands* (draft Rural Lands Guideline) and dated October 2010, for use by consent authorities, with regards to considering the potential impacts on agricultural activities as a result of infrastructure proposals. The draft Rural Lands Guideline recommends the implementation of a range of measures so as to minimise impacts on agricultural resources and enterprises, including the recommendations that landholders be appropriately consulted during the early planning stages of infrastructure projects and that land use conflicts be minimised to allow infrastructure projects to be compatible with ongoing agricultural land use.

The project is to be situated on agricultural land owned by four different landholders. Landholder agreements have been developed between the Proponent and these landholders. The agreements include lease fees and access arrangements which would be a supplementary income source for the life of the project. This means that the landholders would have access to the project site for the purposes of ongoing grazing and pastoral activities.

With regards to aerial application of pesticides and fertilisers, the Department notes that there is no history of such activities being employed at any of the properties on the project site. The Proponent has also consulted with the Aerial Agriculture Association of Australia (AAAA), which represents commercial aerial agriculture operators involved in aerial application activities. The AAAA did not provide any comments on the project. The Department also notes that the reduction and relocation of the proposed wind turbines (from originally proposed 55 wind turbines to currently proposed 41 wind turbines) would further minimise the disturbance to agricultural land. The Proponent has also committed to preparing and implementing a Weed Management Strategy during construction of the project, so as to manage existing weeds and avoid creating additional weed problems.

The Department is satisfied that the Proponent has identified and addressed the key matters relating to agriculture and the project is consistent with the recommendations listed under the draft Rural Lands Guideline. The Department is also satisfied that the project would minimise rural land use conflict and can be constructed and operated in a manner that allows for the co-existence of the proposal and existing agricultural activities.

## **5.7.2. Crown Land Impacts**

### **Issue**

Crown land is located in close proximity to the project site, which comprises two Trigonometric Reserves, Crown roads and Crown waterways. The distances between the nearest proposed wind turbines and the Trigonometric Reserves are between five and eight kilometres. Sections of Lake George, Taylors Creek, Butmaroo Creek and Wrights Creek (all Crown waterways) are located within close proximity of the project site and therefore may be potentially affected by the proposed construction and operational activities.

### **Consideration**

In its submission to the Department, the then Land and Property Management Authority required clarification from the Proponent, on matters relating to the type of impacts (if any) on Crown land. The Proponent's Submissions Report provided clarification on these matters. The Department notes that no proposed works within, or in the vicinity of, Trigonometric

Reserves would be required and the Proponent has committed to avoid disturbing these reserves. With regards to Crown Roads, these would only be crossed by the project, so as to allow the installation of the proposed transmission line and associated infrastructure. During the detailed design stage of the project, an application for a licence to cross Crown Road Reserves would be submitted by the Proponent to the Department of Trade and Investment, Regional Infrastructure and Services (Primary Industries section).

The Department notes that there is an existing crossing of Taylors Creek which may need to be upgraded for the purposes of construction of the project. The Proponent has committed to consult with the Land and Property Management Authority (now the Department of Trade and Investment, Regional Infrastructure and Services), prior to any works on Crown road reserves and waterways. This consultation process is to address the implementation of specific measures required to avoid any adverse impacts on the bed or banks of waterways, on water quality and to ensure no restriction of flows occur.

The Department is satisfied that the issues raised by the then Land and Property Management Authority have been addressed by the Proponent and the project can be designed, constructed and operated in a manner that would avoid any significant impacts on Crown land.

### **5.7.3. Mineral Resources Impacts**

#### **Issue**

The Proponent has previously consulted with the NSW Department of Mineral Resources (now part of the Department of Trade & Investment, Regional Infrastructure & Services) and as a result of this consultation, it has been confirmed that there are no known coal or petroleum resources within or surrounding the project site. Two mineral exploration companies have been issued with exploration licences for exploration activities in close proximity to the project site. However, as a result of the consultation process between the Proponent and the two mineral exploration companies, the proposed placement of the project infrastructure and project layout would avoid any impacts on such exploration activities.

It is noted that the then Department of Industry and Investment indicated that while the turbine layout would not directly affect existing sand extraction operations in the region, it did not support the project in its current form because of the potential impacts of the project on potential sand and gravel resources. This is because it considers that the proposed project location is in an area that has a high potential for significant sand and gravel resources. It therefore has requested that the proposed turbine locations be reviewed, and where possible, relocated, in order to minimise potential resource sterilisation.

#### **Consideration**

The Department notes that the Proponent has consulted with the relevant mineral exploration title holders in the vicinity of the project area and that no concerns have been raised by these companies. The Department also notes that the project would not result in the sterilisation of the entire wind farm site for potential future mineral exploration activities. As stated by the Proponent, exploration activities would still be possible across a majority of the wind farm site. The only limitation to invasive exploration methods would be in close proximity to the placement of project infrastructure, this being the turbines and powerlines, as a result of operational, engineering and safety considerations.

Notwithstanding the above, the Department considers that there is the potential for a discovery of an economic mineral resource in the future. Therefore, the Department considers that during the detailed design stage of the project, the Proponent should consult with the relevant stakeholders, so as to ensure the project does not impede future mineral exploration activities in close proximity to the surface infrastructure, such as turbines. Therefore, the Department has recommended specific requirements that the Proponent must

adhere to, to ensure an effective and substantial consultation process occurs between the Proponent, holders of mineral, mining and exploration titles and the Department of Trade & Investment, Regional Infrastructure & Services (Mineral Resources section). This recommendation would ensure that the Proponent would be aware of, and be able to consider, the views of all those parties that may potentially be affected by the location of the wind farm site and associated infrastructure.

The Department is satisfied that its recommendation discussed above would ensure the project has minimal impact on future exploration of mineral resources, allowing the co-existence of the project and mineral exploration to be achieved. It would also ensure that those affected from the placement of project components would have adequate opportunity to liaise with the Proponent to negotiate the implementation of measures that will maximise mineral exploration potential and minimise sterilisation and access constraints.

With regards to potential impacts on sand and gravel resources, the Department notes that although the project site is spread over a large area (total site area being 50 square kilometres), the actual area on which the proposed infrastructure is to be situated would be significantly less than this. This means that future sand and gravel extraction operations would still be able to occur on the project site once the project is decommissioned. The Department also notes that the reduction and relocation of the proposed wind turbines (from originally proposed 55 wind turbines to currently proposed 41 wind turbines), including the proposed even spacing (approximately 150 metres) between each of the turbines, would further minimise potential constraints on future extraction operations of these resources.

#### **5.7.4. Community Benefit and Contributions**

##### **Issue**

Palerang Council has stated to the Department that the project would involve the removal of land that would otherwise be used for agricultural production and such removal of land would result in localised social and economic impacts. Therefore, Council has stated that the project should include a financial contribution that is to be used for the upgrade of local community facilities. It is noted that the Proponent has agreed to a once only contribution of a fixed amount per wind tower installed, although this amount cannot be disclosed as the Proponent considers it to be "commercial-in-confidence". In relation to the amount discussed with the Proponent, Council requests that the requirement for a contribution towards community facilities be imposed as a condition by the Department or achieved via a planning agreement. Council has also stated to the Department that Council's General Manager has been given delegated authority to negotiate an agreed contribution, should a planning agreement be deemed appropriate.

##### **Consideration**

The Department notes that landowners on which the project is to be located would benefit through income from leases of their land by the Proponent. Also, the project has the potential to provide direct economic benefits to the State and locally through direct investment, employment generation and multiplier effects at all stages of project development, including construction and operation (e.g. benefits to the local service industry through patronage from construction and operation personnel). Also, the proposal would create 100 full-time construction jobs which may be locally sourced. With regards to operation, the proposal would only employ five people. Therefore, it is unlikely that a burden on local services or facilities would be created, given the short term nature of construction (eight months), noting that many of the construction staff could be locally sourced, and due to the limited number of operational staff required.

Additionally, any damage of the local roads that are to be used by construction traffic would be restored by the Proponent. The Department has recommended a condition that requires the Proponent to, upon finalising the haulage route(s) for the construction, commission a

qualified person to undertake a Road Dilapidation Report of all roads and streets from and around Bungendore, Tarago and Goulburn, to the site proposed to be used for construction activities in consultation with relevant road authorities. The purpose of this Report is to assess the current condition of the relevant roads and streets and to allow a subsequent Road Dilapidation Report to be prepared to assess any damage that may have resulted due to traffic and transport related to the construction of the project. Should it be found that any damage is attributable to construction traffic, then the cost of any restorative work that is described in the subsequent Report or recommended by the relevant road authorities after review of that subsequent Report, shall be funded by the Proponent. The Department considers that this recommended condition adequately addresses any potential shortfalls in the community funding that is being offered by the Proponent, with regards to restoring roads impacted by the construction of the project.

The Department therefore considers that subject to the implementation of the above recommended condition, the project's construction and operation would not result in any significant residual impacts. Therefore, any community contribution agreement is a matter between the Proponent and Council. Notwithstanding this, the Department notes that the Proponent has made a community contribution offer to the Council. The Department is satisfied that an adequate consultation process is currently in place between both parties, so as to allow a determination on the contribution. However, to ensure that the community contribution agreement is appropriately developed and executed for the benefit of the local community, the Department recommends a condition on this matter. It is recommended that the Proponent be required to ensure that any voluntary arrangement it enters into with Council, in relation to the provision of a monetary contribution or other material public benefit, is the subject of a Planning Agreement within the meaning of section 93F of the *Environmental Planning and Assessment Act 1979*.

The Department is satisfied that the proposal would address and mitigate any construction and operational impacts on the local community resources. Also, with regards to potential impacts on agricultural production, the Department considers that the project is likely to have a minimal impact on this activity and the project would allow for the co-existence of the proposal and existing agricultural activities (refer to section 5.7.1).

### **5.7.5. Health Impacts**

#### **Issue**

No specific health concerns have been raised in relation to this proposal. However, a number of concerns have been raised about potential health impacts from wind farms in the broader community.

#### **Consideration**

The Department notes that the National Health and Medical Research Council has recently issued a statement on this matter. It has stated "there are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines".

The Department notes that this proposed wind farm is consistent with the South Australian EPA Guideline 'Environmental Noise Guidelines: Wind Farms' (February 2003) and with the planning requirements identified in the Director-General's Requirements for the proposal. Accordingly, it is considered that the proposed wind farm would not give rise to any adverse human health impacts.

## 6. RECOMMENDATION

The Department considers that the Capital II Wind Farm is in the public interest, as it would help meet the predicted electricity demand shortfall through the production of renewable electricity. The project is also consistent with the NSW State Plan and Federal Government targets for reducing greenhouse gas emissions of at least 5 per cent below 2000 levels.

The key environmental impacts associated with the proposal relate to cumulative noise impacts, ecological impacts, visual impacts and Indigenous heritage impacts. The Department has assessed the Proponent's Environmental Assessment, Submissions Report and Preferred Project Report and Statement of Commitments, as well as the submissions received from authorities on the proposal. The Department is satisfied that the Proponent has proposed adequate construction and operational environmental management measures. The Department also notes that the Proponent has reduced the construction footprint, so as to ensure the avoidance of significant ecological and Indigenous heritage impacts during construction. Therefore, the Department considers that provided the Proponent implements all its nominated environmental commitments, its recommended impact avoidance and management measures contained in the EA and the Department's recommended conditions, the impacts associated with the construction and operation of the project can be minimised and managed to acceptable levels.

To ensure the avoidance of significant impacts and the adequate management of residual impacts, both during construction and operation, the Department has recommended specific conditions that are required to be implemented during the different stages of the project (prior to construction, during construction, prior to and during operation and decommissioning). The key recommended conditions include specific requirements to limit hours of construction to acceptable times and a requirement to prepare a revised operational noise assessment, so as to ascertain the predicted noise levels. The Proponent is also required to minimise the clearance of the Natural Temperate Grassland community, and where removal is necessary, it is to be appropriately offset. The Proponent is also required to implement a Bird and Bat Adaptive Management Program, to ensure the management of potential impacts on fauna during operation of the project. Furthermore, provisions for landscaping treatments and landscaping buffers between residential receivers and the project infrastructure have been recommended.

The Department therefore recommends that the Planning Assessment Commission consider the findings and recommendations of this report and determine to approve the project, subject to the recommended conditions.

  
4/10/11  
A/Director  
Infrastructure Projects

  
12.10.11  
Deputy Director-General  
Development Assessment & Systems Performance

  
19/10/11  
A/Director-General

## **APPENDIX A ENVIRONMENTAL ASSESSMENT**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=3965](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3965)

## **APPENDIX B SUBMISSIONS**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=3965](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3965)

## **APPENDIX C    PROPONENT'S RESPONSE TO SUBMISSIONS**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=3965](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3965)

## **APPENDIX D POLITICAL DONATION DISCLOSURES**

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See the Department's website at

[http://majorprojects.planning.nsw.gov.au/index.pl?action=view\\_job&job\\_id=3965](http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=3965)

**APPENDIX E RECOMMENDED CONDITIONS OF APPROVAL**

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# Project Approval

## Section 75J of the *Environmental Planning & Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure under delegation from the Minister enforced from 1<sup>st</sup> October, 2011, the Planning Assessment Commission of New South Wales (**the Commission**) approves the project application referred to in Schedule 1, subject to the conditions specified in Schedule 2.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

**Member of the Commission**

**Member of the Commission**

**Member of the Commission**

Sydney

2011

File No: 10/09150

### SCHEDULE 1

**Application No.:**

MP 10\_0135

**Proponent:**

Capital Wind Farm 2 Pty Ltd

**Approval Authority:**

Minister for Planning

**Land:**

Lots 72, 79, 80 of DP 754919, Lot 300 of DP 1137335, Lot 7 of DP 227420, Lot 16 of DP 535180, Lot B of DP 320961, Lot 18 of DP 535179, Lots 1 and 2 of DP 1140319, Lot 1 of DP 237079 and Lot E of DP 38379.

**Project:**

Capital Wind Farm 2, including:

- 41 wind turbine generators with a generating capacity of approximately up to 100 megawatts, kiosk transformers and access tracks;
- up to three meteorological monitoring masts;
- up to 10 kilometre section of internal overhead transmission line. The Project would utilise the existing Capital Wind Farm 330 kilovolt grid connection and substation infrastructure; and
- associated temporary and ancillary works.

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## DEFINITIONS

<b>Act, the CEMP</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>Conditions of Approval Construction</b>	Construction Environmental Management Plan The Minister's conditions of approval for the project. All pre-operation activities associated with the project <b>other than</b> survey, acquisitions, fencing, investigative drilling or excavation, building/road dilapidation surveys or other activities determined by the Environmental Representative to have minimal environmental impact such as minor access roads, commissioning activities, minor adjustments to services / utilities, establishing temporary construction sites, or minor clearing (except where threatened species, populations or ecological communities would be affected).
<b>Council</b>	Palerang Council
<b>OEH</b>	Office of Environment and Heritage
<b>Department, the</b>	Department of Planning and Infrastructure
<b>Director-General, the</b>	Director-General of the Department of Planning and Infrastructure (or delegate).
<b>Director-General's approval or the agreement or satisfaction of the Director-General</b>	A written approval from the Director-General (or delegate).
<b>Dust</b>	Any solid material that may become suspended in air or deposited
<b>EA</b>	<i>Environmental Assessment Capital II Wind Farm Bungendore</i> (Monteath & Powys Pty Limited, December 2010).
<b>EPA</b>	Environment Protection Authority, as part of OEH
<b>Minister, the</b>	Minister for Planning and Infrastructure
<b>Natural Temperate Grassland</b>	Native Grasslands, derived from previously existing native woodland and forest communities within the project area, and developed as stand-alone grassland communities over time.
<b>NOW</b>	NSW Office of Water
<b>Operation</b>	Any activity which results in the production of electricity for contribution to the electricity grid, but does not include commissioning.
<b>Reasonable and feasible</b>	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. <b>Feasible</b> relates to engineering considerations and what is practical to build. <b>Reasonable</b> relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
<b>Registered Aboriginal Stakeholders</b>	Aboriginal stakeholders identified as registered stakeholders in the Environmental Assessment, including the Buru Ngunnawal Aboriginal Corporation, Pejar Local Aboriginal Land Council and Gundungurra Tribal Council Aboriginal Corporation.
<b>Residence/receiver not associated with the project</b>	No landowner agreement between the Proponent and landowner has been formed, that takes into account the cumulative impacts of Capital Wind Farm, Capital Wind Farm 2 and Woodlawn Wind Farm, as outlined in the email of 20 May 2011, referred to under condition A1 (d) of this Approval.
<b>RFS</b>	NSW Rural Fire Service
<b>RTA</b>	NSW Roads and Traffic Authority
<b>Sensitive Receiver Site</b>	Any non associated residential dwelling or non associated receptor Land to which Major Projects Application MP10_0135 applies.
<b>Submissions Report</b>	<i>Submissions Response Report Capital II Wind Farm</i> (Infigen Energy, April 2011).
<b>Surveyor General</b>	Of New South Wales.
<b>TIRIS</b>	Department of Trade and Investment, Regional Infrastructure and Services

**SCHEDULE 2**  
**PART A - ADMINISTRATIVE CONDITIONS**

**Terms of Approval**

- A1. The Proponent shall carry out the project generally in accordance with the:
- (a) Major Project Application 10\_0135;
  - (b) *Environmental Assessment Capital II Wind Farm Bungendore* (Monteath & Powys Pty Limited, December 2010);
  - (c) *Submissions Response Report Capital II Wind Farm* (Infigen Energy, April 2011);
  - (d) Email correspondence from Infigen Energy to the Department, dated 5, 9, 12, 17 and 20 May 2011; and
  - (e) conditions of this approval.

*Note: The document listed under Part A, condition A1 (c) of this approval includes the Preferred Project Report for the project.*

- A2. In the event of an inconsistency between:
- (a) the conditions of this approval and any document listed from condition A1(a) to A1 (d) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and
  - (b) any document listed from condition A1(a) to A1 (d) inclusive, and any other document listed from condition A1(a) to A1 (d) inclusive, the most recent document shall prevail to the extent of the inconsistency.
- A3. The Proponent shall comply with any reasonable requirement(s) of the Director-General arising from the Department's assessment of:
- (a) any reports, plans or correspondence that are submitted in accordance with this approval; and
  - (b) the implementation of any actions or measures contained in these reports, plans or correspondence.

**Limits of Approval**

- A4. This project approval shall lapse five years after the date on which it is granted, unless works subject of this approval have commenced before that time.
- A5. The project shall not exceed 41 wind turbines.

**Statutory Requirements**

- A6. The Proponent shall ensure that all licences, permits and approvals are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation of the Proponent to obtain, renew or comply with such licences, permits or approvals. The Proponent shall ensure that a copy of this approval and all relevant environmental approvals are available on the site at all times during the project.
- A7. For the purposes of section 75S(2)(b) of the Act, the *relevant provisions*, as defined in section 75S(1A) of the Act, apply to this approval.

**Compliance**

- A8. The Proponent shall ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.
- A9. The Proponent shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.

A10. In the event of a dispute between the Proponent and a public authority, in relation to an applicable requirement in this approval or relevant matter relating to the project, either party may refer the matter to the Director-General for resolution. The Director-General's determination of any such dispute shall be final and binding on the parties.

**Decommissioning**

A11. Prior to the commencement of construction, the Proponent shall provide written evidence to the satisfaction of the Director-General, that the lease agreements with the site landowners have adequate provisions to require that decommissioning occurs in accordance with this approval.

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## PART B – GENERAL CONDITIONS

### Visual Amenity

- B1. The Proponent shall, at the request of any owners of residential dwellings or businesses with views of a turbine(s) located within five kilometres of their dwellings, provide and bear the full cost of reasonable landscaping treatments to visually screen these dwellings. Such a request may be made in writing by the owner of the dwelling or business within 6 months from the commencement of operation of the project, and landscaping treatments agreed between the parties must be implemented and completed within 12 months of such an agreement. Should the parties not be able to reach agreement on the scope of landscaping treatments, then either party may refer the matter to the Director-General for resolution. The Director-General's decision on such a referral shall be final and binding on the parties.
- B2. The Proponent must ensure all residents, business owners or public authority, whose dwelling, business or public area respectively, may be subject to moderate to high visual impact, as defined in the EA, are consulted regarding impact minimisation measures and the outcomes of this consultation process are used to inform the Design and Landscaping Plan, required under condition C16 d).

### Turbine and Associated Infrastructure External Design

- B3. The turbines shall be painted matt off-white/grey. The blades shall be finished with a surface treatment that minimises any potential for glare or reflection.
- B4. No advertising, signs or logos shall be mounted on the turbines, except where required for safety purposes.
- B5. The Proponent shall maximise the use of building materials and treatments for associated infrastructure which visually complement the surrounding environment.

### Lighting

- B6. No external lighting other than low intensity security night lighting of infrastructure associated with the project, including wind turbines is permitted; unless otherwise agreed or directed by the Director-General.

### Shadow Flicker

- B7. Shadow flicker from the project must not exceed 30 hours/annum at any residence not associated with the project. Verification of the ability to achieve this shall be provided to the Director-General, as detailed under condition C14 k).

### Indigenous Heritage

- B8. Disturbance to the Aboriginal objects CWF2-PAD01, CWF2-PAD02, CWF2-S-05, CWF2-S-06, CWF2-1F-07, CWF2-S-14 and CWF2-1F-20 must be avoided for the life of the project.
- B9. Mitigation strategies must be considered and implemented for each of the 63 listed Indigenous sites that are subject to mitigated impacts, identified in Tables 8.1 and 8.2 of the *Final Aboriginal Archaeological & Culture Heritage Assessment Report*, contained in the document referred to under condition A1 (c). This information must be detailed in the CEMP and be prepared in consultation with OEH.

### Traffic and Transport Management

- B10. Upon determining the haulage route(s) for construction, the Proponent shall commission a qualified person to undertake a **Road Dilapidation Report** of all roads from and around Bungendore, Tarago and Goulburn, to the site proposed to be used for construction activities in consultation with relevant road authorities. The Report shall assess the current condition of the relevant roads, in consultation with the RTA, the Primary Industries Division of TIRIS and Council, and identify any upgrade

requirements to accommodate project traffic for the duration of construction (including culvert, bridge and drainage design; intersection treatments; vehicle turning requirements; and site access) considering final traffic volumes. The road dilapidation report shall be submitted to the Director-General prior to the commencement of construction clearly identifying recommendations made by the Council and the RTA and how these have been addressed. The Proponent shall ensure that all upgrade measures identified in the report are implemented to the satisfaction of the RTA, the Primary Industries Division of TIRIS and Council, prior to the commencement of construction. Following completion of construction, a subsequent Road Dilapidation Report shall be prepared to assess any damage that may have resulted due to traffic and transport related to the construction of the project.

- B11. The Proponent must restore the relevant roads to a state, at least equal to that described in the **original Road Dilapidation** report, where the dilapidation is attributable to construction traffic, aside from that resulting from normal wear and tear. The cost of any restorative work described in the subsequent Report or recommended by the relevant road authorities after review of the subsequent Report, shall be funded by the Proponent. Such work shall be undertaken at a time as agreed upon between the Proponent and the relevant road authorities. In the event of a dispute between the parties with respect to the extent of restorative work that may be required under this condition, any party may refer the matter to the Director-General for resolution. The Director-General's determination of any such dispute shall be final and binding on the parties.

#### **Trigonometric Reserves**

- B12. Disturbance to Trigonometric Reserves shall be avoided during the life of the project, unless otherwise approved by the Surveyor General and the relevant licence under the *Crown Lands Act 1989* is obtained by the Proponent.

#### **Crown Waterways and Track Crossings**

- B13. The Proponent shall consult with the Primary Industries Division of TIRIS, in relation to any proposed infrastructure or works on and around the bed and banks of Crown waterways. Prior to the carrying out of such works, the Proponent shall obtain the relevant approval of TIRIS.
- B14. The design and construction of any new or upgraded access track crossings of Taylors Creek or Butmaroo Creek shall be undertaken in accordance with *Policy and Guidelines for Fish Friendly Waterway Crossings* (NSW Department of Primary Industries, 2004) and *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (NSW Fisheries, 2004).

#### **Mineral Resources**

- B15. Prior to the commencement of relevant construction works, the Proponent shall consult with the Department of Trade & Investment, Regional Infrastructure & Services (Mineral Resources section) and holders of mineral, mining and exploration titles or tenements, with respect to measures to be applied during construction and operation of the project so as to minimise the potential for any sterilisation of resources on the tenement.

#### **Hazards and Risks**

##### **Bushfire Risk**

- B16. The Proponent shall ensure that all project components on site are designed, constructed and operated to minimise ignition risks, provide for asset protection consistent with relevant RFS design guidelines (*Planning for Bushfire Protection*, 2006 and *Standards for Asset Protection*, Undated) and provide for necessary emergency management including appropriate fire-fighting equipment and water supplies on site to respond to a bush fire.

- B17. Throughout the operational life of the project, the Proponent shall regularly consult with the local RFS to ensure its familiarity with the project, including the construction timetable and the final location of all infrastructure on the site. The Proponent shall comply with any reasonable request of the local RFS to reduce the risk of bushfire and to enable fast access in emergencies.

#### **Bunding and Spill Management**

- B18. The Proponent shall store and handle all dangerous goods (as defined by the Australian Dangerous Goods Code) and combustible liquids, strictly in accordance with:
- (a) all relevant Australian Standards;
  - (b) a minimum bund volume requirement of 110% of the volume of the largest single stored volume within the bund; and
  - (c) the EPA's Environment Protection Manual Technical Bulletin *Bunding and Spill Management*.

In the event of an inconsistency between requirements listed from a) to c) above, the most stringent requirement shall prevail to the extent of the inconsistency.

#### **Aviation Obstacles and Hazards**

- B19. Prior to the commencement of construction, the Proponent shall consult with:
- (a) aerodrome operators that have an aerodrome located within 30 kilometres of the boundaries of the site, to determine any impact on Obstacle Limitation Surfaces at such aerodromes;
  - (b) AirServices Australia, to determine potential impacts on instrument approach procedures at aerodromes, navigational aids, communications and surveillance facilities; and
  - (c) Aerial Agriculture Association Australia, to determine potential hazards to aerial application and related operations.

Mitigation measures for each of the potential impacts and hazards identified in condition B19 (a) to (c) above, shall be determined in consultation with the respective groups identified in this condition, prior to the commencement of construction.

- B20. Prior to the commencement of construction and operation, the Proponent shall provide the following information to the Civil Aviation Safety Authority, Airservices Australia, Royal Australian Air Force - Aeronautical Information Services, as well as all known users of privately owned local airfields:
- (a) "as constructed" coordinates in latitude and longitude of each wind turbine generator;
  - (b) final height of each wind turbine generator in Australian Height Datum; and
  - (c) ground level at the base of each wind turbine generator in Australian Height Datum.

#### **Safety Management System**

- B21. At least two months prior to the commencement of commissioning, the Proponent shall prepare a report outlining a comprehensive **Safety Management System**, covering all on-site systems relevant to ensuring the safe operation of the project. The report shall clearly specify all safety related procedures, responsibilities and policies, along with details of mechanisms for ensuring adherence to the procedures. Records shall be kept at the site and shall be available for inspection by the Department upon request. The Safety Management System shall be developed in accordance with the Department's *Hazardous Industry Planning Advisory Paper No. 9, 'Safety Management'*, and should include:
- (a) procedures and programs for the maintenance and testing of the safety related equipment to ensure its integrity over the life of the project; and
  - (b) an outline of a documented procedure for the management of change.

#### **Electromagnetic Interference**

##### ***Television and Radio Interference***

- B22. Prior to the commencement of commissioning of the project, the Proponent shall undertake an assessment of the existing quality of the television/radio transmission

available at a representative sample of residential dwellings located within 5 kilometres of any wind turbine.

- B23. In the event of a complaint regarding television/radio transmission during the operation of the project, from a receptor located within 5 kilometres of a wind turbine, the Proponent shall investigate the quality of transmission at the receptor compared to the pre-commissioning situation and where any transmission problems can be reasonably attributable to the project, rectify the problems within three months of the receipt of the complaint, through the implementation of such measures as:
- (a) modification to or replacement of receiving antenna;
  - (b) installation and maintenance of a parasitic antenna system;
  - (c) provision of a land line between the affected receptor and an antenna located in an area of favourable reception; or
  - (d) other feasible measures.

If interference cannot be overcome by the measures outlined in a) to d), the Proponent shall negotiate with the impacted landowner about installing and maintaining a satellite receiving antenna. The Proponent shall be responsible for all costs associated with the mitigation measures.

#### **Radio Communication**

- B24. In the event that any issue with radio communication service links (installed before construction of the project) arise as a result of the project (such as obstruction of transmission paths), the Proponent shall consult with the operator and undertake appropriate remedial measures to rectify any issue. Such measures may include:
- (a) modification to or relocation of the existing antennae;
  - (b) installation of a directional antennae; and/ or
  - (c) installation of an amplifier to boost the signal strength.

#### **Operational Noise Design Standards – Overhead Transmission Line**

- B25. The Proponent shall ensure that any overhead transmission line associated with the project is designed, constructed and operated to minimise the generation of corona and aeolian noise as far as reasonable and feasible, at the nearest existing sensitive receivers.

#### **Dust Generation**

- B26. The Proponent shall construct and operate the project in a manner that minimises dust generation from the site, including wind-blown and traffic generated dust as far as practicable. All project related activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should visible dust emissions attributable to the project occur during construction, operation and decommissioning, the Proponent shall identify and implement all practicable dust mitigation measures, including cessation of relevant works, as appropriate, such that emission of visible dust cease.

#### **Water Quality Impacts**

- B27. Except as may be expressly provided by an Environment Protection Licence for the project, the Proponent shall comply with section 120 of the *Protection of the Environment Operations Act 1997*, which prohibits the pollution of waters.

#### **Community Contributions**

- B28. The Proponent must ensure that any voluntary arrangement it enters into with Palerang Council, in relation to the provision of a monetary contribution or other material public benefit, which is to be applied to a public purpose, is the subject of a Planning Agreement within the meaning of section 93F of the Act. Upon execution of the Planning Agreement, the Proponent shall inform the Director-General on the outcomes of such an agreement.

### **Waste Generation and Management**

- B29. The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.
- B30. The Proponent shall maximise the reuse and/or recycling of waste materials generated on site, to minimise the need for treatment or disposal of those materials outside the site.
- B31. The Proponent shall ensure that all liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with *Waste Classification Guidelines (DECC, 2008)* or any future guideline that may supersede that document and where removed from the site is only directed to a waste management facility lawfully permitted to accept those materials.
- B32. The Proponent shall ensure that no green waste is burnt on site during the life of the project.
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## PART C – PRIOR TO CONSTRUCTION

### FLORA AND FAUNA IMPACTS

#### Native Flora and Fauna Impacts

- C1. The clearing of all native vegetation is to be limited to the minimal extent practicably required and no more than two hectares of Natural Temperate Grassland is to be cleared. Details regarding the procedures for clearing vegetation and minimising the extent of clearing shall be clearly included in the Flora and Fauna Management Plan contained in condition C16 (b).
- C2. Prior to the commencement of construction, the Proponent shall, in consultation with OEH, further survey the site to determine the presence of the Pink-tailed Worm Lizard, the Striped Legless Lizard and the Little Whip Snake. The survey(s) shall be conducted during optimal conditions for the species.

#### Biodiversity Offset Package

- C3. For any clearing of Natural Temperate Grassland (refer to condition C1), the Proponent shall develop and submit for the approval of the Director-General, a **Biodiversity Offset Package** (the Package). The Package shall be developed in consultation with OEH. The Package shall:
- a) identify the objectives and outcomes to be met by the Biodiversity Offset Package;
  - b) consider the biodiversity management measures or activities identified in the documents set out in condition A1 or elsewhere in these Conditions of Approval, including:
    - i. relevant construction measures to reduce flora and fauna impacts; and
    - ii. any ongoing biodiversity or threatened species monitoring requirements.
  - c) provide details of available compensatory habitat in the region to offset the loss of native grasslands and habitat for threatened fauna species, in perpetuity, as a result of the project. Where possible, this should include purchase of land, development of agreements with identified land management authorities (e.g. OEH and local council) for long term management and funding of offsets and mitigation measures, and installation of identified mitigation measures;
  - d) describe the methodology used to develop the Package, including the decision-making framework used in selecting the priority ranking of compensatory habitat options available in the region;
  - e) include an offset for direct and indirect impacts of the proposal which maintains or improves biodiversity values;
  - f) describe the size and quality of the habitat/vegetation communities identified in point e);
  - g) detail the final suite of biodiversity offset measures selected in accordance with the Package; and
  - h) include a program (timeline) to achieve the implementation of the final suite of measures.

Unless otherwise agreed by the Director-General, the Biodiversity Offset Package shall be submitted to the Director-General for approval, and approval obtained, prior to the commencement of any construction works.

#### Bird and Bat Monitoring

- C4. Prior to the commencement of construction, the Proponent must prepare and submit for the approval of the Director-General a **Bird and Bat Adaptive Management Program**, which takes account of bird/ bat monitoring methods identified in the current editions of AusWEA Best Practice Guidelines for the Implementation of Wind Energy Projects in Australia and Wind Farm and Birds: Interim Standards for Risk Assessment, and any cumulative impacts with the existing Capital Wind Farm. The

Program shall be implemented by a suitably qualified expert, approved by the Director-General. The Program shall incorporate **Monitoring and a Decision Matrix** that clearly sets out the objectives of the Program and how the Proponent will respond to the outcomes of monitoring. It must:

- (a) incorporate an ongoing role for the suitably qualified expert;
- (b) set out monitoring requirements in order to assess the impact of the project on bird and bat populations, including details on survey locations, parameters to be measured, frequency of surveys and analyses and reporting. The monitoring program must be capable of detecting any changes to the population of birds and/ or bats that can reasonably be attributed to the operation of the project, that is, data may be required to be collected prior to the commencement of construction (for example, when water in Lake George reaches its eastern edge). The requirements must also account for natural and human changes to the surrounding environment, including the existing Capital Wind Farm, that might influence bird and/ or bat behaviour such as changes in land use practices, and significant changes in water levels in nearby water bodies;
- (c) incorporate a decision making framework that sets out specific actions and when they may be required to be implemented to reduce any impacts on bird and bat populations that have been identified as a result of the monitoring;
- (d) identify 'at risk' bird and bat groups such as the White-fronted Chat, the Little Eagle, the Diamond Firetail and the Eastern Bentwing Bat and include monthly mortality assessments and periodic local population censuses and bird utilisation surveys;
- (e) identify potential mitigation measures and implementation strategies in order to reduce impacts on birds and bats such as minimising the availability of raptor perches, swift carcass removal, pest control including rabbits, use of deterrents, and sector management including switching off turbines that are predicted to or have had an unacceptable impact on bird/ bat mortality at certain times; and
- (f) identify matters to be addressed in periodic reports in relation to the outcomes of monitoring, the application of the decision making framework, the need for mitigation measures, progress with implementation of such measures, and their success.

The Reports referred to under part (f) shall be submitted to the Director-General on an annual basis, from the commencement of operation, and shall be prepared within two months of the end of the reporting period. The Director-General may vary the reporting requirement or period by notice in writing to the Proponent.

The Proponent is required to implement reasonable and feasible mitigation measures as identified under part (e) where the need for further action is identified through the Bird and Bat Adaptive Management Program, or as otherwise agreed with the Director-General.

## **COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT**

C5. Subject to reasonable confidentiality requirements, the Proponent shall make all documents required under this approval available for public inspection on request.

### **Provision of Electronic Information**

C6 Prior to the commencement of construction, the Proponent shall establish a dedicated website or maintain dedicated pages within its existing website for the provision of electronic information associated with the project. The Proponent shall publish and maintain up-to-date information on this website or dedicated pages including, but not necessarily limited to:

- (a) the status of the project;
- (b) a copy of this approval and any future modification to this approval;
- (c) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the project;
- (d) a copy of each plan, report, or monitoring program required by this approval; and

- (e) details of the outcomes of compliance reviews and audits of the project.

### **Community Information Plan**

- C7. Prior to the commencement of construction, the Proponent shall prepare and implement a **Community Information Plan** which sets out the community communication and consultation processes to be implemented during construction and operation of the project. The Plan shall include but not be limited to:
- (a) procedures to inform the local community of planned investigations and construction activities, including blasting works (if any);
  - (b) procedures to inform the relevant community of construction traffic routes and any potential disruptions to traffic flows and amenity impacts;
  - (c) procedures to consult with local landowners with regard to construction traffic to ensure the safety of livestock and to limit disruption to livestock movements;
  - (d) procedures to inform the community where work outside the construction hours specified in condition D4, in particular noisy activities, has been approved;
  - (e) procedures to inform and consult with affected landowners to rehabilitate impacted land; and
  - (f) procedures to inform the community of their rights, including those relevant to the management of visual and noise amenity, the potential for electromagnetic interference and the process for lodgement of complaints, as identified under this Approval.

### **Complaints Procedure**

- C8. Prior to the commencement of construction, the Proponent shall ensure that the following are available for community complaints for the life of the project (including construction and operation) or as otherwise agreed by the Director-General:
- (a) a 24 hour telephone number on which complaints about construction and operational activities at the site may be registered;
  - (b) a postal address to which written complaints may be sent; and
  - (c) an email address to which electronic complaints may be transmitted.
- The telephone number, postal address and email address shall be advertised in a newspaper circulating in the area of the project, on at least one occasion prior to the commencement of construction; and at six-monthly intervals during construction and for a period of two years following commencement of operation of the project. These details shall also be provided on the Proponent's internet site required by condition C6. The telephone number, the postal address and the email address shall be displayed on a sign near the entrance to the construction site(s), in a position that is clearly visible to the public.
- C9. The Proponent shall record details of all complaints received through the means listed in condition C8 of this approval in an up-to-date Complaints Register. The Register shall record, but not necessarily be limited to:
- (a) the date and time, of the complaint;
  - (b) the means by which the complaint was made (telephone, mail or email);
  - (c) any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
  - (d) the nature of the complaint;
  - (e) any action(s) taken by the Proponent in relation to the complaint, including timeframes for implementing the action; and
  - (f) if no action was taken by the Proponent in relation to the complaint, the reason(s) why no action was taken.
- The Complaints Register shall be made available for inspection by the Director-General upon request.
- C10. The Proponent shall provide an initial response to any complaints made in relation to the project during construction or operation within 48 hours of the complaint being made. The response and any subsequent action taken shall be recorded in

accordance with condition C9. Any subsequent detailed response or action is to be provided within two weeks.

### **COMPLIANCE TRACKING PROGRAM**

C11. Prior to the commencement of construction, the Proponent shall develop and implement a **Compliance Tracking Program**, to track compliance with the requirements of this approval during the construction and operation of the project and shall include, but not necessarily be limited to:

- (a) provisions for periodic reporting of compliance status to the Director-General including at least prior to the commencement of construction of the project, prior to the commencement of operation of the project and within two years of operation commencement;
- (b) a program for independent environmental auditing in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing (refer to condition F2 of this Approval);
- (c) procedures for rectifying any non-compliance identified during environmental auditing or review of compliance;
- (d) mechanisms for recording environmental incidents and actions taken in response to those incidents;
- (e) provisions for reporting environmental incidents to the Director-General during construction and operation; and
- (f) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

### **ENVIRONMENTAL MANAGEMENT**

#### **Environmental Representative**

C12. Prior to the commencement of any construction or operational activities, the Proponent shall nominate for the approval of the Director-General a suitably qualified and experienced Environmental Representative(s) independent of the design, construction and operation personnel. The Proponent shall engage the Environmental Representative(s) prior to construction, during construction, and throughout the life of the project, or as otherwise agreed by the Director-General. The Environmental Representative(s) shall:

- (a) monitor the implementation of all environmental management plans and monitoring programs required under this approval;
- (b) monitor the outcome of all environmental management plans and advise the Proponent upon the achievement of all project environmental outcomes;
- (c) have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval, and all other licences and approvals related to the environmental performance and impacts of the project;
- (d) ensure that environmental auditing is undertaken in accordance with the requirements of condition C11 and the project Environmental Management System(s);
- (e) be consulted in responding to the community concerning the environmental performance of the project; and
- (f) have the authority and independence to recommend to the Proponent reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and, failing the effectiveness of such steps, to recommend to the Proponent that relevant activities are to be ceased as soon as reasonably practicable if there is a significant risk that an adverse impact on the environment will be likely to occur, until reasonable steps are implemented to avoid such impact.

### **CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**

C13. The Proponent shall prepare and implement a **Construction Environmental Management Plan (CEMP)** to outline environmental management practices and

procedures to be followed during construction of the project. The Plan shall be prepared in consultation with OEH and be consistent with the Guideline for the Preparation of Environmental Management Plans (DIPNR, 2004 or its latest revision) and shall include, but not necessarily be limited to:

- (a) a description of all relevant activities to be undertaken on the site during construction including an indication of stages of construction, where relevant;
- (b) identification of the potential for cumulative impacts with other construction activities occurring in the vicinity of the project and how such impacts would be managed;
- (c) details of any construction sites and mitigation, monitoring, management and rehabilitation measures specific to the site compound(s) that would be implemented;
- (d) statutory and other obligations that the Proponent is required to fulfil during construction, including all relevant approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies;
- (e) evidence of consultation with relevant public authorities required under this condition and how issues raised by the agencies have been addressed in the Plan;
- (f) a description of the roles and responsibilities for all relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that all employees, contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval;
- (g) details of how the environmental performance of construction will be monitored, and what actions will be taken to address identified potential adverse environmental impacts;
- (h) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1 (a) to (c) of this approval, including those safeguards and mitigation measures detailed in sections 3, 9 and 13 of the EA;
- (i) the additional requirements of this approval;
- (j) a matrix of construction work method statements (or similar) to be prepared and the anticipated level of risk associated with each determined;
- (k) verification of the avoidance of shadow flicker impacts on non-associated receivers and demonstration that any such potential impacts on associated receivers have been addressed under developed agreements;
- (l) measures to monitor and manage soil and water (surface and groundwater) impacts in consultation with NOW, including: control measures for works close to Lake George (including rehabilitation measures following disturbance and monitoring measures and completion criteria to determine rehabilitation success);
- (m) measures to monitor and manage potential flood impacts in consultation with NOW, including contingency measures for the site during potential floods;
- (n) measures to monitor and manage dust emissions including dust generated by traffic on unsealed public roads and unsealed internal access tracks;
- (o) emergency management measures including measures to control bushfires; and
- (p) the Management Plans listed under condition C14 of this approval.

The CEMP shall be submitted for the approval of the Director-General no later than one month prior to the commencement of any relevant construction works associated with the project, or within such period otherwise agreed by the Director-General. Construction works shall not commence until written approval has been received from the Director-General.

C14. As part of the CEMP required under condition C13, the Proponent shall prepare and implement the following:

- (a) a **Traffic Management Protocol** to outline management of traffic conflicts that may be generated during construction and operation of the project. The Plan shall address the requirements of the RTA, the Primary Industries Division of

TIRIS, the Council and any other relevant road authority and shall include, but not necessarily be limited to:

- (i) details of traffic volumes and routes for heavy vehicles (including routes to be used during operation and maintenance stages of the project), including any necessary route or timing restriction for oversized loads;
  - (ii) detailed consideration of measures to be employed to ensure traffic volume, acoustic and amenity impacts (such as dust generation) along the heavy vehicle routes are minimised;
  - (iii) detailed consideration of alternative routes (where necessary);
  - (iv) demonstration that the road structure has the ability to sustain the increased vehicle loads and traffic movements;
  - (v) demonstration that the structures situated along the vehicles routes would not be adversely impacted from the vibration caused by the additional vehicles travelling on the route;
  - (vi) details of any upgrade requirements, as identified under condition B12, to accommodate project traffic for the duration of construction (including intersection treatments, vehicle turning requirements and site access), considering final traffic volumes; and
  - (vii) demonstration that all statutory responsibilities with regard to road traffic impacts have been complied with.
- (b) a **Flora and Fauna Management Plan**, developed in consultation with OEH, to outline measures to protect and minimise loss of native vegetation and native fauna habitat as a result of construction of the project. The Plan shall include, but not necessarily be limited to:
- (i) plans showing terrestrial vegetation communities; important flora and fauna habitat areas, including rocky outcrops; location of EECs, including Natural Temperate Grassland, and native pasture; and areas to be cleared;
  - (ii) methods to manage impacts on flora and fauna species and their habitat which may be directly or indirectly affected by the project, such as location of fencing, procedures for vegetation clearing or soil removal/stockpiling; procedures for managing weeds; rehabilitation; and education tools to ensure construction personnel are made aware of fauna species that have the potential of occurring within the Project site. These management measures should address impacts identified from the results of the pre-construction survey (refer to condition C2 of this approval) and during construction, such as detection of fauna by construction personnel;
  - (iii) procedures to accurately determine the total area, type and condition of vegetation community to be cleared; and
  - (iv) a procedure to review management methods where they are found to be ineffective.
- (c) a **Construction Noise Management Plan** to manage noise impacts during construction and to identify all feasible and reasonable noise mitigation measures. The Plan shall include, but not necessarily be limited to:
- (i) details of construction activities, including construction traffic and an indicative schedule for construction works;
  - (ii) specification of the noise criteria as it applies to a particular activity;
  - (iii) identification of construction activities that have the potential to generate noise impacts on surrounding land uses, particularly residential areas;
  - (iv) detail what reasonable and feasible actions and measures would be implemented to minimise noise impacts;
  - (v) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise amenity, as well as procedures for dealing with and responding to noise complaints; and
  - (vi) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how

often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported; and, if any exceedance is detected how any non-compliance would be rectified.

- (d) A **Design and Landscaping Plan** to outline measures to ensure appropriate development and maintenance of landscaping on the site to achieve adequate landscape buffers and address the visual impacts arising from the project, including turbines, site access roads and associated above ground infrastructure, as far as is reasonable and feasible. The Plan must be prepared by a qualified landscape architect and where relevant meet the requirements of Council, should there be any. The Plan must include design treatments for the turbines and ancillary infrastructure, including, but not necessarily limited to:
- (i) the landscape screening measures at the residences situated in close proximity to the project site and along roadsides to screen potential moderate to significant views of the project, including an outline of additional measures available for requested landscaping treatments, as permitted under condition B1;
  - (ii) landscape elements and built elements, including proposed treatments, finishes and materials of exposed surfaces (including colour specifications);
  - (iii) lighting;
  - (iv) a schedule of species to be used in landscaping;
  - (v) details of the timing and progressive implementation of landscape works; and
  - (vi) procedures and methods to monitor and maintain landscaped areas.
- (e) An **Indigenous Heritage Management Plan**, to outline the measures to minimise and manage impacts to indigenous items and sites, as required under condition B9. The Plan shall be informed by recent archaeological surveys and test excavations conducted on the properties adjacent to the project site and developed in consultation with the relevant Aboriginal stakeholders and OEH.
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## PART D – DURING CONSTRUCTION

### FLORA AND FAUNA

#### Rock Outcrop Habitat

- D1. The Proponent shall, where practicable, avoid disturbance to areas of rock outcrops, during all stages of the project. Locations of rock outcrop habitat shall be determined and described within the document required under condition C14 (b).

#### Fauna Impacts

- D2. Should it be determined that direct impact to any fauna may occur, the Proponent shall implement the management measures identified under the Flora and Fauna Management Plan (refer to condition C14 (b)).

### NOISE IMPACTS

#### Construction Noise

- D3. The Proponent shall implement all reasonable and feasible measures to minimise noise generation from the construction of the project consistent with the requirements of the *Interim Construction Noise Guideline (DECC, July 2009)* including noise generated by heavy vehicle haulage and other construction traffic associated with the project.

- D4. The Proponent shall only undertake construction activities associated with the project that would generate an audible noise at any sensitive receptor during the following hours:

- (a) 7:00 am to 6:00 pm, Mondays to Fridays, inclusive;
- (b) 8:00 am to 1:00 pm on Saturdays; and
- (c) at no time on Sundays or public holidays.

This condition does not apply in the event of a direction from police or other relevant authority for safety reasons, to prevent environmental harm or risk to life.

- D5. The hours of construction activities specified under condition D4 of this approval may be varied with the prior written approval of the Director-General. Any request to alter the hours of construction specified under condition D4 shall:

- (a) be considered on a case-by-case basis; and
- (b) be accompanied by details of the nature and need for activities to be conducted during the varied construction hours and any other information necessary to reasonably determine that activities undertaken during the varied construction hours will not adversely impact on the acoustic amenity of receptors in the vicinity of the site.

Affected residential receivers must be informed of the timing and duration of work approved under this condition at least 48 hours before that work commences.

#### Construction Blasting

- D6. Blasting (if any) associated with the construction of the project shall only be undertaken during the following hours:

- (a) 9:00 am to 5:00 pm, Mondays to Fridays, inclusive;
- (b) 9:00 am to 1:00 pm on Saturdays; and
- (c) at no time on Sundays or public holidays.

The Proponent shall ensure that air blast overpressure generated by blasting associated with the project does not exceed the criteria specified in Table D1 when measured at the most-affected residential or sensitive receiver.

Table D1 – Airblast Overpressure Criteria

<b>Air blast Overpressure (dB(Lin Peak))</b>	<b>Allowable Exceedance</b>
115	5% of total number of blasts over a 12 month period
120	Never

- D7. The Proponent shall ensure that the ground vibration generated by blasting associated with the project does not exceed the criteria specified in Table D2 when measured at the most-affected residential or sensitive receiver.

Table D2 – Peak Particle Velocity Criteria

<b>Peak Particle Velocity Criteria (mms<sup>-1</sup>)</b>	<b>Allowable Exceedance</b>
5	5% of total number of blasts over a 12 month period
10	Never

- D8. Prior to each blasting event, the Proponent shall notify Council and potentially-affected landowners, including details of time and location of the blasting event and providing a contact point for inquiries and complaints.

## **HERITAGE**

### **Historical and Indigenous Items**

- D9. If during the course of construction, the Proponent becomes aware of a non-indigenous heritage item or any previously unidentified significant Aboriginal item(s), all work likely to affect the item(s) shall cease immediately and the Proponent must contact OEH to determine an appropriate course of action, prior to the commencement of work in the vicinity of the item.

## PART E – PRIOR TO AND DURING OPERATIONS

### OPERATIONAL NOISE

#### Operational Noise Criteria

- E1. Subject to conditions E3 to E6 of the Approval, the Proponent shall design, operate and maintain the project to ensure that the equivalent noise level ( $L_{Aeq(10\text{-minute})}$ ) from the project does not exceed, at each of the residential receiver locations identified in Table E1 below, the noise criteria identified in Table E1 below.

Table E1: Operational Noise Criteria at Non-Associated Receivers (dB(A))

Wind Speed (m/s)	4	5	6	7	8	9	10
G05	35	35	35	36	37	38	40
G06	35	35	35	36	37	38	40
G10	35	35	35	36	37	39	40
G11	35	35	35	36	37	39	40
G12	35	35	35	36	37	39	40
G13	35	35	35	36	37	39	40
G14	35	35	35	36	37	39	40
G15	35	35	35	36	37	39	40
G16	35	35	35	36	37	39	40
G17	35	35	35	36	37	39	40
G18	35	35	35	36	37	39	40
Gundry	35	36	38	39	41	42	43
Roth	35	36	38	39	41	42	43

- E2. The Proponent shall design, operate and maintain the project to ensure that the equivalent noise level ( $L_{Aeq(10\text{-minute})}$ ) from the project does not exceed at any other residential receiver (excluding those that are associated with the wind farm) in existence or the subject of a valid development consent at the date of this approval:
- (a) 35 dB(A); or
  - (b) the existing background noise level ( $L_{A90(10\text{-minute})}$ ) correlated to the integer wind speed at 10 metres height at the wind farm site by more than 5 dB(A),

whichever is the greater, for each integer wind speed (measured at 10m height) from cut-in to rated power of the wind turbine generator.

- E3. The Proponent shall prepare a **revised Noise Assessment** for the final turbine model and turbine layout selected, which shall be submitted to the Director-General prior to commissioning of the wind turbines. The revised Noise Assessment shall include the noise predictions of the final turbine model and layout selected at each of the receiver locations. The assessment shall demonstrate consistency with the EA and the ability of final turbine model and layout to meet the requirements of condition E1. Where noise predictions are found to be below the limit specified in condition E1, then these revised predictions will become the new limit.
- E4. Noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 20 metres of the dwelling, where the dwelling is more than 20 metres from the boundary, to determine compliance with the noise level limits in conditions E1, E2 and E3.
- E5. For the purposes of conditions E1, E2 and E3 of this approval, 5 dB(A) shall be applied to measured noise levels where tonality is present. The presence of tonality

shall be determined using the methodology detailed in Wind Turbine Generator Systems- Part 11: Acoustic Noise Measurement Techniques IEC 61400-11:2002 or its latest edition.

- E6. Notwithstanding conditions E1, E2 and E3 of this approval, the noise limits specified under those conditions do not apply to any residence where a noise agreement is in place between the Proponent and the respective owner(s) of those residences in relation to noise impacts and/or noise limits. For this condition to take effect, the noise agreements shall satisfy the relevant requirements of Guidelines for Community Noise (WHO, 1999) and Section 2.3 of Wind Farms: Environmental Noise Guidelines (SA EPA, 2003).

#### **Verification of Operational Noise**

- E7. The Proponent shall prepare a **Noise Compliance Plan** which shall be submitted to the Director-General prior to commissioning of the wind turbines. **The Noise Compliance Plan** shall include, but not be limited to:
- (a) an assessment to be undertaken of the performance of the project against the noise predictions contained in conditions E1, E2 and E3;
  - (b) a commitment that noise compliance monitoring will be undertaken within three calendar months of the commissioning of the wind turbines. If prevailing meteorological conditions do not allow the required monitoring to be undertaken in this period, the Director-General shall be notified and an extension of time may be sought; and
  - (c) a requirement that all noise compliance monitoring results are submitted to the Director-General within one month of completion of the monitoring. The Director-General may request that additional noise compliance monitoring be undertaken and completed within a specified timeframe.

The Noise Compliance Assessment shall be undertaken generally in accordance with the procedures presented in *Wind Farms - Environmental Noise Guidelines* (SA EPA, 2003).

- E8. In the event that the Noise Compliance Plan indicates that noise from the wind turbines exceeds the noise limits specified under conditions E1, E2 and E3, as relevant, the Proponent shall investigate and propose mitigation and management measures to achieve compliance with the noise limits. Details of the remedial measures and a timetable for implementation must be submitted to the Director-General for approval within such period as the Director-General may require. Remedial measures shall include, in the first instance, all reasonable and feasible measures to reduce noise from the project, including but not necessarily limited to reduced operation of wind turbines. Once all reasonable and feasible source controls are exhausted, remedial measures may include offering building acoustic treatments and/or noise screening to affected residents, but may only be used to address noise limit exceedances at the absolute discretion of the relevant landowner/resident. The Proponent shall also demonstrate that the relevant landowner/resident has been made fully aware of the noise and other implications of making any agreement.
- E9. The Proponent shall provide written notice to all landowners that are entitled to rights under condition E8 within 21 days of determining the landholdings to which these rights apply. For the purpose of condition E8, this condition only applies where operational noise levels have been confirmed in accordance with condition E8.
- E10. The Proponent shall bear the costs of any additional at-receiver mitigation measures implemented at an affected landowner or property.

## OPERATION ENVIRONMENTAL MANAGEMENT PLAN

E11. The Proponent shall prepare and implement an **Operation Environmental Management Plan** in accordance with the Department's publication entitled *Guideline for the Preparation of Environmental Management Plans (2004)* or its latest revision. The Plan shall include but not necessarily be limited to:

- (a) identification of all statutory and other obligations that the Proponent is required to fulfil in relation to the operation of the development, including all consents, licences, approvals and consultations;
- (b) a management organisational chart identifying the roles and responsibilities for all relevant employees involved in the operation of the project;
- (c) overall environmental policies and principles to be applied to the operation of the project;
- (d) specific consideration of relevant measures to address any requirements identified in the documents referred to under conditions A1 (a) to (c), including those safeguards and mitigation measures detailed in sections 3, 9 and 13 of the EA;
- (e) standards and performance measures to be applied to the project, and means by which environmental performance can be periodically reviewed and improved, where appropriate;
- (f) management policies to ensure that environmental performance goals are met and to comply with the conditions of this approval;
- (g) the Management Plans listed under condition E12; and
- (h) the environmental monitoring requirements outlined under this approval.

The Plan shall be submitted for the approval of the Director-General no later than one month prior to the commencement of Operation of the project or within such period as otherwise agreed by the Director-General. Operation must not commence until written approval has been received from the Director-General. Upon receipt of the Director-General's approval, the Proponent shall make the Plan publicly available as soon as practicable.

E12. As part of the Operation Environmental Management Plan required under condition E11, the Proponent shall prepare and implement (but not be limited to) the following:

- (a) a **Noise Management Plan** to outline measures to minimise noise emissions from the operation of the project. The Plan must include, but not necessarily be limited to:
  - i. details of procedures to ensure ongoing compliance with the operational noise limits specified in condition E1 to E3, as they apply to identified receptors. This should include identification of monitoring requirements;
  - ii. identification and implementation of best practice management techniques for minimisation of noise emissions where reasonable and feasible;
  - iii. measures to be undertaken to rectify annoying characteristics (refer to section 4.5 of the South Australian Environment Protection Authority's *Wind Farms – Environmental Noise Guidelines, 2003*) resulting from the operation of the project such as, but not limited to, infrasound or adverse mechanical noise from component failure; and
  - iv. procedures and corrective actions to be undertaken if non-compliance is detected.

## **PART F – DURING OPERATIONS**

### **Noise Monitoring**

- F1. Noise compliance monitoring shall be conducted in accordance with the Noise Management Plan under condition E12 (a), or as directed by the Director-General in response to noise complaints.

### **Independent Environmental Auditing**

- F2. Within two years of the commencement of Operation of the project, and then as may be directed by the Director-General, the Proponent shall commission an independent person or team to undertake an Environmental Audit of the project. The independent person or team shall be approved by the Director-General prior to the commencement of the Audit. The Audit must:
- (a) be carried out in accordance with AS/NZ ISO 19011:2003 - Guidelines for Quality and or Environmental Management Systems Auditing;
  - (b) assess compliance with the requirements of this approval, and other licences and approvals that apply to the project;
  - (c) assess the environmental performance of the project against the predictions made and conclusions drawn in the documents referred to under condition A1 (a) to (d) of this approval;
  - (d) review the effectiveness of the environmental management of the project, including any environmental impact mitigation works; and
  - (e) review the adequacy of the Proponent's response to any complaints made about the project through the Complaints Register required under condition C10.

An Environmental Audit Report must be submitted for comment to the Director-General within two months of the completion of the Audit, detailing the findings and recommendations of the Audit and including a detailed response from the Proponent to any of the recommendations contained in the Report.

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## PART G – DECOMMISSIONING / POST OPERATIONS

### MANAGEMENT OF DECOMMISSIONING

#### Decommissioning

G1. Within 18 months of the cessation of operation of the project, the site shall be decommissioned and returned, as far as practicable, to its condition prior to the commencement of construction, in consultation with the relevant landowner(s) and to the satisfaction of the Director-General (refer to condition G3) . All generating facilities and associated infrastructure (including but not necessarily limited to the Capital substation and transformers, overhead and underground transmission lines and control cabling and access roads) shall be removed from the site unless otherwise required for another generating facility or agreed by the Director-General. Project related infrastructure (including access roads) may only be retained on site, where the Proponent has demonstrated to the satisfaction of the Director-General, prior to the commencement of decommissioning, that these components are: permissible under the landuse provision existing at the time of decommissioning; would not pose an ongoing impediment to permissible landuse at the properties; and their retention has been agreed to by the relevant landowners.

*Note: 'another generating facility' may include existing approved energy generating infrastructure, such as existing Capital Wind Farm, Woodlawn Wind Farm and Capital Solar Farm. It may also include proposed energy generating infrastructure, where the development/project application has been accepted by the relevant approval authority, prior to the commencement of the decommissioning period identified above (18 months).*

G2. If any wind turbine is not used for the generation of electricity for a continuous period of 12 months, it shall be decommissioned by the Proponent, unless otherwise agreed by the Director-General. The Proponent shall keep independently-verified annual records of the use of wind turbines for electricity generation. Copies of these records shall be provided to the Director-General upon request. The relevant wind turbine and any associated infrastructure is to be dismantled and removed from the site by the Proponent within 18 months from the date that the wind turbine was last used to generate electricity.

G3. No later than one month prior to the decommissioning of the project, or as otherwise agreed by the Director-General, the Proponent is to prepare a Decommissioning Management Plan for the approval of the Director-General. The Plan is to include but not necessarily be limited to:

- (a) identification of structures to be removed and how they will be removed;
  - (b) measures to reduce impacts on the environment and surrounding sensitive land uses;
  - (c) details of components to be recycled; and
  - (d) details of rehabilitation and revegetation with reference to the biodiversity offset required under condition C3.
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