



NSW GOVERNMENT  
**Department of Planning**

**MAJOR PROJECT ASSESSMENT:  
*Boco Rock Wind Farm***



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

June 2010

© Crown copyright 2010  
Published June 2010  
NSW Department of Planning  
[www.planning.nsw.gov.au](http://www.planning.nsw.gov.au)

**Disclaimer:**

While every reasonable effort has been made to ensure that this document is correct at the time of publication, the State of New South Wales, its agents and employees, disclaim any and all liability to any person in respect of anything or the consequences of anything done or omitted to be done in reliance upon the whole or any part of this document.

## EXECUTIVE SUMMARY

---

Boco Rock Wind Farm Pty Ltd (the Proponent) proposes to construct and operate a wind farm and associated infrastructure with a maximum generating capacity of 270 megawatts approximately six kilometres to the west of the township of Nimmitabel in the Bombala and Cooma-Monaro Shire local government areas, in southern New South Wales. The project comprises two possible wind turbine layouts (either 122 or 104 turbines) of which only one layout would be constructed. The project is expected to generate up to 100 construction jobs and up to 15 full time equivalent operational jobs and involve a capital cost of \$750 million. The project is classified as critical infrastructure under the *Environmental Planning and Assessment Act 1979* and has been declared to be a 'Controlled Action' under the *Commonwealth's Environment Protection and Biodiversity Conservation Act 1999*. Transmission connection to the existing electricity network via a new 132 kilovolt transmission line does not comprise part of the project and will be pursued independently by Country Energy (the network operator) under Part 5 of the *Environmental Planning & Assessment Act 1979*.

The Environmental Assessment for the project was placed on public exhibition for an extended period from 9 December 2009 until 3 February 2010 and the Department received a total of nine public submissions on the project. Of these four (44%) objected to the project. The remainder did not state a specific position however, identified concerns or comments for consideration by the Department. In addition, submissions were received from seven Commonwealth and State public authorities: AirServices Australia, Department of Environment, Climate Change and Water, NSW Office of Water, Industry and Investment NSW, NSW Roads and Traffic Authority, Cooma-Monaro Shire and Bombala Council. Cooma-Monaro Shire Council expressed support for the project. The remaining agencies did not state a position however raised issues for the Department's consideration in its assessment.

Key issues raised in submissions relate to visual and landscape, property impacts (including impacts to future development potential and requests for compensation), flora and fauna, noise, consultation, decommissioning, impacts to aerial agricultural spraying, traffic and transport and waterways. To address significant concerns raised in public authority submissions in relation to biodiversity impacts, the Proponent modified its project as part of its Response to Submissions to remove three wind turbines originally proposed as part of the "Springfield Cluster" (three turbines from each of the 107 and 125 turbine layouts originally identified in the Environmental Assessment).

The Department has assessed the Proponent's Environmental Assessment, Response to Submissions and Statement of Commitments and submissions received on the project and considers the key issues associated with the project relate to flora and fauna, visual and noise impacts. Based on its assessment, the Department accepts the need for the project with respect to helping address the State's electricity requirements and considers that the project would entail significant greenhouse gas benefits by resulting in no net greenhouse gas emissions during operation and displacing other greenhouse gas emitting sources of electricity in the National Electricity Market. In this regard, the Department considers the project to be entirely consistent with priorities and targets of the NSW State Plan including "achieve a 60% cut in greenhouse gas emissions by 2050 in line with the Federal Government targets" and "achieve 20% renewable energy consumption by 2020 in light of the Federal Government's expanded Renewable Energy Target".

Based on its assessment, the Department is also satisfied that the Proponent has undertaken an appropriate and conservative level of assessment covering both layouts. The Department's assessment indicates that the project would result in some unavoidable biodiversity impact to threatened species habitat and to the Natural Temperate Grassland endangered ecological community. However, the impacts can be suitably offset in perpetuity at ratios of up to 10 hectares to each hectare lost (depending on the species or community) consistent with "maintain or improve" principles. The Department is also satisfied that potential risks in relation to rotor collisions can be effectively managed through the implementation of an appropriate adaptive bird and bat management plan. The Department's assessment on visual and noise impacts has considered impacts on both existing receptors and future development potential and has concluded that significant impacts are unlikely in either case, such as to warrant compensation or withhold approval. In particular, the Department's assessment indicates that in relation to noise, relevant operational criteria would be achieved at all sensitive receptors surrounding the site. Notwithstanding, the Department's assessment indicates that the project may result in some residual impacts to

landscape amenity (particularly at a local level). The Department does not consider that these residual impacts would outweigh the project's broader public interest with respect to renewable energy generation. To offset residual amenity impacts, the Department has recommended conditions of approval requiring the Proponent to provide an annual contribution of \$2500 per turbine to fund local community enhancement initiatives.

On the above basis, the Department has recommended full project approval (i.e. approval to construct) for all components of the project including both layouts (one or the other). The Department has formulated stringent recommended conditions of approval in relation to flora and fauna, visual and landscape, noise, decommissioning, aviation hazard, traffic and transport, waterways and community contributions to ensure that the project achieves acceptable environmental standards, protects public amenity and offsets residual impacts.

On balance, the Department considers the project to be justified and in the public's interest and should be approved subject to the recommended conditions of approval and the Proponent's Statement of Commitments.

## TABLE OF CONTENTS

---

<b>1.</b>	<b>BACKGROUND .....</b>	<b>1</b>
1.1	Study Site .....	1
1.2	Surrounding Land Use.....	2
<b>2.</b>	<b>PROPOSED DEVELOPMENT .....</b>	<b>3</b>
2.1	Project Description .....	3
2.2	Changes to Project Since Exhibition.....	6
2.3	Project Need .....	7
<b>3.</b>	<b>STATUTORY CONTEXT.....</b>	<b>11</b>
3.1	Major Project .....	11
3.2	Critical Infrastructure .....	11
3.3	Controlled Action .....	11
3.4	Permissibility.....	11
3.5	Environmental Planning Instruments .....	11
3.6	Exhibition and Notification .....	12
3.7	Objects of the <i>Environmental Planning and Assessment Act 1979</i> .....	12
3.8	Minister's Approval Power .....	13
<b>4.</b>	<b>CONSULTATION AND ISSUES RAISED .....</b>	<b>15</b>
4.1	Public Submissions .....	15
4.2	Submissions from Public Authorities .....	16
4.3	Response to Submissions .....	18
4.4	Department's Consideration .....	19
<b>5.</b>	<b>ASSESSMENT OF ENVIRONMENTAL IMPACTS.....</b>	<b>23</b>
5.1	Flora and Fauna .....	23
5.2	Visual Amenity.....	36
5.3	Noise and Vibration .....	46
<b>6.</b>	<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>55</b>
	APPENDIX A – RECOMMENDED CONDITIONS OF APPROVAL.....	57
	APPENDIX B – STATEMENT OF COMMITMENTS .....	58
	APPENDIX C – RESPONSE TO SUBMISSIONS .....	59
	APPENDIX D – ENVIRONMENTAL ASSESSMENT .....	60





# 1. BACKGROUND

Boco Rock Wind Farm Pty Ltd (the Proponent) a wholly owned subsidiary of Wind Prospect (CWP) Pty Ltd, proposes to construct and operate a wind farm and associated infrastructure with a maximum generating capacity of 270 megawatts approximately six kilometres to the west of the township of Nimmitabel in the Bombala and Cooma-Monaro Shire local government areas, in southern New South Wales (refer Figure 1). The project would be located approximately 150 kilometres to the south of Canberra and approximately 48 kilometres to the north of the New South Wales – Victorian border.



Figure 1: Site Location (Wind Prospect Pty Ltd, November 2009)

Transmission connection to the existing electricity network would be via a new 132 kilovolt transmission line between the project and the existing 132 kilovolt and/ or 66 kilovolt network operated by Country Energy, located approximately 20-25 kilometres to the east of the project (to the east of the township of Nimmitabel). As the new transmission line would become part of Country Energy's network, the development of the line and associated substation is being pursued independently by Country Energy as a separate project under Part 5 of the *Environmental Planning & Assessment Act 1979*, and does not comprise part of the Boco Rock Wind Farm project.

## 1.1 Study Site

The project is proposed to be sited on the high altitude plateau of the Monaro Plains approximately 40 to 60 kilometres to the east of the Kosciuszko National Park, at altitudes between 900 to 1100 metres above sea level. The wind farm would be spread across approximately 11,750 hectares of rural-grazing land owned by 17 different landowners, with turbines to be located in four general clusters atop several rolling hills to the north and along a single north-south trending ridge line (the Sherwin Range) to the south. A number of waterways bisect the site including the McLaughlin River which flows across the site from west to east and feeds into the Snowy River, approximately 30 kilometres to the south, and several dry water bodies including Boco Creek, Gentle Barlow Creek and Coopers Lake.

The project site would be accessed from the Monaro Highway via existing arterial roads including Springfield Road, Avon Lake Road and Snowy River Way. 18 dwellings owned by landowners on whose properties the project would be sited on (i.e. "associated" dwellings), are located within 10 kilometres of the project. Three of these are currently uninhabited: Avon Lake, Nestlebrae and Kelton Plains (the latter comprising an uninhabitable ruin). Approximately 12 dwellings are located within two kilometres of the project, eleven of which are "associated" dwellings (including the three uninhabited/ uninhabitable dwellings) whilst the remaining dwelling is owned by a neighbouring landowner (i.e. a "non-associated" landowner). The closest "associated" dwelling would be approximately 730 metres from a turbine and the closest "non-associated" landowner would be approximately 1,550 metres from a turbine.

## 1.2 Surrounding Land Use

The project is located within the Monaro Plains, which comprises an elevated plateau between the Great Escarpment to the east and the Snowy Mountains to the west between approximately Bredbo (to the north) and Delegate (to the south) in southern New South Wales. The high plains of the Monaro are characterised by rolling undulating topography with low hills and ranges approximately 900 to 1200 metres above sea level. This includes the Monaro Range, which forms a north-westerly tending section of the Great Divide that traverses across the Monaro Plains between approximately Nimmitabel and Kiandra connecting the Great Escarpment and Snowy Mountains. The Monaro Range forms a drainage divide within the Monaro Plains with areas to the north draining to the Murrumbidgee River and areas to the south to the Snowy River system (refer Figure 1). The Monaro Plain is also characterised by water bodies/ wetlands formed in erosion depressions of the underlying bedrock and depressions associated with past fault activity, fed by groundwater, rainfall and/ or runoff from local catchments. Many of these water bodies have remained dry due to the long period of drought experienced in the region. The project would be located to the south of the Monaro Range within the Snowy River catchment.

The Monaro Plain is characterised by sub-alpine climate and variable rainfall due to the rain shadow effect from the Snowy Mountains to the west and the coastal ranges to the east. Tussock grassland communities dominate the frost affected undulating valleys of the Monaro Plains with woodland occurring mainly on top of and along hill slopes. The natural dominance of grassland vegetation has led to the area being referred to as the "treeless plains". Historic rural and grazing landuse have led to some modifications to naturally occurring vegetation communities including clearing of woodland (for fences and other uses), the introduction of exotic pasture species and low recruitment and regeneration of woodland species. The area surrounding the project site is dominated by rural-grazing landuse, with pastures characterised by varying levels of native grassland species and some remnant woodland vegetation in places. A number of State conservation areas (Ironmungy, Bobundra, Dangelong Myalla and Merriangaah) are located between seven and 15 kilometres of the project site. The ridgelines to the south of the proposed southernmost extent of the project along the Sherwin Ranges, become progressively wooded as they joins up with the Merriangaah Nature Reserve to the south.

Land use in the surrounding district is characterised by rural-grazing with generally low population density. A total of 94 dwellings have been identified within 10 kilometres of the project (excluding dwellings within the township of Nimmitabel and including the Kelton Plains ruin). The small rural township of Nimmitabel, located approximately six kilometres to the east, comprises the nearest urban settlement to the project and has a population of approximately 238 people. The regional centre of Cooma is located approximately 38 kilometres to the north of the site (refer Figure 1). Nearest aerodromes to the project site are located 35 and 40 kilometres to the north respectively (Cooma aerodrome and Polo Flat airfield).

The Snowy Mountain region and Kosciuszko National Park located approximately 40 to 60 kilometres to the west, forms a major tourist destination and conservation area of National and State importance to the west of the Monaro Plain (refer Figure 1). Mount Kosciuszko is located approximately 74 kilometres to the west of the project site. The Snowy River Way, one of the arterial routes which would provide access to the project site, forms an alternate transport route to the Snowy Mountains from the south via the Monaro Highway.



## 2. PROPOSED DEVELOPMENT

### 2.1 Project Description

#### Wind Turbines

The Proponent proposes to construct and operate a wind farm with a total capacity of up to 270 megawatts and associated infrastructure. The Proponent has sought project approval for two possible wind turbine layouts (refer Figure 2) (of which only one layout would be constructed) to provide maximum flexibility during tendering and detailed design. The layouts comprise:

- Layout 1: up to 122 x 1.8-3.3 megawatt turbines; or
- Layout 2: up to 104 x 1.8-3.3 megawatt turbines.

The 270 megawatt capacity of the project would be equivalent to approximately 827,820 megawatt hours of electricity produced per annum (based on a capacity factor of 0.35%), however, the Proponent has conservatively estimated the generation capacity of the project to be around 785,663 megawatt hours per annum on the basis of the lower end of turbine ratings (i.e. 2.05 megawatts) under consideration.

The turbines are proposed to be located in four general clusters both to the north and the south of the McLaughlin River as shown in Figure 2 and summarised in Table 1 below.

**Table 1: Turbine Clusters (Modified from Wind Prospect Pty Ltd, November 2009)**

Turbine Cluster	No. of Turbines (Layout Option 1)	No. of Turbines (Layout Option 2)	General Location
Yandra	32	27	North eastern cluster, accessible via Yandra and Benbullen Roads off Springfield Road
Springfield	20	17	North western cluster, accessible via Dummy lane off Springfield Road
Boco	23	21	South eastern cluster, accessible via internal access road and Boco Road off Snowy River way
Sherwins	47	39	South western cluster, accessible via Avon Lake Road and the Snowy River Way.

The final dimensions and generating capacity of turbines to be used on site will depend on the turbine model chosen (to be determined as part of a competitive tendering process); however, it will be no greater than a maximum height of 152 metres (from the tip of the rotor blade to the base of the tower) and up to 3.3 megawatts. The turbines would typically operate at speeds between four and 25 metres per second (14.4 to 90 kilometres per hour) and would automatically shut down at higher speeds for safety reasons. Each turbine would require a 50 to 450 cubic metre footprint for installation of footings (depending on geotechnical conditions) as well as an approximately 50 by 25 metre hard stand area at each turbine for siting of the cranes required for turbine assembly. The hardstand areas would be constructed using local stone/ gravel and maintained throughout the operational life of the project to enable the periodic maintenance of the turbines.

#### Ancillary Infrastructure

Key ancillary infrastructure associated with the project comprise (refer Figure 2):

- up to 122 wind turbine generator transformers, located within the hard stand areas at the base of each turbine, to step up electricity generated by each turbine to 33 kilovolts for transmission;
- approximately 64 kilometres of underground 33 kilovolt transmission cables and 18 kilometres of interconnection cables (four kilometres of which may be located as overhead cables) generally following internal access roads, for transporting electricity generated by the turbines to the project collector substation;
- approximately 68 kilometres of underground control cables (four kilometres of which may be located as overhead cables), generally following internal access roads, for enabling automated and remote control of the turbines; and
- a 100 by 100 metre collector substation and associated transformers, located to the east of the most north-easterly turbine of the Sherwins cluster, for receiving electricity transmitted by the internal 33 kilovolt transmission network. The external overhead 132 kilovolt transmission line (being developed by Country Energy) would connect to this collector substation to transport electricity generated by the project to the



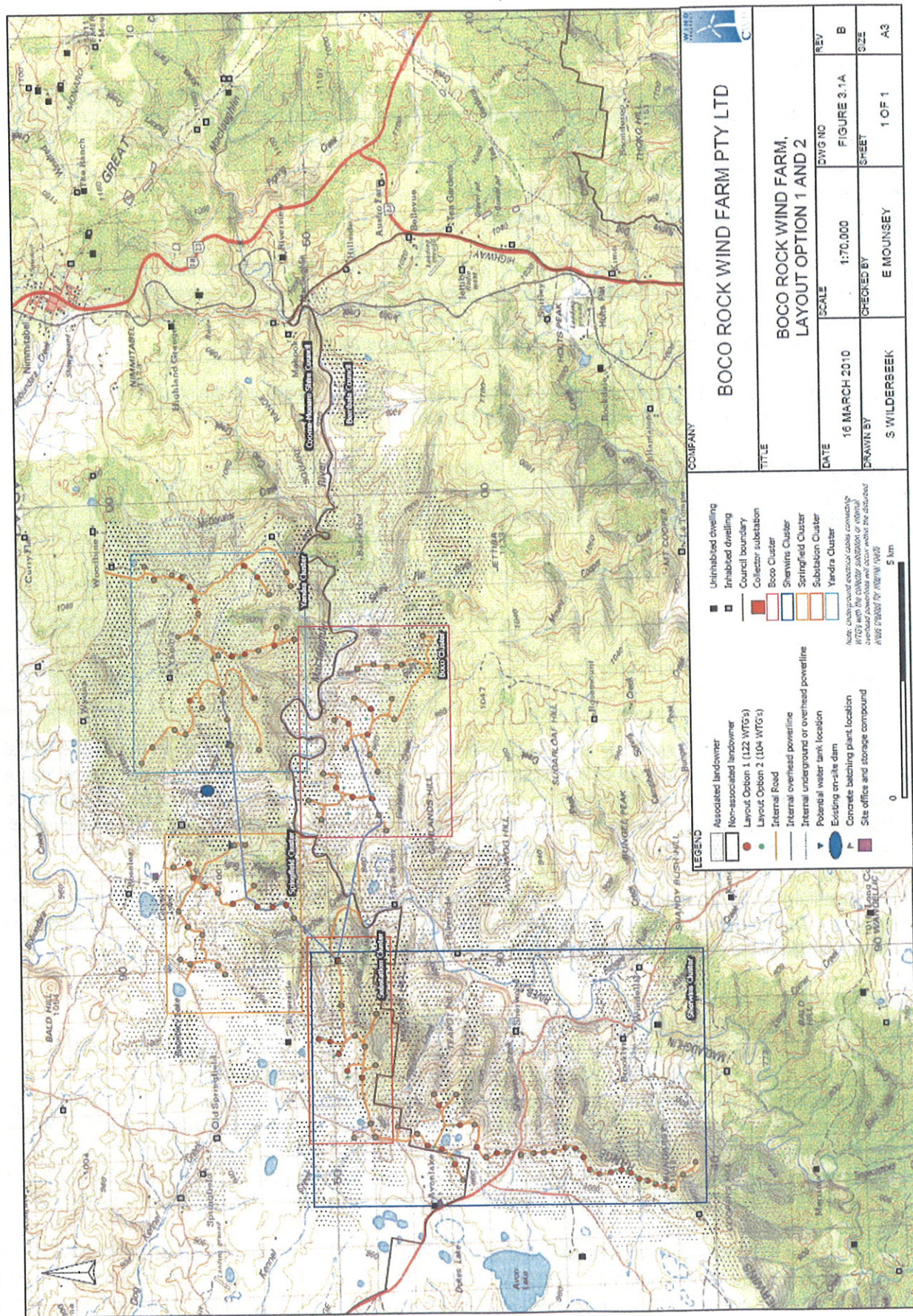


Figure 2: Proposed Turbine and Infrastructure Locations (Wind Prospect Pty Ltd, May 2010)



- electricity grid. The Proponent has indicated that location of the collector substation has been chosen to minimise access distances, electricity losses and public visibility. The facility would be situated approximately two kilometres from the nearest inhabited dwelling ("Boco", an associated landowner);
- a six by 30 metre operations facility building to house control and communications equipment. The facilities building would be sited directly adjacent to the collector substation to minimise the development footprint. The Proponent has indicated that the visibility of the site as a whole (collector substation and facilities building) may be further screened through landscape planting, where required;
  - internal access roads (approximately six to 12 metre width) comprising:
    - Yandra Cluster: reconstruction of approximately six kilometres of existing access road and construction of approximately 17 kilometres of new access road;
    - Springfield Cluster: reconstruction of approximately 1.5 kilometres of Brechnoch Road and approximately 200 metres of existing laneway entrance to Dummy Lane road as well as construction of approximately 11 kilometres of new access road;
    - Sherwins Cluster: construction of approximately 25 kilometres of new access road,
    - Boco Cluster: reconstruction of approximately one kilometre of existing farm track and construction of approximately 17 kilometres of new access road; and
    - construction of a new 2.5 internal link road between the Sherwins and Boco clusters across the McLaughlin River including reconstruction of an existing road causeway across the river with box culverts.

In addition to the above, the project would require temporary a site office, compound areas and concrete-batching/ rock crushing facilities. The Proponent has identified two possible locations for the site office and compound area (expected to be approximately 3.4 hectares in size) of which only one site would be utilised and five possible locations for the concrete-batching/ rock crushing facilities (expected to be approximately 0.5 hectares in size). The Proponent has identified that each location option has been chosen on the basis of accessibility, level topography and minimising ecological, traffic and transport, visibility and noise impacts. The Proponent has indicated that should a construction contractor determine alternate site(s) for construction facilities, these locations would be determined on the basis of the same location criteria. The proposed locations for temporary facilities are:

- site office/ compound area: along Brechnoch Road or at the intersection of the Snowy Way and Avon Road; and
- concrete-batching plant/ rock crusher: along Brechnoch Road, the intersection of the Snowy Way and Avon Road, along Yandra Road, within the Yandra Cluster and at the location of the collector substation.

#### *Micro-siting*

The Proponent has sought approval for a micro-siting allowance of 100 metre radius for the project turbines and associated infrastructure, to provide flexibility in detailed design and construction (including ongoing energy yield analysis and unforeseen environmental and construction constraints).

#### *Staging, Employment and Capital Investment*

The proposal is expected to take approximately 18 to 24 months to construct and have an operational life of between 20-25 years. The project is expected to be constructed in stages with up to two turbine clusters being constructed at a time. At the end of project design life (unless the components are refurbished or replaced with new available technology, subject to relevant planning approval), all above ground components of the project would be dismantled and decommissioned including the rehabilitation of internal access roads if not required for farming purposes. Underground cables (which would be trenched to below cropping level) are proposed to remain in-situ.

The project is expected to generate up to 100 construction jobs and up to 15 full time equivalent operational jobs and involve a capital cost of \$750 million.

#### *Transmission Line Connection to Grid*

A new 132 kilovolt overhead transmission line is required to distribute electricity produced by the wind farm (from the collector substation) to the existing high voltage electricity network located approximately 20-25 kilometres to the east of the site. The existing network comprises north-southeast running 132 and 66 kilovolt lines approximately 250 metres and 3.8 kilometres to the east of the township of Nimmitabel, respectively. The new line would connect to the existing Country Energy 132 transmission network and/ or the 66 kilovolt network (which

is planned to be upgraded by Country Energy to a 66/132 kilovolt rating, independent of this project). The new line is expected to comprise a double-circuit, single pole design, overhead 132 kilovolt line approximately 26 metres in height and within a maximum 45 metre wide easement. The new line would also require a switching substation (approximately four hectares in size) at the point of connection with the existing grid network.

The proposed new transmission line connection does not comprise part of the project and will be progressed separately by Country Energy (the network operator) under Part 5 of the *Environmental Planning and Assessment Act 1979*. Country Energy will therefore constitute the Proponent for the transmission line project. Design and construction of the transmission line will however be undertaken by the wind farm proponent, Wind Prospect (CWP) Pty Ltd (the parent company of Boco Rock Wind Farm Pty Ltd). Wind Prospect (CWP) Pty Ltd is currently undertaking the necessary environmental and planning studies for the transmission line on behalf of Country Energy.

A route options study into possible route corridors for the line (refer Figure 3) has been completed by Wind Prospect (CWP) Pty Ltd with the southern corridor identified as the preferred route. A Review of Environmental Factors is currently under preparation for the preferred option. Should the project be approved by Country Energy, the transmission line is expected to take approximately six months to construct. The ongoing function of the 132 kilovolt transmission line at the end of the operational life of the wind farm, would be subject to normal network planning and management decisions by the Country Energy as the network operator.

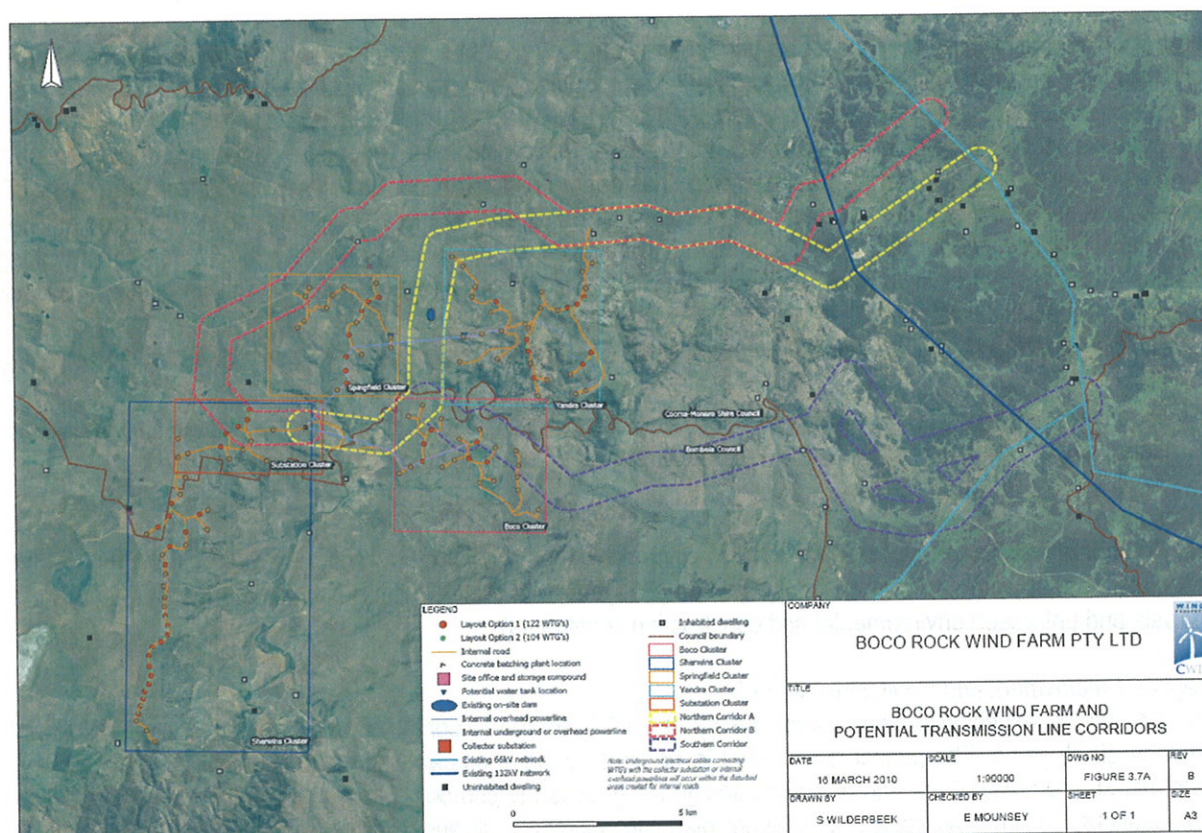


Figure 3: Transmission Line Route Options Investigated (Wind Prospect Pty Ltd, May 2010)

## 2.2 Changes to Project Since Exhibition

The exhibited project comprised three additional turbines within the "Springfield" cluster with the total number of turbines for the project amounting to between 125 (layout 1) and 107 (layout 2). Five of the turbines located within the Springfield cluster were identified in the exhibited Environmental Assessment as being located on land mapped as "known" habitat for the Commonwealth and NSW listed threatened species the Grassland Earless Dragon (refer Figure 6 of Section 5.1). "Known habitat" has been mapped as the areas in the general vicinity of areas where individuals of the species were recorded in site surveys. In response to concerns raised in submissions, the Proponent has determined to remove three turbines from the Springfield cluster, to further avoid and minimise impacts to known areas of Grassland Earless Dragon habitat (refer Figure 6 of Section 5.1). The removal of these additional turbines would reduce the area of "known Grassland Earless Dragon habitat"



impacted for the project from 5.6 to 2.9 hectares and the total impact of the project on Grassland Earless Dragon habitat ("known" and "potential") from 103.6 to 100.9 hectares. In addition to this, the Proponent has also made a minor change to the alignment of the access track for the Yandra cluster to minimise impacts to hollow bearing trees in the area. The locations of changes to the project are shown in Figure 4 below.

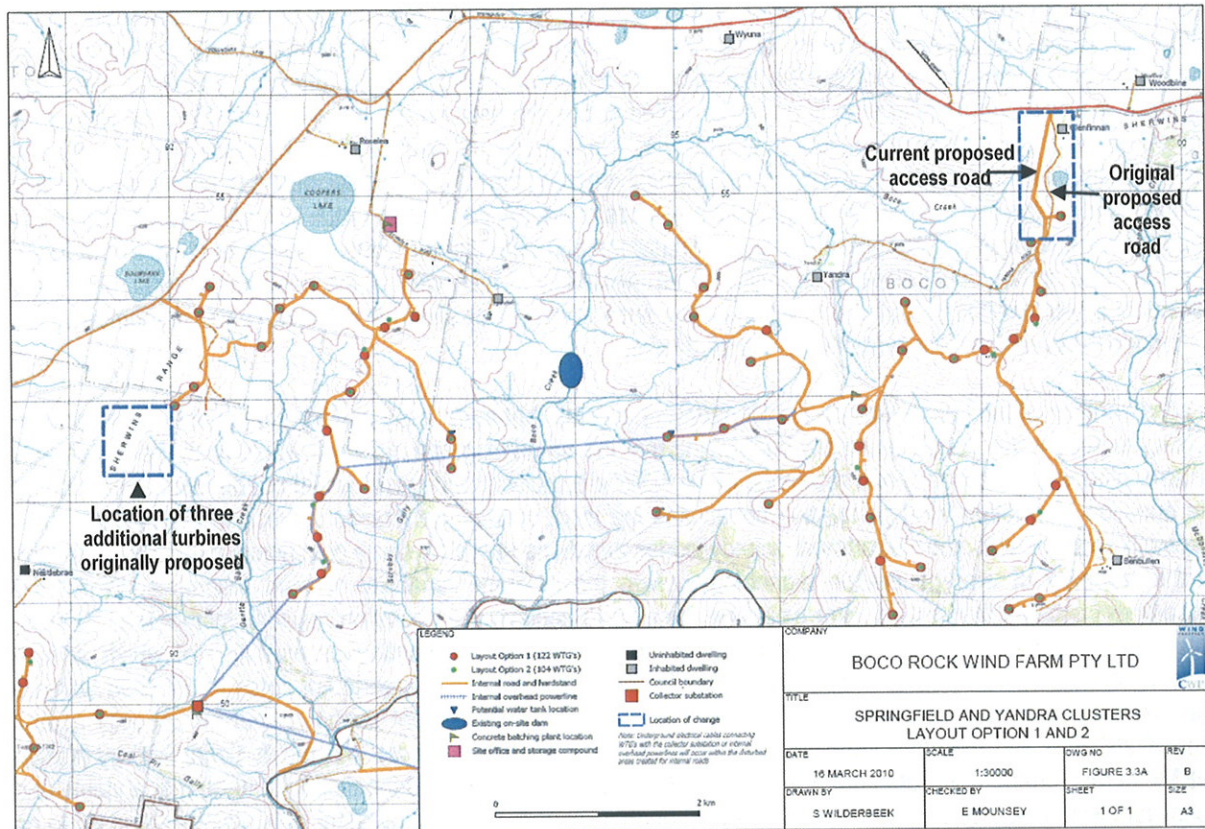


Figure 4: Location of Project Changes since Exhibition (modified from Wind Prospect Pty Ltd, May 2010)

### 2.3 Project Need

Electricity demand in NSW is predicted to rise and exceed existing reserves unless new generation capacity is installed. Both the NSW Government inquiry into electricity supply (Owen Report, 2007) and the National Electricity Market Management Company Statement of Opportunities (2007) predicted that additional generating capacity would be required by 2013/2014 to ensure on-going security and reliability of supply. Whilst the 2008 and 2009 Statement of Opportunities revised and pushed back this date by two years taking into account reduced overall demand resulting from the Global Financial Crisis and new generation capacity expected to come on line in the interim (Tallawarra, Uranquinty, Colongra and the upgrade of the existing Eraring Power Station), low reserve conditions are still expected to be reached by mid decade with a deficit of 182 megawatts predicted by 2015/2016. Based on forward predictions, the shortfall could be as much as 1450 megawatts by 2018/19. Additional capacity limitation may also result from drought conditions and associated water restrictions on existing hydro and coal-fired generators. While demand management and efficiency measures have an important role to play, it is recognised that these approaches alone would not be sufficient to address the predicted deficit in generation reserve by 2015/2016 without the addition of new generating capacity to the network.

On this basis, the Department accepts that new generating sources are required to meet the growing electricity demand and forecast future capacity deficits of the State. The Department considers that in conjunction with relevant demand management and efficiency measures, a diverse mix of local embedded generating solutions would provide the most risk-averse method of achieving a secure and reliable electricity supply base for the State, which is resilient to changing market factors including a more constrained carbon market and water restrictions associated with drought (which may affect the performance of existing hydro and coal-fired generators). Local embedded generation in regional areas would promote greater transmission efficiencies (and associated greenhouse gas benefits from reduced transmission losses) by reducing the need for electricity to be delivered from further afield. This also has the potential to facilitate more efficient supply to the areas of greatest demand being the load centres of Newcastle-Sydney-Wollongong.