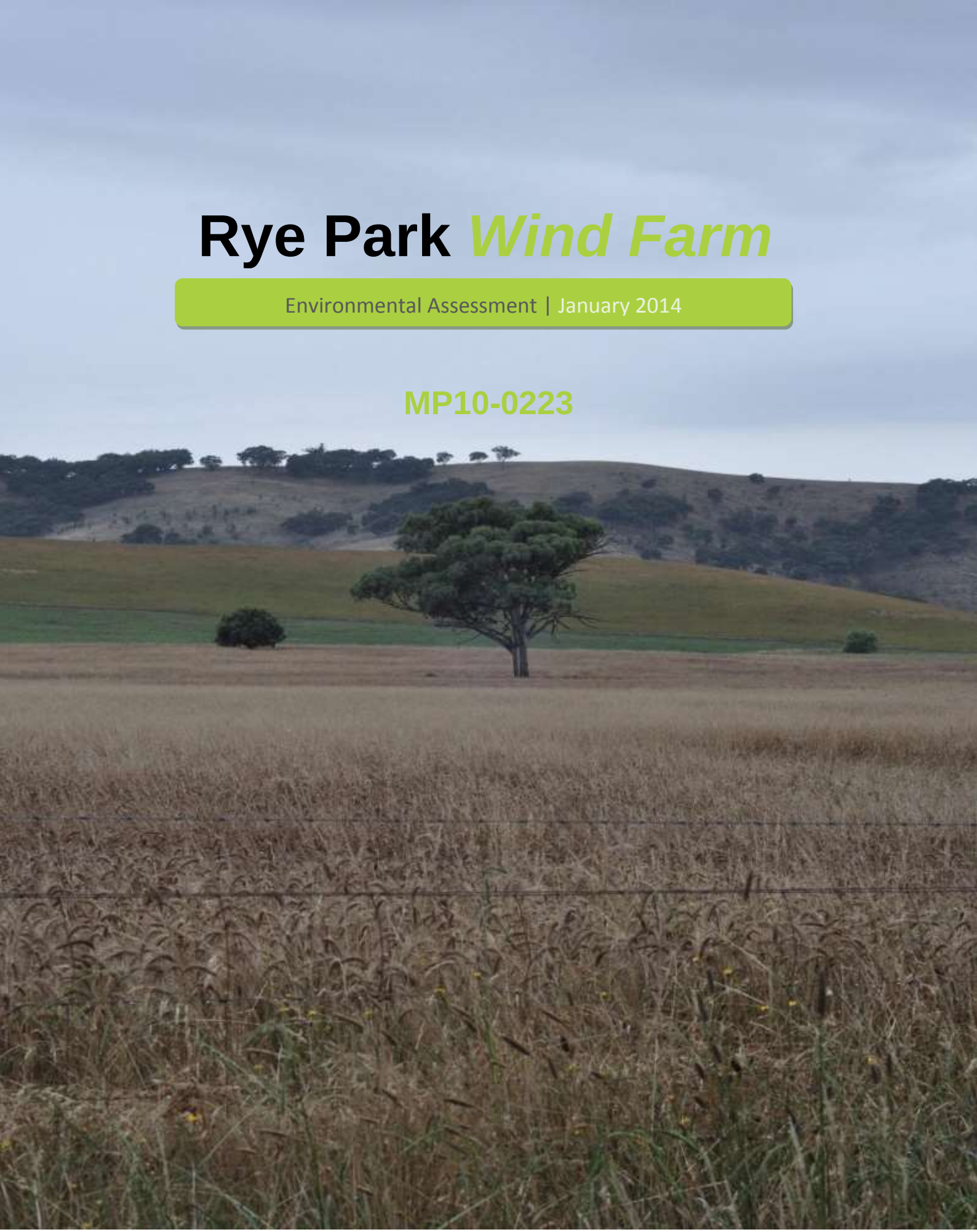
Rye Park *Wind Farm*

Environmental Assessment | January 2014

MP10-0223



EPURON

Rye Park *Wind Farm*

Environmental Assessment | January 2014

MP10-0223

Prepared By:

Epuron Pty Ltd
Level 11, 75 Miller Street
North Sydney NSW 2060
AUSTRALIA

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Foreword

As one of the leading renewable energy developers in New South Wales, Epuron is proud of its proposal to build the Rye Park Wind Farm. This wind farm will provide multiple opportunities to capture much needed investment and job creation in the local area, and also brings environmental benefits that clean, green, renewable energy provides to the wider community.

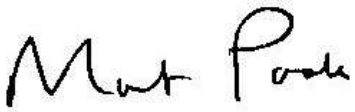
Wind farms play a vital role in delivering renewable energy to meet New South Wales and Australia's growing demand for cleaner sources of electricity. They also reduce harmful greenhouse gas emissions and help to secure a more sustainable future.

Epuron strives to ensure that its projects are developed and built in a manner that recognises the importance of an ongoing, long-term relationship with its landowners and the local community.

We believe this renewable energy project enjoys the support of the majority of people living in the local community and trust this application demonstrates our thoroughness and allows you to make an informed decision on the project's merits.

In preparing this Environmental Assessment for the Rye Park Wind Farm we would like to thank the many stakeholders and community members that have provided their feedback and contribution towards its preparation.

Sincerely,



Martin Poole
Executive Director



Andrew Durran
Executive Director

Addendum 21 March 2014

The Environmental Assessment for the Rye Park Wind Farm (MP 10_0223) was prepared in accordance with Part 3A of the Environmental Planning and Assessment Act 1979. On 13 March 2014 the NSW Department of Planning and Infrastructure advised that the Environmental Assessment was adequate for public exhibition.

On 21 March 2014, by order of the Minister for Planning and Infrastructure published in the NSW Government Gazette, the project ceased to be a transitional Part 3A project and became a 'State Significant Development'. Accordingly, the environmental assessment requirements and the statement of environmental assessment under Part 3A are taken to be environmental assessment requirements and an Environmental Impact Statement under the corresponding provisions of Part4 (clause 6(3)(b), Schedule 6A Transitional arrangements—repeal of Part 3A, Environmental Planning and Assessment Act 1979).

For clarity, when reading this Environmental Assessment, any reference to Part 3A is to be read as a reference to State Significant Development (Division 4.1 of Part 4, Environmental Planning and Assessment Act 1979).

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1 Executive Summary

1.1 Introduction

The purpose of the executive summary is to provide an overview of the key elements of the proposed Rye Park Wind Farm, a 126 turbine wind farm project located to the north of Yass and southeast of Boorowa, New South Wales. The site sits on the edge of the Southern Tablelands and the South West Slopes in the vicinity of the township of Rye Park. The site is approximately 250 km south west of Sydney and is located on freehold and leasehold land within and adjacent to agricultural areas, predominantly used for grazing sheep and cattle.

The site has been selected for its exposed windy ridges, cleared grazing land and proximity to the national electricity grid. The majority of land in the region is currently used for commercial agriculture (sheep and cattle grazing) and has been cleared and grazed over many decades.

The Environmental Assessment (EA) has been prepared to assess the potential environmental impacts and highlight the key benefits associated with the development of the Rye Park Wind Farm. The project will be assessed as a Major Project under Part 3A of the NSW Environmental Planning and Assessments Act 1979. Under this Act the project also meets the criteria for Critical Infrastructure as a renewable power generator with the capacity to generate in excess of 30 MW.

The Proponent for the Project is Rye Park Wind Farm Pty Ltd, a wholly owned subsidiary of Epuron Pty Ltd, an Australian renewable energy company established in North Sydney in 2003. Epuron is one of the most experienced wind energy development companies in NSW, with approved projects including Cullerin Range, Conroy's Gap, Gullen Range, Silverton and White Rock wind farms.

This executive summary provides an overview of the EA. Further details of each aspect of the EA can be found throughout the document and in the specialist studies that are appendices to this EA.



Figure 1-1 A ridge forming part of the Rye Park Wind Farm at the corner of Cooks Hill and Rye Park – Dalton roads

1.2 Project Outline

The Rye Park Wind Farm would involve the construction, operation and decommissioning of up to 126 wind turbines, together with the ancillary structures, access tracks and electrical infrastructure required to connect the project into the existing national electricity network. Figure 1-2 on the following page shows the proposed turbine layout and site boundary.

This project would directly involve approximately 38 properties that are currently used for agriculture and grazing purposes. These existing uses would continue with minimal interruption from the wind farm during construction and operation.

The wind turbines would have a maximum tip height (tower plus blades) of 157 metres above ground level and would be located on a series of ridgelines running north to south near the towns of Yass and Rye Park.

The wind turbines would be electrically connected by a series of underground and overhead cables joining each wind turbine to one of two on-site collection substations. A new overhead powerline, rated at up to 330 kV (nominal) capacity and approximately 35 km in length, running north-south along the length of the wind farm site would connect to the two collection substations and the wind farm connection substation. A short span of new overhead 330 kV powerline, approximately 100-200 metres in length, would connect the wind farm connection substation to the existing 330 kV TransGrid transmission line, which crosses the southern end of the site.

Additional permanent structures such as an operations and maintenance facility would be required as well as temporary construction facilities. Minor upgrades to local roads would be required for the delivery, installation and maintenance of wind turbines and the related facilities.

Table 1-1 Summary of the project

Aspect of the Project	*Description*
Project Summary	Construction and operation of a 126 turbine wind farm approximately 250 kilometres south west of Sydney, NSW. The project would have the ability to produce around 1,192,000 MWh of renewable energy every year, equivalent to the average consumption of around 149,000 homes (based on a 36% capacity factor).
Infrastructure & Facilities	The site will accommodate a wind farm connection substation, up to two collection substations, overhead powerlines and an operations and maintenance facility. Access tracks approximately 5-6 metres wide (wider at bends) would connect all of the wind turbines and associated infrastructure.
Electrical Connection	Underground and overhead electrical cabling and a new overhead powerline would connect the wind turbines to the on-site collection substations and wind farm connection substation. The collection substations would include transformers to step up the voltage from 22 kV or 33 kV to 330 kV and the wind farm would be connected to the existing transmission network via a connection substation adjacent to the existing 330 kV transmission line.
Employment	The construction phase would create approximately 363 jobs in direct employment and there would be a requirement for around 34 ongoing operation and maintenance jobs during the life of the wind farm.
Project Life	Once installed, the turbines would operate for an economic life of up to thirty years. After this time the turbines may be refurbished/replaced to improve their performance or decommissioned and removed from the site.
Environmental Benefits	Carbon Dioxide (CO_2) emissions reductions of 1,153,000 tonnes per year and an increased renewable generation source for NSW.
Installed Capacity	The project would have 126 turbines with an installed capacity in the range of 189 –378 MW based on 126 wind turbines at 1.5 - 3.0MW each.

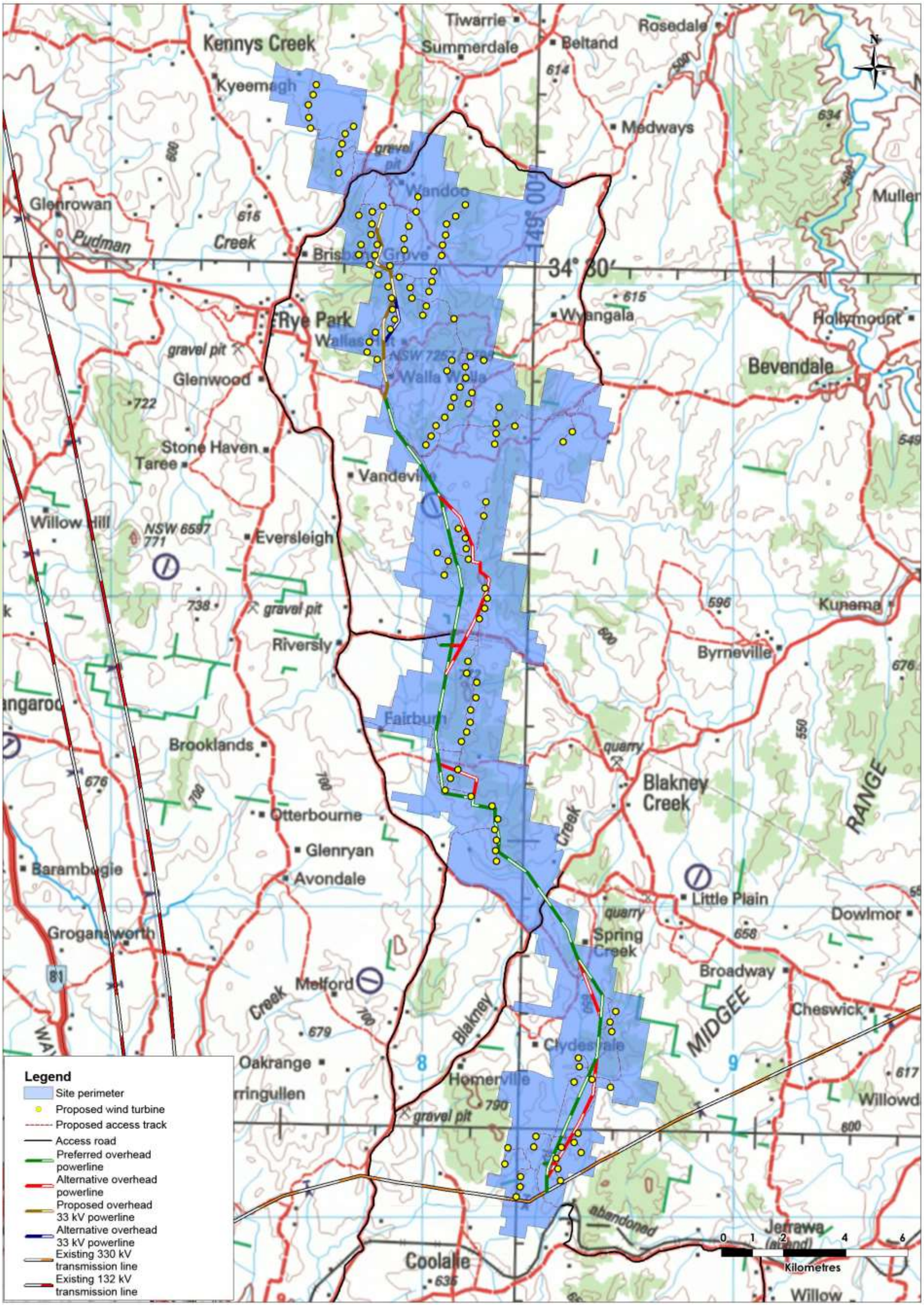


Figure 1-2 Rye Park Wind Farm turbine layout & site boundary

1.3 Strategic Justification

The NSW Government is developing the Renewable Energy Action Plan (REAP) to support the achievement of the national target of 20% renewable energy by 2020. The REAP positions NSW to increase the use of energy from renewable sources, such as wind energy, at least cost to the energy customer and with maximum benefits flowing to NSW.

The need for power

Primary drivers for developing renewable energy projects in NSW such as the Rye Park Wind Farm are: meeting a growing demand for electricity, the need for reducing greenhouse gas (GHG) emissions through clean energy generation sources, and contributing toward state and federal renewable energy targets.

Electricity consumption continues to grow, and the additional demand must be met by either increased fossil fuel generation or an increase in generation from renewable sources such as wind power.

TransGrid's Annual Planning Report (2012) and AEMO's Annual Electricity Statement of Opportunities (2011) confirms that growth in demand for electricity will soon exceed supply during peak times. Over the next 10 years energy use in NSW is expected to increase at an average of 1.6% per year. By 2020 electricity demand in NSW is expected to be 87,745 GWh/an, an increase of approximately 13,000 GWh/an over today's consumption (AEMO, 2011; TransGrid, 2012).

Meeting this demand will require our existing electricity generators to increase their annual output and the development of additional power generation will also be required. AEMO has estimated that additional power generating capacity will be required to manage peak periods in NSW by summer 2018/19. Alternative sources of generation need to be developed to meet this expected demand growth to ensure reliability of supply and avoid power outages and blackouts (TransGrid, 2012).

The Rye Park Wind Farm would contribute towards this growing demand for generation and decrease the country's dependence on fossil fuel power stations, which currently contribute over 90% of electricity generation in the NEM. The Rye Park Wind Farm represents a large sized wind farm with an installed capacity of around 378 MW based on a 3.0 MW turbine.

Based on the *NSW wind farm greenhouse gas savings tool* developed by the Department of Environment, Climate Change and Water (DECCW), the Rye Park Wind Farm will reduce greenhouse gas emissions by around 1,153,000 t CO_2e per annum. This is equivalent to taking 314,000 cars off our roads, and will contribute to global efforts to mitigate climate change.

The benefits to the region

There are also benefits to the local economy through job creation and investment. The Proponent is committed to developing this project in a way which minimises the adverse local impacts while maximising the potential energy in the wind resource and the benefits to the local community.

The project offers the following benefits:

- Production of more than 1,192,000 MWh of electricity per year - sufficient for the average consumption of around 149,000 homes;
- Improvement to the security of electricity supply through diversification of generation sources and locations;
- Reduction of greenhouse gas emissions by approximately 1,153,000 t CO_2e per annum;
- Contribution to the State and Federal Governments' target of providing 20% of consumed energy from renewable sources by 2020; and
- Creation of local employment opportunities and local economic benefits; and,
- An injection of up to $1,708 million into the Australian economy through the inclusion of flow on effects and multipliers.
- The creation of up to 363 direct employment jobs in the region during the construction phase and up to 34 permanent jobs for the life of the project.

1.4 Consideration of Alternatives

Site Selection

The site for the proposed Rye Park Wind Farm was fundamentally identified due to its excellent wind resource, proximity to an existing strong transmission network and the identification of willing landowners. A prefeasibility assessment revealed the site had excellent potential due to its elevated ridgelines, access via a main highway and relatively low density of residential houses.

Design Principles

Potential wind farm sites in NSW are typically located in areas with elevated ridgelines and strong prevailing winds. Due to these geographical attributes the potential turbine locations are more limited than on flatter areas such as near the coastal plains. Standard distances between turbines must be considered in conjunction with the prevailing wind conditions to avoid unnecessary turbulence that can lead to a decrease in energy yield and mechanical stress on the turbines. While the final turbine model has not yet been selected, a likely turbine size of 3.0 MW was considered when developing the layout for this EA as this presents the maximum design impact.

Layout Adjustments

The design of the wind farm layout was an iterative process that sought to maximise the energy potential of the site while minimising amenity impacts to the surrounding community. Community feedback and various expert assessments were considered when adjusting the turbine locations in order to design the most appropriate layout given the surrounding environment. In some instances, turbines were relocated and in some cases deleted to avoid or minimise impacts in response to issues such as noise, ecological, heritage and community concerns.

1.5 Planning Context

State Legislation

The determination process for the proposed Rye Park Wind Farm is governed by the NSW Environmental Planning and Assessment Act 1979 (EP&A Act). Having a capital investment value of more than $30 million, the Rye Park Wind Farm is a Transitional Part 3A project ('critical infrastructure', having the capacity to generate in excess of 30 megawatts). The determination is to be made by the Planning Assessment Commission, under delegation from the Minister.

The local Councils are not the Consent Authority for this project, and there is no obligation to comply with all relevant Development Control Plans (DCPs) prepared by each Council. However, compliance or otherwise against these DCPs must be taken into consideration in carrying out the assessment.

The Director General of the Department of Planning has issued requirements for Epuron to consider and address in this EA (known as the Director General's Requirements or DGRs). These requirements incorporate inputs from the various government agencies that will provide advice to the Department in the assessment of this proposal.

The steps in the planning determination process are outlined in Table 1-2.

Table 1-2 Planning Assessment Process

Stage of the Assessment	*Description*
Project Application and Preliminary Environmental Assessment	A Preliminary Environmental Assessment (PEA) is conducted by the Proponent to support the Project Application and give context around the site and potential issues that would need to be considered. This was submitted by Epuron in January 2011.
Director General Requirements (DGRs)	Using the PEA and advice from other governmental departments the Department of Planning and Infrastructure (DPI) issues DGRs. This is a list of issues that must be addressed by the proponent in an EA. The DGRs were issued to Epuron on 14 February 2011 and Supplementary DGRs were issued to Epuron on 16 August 2011.
Environmental Assessment and Consultation	The Proponent prepares an EA following the DGRs. This involves extensive studies to be conducted on site as well as consultation with the local community and other stakeholders.
Submission and Departmental Review of the EA	The Proponent submits the EA and supporting studies to the DPI who undertakes a review of the EA to ensure the document is acceptable and

Stage of the Assessment	Description
	addresses all issues raised in the DGRs. The DPI may require further work to be carried out by the Proponent.
Public Exhibition	The EA is placed on display locally and electronically for the public to review and provide feedback via submissions to the DPI. It is expected the EA will be on display for a minimum of 60 days.
Response to Submissions	The DPI provides the Proponent with a summary of issues raised in submissions. The Proponent is required to respond to each issue that is raised in the submissions and submit a Submissions Report to support the EA.
Determination	The DPI considers the EA and the Submissions Report, preparing its advice and recommendations for the Minister for Planning and Infrastructure, and the Planning Assessment Commission (as delegate of the Minister) determines the application.

About This Report

This EA was prepared with the intention of providing the reader with a clear concise overview of the project details, the rationale behind the project and the issues that have been considered from a social and environmental perspective. Additional detail is provided in the attachments and appendices. The EA references these sections wherever relevant in order to aid the reader in locating the more detailed sections.

This EA document comprises the following sections:

Main Report: Environmental Assessment for the proposed Rye Park Wind Farm

Attachments:

Attachment 1 – Involved Land Parcels

Attachment 2 – Residence Coordinates

Attachment 3 – Turbine Coordinates

Attachment 4 – Letter Confirming Part 3A Position

Attachment 5 – Director General's Requirements and Supplementary Director General's Requirements

Attachment 6 – Community Consultation Plan

Attachment 7 – Consultation Material

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Appendix B – Noise Assessment

Appendix C – Biodiversity Assessment

Appendix D – Aboriginal and European Heritage

Appendix E – Traffic and Transport Assessment

Appendix F – Telecommunications Impact Assessment

Appendix G – Decommissioning and Rehabilitation Plan

1.6 Consultation

In 2010 the NSW Government commissioned a report *'Community Attitudes to Wind Farms in NSW'* to assess residents attitudes towards targets set to achieve 20% renewable energy sources by 2020. The survey was conducted by telephone of 2022 resident's aged 18 years and older and 300 businesses across the 6 Renewable Energy Precincts, including the ACT/NSW Border Areas and a control area in regional NSW.

One of the key findings from this study was the overall support for wind farms as a source of energy generation within the vicinity of a residence. 85% of the population across the precincts supported wind farms in NSW, with 80% supporting them within their local precinct, and 79% supporting a wind farm being built 10 km from their residence.

Based on this survey, including observations made by the project consultation team, it can be concluded that communities in the Yass Valley region are generally supportive of wind farms. The survey also showed that a majority of the population did not feel they had adequate information about wind farms, even in areas where general wind farm awareness was much greater.

Epuron prepared a Project Consultation Plan to inform and guide the community consultation and development program for the Rye Park Wind Farm. The Project Consultation Plan focused on providing information to the local community about the project and the assessment process and outlining the mitigation of potential impacts. The Project Consultation Plan was implemented and has proved to be effective and has included individual consultation with neighbouring residents of the project, newsletters, a Community Consultation Committee as well as an information 'Open House' day held in Rye Park in July 2012.

1.7 Landscape and Visual Impacts

The Landscape and Visual Impact Assessment (LVIA) for the proposal has been prepared by the specialist consultant Green Bean Design (GBD). The LVIA involved a comprehensive evaluation of the visual character of the landscape in which the wind farm would be located, and an assessment of the potential significance of landscape and visual impacts that may result from the construction and operation of the wind farm, taking into account appropriate mitigation measures.

In terms of overall landscape sensitivity, the LVIA determined that in aggregate each of the five Landscape Characteristic Areas within the 10km wind farm viewshed had a medium/medium to high sensitivity to accommodate change, and represented a landscape that is reasonably typical of other landscape types found in surrounding areas of the Southern Tablelands. The landscape values have been considered and determined as a set of professional judgements on the importance to society of the local and regional landscape surrounding the proposed wind farm and are not considered to have the potential to have a significant impact on existing landscape values.

The LVIA identified a total of 51 potential involved and uninvolved residential view locations within the Rye Park wind farm 2 km viewshed. An assessment of each potential residential view location indicated that for the Rye Park wind turbine design layout:

- 10 of the 51 residential view locations have been determined to have a low visual significance;
- 10 of the 51 residential view locations have been determined to have a low to medium visual significance;
- 12 of the 51 residential view locations have been determined to have a medium visual significance;
- 17 of the 51 residential view locations have been determined to have a medium to high visual significance; and
- 2 of the 51 residential view locations have been determined to have a high visual significance.

The LVIA determined that the majority of residential dwellings and public viewpoints located beyond the 2 km wind turbine offset are unlikely to be significantly impacted by the wind farm development.

Taking into account the mitigation measures outlined in Section 9.4, the LVIA concludes that the Rye Park wind farm project would have an overall medium visual significance on the majority of uninvolved residential view locations within the 10 km viewshed as well public view locations.

The LVIA identified 27 residential view locations within 2 km of the proposed 330 kV powerline route (including the three alternative route options). An assessment of the potential visual significance of the proposed powerline indicated that:

- 9 of the 27 residential dwellings would have a Nil visual significance;
- 12 of the 27 residential dwellings would have a Low visual significance;
- 3 of the 27 residential dwellings would have a Low to Medium visual significance; and
- 3 of the 27 residential dwellings would have a Medium visual significance.

1.8 Cumulative Impacts

An assessment of cumulative environmental impacts has been undertaken to consider the potential impact of the Rye Park proposal in the context of existing and proposed developments to ensure that any potential impacts are not considered in isolation.

The nearby proposed Bango and Rugby wind farm developments shown in Figure 1-3 are currently in the planning stage and are not yet approved. The proposed location and number of turbines associated with these developments was not publically available during the preparation of this EA. As the Yass Valley and Conroys Gap wind farm developments are around 20 km from the Rye Park wind farm site it is considered unlikely that they will contribute to any material additional cumulative impact. The potential for cumulative impact will ultimately be dependent on a number of factors such as the selected turbine type, separation distance between turbines, layout of turbines relative to the proposed Rye Park project and the actual sequence of projects constructed if commenced following approval.

An assessment of potential cumulative impact arising from visual, noise, traffic, ecology and heritage effects were assessed against the proposed wind farms and shown to have a minimal to negligible impact.

Whilst some degree of intervisibility between proposed projects is expected, the nature and extent of the undulating landform surrounding each of the project sites, would partially limit the overall potential for 'direct' and 'indirect' views for many of the residential dwellings located between them. Long distance views (around 30 km) can be obtained toward the existing operational Gunning and Cullerin wind farms from elevated areas of the landscape to the south east of the Rye Park project area. Although visible, these wind farms are unlikely to result in any significant additional level of 'direct' and 'indirect' cumulative impact within the Rye Park 10 km viewshed due to the distance affect on overall visibility between the existing and proposed wind farms.

Cumulative impacts are assessed and discussed further in Section 16.7.

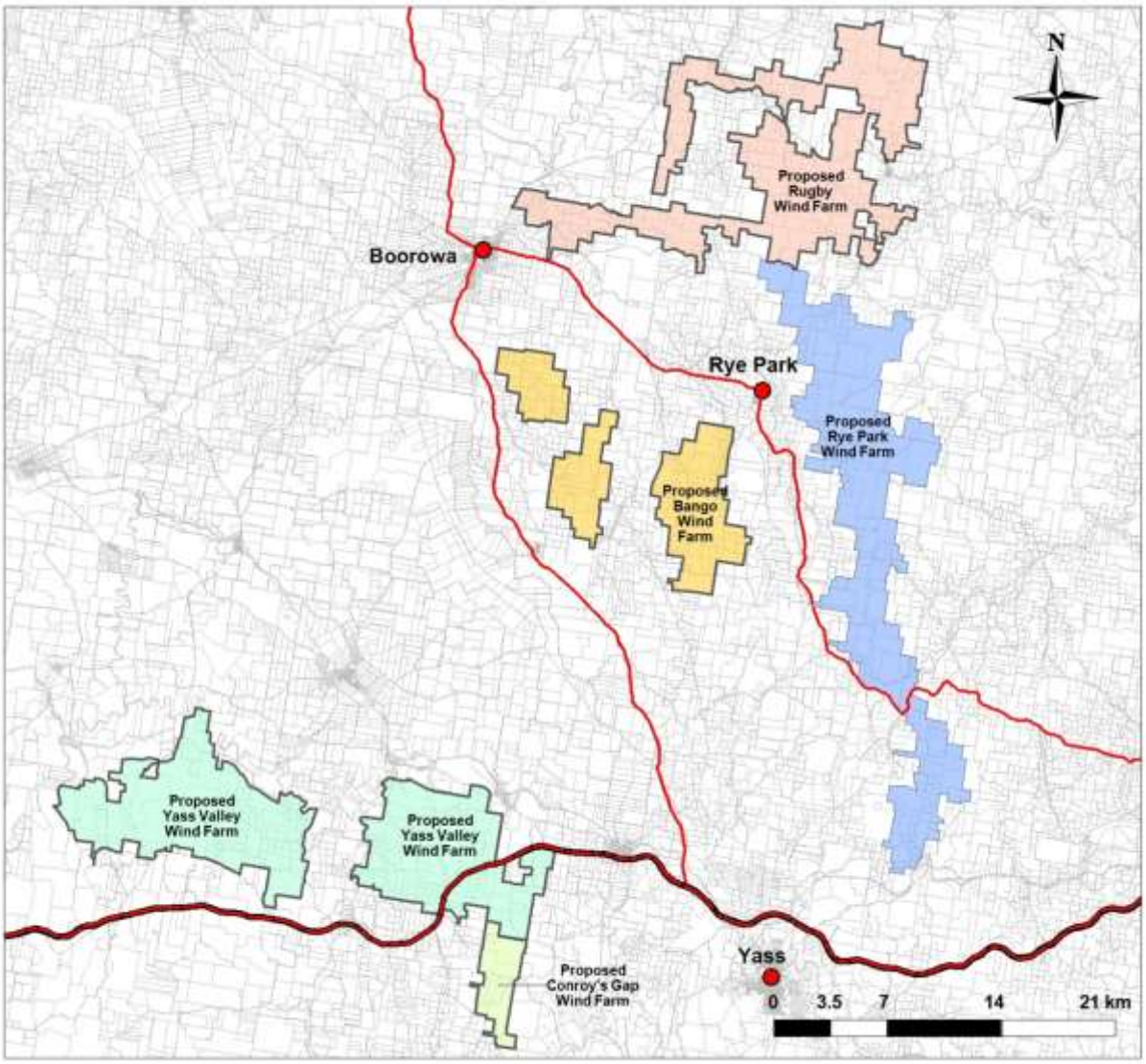


Figure 1-3 Proposed wind farms in the Yass region

1.9 Environmental Noise

A full assessment of the wind farms operational and construction noise was undertaken by an expert consultant, SLR Consulting Australia Pty Ltd. The Noise Impact Assessment (NIA) in Appendix B compares the wind farms predicted level to the limits set out in the South Australian Environmental Protection Authority "Environmental Noise Guidelines for Wind Farms (February 2003)" and World Health Organization limits to determine compliance. The assessment of noise from the wind turbines was completed by plotting the predicted noise levels against the limit curves for all wind speeds.

The results of the assessment showed that some minor exceedances were predicted in the initial layout and compliance could be achieved using Sound Management Mode on some turbines in the current layout. The result of the assessment showed that the noise levels of the mitigated layout were predicted to meet the relevant criteria at all receptor locations.

The project is yet to select and finalise the wind turbine make and model. Upon finalising the wind turbine selection a revised noise prediction and assessment will be completed to confirm compliance. Should any noise impacts be identified that exceed criteria then adaptive management practises could be implemented to mitigate or remove the impact.

As requested by the NSW Department of Planning and Infrastructure, additional assessments have been undertaken under the recently released NSW Draft Wind Farm Noise Guidelines. Assessments into low frequency noise and tonality have been undertaken and the results do not indicate any further investigation into these Special Audible Characteristics is required under the draft guidelines.

Construction noise was assessed based on the Interim Construction Noise Guidelines. Construction noise was predicted at all receivers using worst case construction impacts. A number of receivers were deemed 'noise affected' under the guidelines and it is recommended that a more detailed construction management plan be developed by prior to construction.

Blasting impact has been assessed and found to be acceptable. Construction traffic noise under a worse case has been found to comply with the NSW Road Noise Policy requirements. Substation and Transmission line noise predictions have been made and compared to the appropriate NSW Industrial noise policy limit and found to comply.

1.10 Ecology

Epuron commissioned a Biodiversity Assessment (BA) by NGH Environmental to assess the biodiversity impacts of the project with particular attention to threatened entities (species, populations and communities).

The project area is characterised by cleared farmland, mostly derived from former Box-Gum Woodland on the lower slopes and flats with Inland Scribbly Gum Dry Forest vegetation on the steeper sheltered slopes. Remnant stands of the original vegetation remain as paddock trees or larger scattered patches of forest/woodland on the lower slopes with more extensive forested areas on the ridge tops. The pasture ranges from exotic to native species dominated. This pattern of vegetation and land-use onsite is common across the locality.

Eleven vegetation types occur across the project site. No threatened flora species were detected during the surveys. A threatened species evaluation was undertaken to determine the presence of habitat in the project area and the likelihood of impact from the proposal for each species and community with potential to occur. Four threatened flora species and one EEC were identified with potential for impact.

Nine species of threatened birds and three species of threatened microbats were recorded during surveys in the project area: Brown Treecreeper (*Climacteris picumnus*), Diamond Firetail (*Stagonopleura guttata*), Speckled Warbler (*Pyrrholaemus sagittatus*), Flame Robin (*Petroica phoenicea*), Scarlet Robin (*Petroica multicolour*), Hooded Robin (*Melanodryas cucullata cucullata*), Varied Sittella (*Daphoenositta chrysoptera*), White-fronted Chat (*Epthianura albifrons*), Superb Parrot (*Polytelis swainsonii*), Eastern Bentwing-bat (*Miniopterus schreibersii oriane*), Eastern False (*Pipistrelle Falsistrellus tasmaniensis*) and the Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris*). Additional fauna species were identified with potential for impact.

Constraints mapping was used to inform the infrastructure layout. The proponent has undertaken several rounds of infrastructure layout revision to avoid impacts in areas identified as a high constraint in NGH Environmental's report and subsequent correspondence. Design measures to avoid impacts associated with vegetation clearing including loss of Box-Gum Woodland EEC and connectivity, are provided in the BA and include removing or relocating turbines from several areas.

Design measures to avoid blade-strike impacts associated with the operational phase of a wind farm including proximity to nest trees, were also undertaken and are summarised in the BA. These included removing or relocating turbines in close proximity to identified nests and in areas that may affect landscape connectivity.

Based on the assessments of significance, impacts arising from the proposal upon the threatened community and species known and likely to occur in the project area are considered manageable and unlikely to be significant. A Species Impact Statement (SIS) under the EP&A Act is not considered necessary. A referral to the Commonwealth government under the Environmental Protection & Biodiversity Conservation (EPBC) Act is also not considered necessary but will be progressed by the Proponent to achieve certainty. This conclusion assumes the effective implementation of the management measures provided in the BA.

1.11 Cultural Heritage

A Cultural Heritage Assessment was undertaken for the project by an expert consultant, NSW Archaeology, with input from the local Aboriginal community. The assessment considered the heritage and archaeological context of the project area to develop a methodology to help target a field survey of the study area for Aboriginal and non-indigenous heritage items.

The following five local groups are the registered aboriginal parties for the Project and were consulted and contributed to the preparation of the cultural heritage assessment:

- Onerwal Local Aboriginal Land Group;
- Carl and Tina Brown;

- Gunjeewong Cultural Heritage Aboriginal Corporation;
- Gundungurra Aboriginal Heritage Association Inc; and
- Buru Ngunawal Aboriginal Corporation.

Epuron would like thank these local groups for their contribution and assistance to the project.

A nine day field survey was undertaken during July 2012 with the assistance of the Buru Ngunawal Aboriginal Group. Results of the field survey showed proposed impact areas were assessed to be of low archaeological and heritage significance primarily due to their location on very rocky ridgelines and situated away from streams and rivers. It was predicted that aboriginal land use would have historically been related to low levels of hunting, gathering and transit through country. A very low density of small stone artefacts was found to be present on the project site.

Three European milky quartz outcrops were recorded across the project site and should be avoided during construction. These outcrops would have been used for the extraction of raw materials last century by European settlers.

1.12 Additional Issues

Traffic and Transport

The construction phase of the project presents the most traffic issues associated with the project as it generates the greatest volume of traffic. A Traffic and Transport Assessment considered the potential issues associated with the proposed wind farm and provided mitigation measures to minimise and avoid such issues.

Access to the site would primarily be via the Hume Highway at the southern end of the site. New unsealed tracks would be constructed to access the temporary construction compounds, operation and maintenance facility, connection substation, collection substations and the turbine locations across the site. Additional traffic generated from the project would not constitute a significant increase in existing volumes on the Hume Highway.

The operational phase would have a very minimal impact to traffic volumes as the turbines would be maintained by a relatively small crew of technicians likely to be based out of Yass or Canberra.

Aviation

Epuron has consulted with the relevant aviation associations in relation to air safety and potential hazards caused by the construction of turbines. The location of the proposed turbines would not encroach on an Obstacle Limitation Surface (OLS) of any registered or regulated aerodrome. The closest Civil Aviation Safety Authority (CASA) certified and registered aerodromes to the proposed wind farm site are Canberra and Goulburn airports, approximately 70 km to the south-southeast and 80 km to the east of the site respectively.

The presence and location of eleven agricultural airstrips identified within 5 km of the project have been assessed and considered in the design of the wind farm to ensure turbines do not encroach on any of the existing landing areas. The closest turbine to an existing agricultural landing strip is 570 m.

1.13 Land Management

Land Use

The wind farm project infrastructure is located on private property that is primarily used for grazing and agricultural purposes. Once operational the wind farm will have a negligible impact on normal farming operations and the agricultural capacity of the land as it would occupy only a few per cent of land from the involved landowner properties.

Hydrology and Drainage

The layout for the wind turbines and associated wind farm infrastructure has been designed with particular emphasis on protecting existing streams and ephemeral watercourses. The layout avoids crossing or interfering with watercourses wherever possible. This is to avoid and minimise any adverse impacts to the existing drainage and hydrological regime in the local area.

The water required for construction of this project will be sourced from Burrinjuck Dam in the Yass catchment area or from the Yass reservoir and permission will be obtained from the Yass Valley Council.

Once the wind farm is completed it will require only a small volume of water. This will be obtained through the use of storage tanks collecting water runoff from any of the permanent structures.

Soils and Landforms

The project is not predicted to have any significant adverse environmental impacts on the site or its surrounds, geology or soils as the overall surface disturbance is relatively small in size and manner.

A detailed geotechnical assessment would be conducted once the turbine locations have been finalised to determine the ground conditions and stability at each turbine site. No geotechnical issues are anticipated due to the favourable geological characteristics of the area.

An Environmental Management Plan (EMP) would be developed in accordance with the Best Practice Guidelines for Wind Energy Projects and the project consent conditions to ensure that issues such as erosion, weed control, air quality and drainage are appropriately addressed.

1.14 Environmental Management

Prior to the commencement of construction works a Construction Environmental Management Plan (CEMP) will be prepared to the satisfaction of the relevant authorities to manage and mitigate environmental impacts on the wind farm site. The CEMP will incorporate all relevant processes and mitigation measures for development activity and will include:

- Traffic and Transport;
- Erosion & Sediment Control Plan;
- Landscape Management Plan;
- Soil & Water Management;
- Chemical and Fuel Storage - to avoid pollution of surface and ground waters;
- Fire Management;
- Rail Safety Management Plan;
- Waste Generation and Disposal; and
- Additional measures mentioned in the Statement of Commitments.

Prior to the commencement of permanent wind farm operations an Operational Environmental Management Plan (OEMP) will be prepared to the satisfaction of the relevant authorities to manage and mitigate environmental impacts on the wind farm site. The OEMP will incorporate all relevant processes and mitigation measures for wind farm operations and will include:

- Health and Safety;
- Community and Communications
- Waste Generation and Disposal; and
- Additional measures mentioned in the Statement of Commitments.

1.15 Statement of Commitments

As a result of the thorough investigations undertaken a wide range of mitigation measures have been identified for the proposed Rye Park Wind Farm. These mitigation measures will be implemented where specified and relevant throughout the project to address potential issues arising from visual, noise, traffic, ecology, communications and impacts to the local community. The mitigation measures set out for each issue have been documented as a draft Statement of Commitments which would form the basis of the Construction and Environmental Management Plans (CEMP) and the Operational Environmental Management Plan (OEMP) to ensure that the project achieves maximum benefits while minimising the impacts to the local environment and community.

1.16 Contact Information and Further Details

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Phone: (02) 8456 7400

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2 Introduction – Project & Proponent

2.1 Overview of the Project

The proposed Rye Park Wind Farm is located to the north of Yass and southeast of Boorowa, New South Wales, on the edge of the Southern Tablelands and the South West Slopes in the vicinity of the township of Rye Park. The site is in close proximity to a number of proposed wind farms, as shown in Figure 2-1.

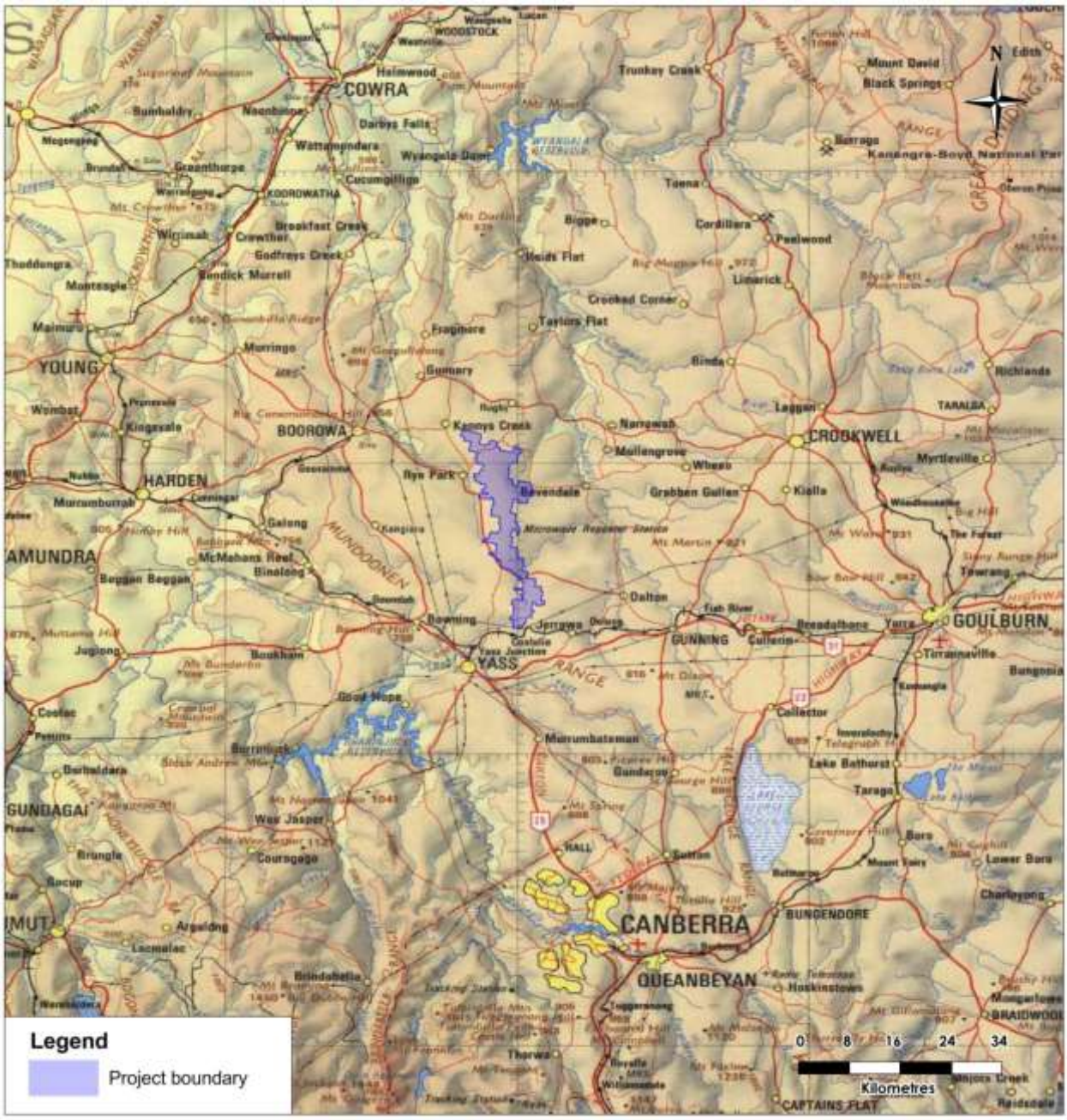


Figure 2-1 Proposed Rye Park Wind Farm location

The proposed site is located on freehold land within and adjacent to agricultural areas. The closest rural centre is the town of Yass, 10 km to the southwest from the southern boundary of the site. There are a number of local residences that surround the site; these have been identified through reviews of cadastral and topographic mapping, on-site inspection and aerial imagery.

The project would involve the construction, operation and maintenance of up to 126 wind turbines, together with the ancillary structures, access tracks and electrical infrastructure required to connect the project into the existing electricity network.

The turbines would be placed along a series of ridgelines and surrounding hilltops in order to maximise the renewable energy produced by the wind (see Figure 3-4 in Section 3.2 for details of the turbine layout).

2.2 Proponent and Stakeholders

Proponent: Rye Park Wind Farm Pty Ltd

The Proponent of the proposed Rye Park Wind Farm is Rye Park Wind Farm Pty Ltd; a wholly owned subsidiary of Epuron Pty Ltd. Epuron is the most experienced wind energy development company in NSW. Epuron commenced its operations in 2003 as Taurus Energy Pty Ltd and since that time, in NSW, has developed the largest wind farm, the largest number of wind farms, and the largest number of wind turbines as indicated in Table 2-1.

Epuron is therefore one of the largest wind farm developers in Australia.

Epuron operates out of its offices in North Sydney where it has a professional team with considerable development expertise and proven track record. Epuron undertakes its own developments including wind monitoring, site layout and design. For environmental assessments such as ecology, archaeology, noise and visual, appropriate specialists are engaged.

Table 2-1 New South Wales wind farm projects developed by Epuron

Project	*Turbines / Size*	*Development Status*	*Region*
Cullerin Range	15 turbines 30 MW	Operating – now owned by Origin Energy	Southern Tablelands
Conroy's Gap	15 turbines 30 MW	Development Approved	Southern Tablelands
Snowy Plains	15 turbines 30 MW	Development Approved	Monaro
Gullen Range	73 turbines	Development Approved, Under Construction – now owned by Goldwind Australia	Southern Tablelands
Silverton	598 turbines Stage 1 - 282 Stage 2 - 316	Joint Venture (JV) with Macquarie Capital Wind Fund – now owned by AGL Project Approval - stage 1 Concept Approval - stage 2	Far Western NSW
Yass Valley	152 turbines	Awaiting completion of Submission Report	Southern Tablelands
White Rock	119 turbines 238 MW	Development Approved	New England Tablelands
Eden	7 turbines 14 MW	Statement of Environmental Impacts lodged and awaiting determination	Illawarra / South Coast
Liverpool Range	Up to 550 turbines	Environmental Assessment lodged in December 2012 for assessment	Orana, Hunter & Northern Inlands

Consent Authority: Department of Planning and Infrastructure

The project will be assessed as a transitional Part 3A development project under the Environmental Planning and Assessment Act 1979 (the EP&A Act), accordingly the Consent Authority is the NSW Minister for Planning assisted by the Department of Planning and Infrastructure.

An additional consent may be required from the Federal Government, through the Department of Sustainability, Environment, Water, Population and Communities, under the Environmental Protection and Biodiversity Conservation (EPBC) Act 1999.

An outline of the assessment processes including consultation with the community and other government agencies is found in Sections 1 and 7.

Key Stakeholders

During the development of this project, Epuron and its consultants have actively engaged with a number of key stakeholders including:

- local councils – Boorowa Council, Yass Valley Council and the Upper Lachlan Shire Council;
- State Government agencies – to receive specialised advice on the assessment of key issues;
- local community – involved and neighbouring or nearby landowners as well as community groups; and
- TransGrid – the high voltage electricity transmission infrastructure that the project would connect into is owned and operated by TransGrid.

During the assessment process the Department of Planning and Infrastructure (DPI) will seek comments on the project from key stakeholders and relevant government agencies, which will include a review of this Environmental Assessment (EA).

2.3 Development Application Process

Purpose of this document

This EA has been prepared to support the Development Application of the Rye Park Wind Farm and to address the Director General's Requirements (DGRs) issued by the NSW Department of Planning and Infrastructure.

This EA presents:

- a detailed description of the project;
- a summary of the development and assessment process;
- findings and recommendations from the detailed EA studies; and
- a description of the consultation plan Epuron is implementing in relation to this project.

Overview of the planning process

The proposal is a transitional Part 3A project application and is required to be assessed under both state and federal government environmental legislation, specifically the *Environmental Planning and Assessment Act 1979 (NSW)* and the federal *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The proposal will also have regard, to the maximum extent possible, to the draft NSW Wind Farm Planning Guidelines (2012).

In relation to this EA, we note:

- The proposed Rye Park Wind Farm would have a capital cost in excess of $30 million and in the Minister's opinion is considered to be a Major Project, under Part 3A of the EP&A Act (Minister's opinion dated 8 December 2010, included in Attachment 4). Part 3A of the EP&A Act consolidates the assessment and approval regime for all Major Projects that require the approval of the NSW Minister for Planning and Infrastructure.
- The proposed Rye Park Wind Farm has the capacity to generate in excess of 30 Megawatts and therefore is a Critical Infrastructure Project under section 75C of the EP&A Act by virtue of the Critical Infrastructure declaration made by the NSW Minister for Planning on 11 November 2009.

The assessment process for the project is as follows:

- The Proponent of a Major Project first submits a Project Application for the approval of the Minister for Planning and Infrastructure.
- The Department of Planning and Infrastructure seeks input from key government agencies in detailing the requirements of the EA.
- The Director-General of Department of Planning and Infrastructure then issues the Proponent with requirements for the EA, indicating the issues to be addressed, the level of assessment required and consultation requirements. These are the DGRs.

- The DGRs may also require the Proponent to include in the EA a Statement of Commitments (SOC) the Proponent is prepared to make for environmental management and mitigation measures on the site.
- After an EA has been prepared and submitted to the DPI, the report is placed on public exhibition for a minimum of 60 days during which time submissions from the community, local government and state agencies are accepted.
- Following the consultation period, the Director-General may require the Proponent to respond to the submissions, revise the proposal or revise the Statement of Commitments.

Consistent with former Part 3A, this assessment was preceded by an issues scoping exercise to identify and prioritise issues related to the project. A Preliminary Environmental Assessment identifying and prioritising issues relating to the project was submitted to the Department of Planning and Infrastructure (DPI) on the 14 January 2011. The DPI responded on 14 February 2011 and 16 August 2011 with the DGRs and Supplementary DGRs for this EA.

2.4 Content in this Environmental Assessment

This EA draws together a number of specialist studies investigating the potential impacts of the wind farm. The findings of these studies have been summarised into the EA and are also included as standalone documents appended to this EA. This EA concludes with a Statement of Commitments to which the Proponent would commit, pending approval of the proposal, in order to manage identified impacts.

A brief summary of the sections in this EA is as follows:

- **Section 1** – The Executive Summary aims to give a brief overview of the wind farm and how impacts will be managed.
- **Section 2** – Introduces the project and the process.
- **Section 3** – Provides a detailed description of the project and the activities involved with each stage of development.
- **Section 4** – Provides a context for the project in the form of an overview of the current energy situation and how wind energy fits in to this, including justification for the project.
- **Section 5** – Describes the alternatives considered for this project
- **Section 6** – Provides a description of the planning process
- **Section 7** – Details Epuron's community consultation process
- **Section 8** – Addresses the risk analysis of the issues identified in the DGRs
- **Section 9** – Visual and Landscape Impact Assessment
- **Section 10** – Operation and Construction Noise Impacts
- **Section 11** – Ecological Assessment
- **Section 12** – Aboriginal and European Heritage Assessment
- **Section 13** – Traffic and Transport
- **Section 14** – Hazards and Risks
- **Section 15** – Water Supply, Water Quality and Hydrology
- **Section 16** – General Environmental Assessment
- **Section 17** – Epuron's draft Statement of Commitments
- **Section 18** – Conclusions

3 The Project

3.1 Description of the Project

This section of the EA provides a detailed description of the project and in particular outlines the work associated with the construction and operation of the wind farm and all associated infrastructure.

This EA has assessed the impacts of locating wind farm components within an up to 200 m wide corridor in which all proposed infrastructure will be contained, comprising a total area of approximately 4,850 hectares (Project Corridor). The assessed Project Corridor is shown on Figure 3-2 and Figure 3-3.

The main components of the proposed wind farm included in this application, each of which will be located within the assessed Project Corridor, are:

- up to 126 wind turbines, each with:
  - a capacity between 1.5 and 3.0 MW;
  - three blades mounted on a tubular steel tower, with a combined height of blade and tower limited to a maximum tip height of 157 metres;
  - an adjacent pad mounted wind turbine transformer, crane hardstand area, and related turbine lay down area;
- a new 330 kV wind farm connection substation located adjacent to the existing TransGrid 330 kV transmission line (Yass – Bannaby) that traverses the southern section of the site;
- up to two new 22 or 33/330 kV collection substations located across the wind farm;
- a new overhead powerline approximately 35 km in length, rated at up to 330 kV (nominal) capacity, running north-south along the length of the wind farm site to the two collection substations. The new powerline would be mounted on a single pole type structure and may be single-circuit or double-circuit as required;
- underground and overhead 22 or 33 kV electrical cabling linking the wind turbines to the on-site collection substations and connection substation. This will include the crossing of existing roads such as Rye Park Rugby Road toward the northern end of the site and Blakney Creek Road toward the southern end of the site;
- an operation and maintenance facility incorporating a control room and equipment storage facilities;
- temporary concrete batching plants and construction facilities;
- access tracks required for each wind turbine and the related facilities above;
- minor upgrades to local roads, as required for the delivery, installation and maintenance of wind turbines and the related facilities above; and
- up to six permanent monitoring masts for wind speed verification, weather and general monitoring purposes. The permanent monitoring masts may be either static guyed or un-guyed structures and will be to a minimum height of the wind turbine hubs.

A range of wind turbines is being considered for the Project with a capacity between 1.5 and 3.0 megawatts. For consistency of presentation the calculations used throughout this EA assume an indicative wind farm capacity of 378 MW based on a typical 3.0 MW turbine.

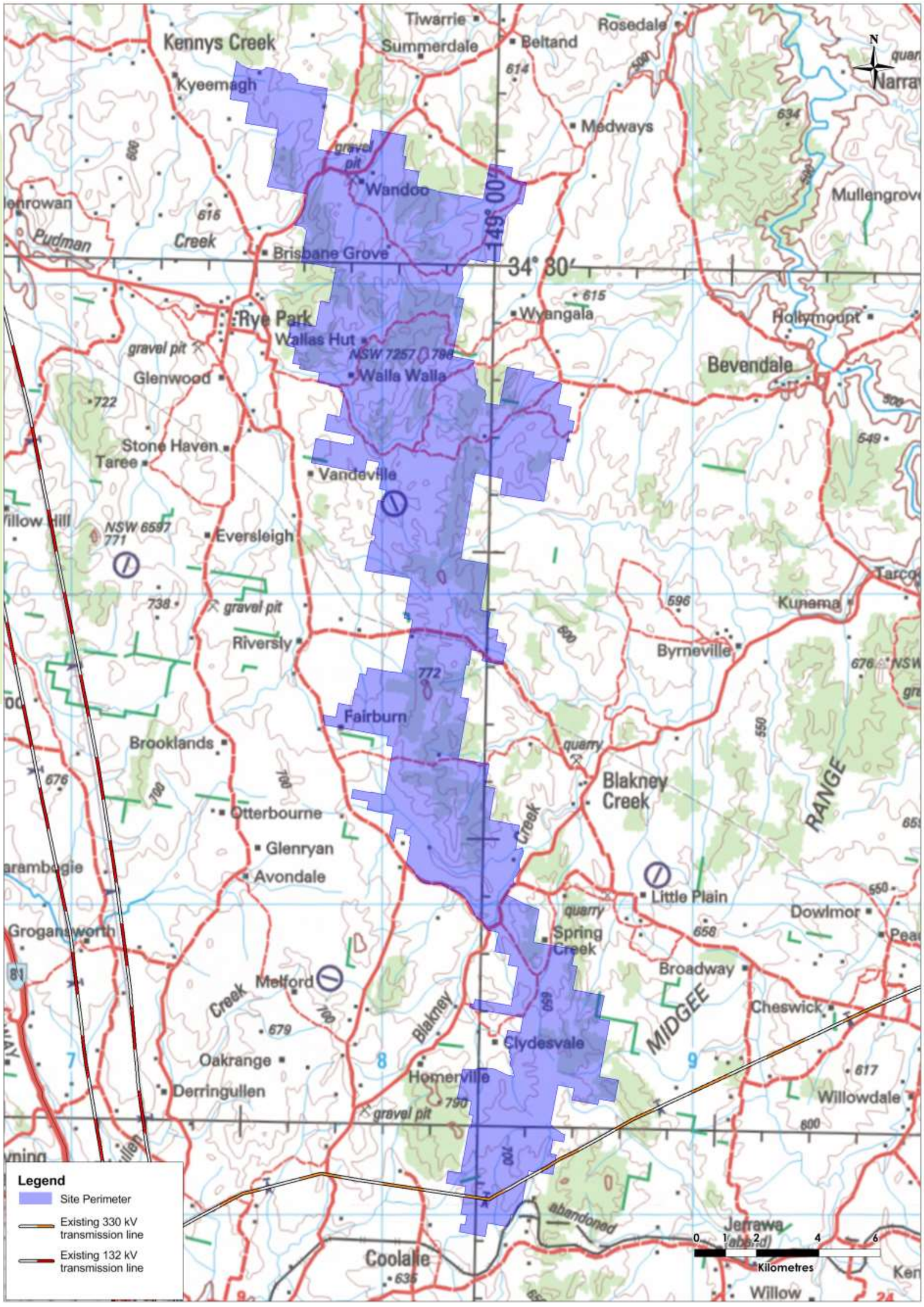


Figure 3-1 Locality and site boundary of the Rye Park Wind Farm

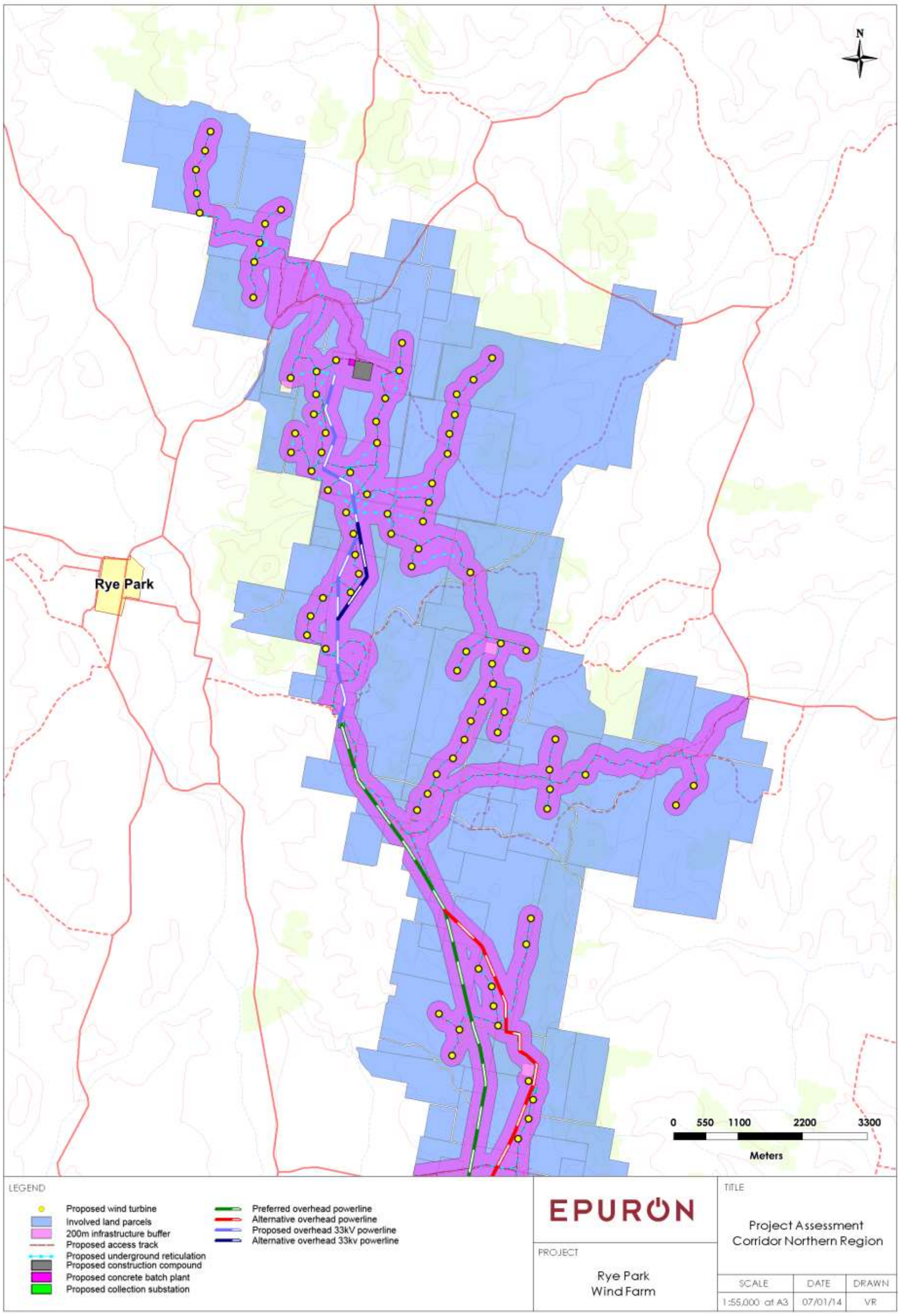


Figure 3-2 Project Assessment Corridor (Northern Region)

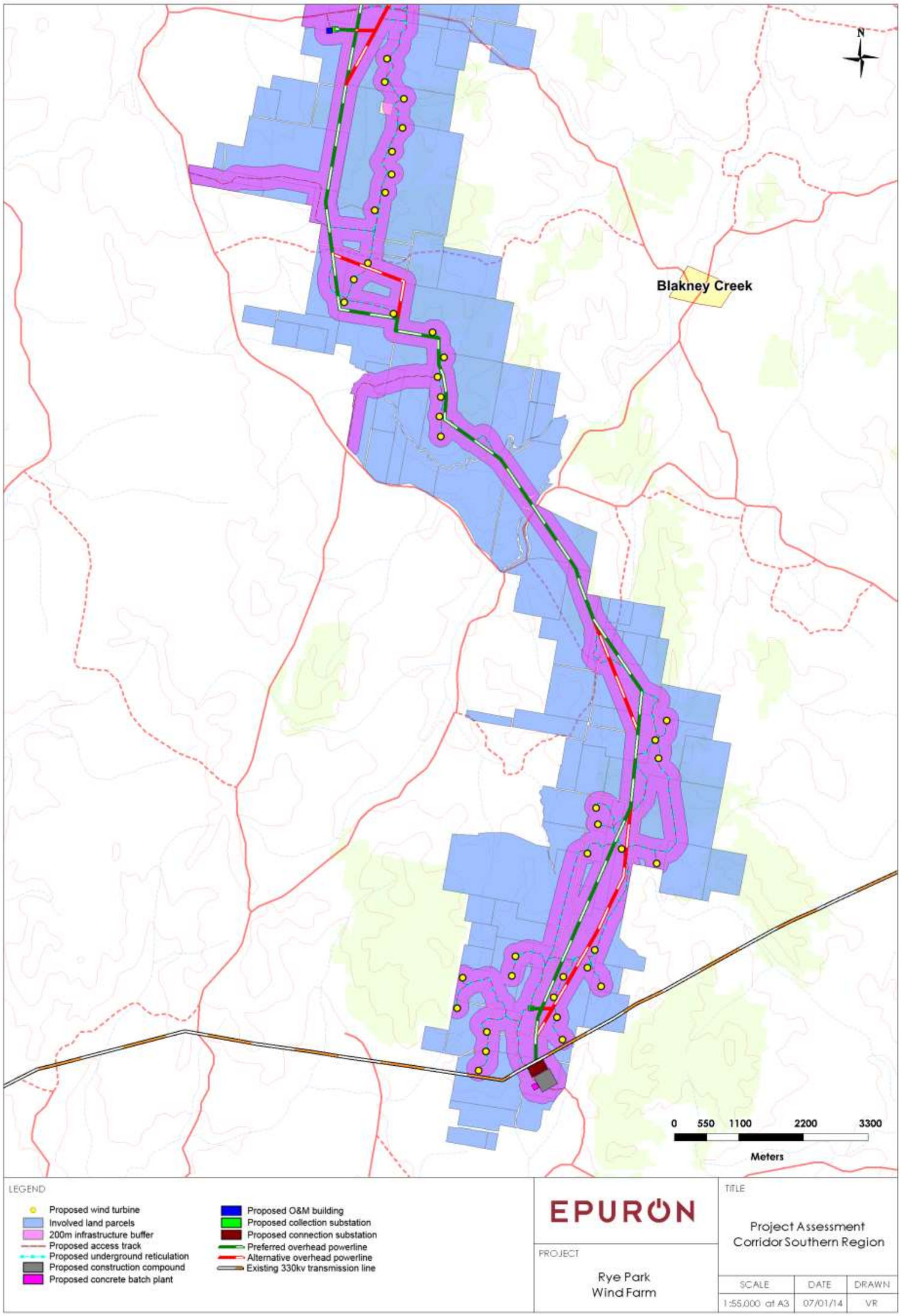


Figure 3-3 Project Assessment Corridor (Southern Region)

3.2 Wind Farm Layout

General

As outlined above, all wind farm components will be located within the assessed Project Corridor.

This EA has assessed an indicative wind farm layout which has been through a number of design optimisations and iterations. The design process is focused around three core principles:

- minimising and/or avoiding where possible negative environmental and community impacts;
- maximising positive impacts (clean energy production and greenhouse gas reduction); and
- incorporating practical limitations in relation to the construction and operation of the site, including costs.

Where there is a conflict or dynamic tension between these core principles, Epuron has used its experience and judgement, taking into consideration a balanced view of the public good in finalising the layout.

Preliminary Layout

In 2009-10 a preliminary layout accommodating up to 180 wind turbine locations was prepared to guide initial landowner discussions and the progression of community consultation engagement. This layout was based primarily on early wind speed analysis and a desktop review of available terrain and mapping data. Some early feedback was available from discussions with landowners, but there were no results from field studies or identified land-use constraints, as these were not available at the time the preliminary layout was prepared. The preliminary layout has been subsequently revised and improved, taking into account updated technical and environmental constraints, community consultation feedback and results of the various environmental assessments conducted.

Revised Layout

Based on updated information and feedback received on the preliminary layout, a revised layout proposing 131 wind turbines was prepared in 2011-12 for consultation. Release of this layout was intended to inform ongoing design iterations and consultation and was largely prepared with input from;

- feedback on the preliminary layout;
- constraints identified during initial field studies;
- around 2 years of wind data;
- feedback from consultation discussions with stakeholders, and
- input from discussions with involved landowners regarding their properties.

This layout was also featured at the public open day held in Rye Park on 26 July 2012. A number of other layout iterations have been made available for discussions with landowners and stakeholders at various times to accommodate the evolving nature of information impacting certain areas of the wind farm.

Current Layout

The current project layout contained in this report is indicative only and is subject to detailed design. The indicative layout has been prepared on the basis of the best knowledge available at this time, and incorporates the avoidance, mitigation and management measures outlined in this report. The Project assessed in this report has assumed the maximum impact of each of the project components to ensure that the “worst-case” scenario is assessed.

The current layout includes 126 wind turbine locations spanning a distance of about 38 km from north to south and 10 km from east to west. Approval is sought for the two overhead powerline routes, proposed and alternate, identified on the site although only one route or a mix thereof will be constructed. This EA seeks planning approval to locate all wind farm components within the assessed Project Corridor. An overview can be seen in Figure 3-4 and detailed maps of landowners, vegetation and indicative turbines layouts can be seen in Figure 3-6 through Figure 3-9, Figure 3-12 and Figure 3-13. These detailed maps have been spilt into northern and southern regions to show the indicative layout in greater detail. This division is shown in Figure 3-5.

The current turbine layout reflects the typical spacing required for the wind turbine under consideration, while maximising the total energy output of the wind farm balanced against the identified constraints.

A description of the key improvements made to the layout over time with reasons for each improvement is included in Section 5.2. Issues identified through the community consultation process guided the design and implementation of the various impact assessments, which also informed the preparation of this layout.

Avoiding and minimising impact to the flora and fauna has been considered during all stages of design through the use of mapped constraint areas identified during the detailed field assessments. Archaeology, noise and visual impact assessments have also contributed to this current layout. The assessments were carried out on the basis of the most representative project impacts likely to occur, however a worst case impact assessment was also considered. These studies are included in Sections 9 - 12 and also as appendices to the EA.

To prepare this current layout, the following resources and constraints were considered for the site, including:

- high resolution aerial photography and topographic contours (to produce vegetation and roughness maps);
- wind speed data collected on site and correlated with locally available data sources;
- location of residences in the vicinity, particularly those dwellings within 2 km of a proposed turbine;
- results of background noise assessment including predicted noise limits at residences;
- results of ecological and archaeological assessments;
- results of landscape and visual impact assessment on and around the site;
- information on other identified constraints within and around the site;
- information on communications links and aviation requirements in the vicinity of the site; and
- accessibility for delivery of large scale wind turbine components.

Final Layout

Detailed geotechnical investigations and final engineering design is carried out once consent conditions are known and a wind turbine supplier has been selected. This is because each wind turbine model is different and requires different spacing, access and exit gradients and crane requirements. Accordingly, the detailed design of the final wind farm layout (including the final locations of all turbines, on-site access roads and hardstands and associated infrastructure) cannot be determined until the construction contractor surveyor traverses the entire project site and incorporates the requirements of the final conditions of approval. It is therefore essential for efficient project delivery that the consent authority provides this necessary flexibility by authorising the micrositing of infrastructure, in accordance with the conditions of approval, anywhere within the assessed Project Corridor. Accordingly;

- the current layout is indicative only and subject to detailed design; and
- Epuron seeks consent to microsite turbines and infrastructure anywhere within the assessed Project Corridor.

The current turbine layout has undergone a preliminary review to determine if the layout is reasonably suitable for construction, meets planning guidelines and would comply with expected consent conditions. However, relocation of specific turbines and infrastructure within the assessed Project Corridor may be required prior to construction to take into account a number of factors including:

- final turbine selection and wind farm design;
- final wind speed assessment and energy yield analysis;
- additional site constraints identified through ongoing investigations;
- constraints identified in relation to constructability or construction cost minimisation; and
- constraints identified after the results of final geotechnical investigations at turbine locations are completed.

Depending on final turbine selection, it is possible that not all turbines proposed would be installed to ensure that the project continues to meet all conditions of approval.

To that end, a final layout would be prepared after final turbine selection has taken place and prior to the commencement of construction. This final layout would include adjustments to ensure all criteria are achieved. Further surveys and variations would be submitted for approval by the Director-General of Planning in accordance with the final conditions of approval.

Epuron would ensure that any minor changes do not create a detrimental overall impact and if any revisions are material, will resubmit noise and /or visual impact assessments based on the revised layout prior to construction.

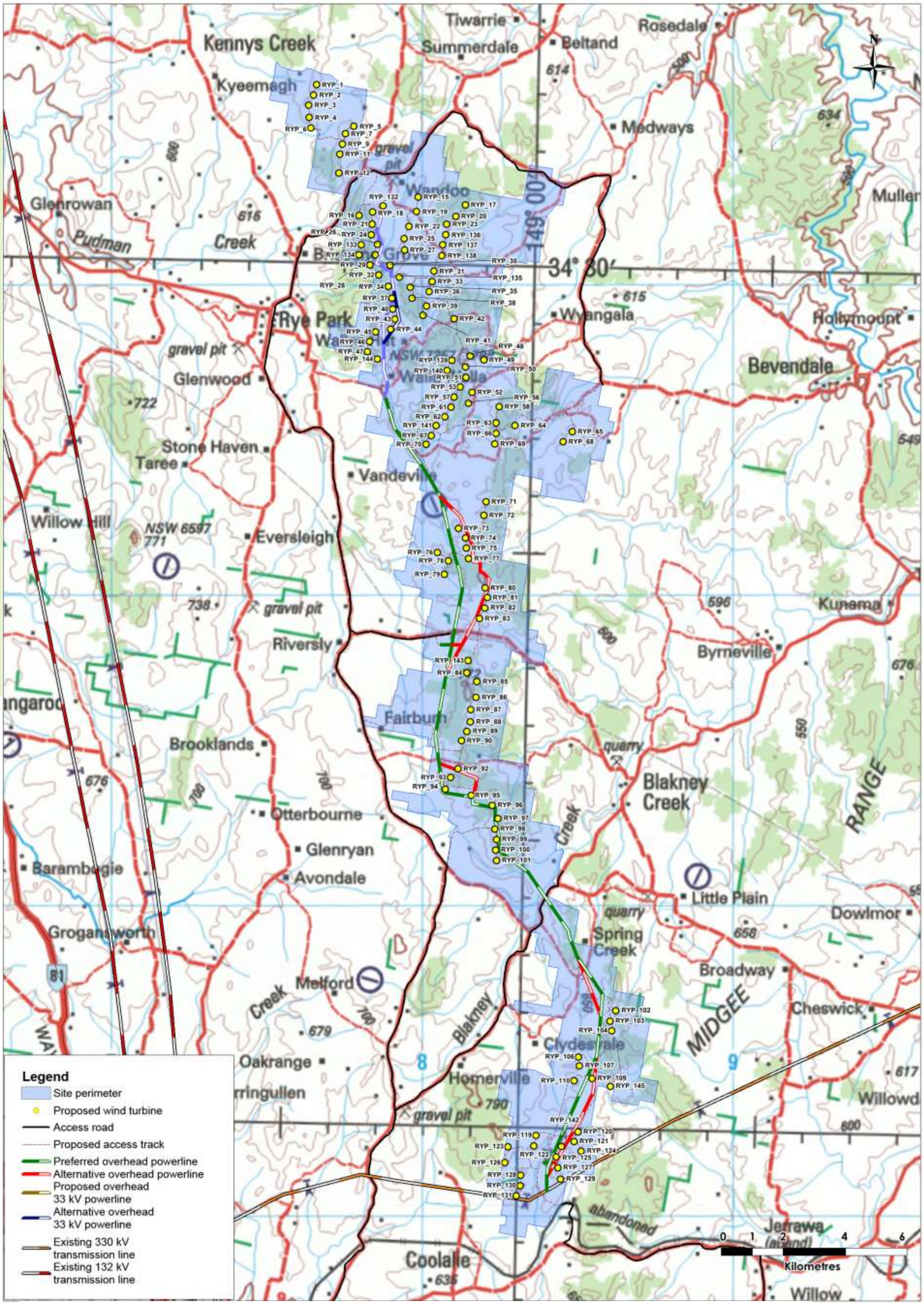


Figure 3-4 Site layout overview for the proposed Rye Park Wind Farm

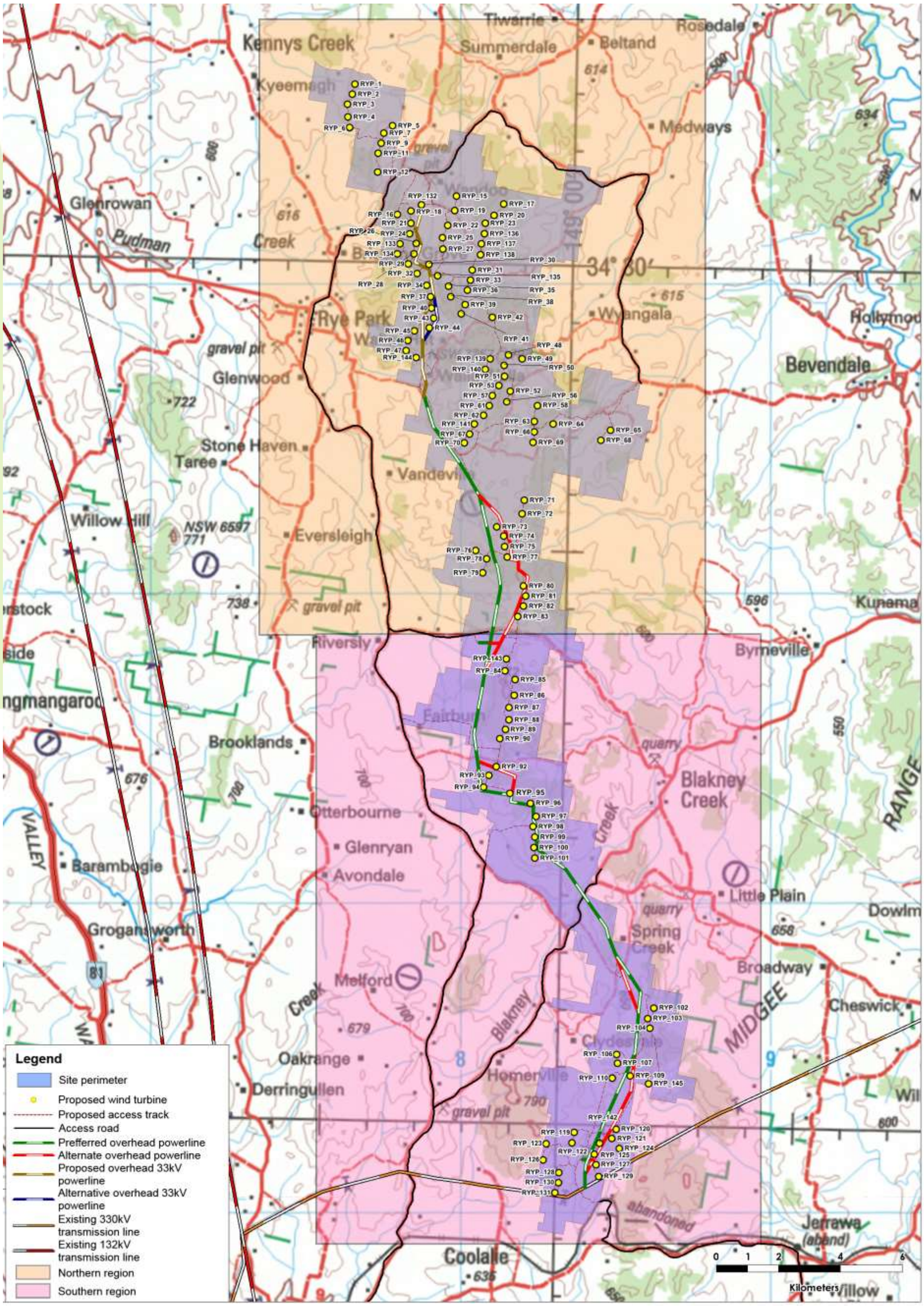


Figure 3-5 Division of the wind farm site at Flakney Creek Road into north and south regions

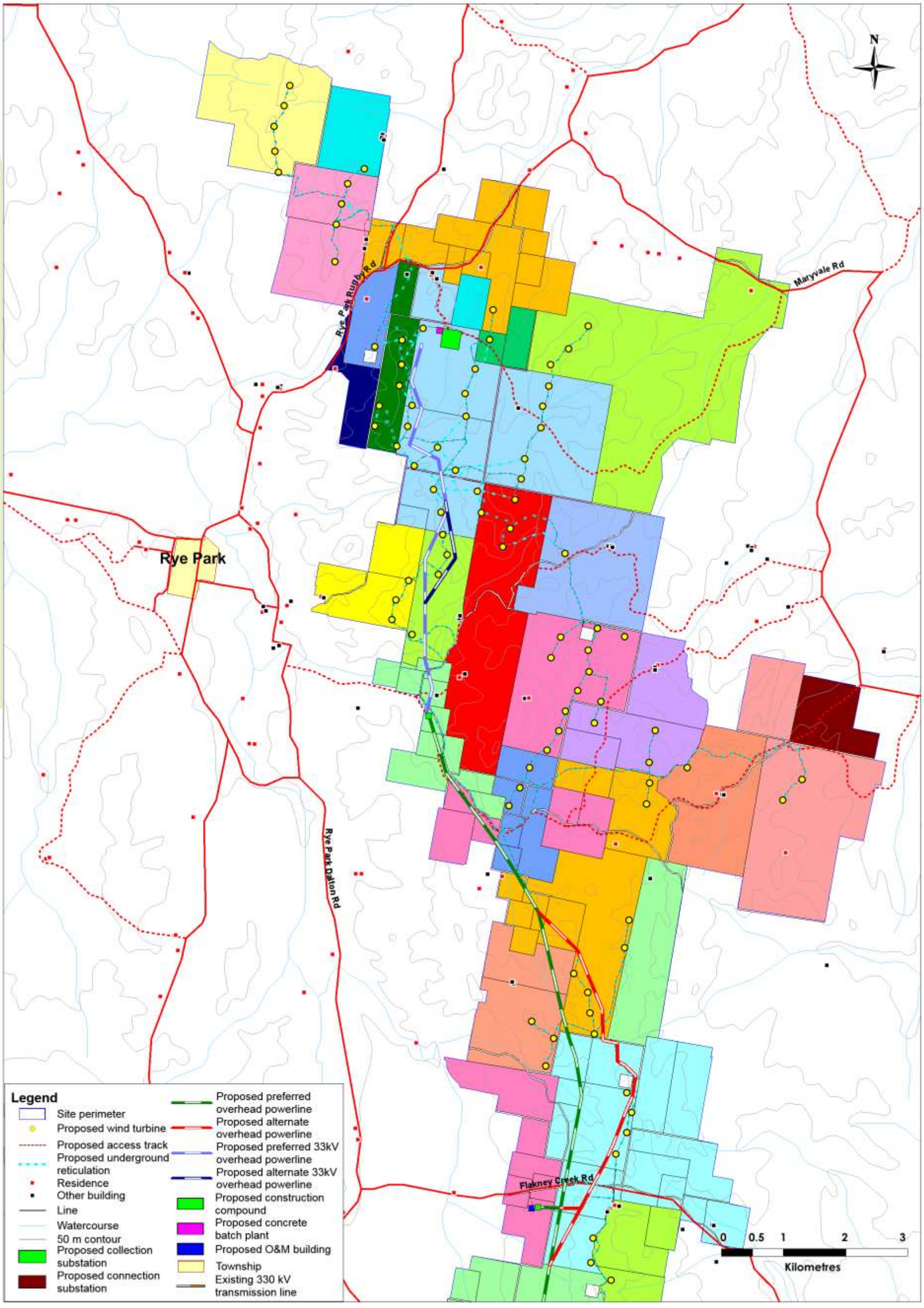


Figure 3-6 Northern landowners involved in the Rye Park Wind Farm (colour denotes an individual landowner's property)

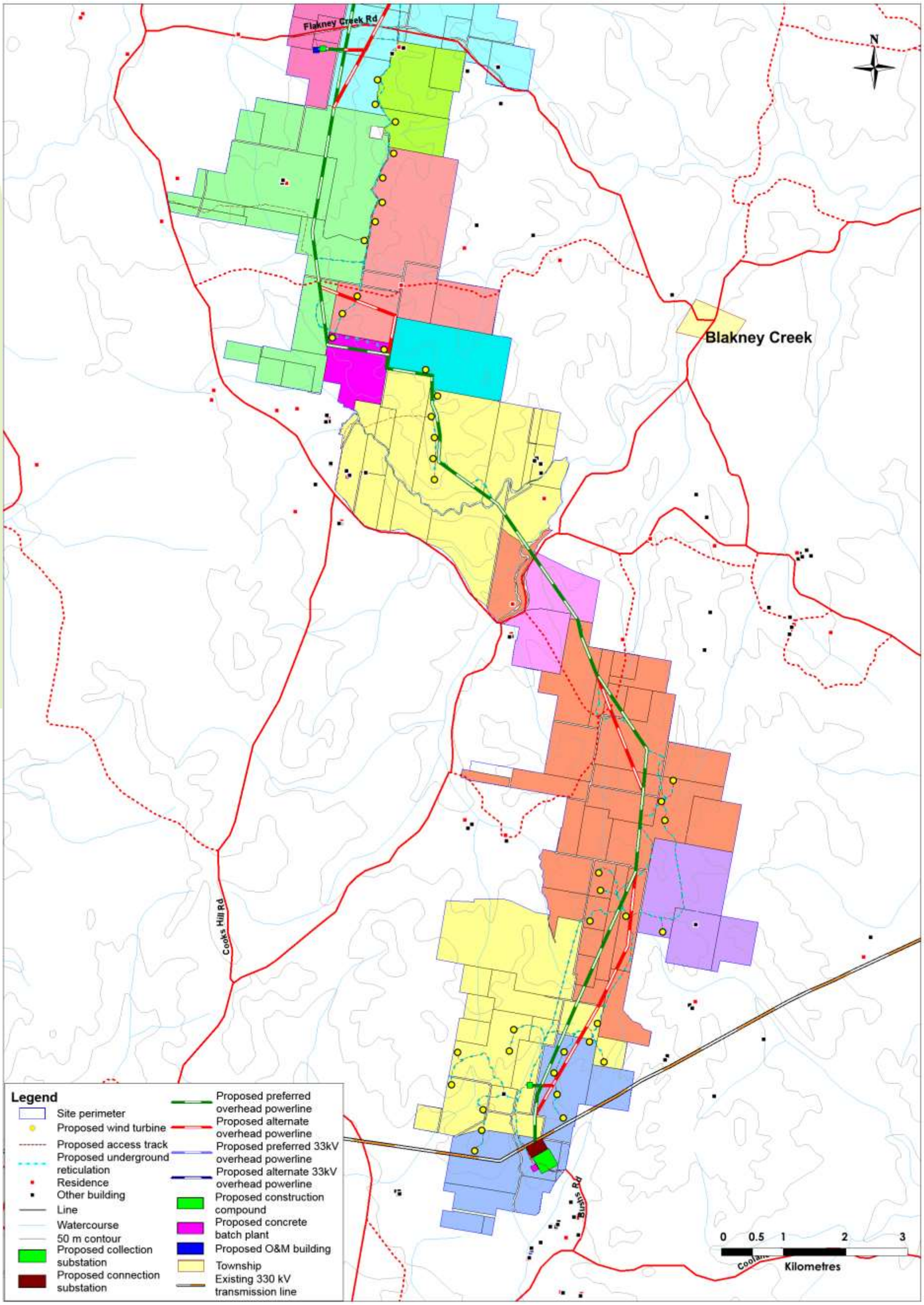


Figure 3-7 Southern landowners involved in the Rye Park Wind Farm (colour denotes an individual landowner's property)

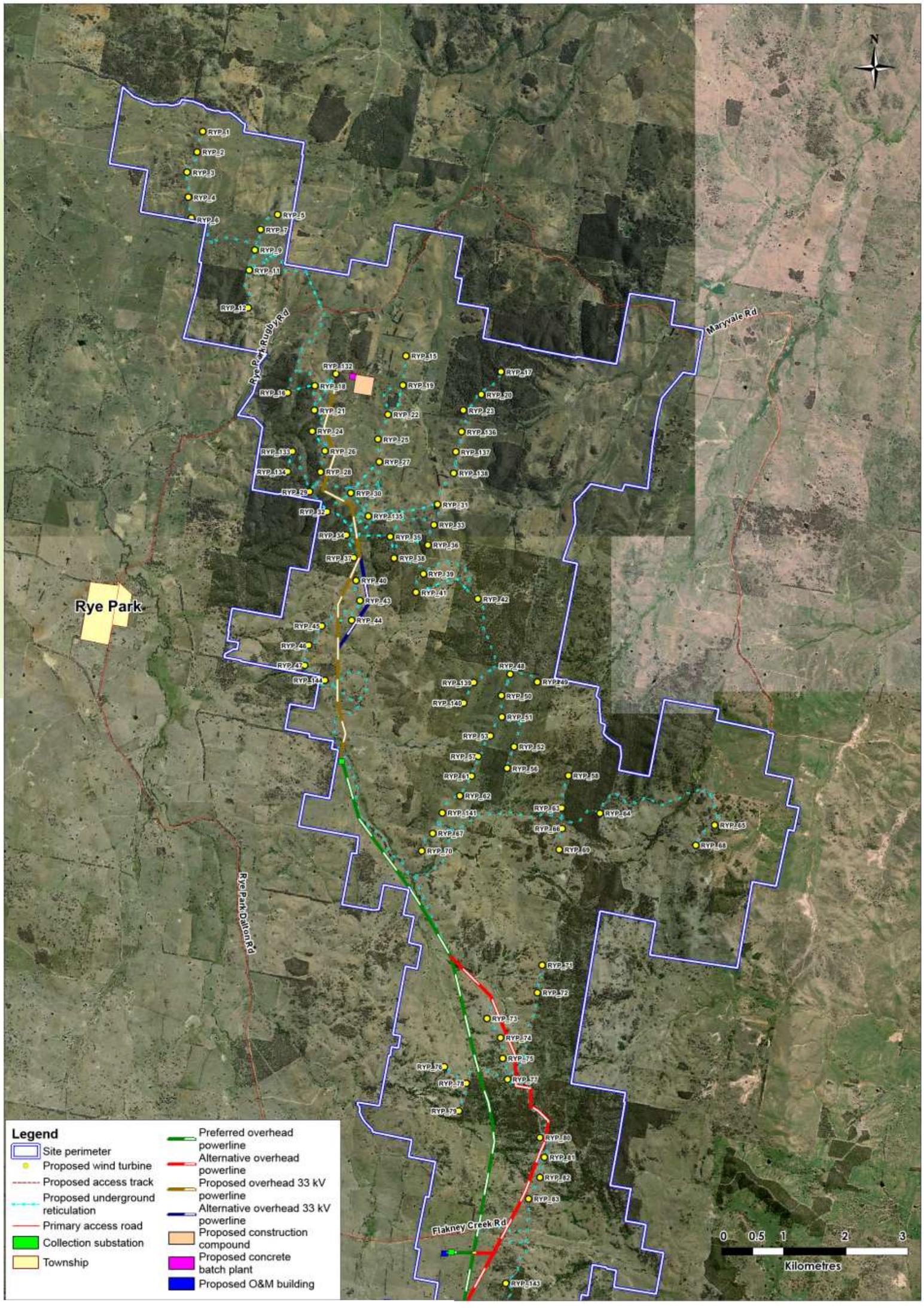


Figure 3-8 Aerial view of the vegetation north of Flakney Creek Road

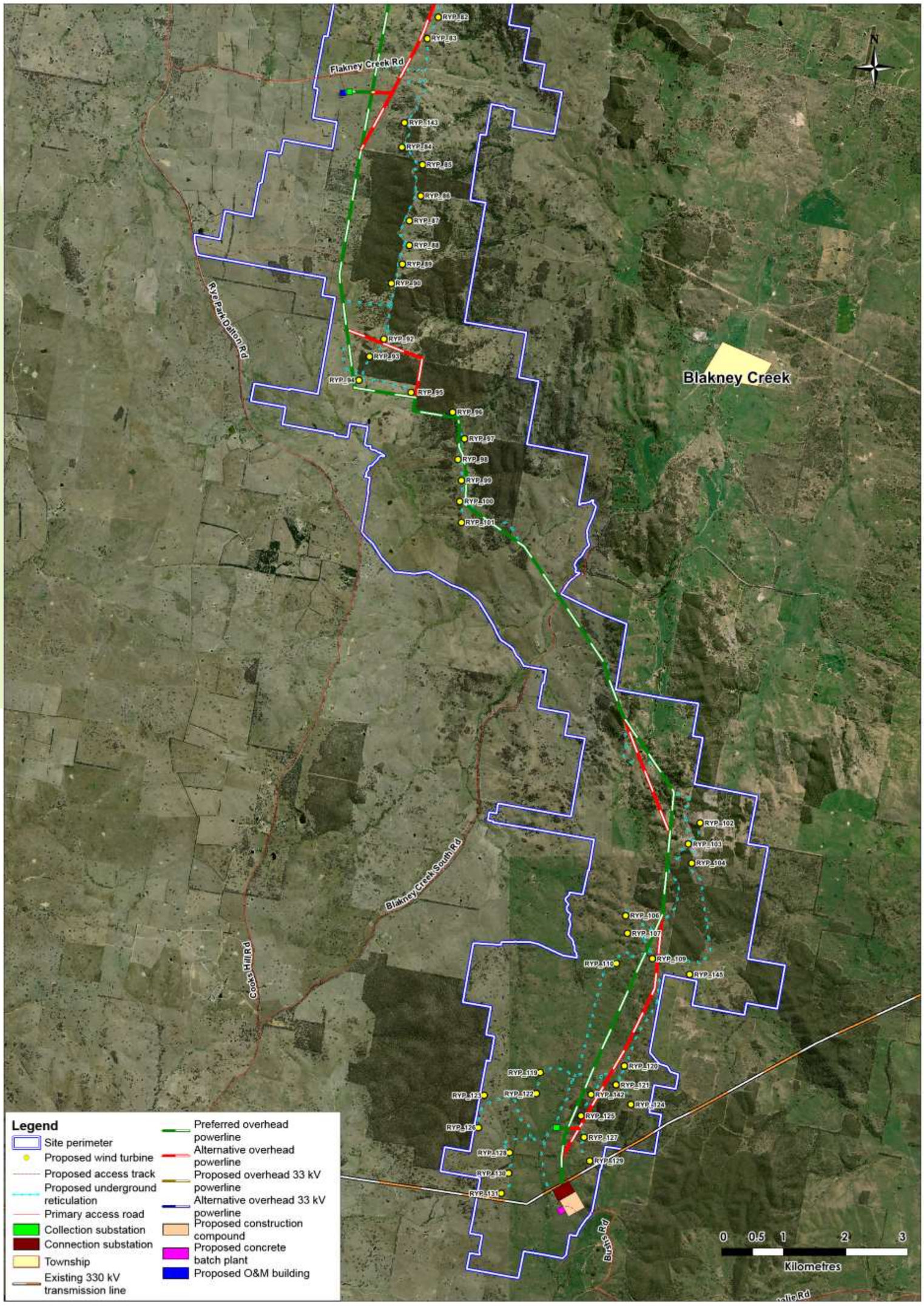


Figure 3-9 An aerial view of the vegetation south of Flakney Creek Road

3.3 Wind Turbine Selection

Wind Turbines under Consideration

Epuron has not yet selected the turbine model to be used for this project. A number of turbines are under consideration for the proposal, each with varying characteristics including physical dimensions and technical attributes, production capacity and cost considerations.

In general, different characteristics of turbine models require different turbine layouts, however to simplify the environmental assessment of the project, an indicative layout has been developed that reflects the characteristics of a large range of turbine models.

For the purpose of assessing the wind farm impacts, Epuron bases its assessment on understanding both typical and worst-case impacts likely from the range of turbines under consideration. In general, only three impacts are materially affected by the turbine selection:

- visual impacts are carried out on worst case turbine size, using the blade tip height when vertical as the indicator of turbine size;
- noise impacts are carried out on worst case noise profiles; and
- energy production (which typically increases with the physical size of the wind turbine).

All other impacts are driven primarily by the turbine layout rather than the selection of the turbine model.

Final wind turbine selection would be carried out based on commercial and technical considerations within the consent conditions stipulated by the DPI. In particular, a final assessment of potential noise impacts would be undertaken prior to construction based on the final turbine selection and layout.

Wind Turbines

The wind turbines under consideration have a typical hub height of 80 m – 101 m and a typical blade length of 45 m – 56/57 m (or 90 m – 115 m overall rotor diameter). The tallest wind turbine tip height combination under consideration is 157 m.

Each wind turbine would be a three bladed type of the “up-wind” design, meaning that the blades face into the wind and in front of the tower and nacelle. This design reduces noise levels generated during operation.

Each wind turbine would have a rated power capacity of between 1.5 MW and 3.0 MW, subject to final turbine selection.

Nacelle

The nacelle is the housing at the top of the tower that encloses the generator, gearbox (unless direct drive), and control gear including motors, pumps, brakes and electrical components. This control gear ensures that the wind turbine always faces into the wind, and adjusts blade angles to maximise power output and minimise blade noise. The nacelle also houses winches to assist in lifting maintenance equipment or smaller replacement parts to the nacelle.

The nacelle design takes into account acoustic considerations to minimise noise emissions from mechanical components.

Tower

The tower is of tubular steel or concrete construction typically 80-101 m high, tapering from around 5-6 m in diameter at the base to around 3-4 m at the top. Exact dimensions would depend on the wind turbine design selected. The tower is constructed in up to five sections, each section bolted or welded together via an internal flange arrangement. Within the core of the tower are the power and control cables and an access ladder or mechanical person lift to the nacelle (with safety climb system).

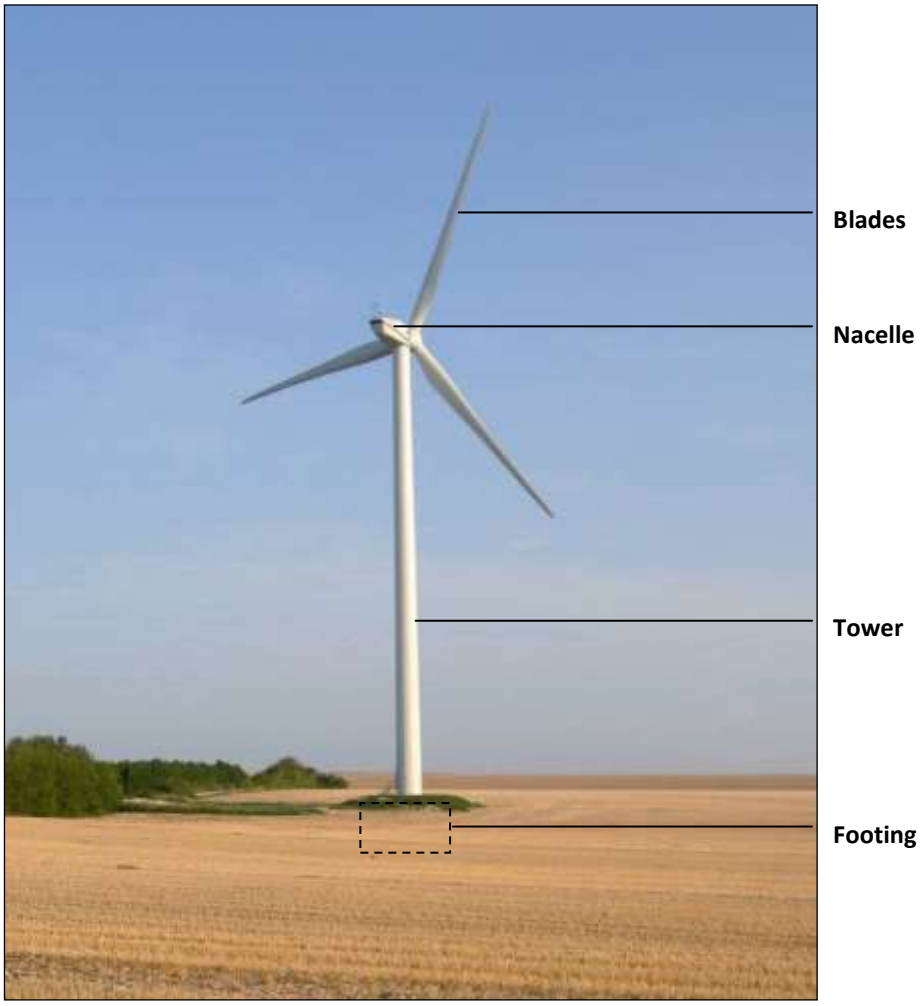


Figure 3-10 Typical wind turbine installed on an 80m tower (Photo courtesy REpower Systems AG)

Access Tracks, Hardstands and Footings

The tower would be mounted on a reinforced concrete footing and would require removal of rock and subsoil at the base of each turbine. A number of footing design options are under consideration including a gravity footing (where subsoil geology is less stable) and a rock-bolted footing (where subsoil geology provides good bedrock). A combination of these footing designs may be used on the site depending on the geology identified at each turbine location.

Each wind turbine would require an access track and electrical cabling to the site collection / connection substations. Access tracks would be a minimum of 5-6 m wide (wider at bends and passing lanes) and be all weather graded gravel tracks. Hardstand areas required beneath each turbine would be approximately 25 m x 45 m (1125 m^2). The shape and exact size of the hardstand area is subject to final turbine selection and crane lifting requirements. The hardstand area is used for delivery and storage of turbine components, assembly of the turbine components and for the turbine installation cranes.

Access tracks and hardstands areas would generally be left in situ after construction to allow for any required maintenance and repairs.

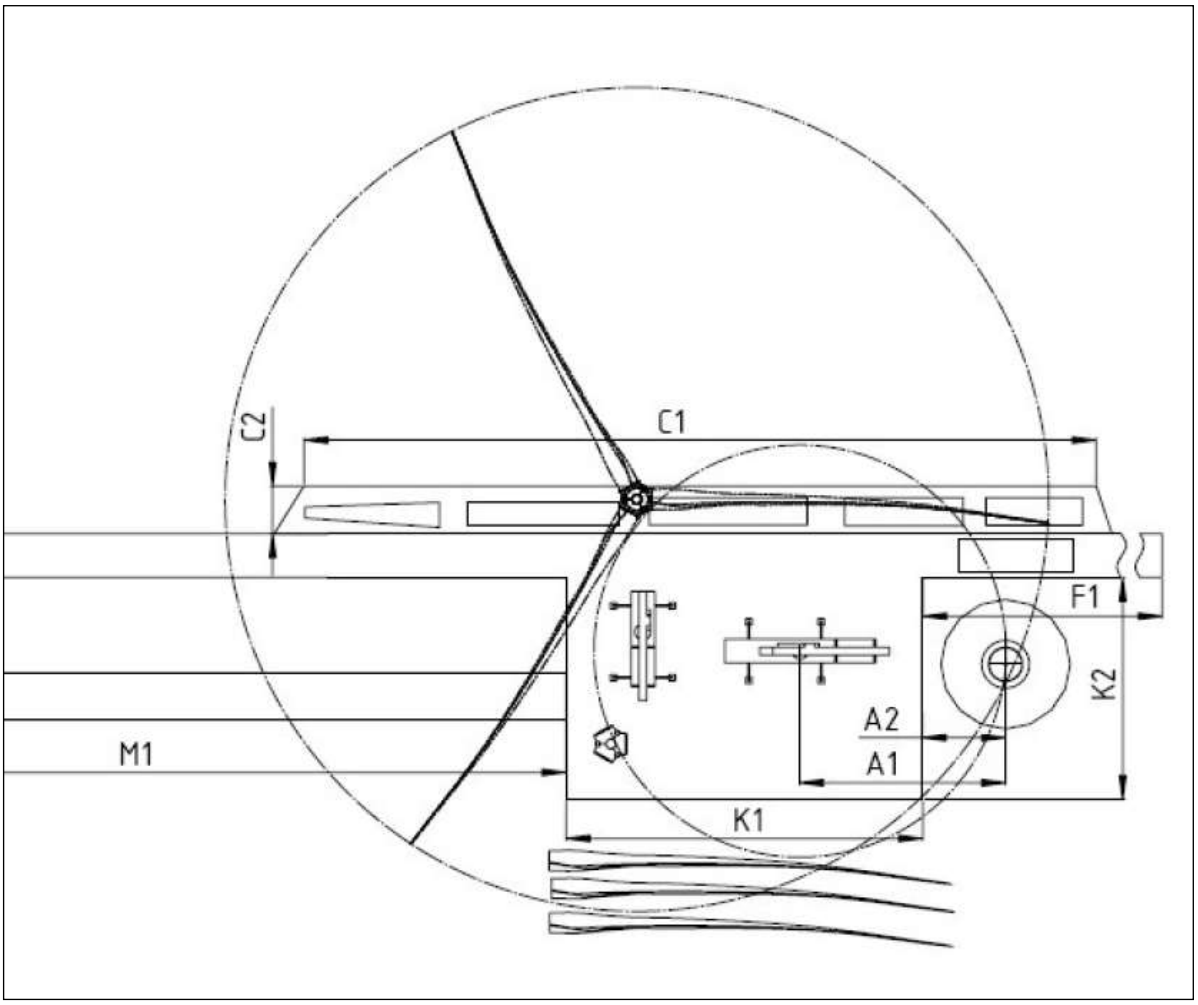


Figure 3-11 Example crane hardstand area (Source: REpower)

Transformer

Each wind turbine generator would produce power at typically 690 V, and up to 1,000 V. Power is then transformed at each wind turbine to either 22 kV or 33 kV for reticulation around the site. The transformer for each wind turbine would be located either within the base of the tower, in the nacelle, or externally adjacent to the tower as a small pad-mount transformer, depending on the specific wind turbine model selected. The transformer would be either a dry-type transformer, or would be suitably bunded.

Lightning Protection

Each wind turbine would have a lightning protection system installed. This system includes lightning rods through each wind turbine blade, an earth mat built into the foundations of the wind turbine, and lightning protection around the various electronic components within the wind turbine.

Obstacle Lighting

Depending on the requirements of the aviation authorities including CASA, aviation obstacle lighting of turbines may be required to be installed. This lighting where required is usually a number of red flashing beacons mounted on the nacelle of some of the wind turbines.

The guidelines in relation to aviation warning lighting are currently changing as described in Section 14.1 Hazards and Risks.

Epuron will not install aviation obstacle lighting unless required to do so by CASA, the consent conditions relating to the project or the requirements or recommendations of any other relevant authority.

Wind Turbine Controls and Operation

Each wind turbine would have its own individual control system, and would be fully automated. Start-up and shutdown (including safety shutdowns) are fully automated, with manual interruption available via onsite control systems and remote computer.

Generally, wind turbines would commence operation at wind speeds around 3 – 5 metres per second (11 – 18 kilometres per hour) and gradually increase in production to their rated capacity, usually at wind speeds around 12 – 15 metres per second (44 – 54 kilometres per hour). Once at this rated capacity, the wind turbine would control its output by altering the pitch of the wind turbine blades. Under high wind conditions in excess of 25 metres per second (90 kilometres per hour) the wind turbine would automatically shut down to prevent damage. It would continue measuring the wind speeds during this state via an anemometer mounted on the nacelle, and would restart once wind speeds drop to a suitable level.

Various operating constraints can be programmed into the control system to prevent or limit operation under certain conditions. For example, if operational issues are identified such as excess noise or shadow flicker under certain conditions, these conditions can be pre-programmed into the control system and individual wind turbines automatically controlled or shut down or limited whenever these conditions are present.

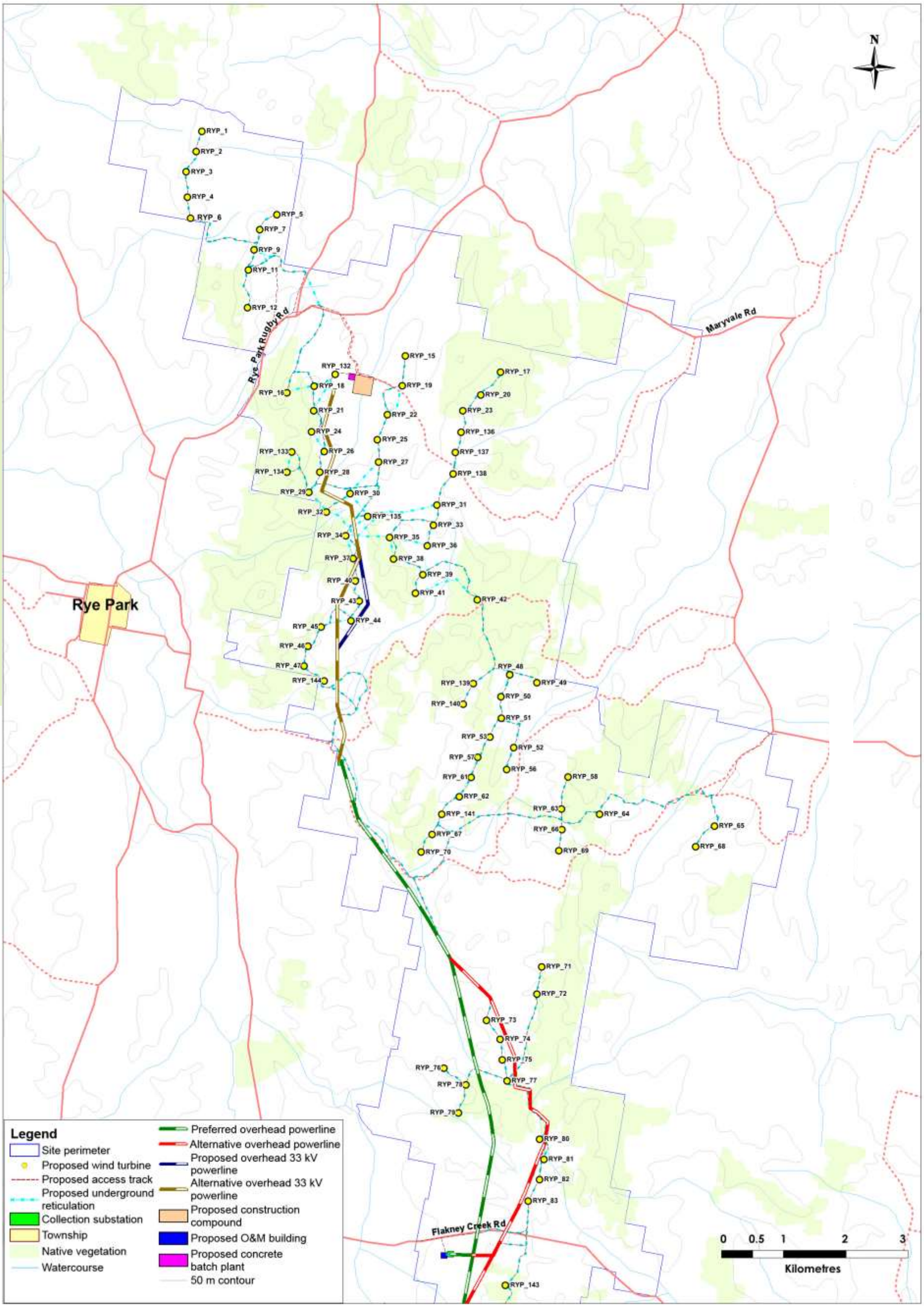


Figure 3-12 Detailed wind turbine layout & identification north of Flakney Creek Road

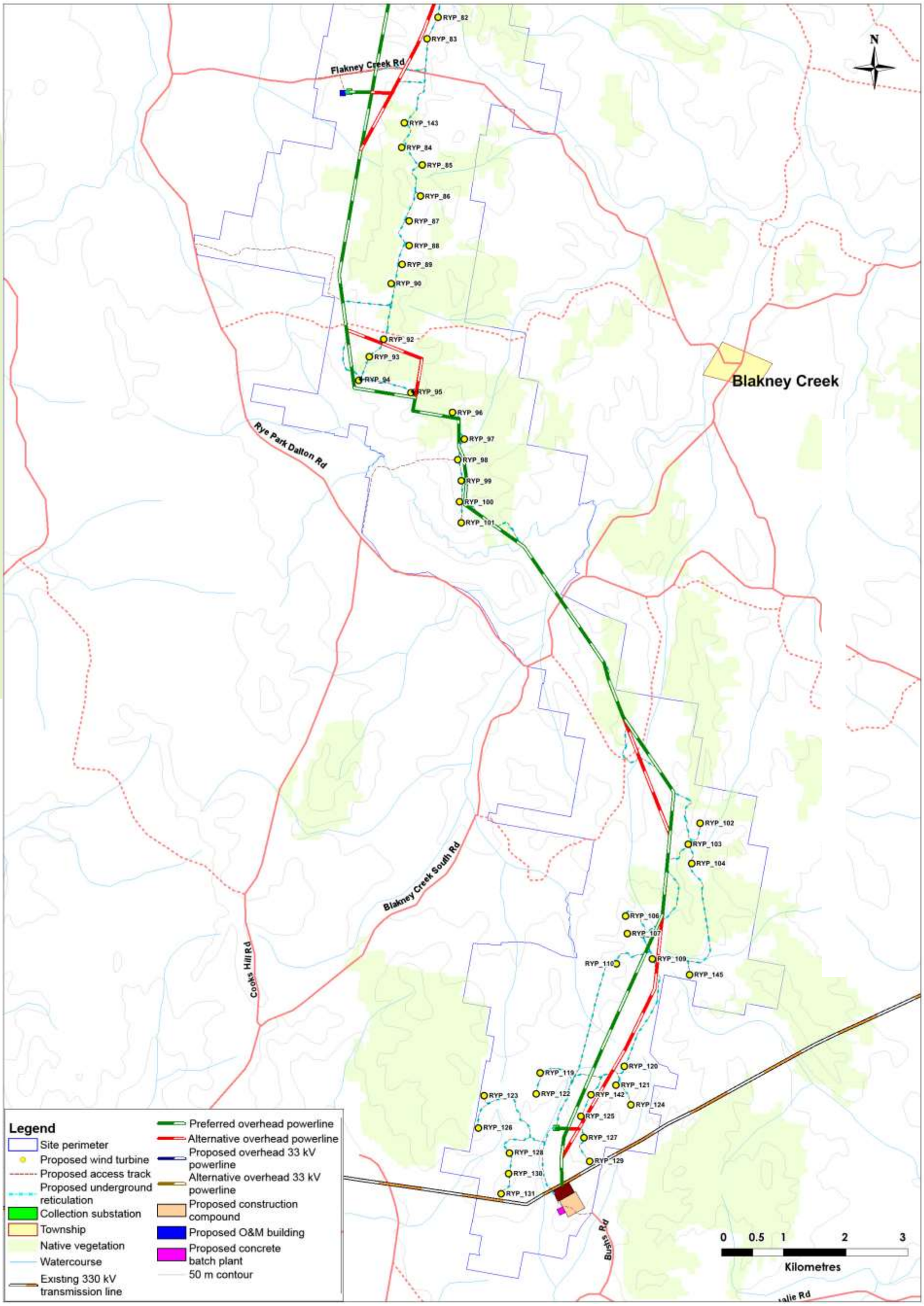


Figure 3-13 Detailed wind turbine layout & identification south of Flakney Creek Road

3.4 Connection to the Electricity Grid

Introduction

To export power from the wind farm, it is necessary to connect the wind turbines to the national electricity grid. This is achieved through a combination of underground and overhead electricity cables connecting the turbines to the collection substations, which then connects into the electricity grid via an overhead powerline to the wind farm connection substation.

Epuron has submitted a Grid Connection Enquiry to TransGrid and carried out a grid connection assessment to confirm that TransGrid's existing 330 kV transmission line that crosses the southern section of the site has sufficient capacity to allow export from the wind farm.

The primary onsite electrical works would include:

- A new 330 kV wind farm connection substation, including step up / down transformers and connecting transmission line will be located adjacent to the existing 330 kV TransGrid transmission line that crosses the southern section of the site.
- A new overhead powerline, approximately 35 km long, will run north-south along the length of the wind farm site to the two new collection substations. The new overhead powerline will be rated at up to 330 kV (nominal) capacity and mounted on a single pole type structure. The powerline may be single-circuit or double-circuit as required.
- Up to two new collection substations will be located on the wind farm site. The two new collection substations will collect power generated by the turbines and deliver to the new overhead powerline.
- A network of underground and overhead electrical cables, at 22 kV or 33 kV, reticulating power from the turbines to the collection substations. The underground and overhead electrical reticulation network will include the crossing of existing roads, such as Rye Park Rugby toward the northern end of the site and Blakney Creek Road toward the southern end of the site.
- Associated communications network necessary for site operations and control.
- An operations and maintenance facility including wind farm controls and power supply.

Wind Farm Connection Substation and Connection to TransGrid Transmission Line

A new 330 kV wind farm connection substation will be constructed to connect the wind farm into the existing 330 kV TransGrid Yass – Bannaby transmission line No 61 located at the south of the site. This connection substation would cover an area approximately 3-4 hectares plus an access road, Transgrid switching station, car park, communications tower and site facilities.

The connection substation may require up to two large power transformers to change the voltage, from reticulation voltage (22 kV or 33 kV) and overhead powerline voltage (up to 330 kV), up to transmission voltage (330 kV). The transformers are likely to be of the oil-cooled variety, and therefore may contain considerable quantities of oil. Provision would be made in the design of the substation for containment of any oil which may leak or spill. Other equipment in the substation includes circuit breakers and a busbar arrangement.

The connection substation will include all necessary ancillary equipment including a number of short spans of 330 kV connecting transmission line, control room and amenities, communication equipment, control cubicles, voltage and current transformers, and circuit breakers for control and protection of the substation. The connection substation also requires a telecommunications tower (cable, optic fibre and/or microwave links) and low voltage electricity connections (415 V – 11,000 V) from local services.

The connection substation area would be marked by a security fence to prevent trespassers and stock ingress. The ground would be covered partly by crushed rock and partly by concrete pads for equipment, walkways and cable covers, and would have an earth grid extending outside of the boundary of the security fence.

The connection substation will include an appropriate bushfire Asset Protection Zone (APZ) that complies with the RFS *Planning for Bushfire Protection* guidelines. This has been evaluated based on the vegetation type and slope. The site parameters (predominantly flat land with limited continuous canopy cover) indicate that a compliant inner protection area (which can be maintained under continued grazing practices) and outer protection area would be achievable.

Typically the 330 kV connection substation would take up an area of approximately 3-4 hectares and would be generally on an east-west layout orientated in parallel to the existing No 61 330kV Transgrid transmission line. The

proposed location for the connection substation has been identified and is shown in Figure 3-22. A number of short spans of 330 kV connecting transmission line would connect the connection substation to the existing 330 kV TransGrid transmission line.

Typical civil works will be required in the construction of the new connection substation, including;

- Site preparation and earthworks
- Drainage and major cable trenches
- Minor equipment footing and security fencing
- Access road
- Substation surfacing
- Landscaping
- Auxiliary services buildings

In addition to the connection substation construction, the substation confines would include a car park, an auxiliary services building, two secondary system buildings (which are modular buildings) and communications facilities. A connection substation access road approximately 6m in width would be connected to the wind farm access roads.



Figure 3-14 **TransGrid's 330 kV Macarthur Substation in western Sydney**

Deviation of the Transgrid Line No 61 from Structure 45 – 48

A new transmission line corridor shown on Figure 3-22 is to be established to connect the existing TransGrid Line No.61 330kV transmission line to the new connection substation. The transmission line will include a 60m easement in which any vegetation with a mature height of 4m or above will be selectively cleared. This is considered a reasonable clearing methodology given the limited amount of vegetation located within any new alignment between these structures and the riparian zone needing to be maintained as much as possible.

Construction of up to 6 off 330kV transmission line steel lattice structures will be required to connect the new connection substation into Line No 61 between Structures 45 and 48 and final location within the corridor will be determined at the detailed design stage. Each new structure will require a construction footprint of approximately 40m x 30m to establish up to 2 pads at each structure and to erect the structures. New structures will be of similar height and appearance to the existing Transgrid transmission line structures.

Decommissioning and Removal of Redundant Line No 61 Structures and Equipment

Once the transmission line is deviated to connect the existing No.61 330kV transmission line to the new connection substation, a portion of the No.61 330kV transmission line will become redundant (between existing structures 45-48). All redundant structures and associated conductors shall be dismantled and removed (will be recycled or appropriately licensed waste facility).

Radio Repeater Site

Route diverse communications paths are required to maintain transmission network system security and reliability. As such, the establishment of the Rye Park 330kV Connection Substation will require protection grade communications from the site to TransGrid's Yass and Gullen Range switchyards, including appropriate SCADA signals back to TransGrid's system operations control centre.

To meet these requirements, a radio repeater site (RRS) is to be located within the connection substation confines. The RRS is to comprise of the following:

- Installation of a 60m steel lattice communications tower at the Rye Park 330kV Connection Substation adjacent to the substation auxiliary services building, including the installation of antennas, waveguides, cable tray and earthing;
- Supply and installation of duplicated PDH microwave equipment for a single hop microwave link from the Rye Park 330kV Substation – Yass RRS; and
- Supply and installation of duplicated P MUX equipment at the Rye Park 330kV Substation Station.

Transgrid have noted that the communication path profile between the proposed Rye Park 330kV Substation and Yass RRS needs to be confirmed via further field survey to confirm the required structure height and the location of the actual communications structure. Subject to their further detailed analysis, there is potential that the 60m steel lattice tower could be replaced with a 40m concrete monopole structure (and still establish line of site with the Yass RRS). Similarly there is a risk that line of sight cannot be established and a remote RRS establishment would be required. Following the further work TransGrid will advise if there is any change in scope required but have confirmed the 60m steel lattice tower RRS within the substation is the most likely option.

Overhead Powerline

A new overhead powerline, approximately 35 km long, will run up the length of the wind farm site and connect into the two new collection substations. Approval is sought for the two overhead powerline routes, proposed and alternate, identified on the site although only one route or a mix thereof will be constructed.

Powerline structures come in many designs however most are either steel or concrete pole design or a steel lattice tower design. The type of design used may vary depending on the preferred voltage, different ground conditions, carrying weights, strain angles, clearance requirements as well as local environmental conditions including local constraints (e.g. archaeological) and visual amenity.

Based on electrical design assessments for the wind farm it is proposed the new overhead powerline will be rated at up to 330 kV (nominal) capacity and will be mounted on a single pole type structure as shown below and would be up to 45 m high. The new overhead powerline would be either single-circuit or double-circuit design.

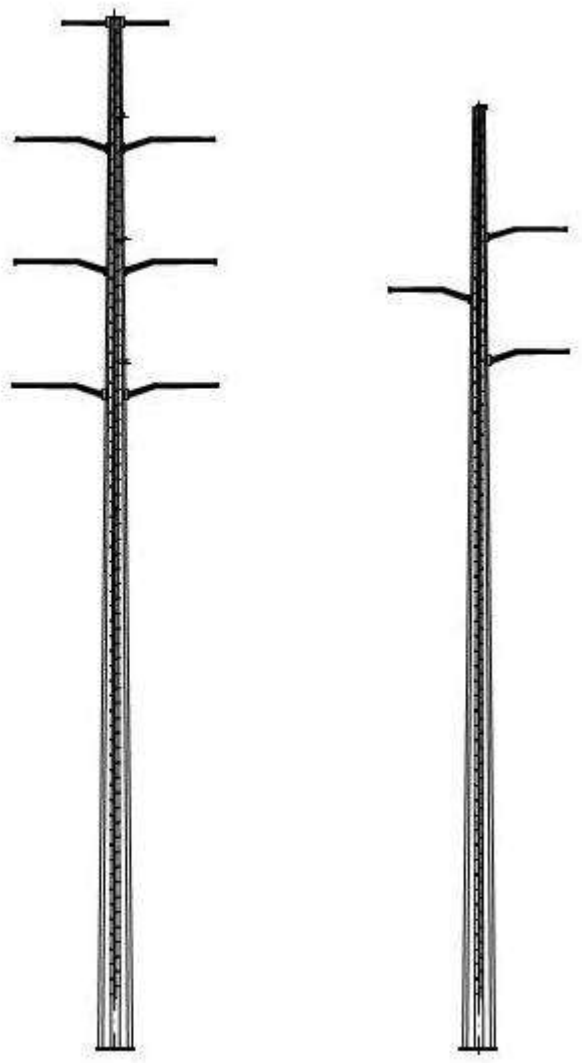


Figure 3-15 Example of a double circuit (left) and single circuit (right) 330 kV overhead powerline mounted on a single pole type structure

Collection Substations

It is proposed up to two new collection substations will be located on the wind farm site. The two new collection substations will collect power generated by the turbines and deliver it to the new overhead powerline running north-south along the length of the wind farm site.

Each collection substation will include all necessary ancillary equipment such as a control room and amenities, communication equipment, control cubicles, voltage and current transformers, and circuit breakers for control and protection of the substation. The collection substation also requires telecommunications (cable, optic fibre and/or microwave links) and low voltage electricity connections (415 V – 11,000 V) from local services.

The perimeter of each collection substation area would be marked by a security fence to prevent trespassers and stock ingress. The ground would be covered partly by crushed rock and partly by concrete pads for equipment, walkways and cable covers, and would have an earth grid extending outside of the boundary of the security fence.

The collection substation will include an appropriate bushfire Asset Protection Zone that complies with the RFS *Planning for Bushfire Protection* guidelines. This has been evaluated based on the vegetation type and slope. The site parameters (predominantly flat land with limited continuous canopy cover) indicate that a compliant inner protection area (which can be maintained under continued grazing practices) and outer protection area would be achievable.

Typically each collection substation would occupy an area of approximately 100 m x 100 m. The proposed locations for each collection substation have been identified and are shown in Figure 3-20 and Figure 3-21.

Onsite Electrical Reticulation

From each wind turbine, the power voltage is stepped up from generation voltage to either 22 kV or 33 kV for either underground or overhead reticulation cabling from each group of turbines to the collection substations.

In general, overhead cabling offers benefits as it minimises ground disturbance and is significantly lower in cost. There are practical limitations installing overhead cabling on ridges where turbines are located, as well as increased visual impact.

Typically underground cabling is used to connect turbines along the ridgelines and overhead cabling is used to transport power between adjacent ridges and from groups of turbines to the collection substations. Cable trenches would, where practical, be dug within or adjacent to the onsite access tracks to minimise any related ground disturbance. Short spur connections would diverge from the main cable route which would approximately follow the main access route at each group of turbines. Subject to ground conditions underground cables would require a trench of 0.75 – 1 m deep and be typically 0.3 – 1 m wide. Parts of the underground network will cross existing roads such as Rye Park Rugby Road at the northern end of the site.

Statements of Commitment accompany this proposal to ensure that micro-siting is used to minimise environmental (particularly ecological) impacts. This would be undertaken with the assistance of an ecologist, especially where routes are located near sensitive environmental features.

A detailed view of the proposed overhead powerline and onsite electrical reticulation can be seen below in Figure 3-16 and Figure 3-17.

Communications

A suitable communications network will be established across the wind farm site to enable appropriate operation and control including the required interaction with the TransGrid electricity grid. This may involve underground, overhead or microwave communication systems.

Operations and Maintenance Facilities

A permanent operations and maintenance facility will be constructed on the wind farm site and requires connection to low voltage electricity supply (415 V – 11,000 V) from local services. The facility will be 100 m x 100 m in size.

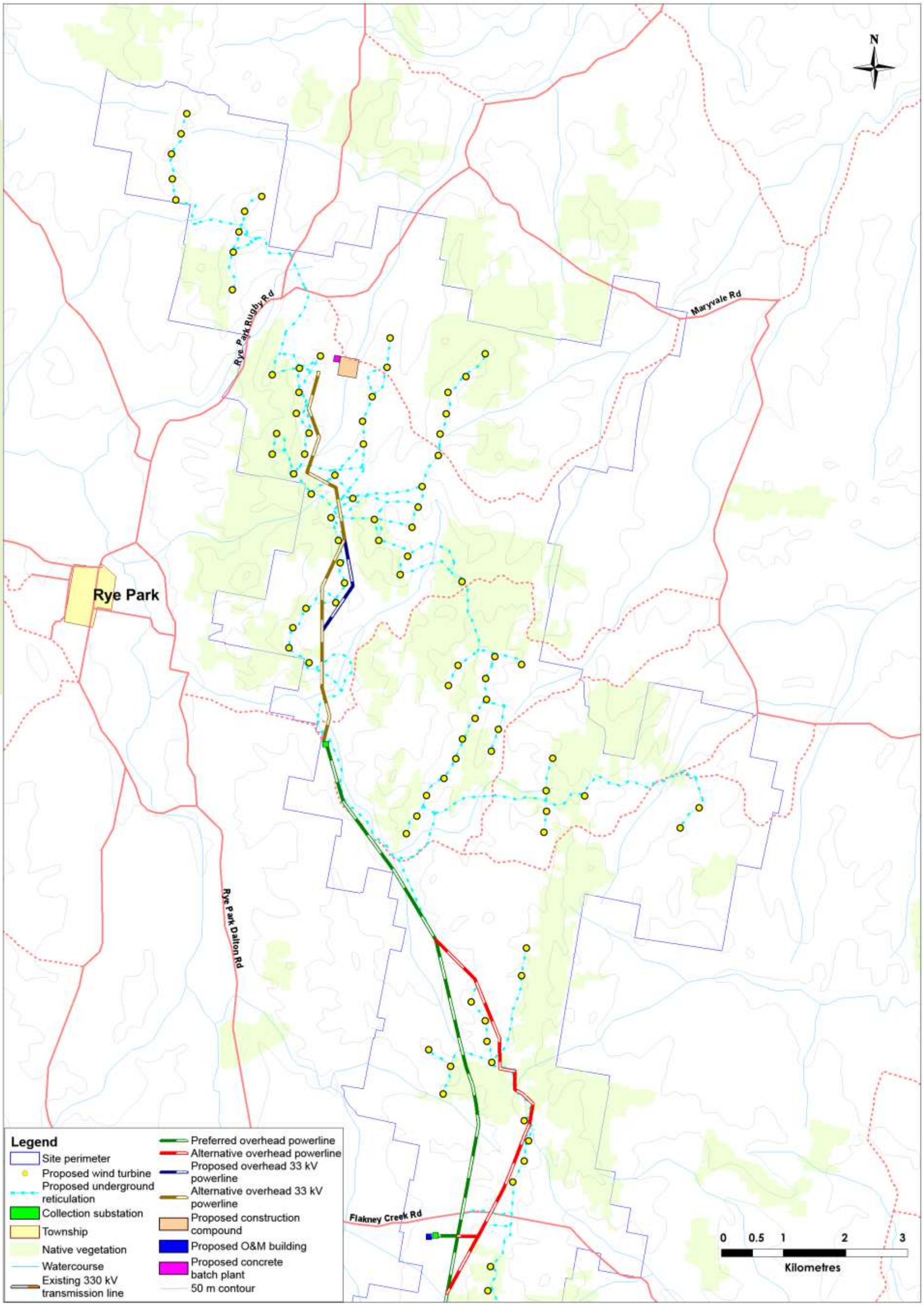


Figure 3-16 Detailed overhead powerline & underground electrical reticulation layout north of Flakney Creek Road

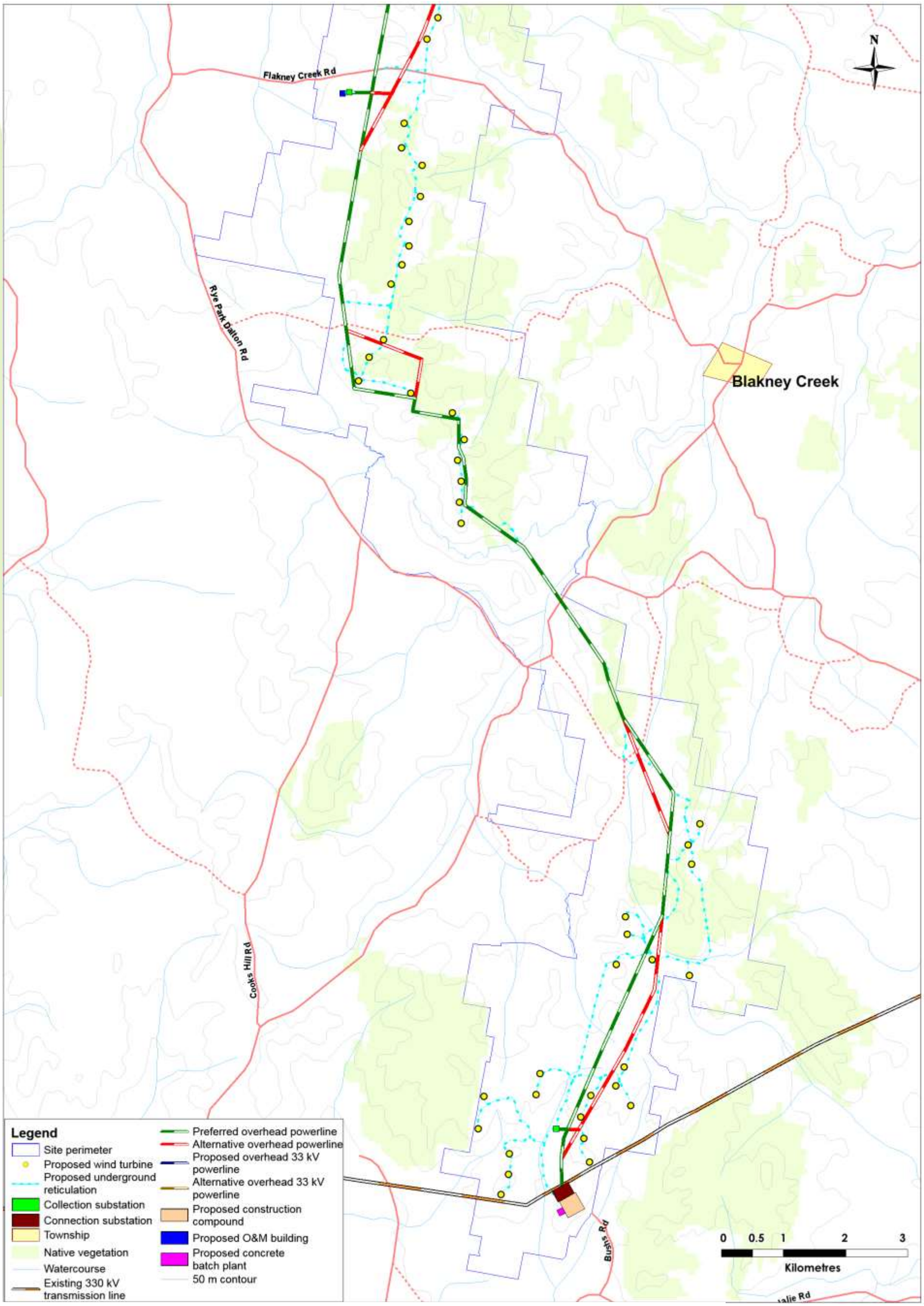


Figure 3-17 Detailed overhead powerline & underground electrical reticulation south of Flakney Creek Road

3.5 Access to and Around the Site

Main Access

The primary access to the project site will be via the Hume Highway. This is a major duel carriageway highway between Sydney and Yass and will comfortably handle the additional traffic generated during the construction of the wind farm. The turn off to and from the wind farm will be signposted and designed to allow vehicles to exit and enter the highway safely.

Alternate access to the site will be via the town of Boorowa. The alternate route follows Lachlan Valley Way from the south end of the site turning off the Hume Highway just pass the Yass turn off. A suitable route has been selected around the outskirts of Boorowa following consultation with council. The route will follow the Rye Park Boorowa Road heading to Rye Park.

A detailed Traffic and Transport study has been conducted and is summarised in Section 13.

Access tracks

On site access tracks required for construction and operation would be unsealed formations with a minimum width of 5 - 6 m. Access tracks are required to the base of each wind turbine location and to the location of the connection substation, collection substations, overhead powerline route and operation and maintenance facility. New gates and possibly new or realigned fences may also be required to protect stock during the construction phase and at property boundary crossings.

Once the construction phase has finished, the crane hardstands and access tracks would be maintained to allow maintenance and repairs to the wind turbines. These tracks can also be used for normal farm access and for emergency or fire vehicle access.

In locating access tracks on site, every effort would be made to:

- minimise the number and length of access tracks;
- locate access tracks along the route of existing farm tracks;
- locate access tracks to minimise clearing of native vegetation;
- locate access tracks to minimise impact on sensitive ecological or heritage areas;
- construct access tracks with due regard to erosion and drainage; and
- construct access tracks with due regard to landowners ongoing farming practises

A detailed view of the proposed access tracks can be seen below in Figure 3-18 and Figure 3-19.

Vehicle management

Prior to the commencement of construction a Traffic Management Plan (TMP) would be prepared to properly manage traffic impacts on public roads as detailed in Section 13. It would be developed in consultation with the roads authorities to ensure that the measures are adequate to address potential safety and asset degradation impacts.

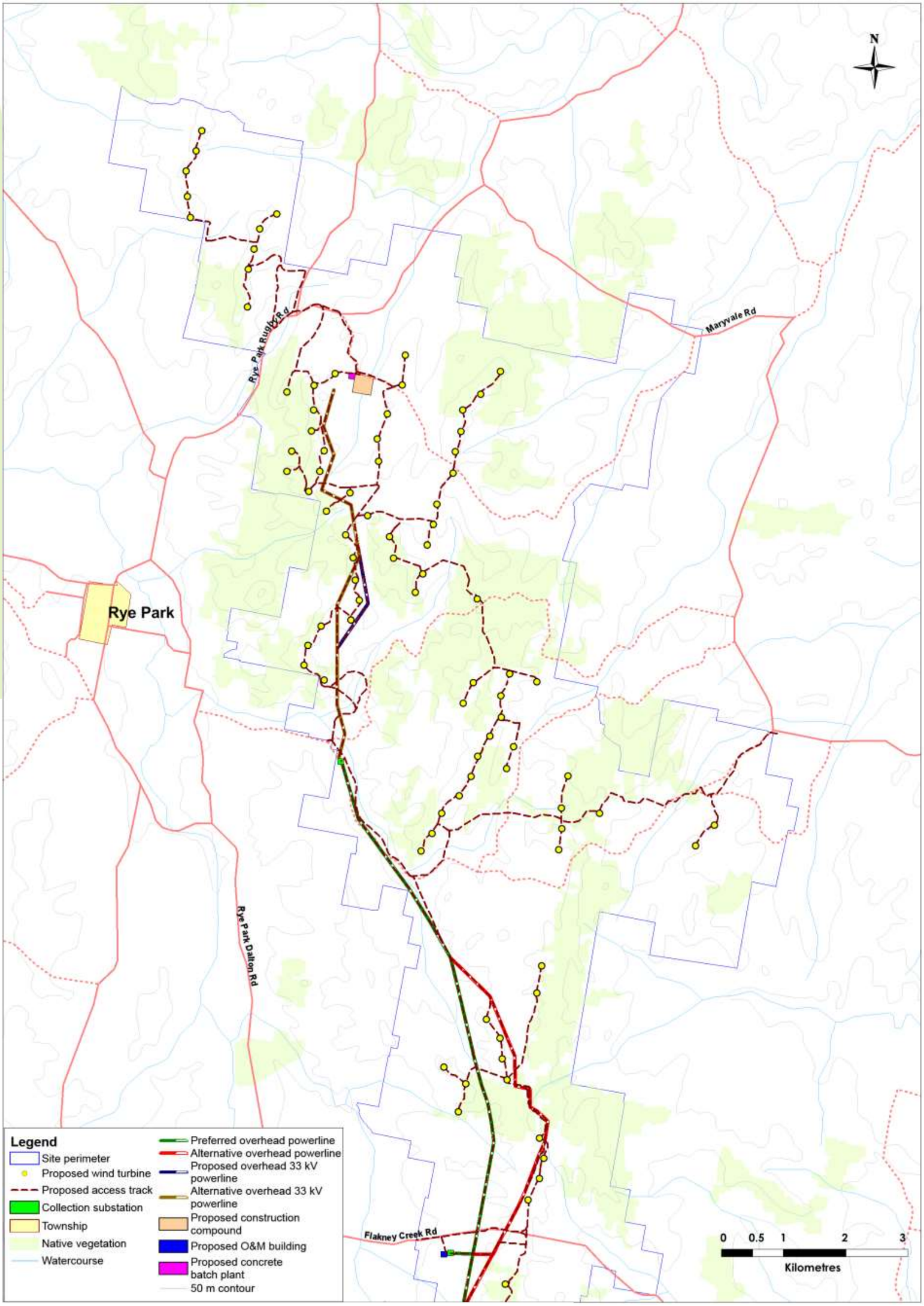


Figure 3-18 Detailed site access tracks layout north of Flakney Creek Road

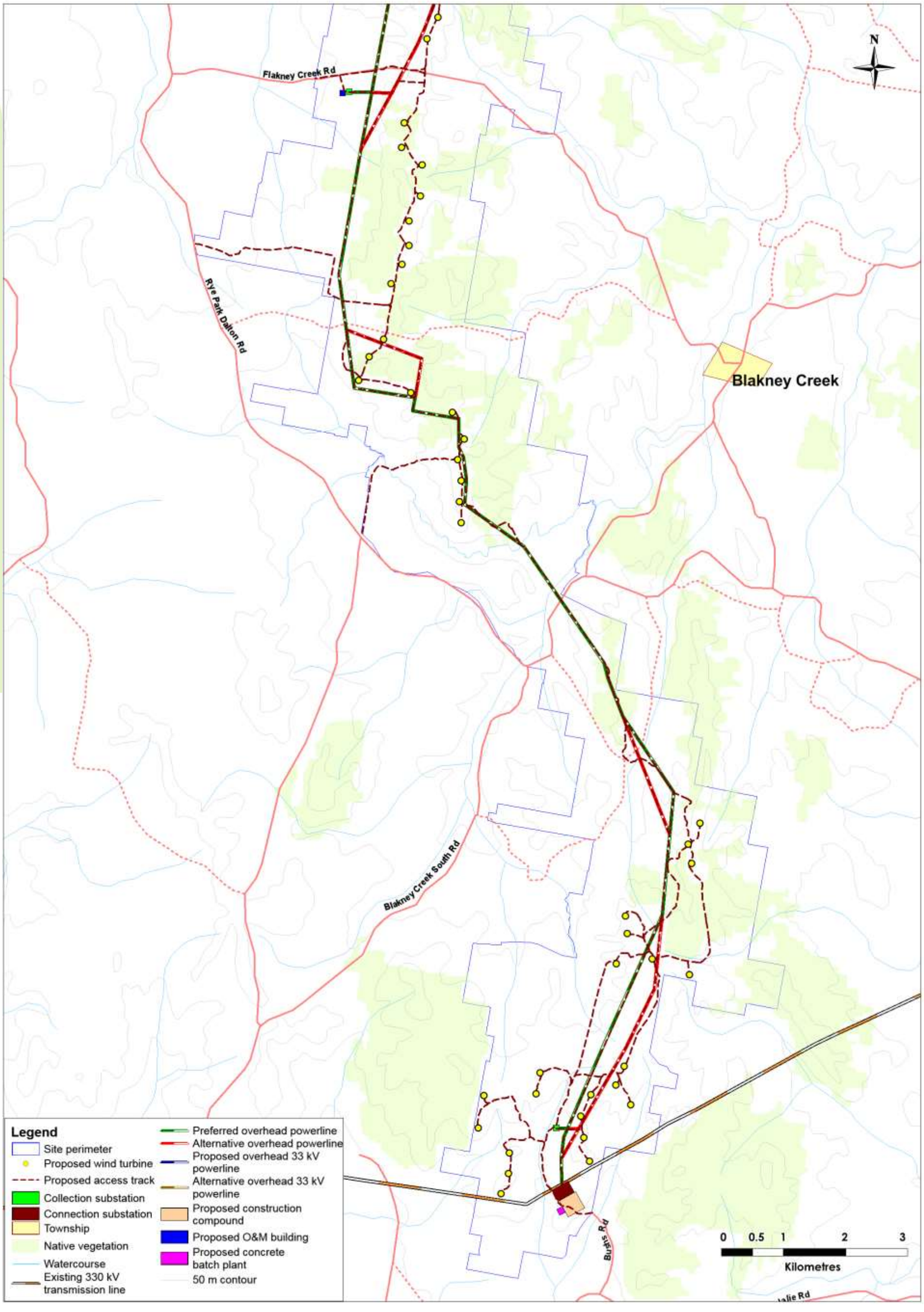


Figure 3-19 Detailed site access tracks layout south of Flakney Creek Road

3.6 Additional Permanent Facilities

Operations and Maintenance Facilities

A permanent operations and maintenance facility, up to 100 x 100 metres in size, will be constructed on the wind farm site for managing operations and maintenance activity. The facility would likely be located near to the central collection substation on the wind farm as shown in. The facility will include car parking, offices and amenities for the maintenance staff, a control room and storage facilities for spares and equipment needed for the maintenance and operation of the wind turbines.

Control and Communication Cabling

In addition to the electrical cabling, control and communications cabling is required from the maintenance facility to each wind turbine, and to the various substations. This communication cabling is typically optical fibre cable and would be installed using the same method and route as the power cabling described above, that is, strung from the same poles as overhead lines, or buried in the same cable trench as the electrical cables.

Wind Monitoring Equipment

Epuron is currently operating five temporary wind monitoring masts on the site to assess wind speeds at or near proposed turbine locations. Following construction, up to 6 permanent wind monitoring masts would be required to assist the control and operation of the wind farm. These would be either static guyed or un-guyed structures and will be to a minimum height of the wind turbine hubs with remotely operated wind monitoring equipment installed at multiple heights on each mast.

Pending final wind turbine placements, it may be necessary to move or install additional temporary wind monitoring masts to verify wind speeds across the site.

The temporary and permanent masts would be located within the development envelope assessed in the various studies reported in this document. Epuron will inform CASA and the Department of Defence of the location of any monitoring masts constructed.

3.7 Temporary Facilities

During the construction phase up to two construction compounds will be established on the site. The compounds will include car parking, site offices, and amenities for the construction work force, and lay down areas for the temporary storage of construction materials, plant, equipment and wind turbine components. A temporary power supply will be required to be connected to the construction compounds.

Site Offices

During the construction phase up to 363 staff would be working on site at any time. Suitable locations for up to two site offices would be selected, avoiding areas that are regarded as having environmental constraints. The site offices may include several demountable buildings and amenities blocks located on site for the duration of construction. Sufficient parking would be provided for the expected usage.

Rock Crushing

Materials excavated during the construction of wind turbine footings may be able to be reused for other purposes such as road base for the access roads and upgrades. Mobile rock crushers would be used for these purposes during construction.

Concrete Batch Plants

During construction up to two concrete batching plants would be required on site and are typically located proximate to the construction compounds. A typical concrete batch plant would involve a level area of approximately 100 x 100 m to locate the loading bays, hoppers, cement and admixture silos, concrete truck loading hardstand, water tank and stockpiles for aggregate and sands. The batching plant would include an in-ground water recycling / first flush pit to prevent dirty water escaping onto the surrounding area, and would be fully remediated after the construction phase. The proposed locations are shown in Figure 3-22 and Figure 3-23. The concrete batching plant would produce around 400 m^3 of concrete per day when a turbine foundation is being poured. The operational period would be for 18-24 months and each plant would produce around 850 tonnes of concrete per day. This is equivalent to around 110,000 tonnes of concrete during the construction phase for foundations. The batch plant operations would therefore require a license to be issued by DECCW (under the Protection of the Environment Operations Act 1997), given the amount exceeds the license threshold of 150 tonnes per day. License conditions specified by DECCW are likely to include operational protocols and monitoring.

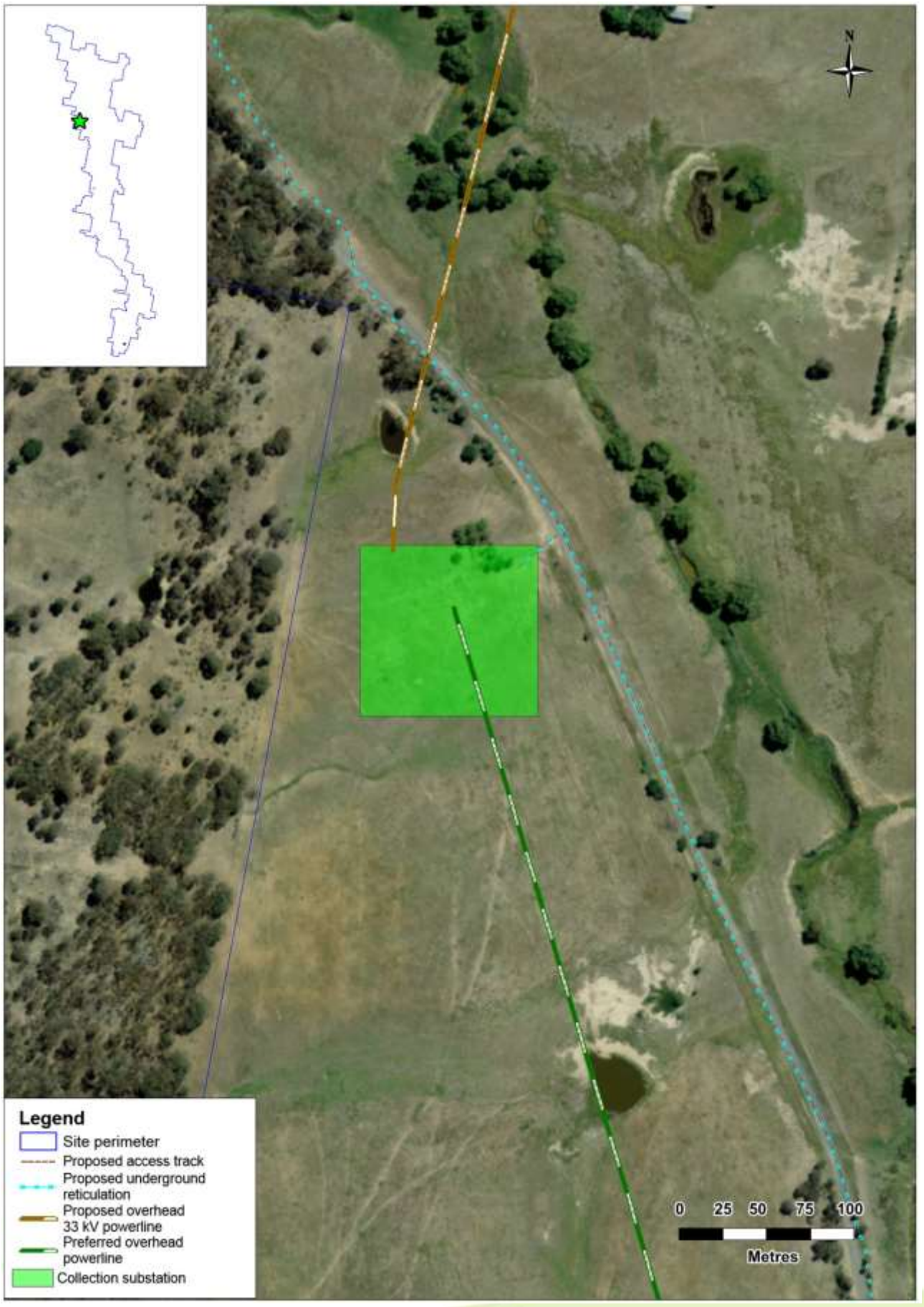


Figure 3-20 Proposed northern wind farm collection substation

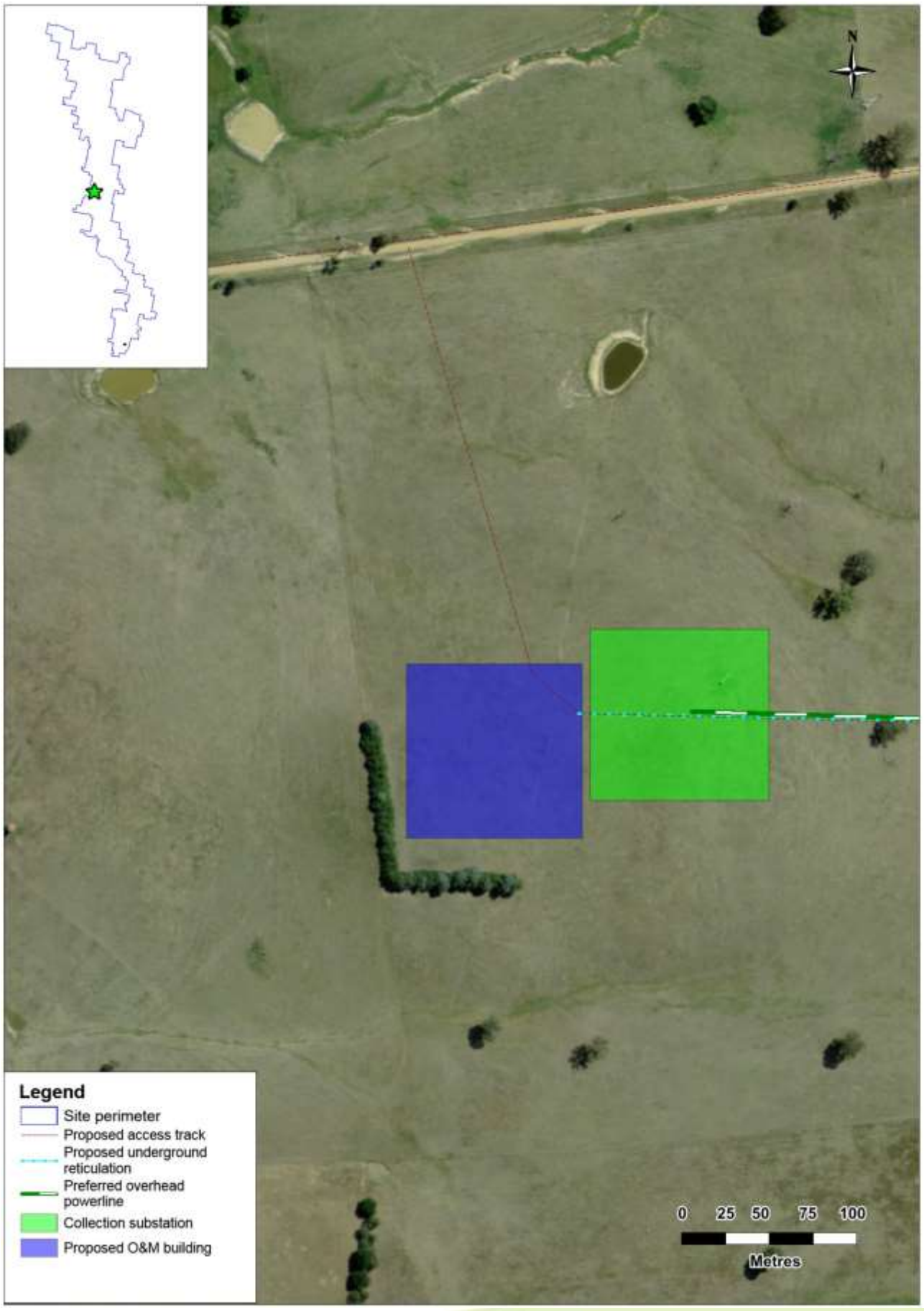


Figure 3-21 Proposed central wind farm collection substation and permanent operation and maintenance facility

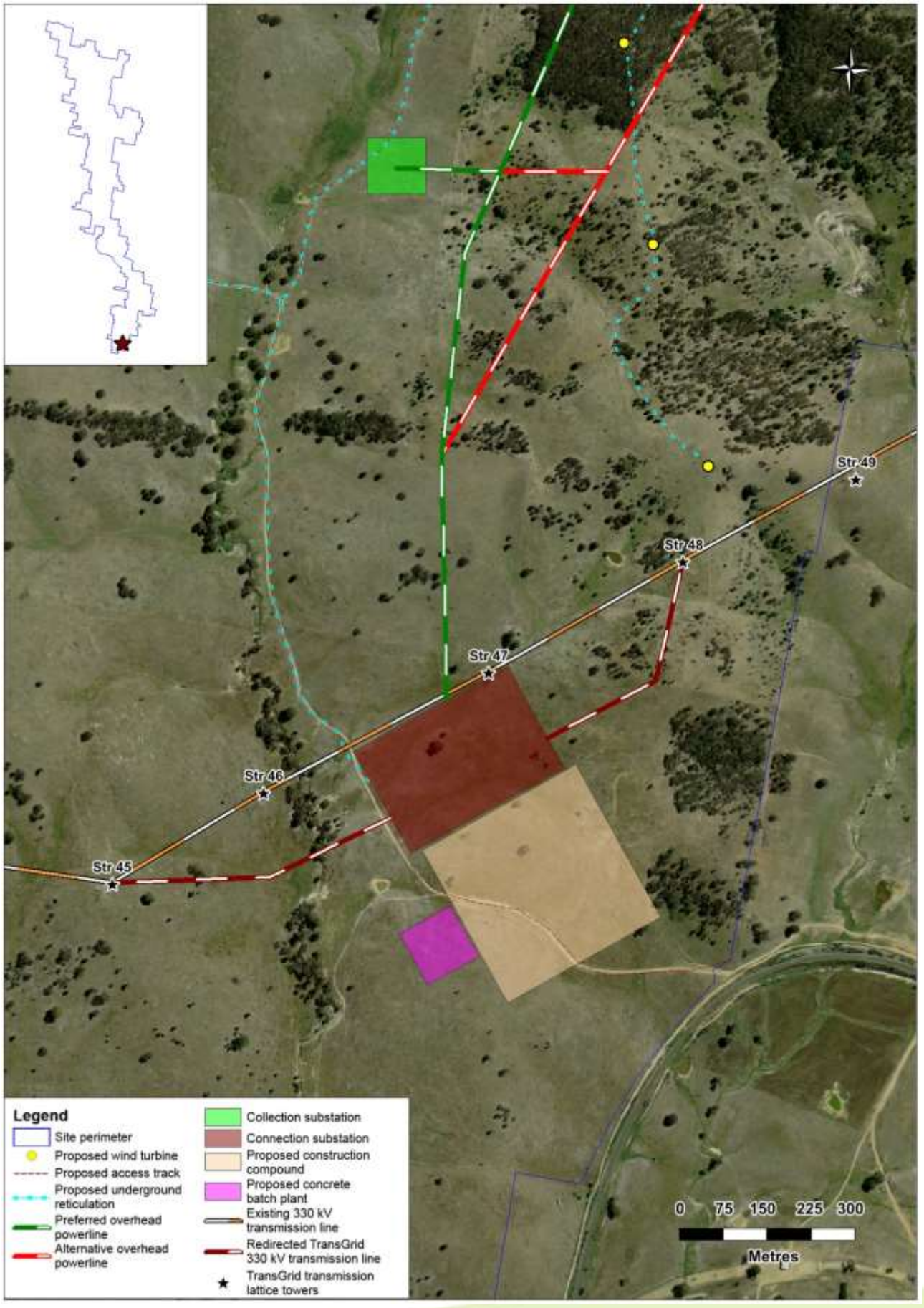


Figure 3-22 Proposed wind farm connection substation, southern construction compound, line deviation route and concrete batch plant

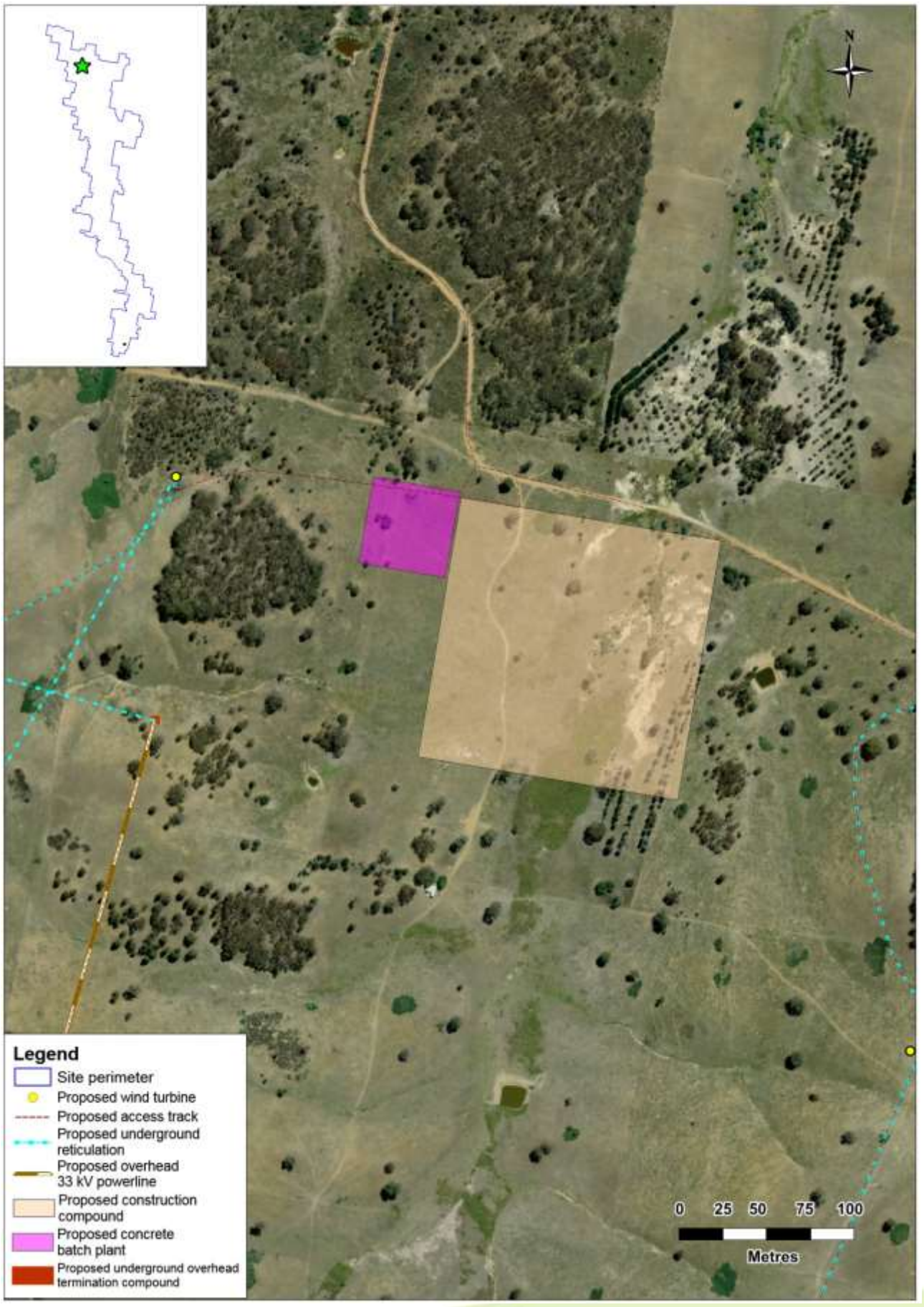


Figure 3-23 Proposed northern construction compound and concrete batch plant

3.8 Site Disturbance and Impact Areas

The proposed wind farm requires the construction of a number of elements including turbines, turbine foundations, underground and overhead powerlines, substations, control buildings and access roads on the site.

During the construction activities additional areas of the site would be impacted to provide construction compounds, concrete batching plants and storage areas. These areas can be rehabilitated and restored following the completion of the construction program. Table 3-1 and Table 3-2 present the calculated area of the site impacted by the project based on the turbine layout. Some of these impacts would be for the duration of the wind farm operation and some are temporary impacts during the construction phase.

Table 3-1 Development footprint and site disturbance areas

Project Components	Typical Dimensions	Quantity	Total Area (ha)
Footing and Hardstand#	25 x 60 m	125	18.9
Access and spur roads*#	10 m	88.9 km	88.9
Underground powerlines onsite**	1 m	88.9 km	8.9
Overhead Powerline^	60 m	36.9 km	147.7
Connection Substation	3-4 hectares	1	4
Collection Substations	100 x 100 m	2	2
Operations and Maintenance facilities and Control Building	100 x 100 m	1	1
Concrete batch plants	100 x 100 m	2	2
Construction compound, staging and storage areas	300 x 300 m	2	18

* Access tracks around the site are anticipated to be 5-6 metres in width, however, a 10 metre width has been used to assess the likely impact due to cut and fill operations in order to achieve the required slope and increased width needed at bends.
**The impact area associated with underground cables has been incorporated into the figures for access tracks.
Habitat permanently removed
^ Habitat would be modified for underground and overhead electrical cabling and overhead powerline maintenance. This would include clearing and trimming vegetation for each power pole and maintaining clearance from electrical conductors between poles.

Table 3-2 Summary of impacted vegetation within the site

Vegetation types	Permanent habitat loss within each condition class (ha)				
	Good	Moderate	Poor	Unknown	Total
Box-Gum Woodland	6	0	6	8	21
Box-Gum Woodland Derived Grassland	0	0	3	0	3
Inland Scribbly Gum Forest	17	15	10	11	52
Argyle Apple Forest	0	0	0	0	0
Brittle Gum Forest	0	0	1	0	1
Sifton Bush Shrubland	4	2	0	1	7
Native pasture	1	8	11	8	27
Exotic/planted	0	0	3	0	3
				Total	114

Note: The dimensions used for the vegetation impacts in Table 3.2 and the BA are estimates of the actual disturbance rather than typical footprint dimensions reflected in Table 3.1. The actual vegetation impacts for the final confirmed layout and dimensions will be confirmed prior to construction as part of the Offset Plan prepared in consultation with OEH.

3.9 Project Implementation

The establishment of the wind farm can be considered as occurring in four phases. These include construction, operation, refurbishment and/or decommissioning of the wind farm. A description of activities under these headings follows.

3.9.1 Phase 1: Wind Farm Construction

The construction phase of the wind farm is likely to occur over an 18-24 month period and would include activities such as:

- transportation of people, materials and equipment to site;
- civil works for access track construction, turbine and monitoring mast footings and trenching for cables;
- establishment, operation and removal of any required construction equipment such as rock breaking equipment and concrete batching plants;
- potential use of blasting in foundation excavation, if required;
- installation of wind turbines using large mobile cranes;
- construction of site substations, connection to on-site 330kV transmission line, and onsite overhead powerlines and electrical cables;
- construction of additional facilities (temporary and permanent) as required;
- construction, use and removal of temporary offices and facilities;
- temporary storage of plant, water, aggregates and other equipment; and
- restoration and revegetation of disturbed onsite areas on completion of construction works.

In general, construction would commence with site establishment, construction of access tracks and all other site civil works, including preparation of hardstand areas, and laying of cables. This would be followed by preparation of concrete footings, which must be cured prior to installation of wind turbines and monitoring masts.

Wind turbine construction and erection can be relatively fast once the footings are prepared, with wind turbines installed at a rate of approximately 2-3 per week, subject to weather. The towers are erected in sections, the nacelles lifted to the top of the towers, and finally blades lifted and bolted to the hub or preassembled on the ground and lifted as a unit.

The necessary substation construction and grid connection works would be carried out in parallel.

The commissioning phase would include pre-commissioning checks on all high-voltage equipment prior to connection to the TransGrid transmission network. Once the wind farm electrical connections have been commissioned and energised, each wind turbine is then separately commissioned and placed into service.

On completion of construction, remaining disturbed areas would be remediated and all waste materials removed and disposed of appropriately.

3.9.2 Phase 2: Wind Farm Operation

While the wind farm operation would be controlled remotely, the wind turbines and other equipment would require regular maintenance. It is possible that some equipment may require major repair or replacement. During the initial operating years, operator attendance may be more regular while wind farm operation is being fine-tuned and optimised.

Once installed, the turbines would operate for an economic life of twenty to thirty years. After this time the turbines may be refurbished/replaced to improve their performance or decommissioned and removed from the site.

Routine Maintenance

To ensure the wind farm operates in a safe and reliable manner, it would require regular inspection and maintenance on an 'as needs' basis. This would generally be carried out using standard light vehicles.

In addition, regular scheduled maintenance is required, generally at 3, 6 and 12 monthly intervals. As a guide, each turbine requires approximately 7 days of maintenance per year. This does not require the use of major equipment,

and could be carried out in a normal utility or small truck and would not require any additional works or infrastructure.

Major Repairs

It is possible that major unexpected or unscheduled equipment failures could take place during the life of the wind farm. While wind turbines and electrical components are designed for a 20 - 30 year life, failures can occur, for example due to lightning strike.

Most repairs can be carried out in a similar manner to routine maintenance, with some exceptions:

Replacement of wind turbine blades, if necessary, would require bringing new blades to the affected turbine and installation of these blades using large cranes. The requirements are similar to the construction phase, and the access tracks established for construction would be used.

Replacement of wind turbine generators or gearboxes may require a crane and low loader truck to access the wind farm.

Replacement of substation transformers would require a low loader truck to access the site.

Site monitoring program

A post-construction monitoring program would be established to determine any additional impacts resulting from the operation of the wind farm. The Operational Environmental Management Plan would contain specific monitoring programs required and would assess key issues such as noise compliance.

Further details of the monitoring and adaptive management mechanisms are included in Section 17.

3.9.3 Phase 3: Wind Turbine Refurbishment / Replacement

The life of a modern wind turbine is typically 20 - 30 years, at which point individual wind turbines would be refurbished, replaced, overhauled or removed. Individual turbines may also fail at shorter duration for various reasons as discussed above.

Replacement, refurbishment and recommissioning would involve similar road access arrangements to construction, and would require access for large cranes and transport vehicles to dismantle and remove the existing turbines and to install replacement turbines.

Existing substations and cabling would be largely reused. It is also possible that the existing footings and towers could also be reused, subject to the design of turbines available at the time of replacement / recommissioning. This would allow a significant cost saving for the wind farm.

Any refurbishment or turbine replacement would comply with the ongoing requirements of the project approval under this application.

3.9.4 Phase 4: Wind Farm Decommissioning

Decommissioning the wind farm at the end of its commercial life is the proponent's obligation and cost. It would involve reinstating similar road access arrangements to construction, and would require access for large cranes and transport vehicles to dismantle and remove the turbines and associated infrastructure. All underground infrastructure such as foundations and cable trenches would remain in situ and all above ground infrastructure would be removed. Some infrastructure such as access roads and buildings may be required by the landowner to remain in place after decommissioning and will not be removed. The decommissioning period is likely to be significantly shorter and with significantly fewer truck movements than the construction phase.

A Decommissioning and Rehabilitation Plan for the project is attached as Appendix G.

3.9.5 Staging of Works

It is possible that not all turbines, access tracks or other equipment outlined in this EA would be ultimately required for the project. Likewise, market, seasonal, or operational requirements may mean that the actual construction of the wind turbines may occur in stages or groups over a number of years.

Construction works packages, such as civil and electrical works, may be required to commence at different times or in stages as a result of receiving certain final development approvals or certifications to commence at different times.

3.9.6 Construction Hours

In general, construction activities associated with the project that would generate audible noise in excess of the requirements of the NSW Interim Construction Noise Guidelines at any residence would be undertaken during the daylights hours of:

Monday – Friday:	7am – 6pm
Saturday:	8am – 1pm
Sunday and public holidays:	Not currently proposed

These working hours have been proposed to allow reasonable efficiencies of effort to achieve maximum productivity and to minimise the overall construction duration but should not be restricted to daylight hours. Variations to these hours may be required subject to weather and seasonal impacts.

However, some activities (including delivery to site of major equipment, and turbine installation) may occur outside of these hours due to logistic, safety or weather related reasons.

Turbine crane lifts, for example, can only be carried out during periods of lower wind speeds because of operational limitations with the tall cranes and it is possible that out of hours work would be required for this purpose. This scenario has occurred at other wind farms (for example Cape Bridgewater, Victoria) where night crane operations have been required because of strong winds occurring during the day.

Likewise, the requirements of NSW Police or roads authorities may limit transport of major equipment to and from the site to outside of normal working hours.

Any construction activities outside of the standard construction hours will only be undertaken in the following circumstances;

- Construction activities that generate noise that is:
    - no more than 5dB(A) above rating background level at any residence in accordance with the ICNG (Table 2 of the ICNG); and
    - no more than the noise management levels specified in Table 3 of the ICNG at other sensitive receivers; or
- for the delivery of material required outside those hours by the NSW police Force or other authorities for safety reasons (section 10.11.2); or
- where it is required in an emergency to avoid the loss of life, property and/or to prevent environmental harm;
- works as approved through the out-of-hours work protocol outlined in the Construction Noise and Vibration Management Plan as part of the Construction Environmental Management Plan.

3.10 Crown Land

The proposed Rye Park Wind Farm has no turbines and associated blades that encroach and impact on any Crown Land which includes Crown Parcels, Crown Roads and Crown Waterways. Permanent and temporary facilities including O&M building, construction compound, substation and concrete batching plant also do not encroach and impact on any Crown Land. Each individual infrastructure item is documented relative to its potential impact on the type of Crown Land, shown in Table 3-3 to Table 3-6.

There are five Crown Parcels within the site perimeter. These are Lot 7001 DP 1026328, Lot 7301 DP 1147658, Lot 7001 DP 1033069, Lot 7002 DP 1033069 and Lot 7001 DP 1026213. Figure 3-24 through Figure 3-27 show infrastructure relative to these respective Crown Parcels. No turbines, associated blades, facilities, access tracks, underground cabling and overhead powerlines encroach and impact on any Crown Parcels. This is summarised in Table 3-3. To ensure that Crown Land is not encroached upon by any infrastructure all infrastructure relative to the cadastre will be surveyed prior to construction. In addition, claim area ALC 10992 has been avoided and no infrastructure is proposed on this land.

In some instances access tracks and underground cabling cross or run along Crown Roads. Table 3-4 represents the number of instances where infrastructures crosses or runs along Crown Road's where the Crown Road is an unformed

paper road i.e. there is not any existing public road. Table 3-5 represents the number of instances where infrastructure crosses or runs along Crown Roads where there is an existing public road.

A survey of all infrastructures relative to the cadastre will be carried out prior to construction to accurately confirm there are no turbines and associated blades encroaching on Crown Roads.

In some instances access tracks, underground cabling and overhead powerlines cross Crown Waterways. Only two Crown Waterways are crossed, however there are multiple instances of this as summarised in Table 3-6.

A survey of all infrastructures relative to the cadastre will be carried out prior to construction to accurately confirm there are no turbines and associated blades encroaching on Crown Waterways.

There are no turbines or infrastructure placed on, encroaching or impacting Trig Reserves. The Survey Infrastructure and Geodesy department in the Land and Property Information Division has been consulted and the project has considered the requirements set out in 'General Guidelines for positioning of and construction of Wind Turbines near Trigonometrical Stations' V1.3 dated Jun'12.

Table 3-3 Infrastructure relative to Crown Parcels

Infrastructure	*Encroaches Crown Parcels*
Turbines and blade	0
Facilities - O&M building, construction compound, substation, concrete batching plant	0
Access tracks	0
Underground cabling	0
Overhead powerline	0

Table 3-4 Infrastructure relative to Crown Road – Unformed Paper Roads

Infrastructure	*Crosses road*	*Runs along road*
Turbines and blade	0	0
Facilities - O&M building, construction compound, substation, concrete batching plant	0	0
Access tracks	37	2
Underground cabling	36	2
Overhead powerline	19	0

Table 3-5 Infrastructure relative to Crown Road – Existing Public Roads

Infrastructure	*Crosses road*	*Runs along road*
Turbines and blade	0	0
Facilities - O&M building, construction compound, substation, concrete batching plant	0	0
Access tracks	3	3
Underground cabling	3	3
Overhead powerline	2	0

Table 3-6 Infrastructure relative to Crown Waterways

Infrastructure	*Crosses waterways*
Turbines and blade	0
Facilities - O&M building, construction	0

Infrastructure	*Crosses waterways*
compound, substation, concrete batching plant	
Access tracks	15
Underground cabling	14
Overhead powerline	14

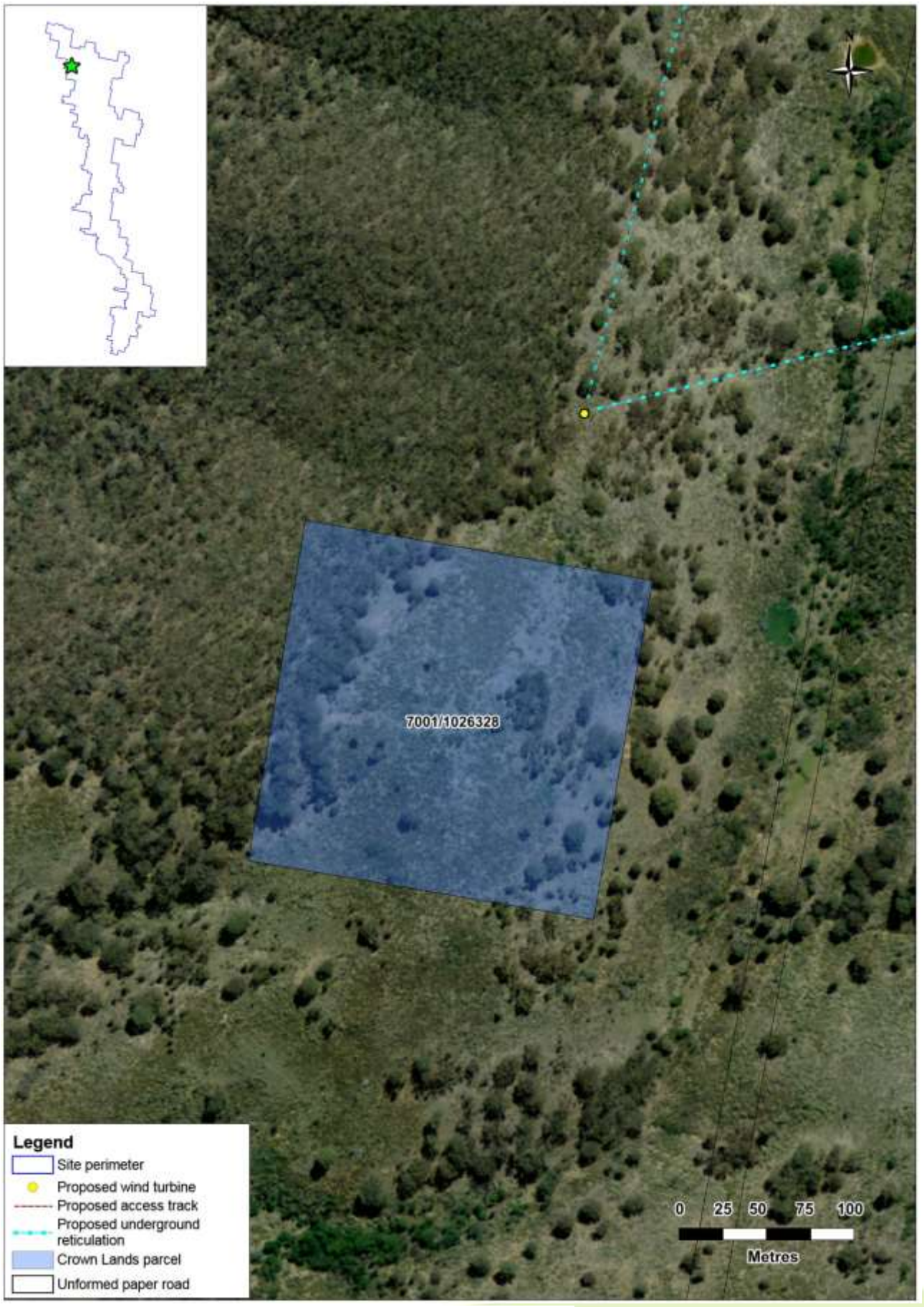


Figure 3-24 Crown Lands parcel located within the project boundary

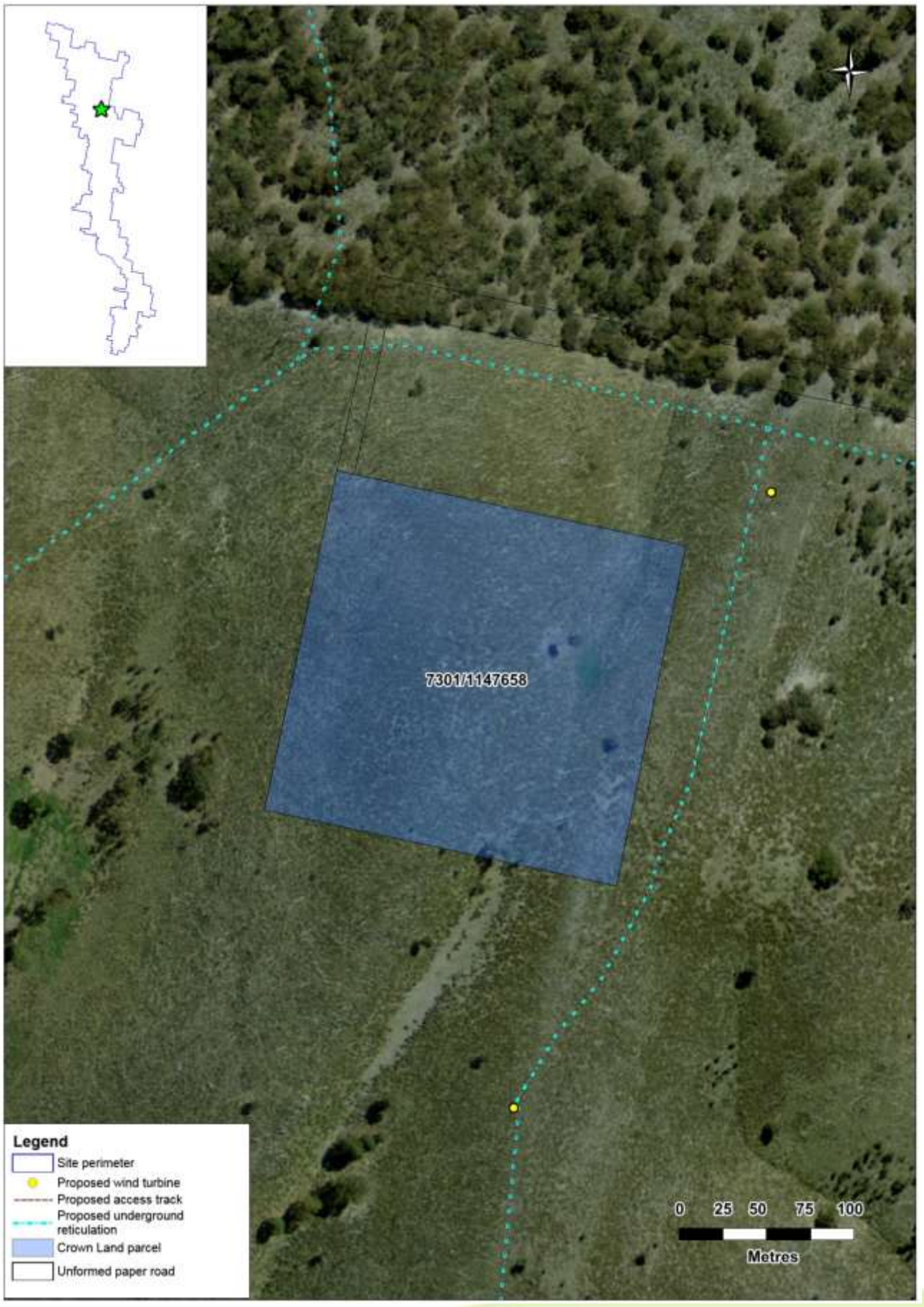


Figure 3-25 Crown Lands parcel located within the project boundary

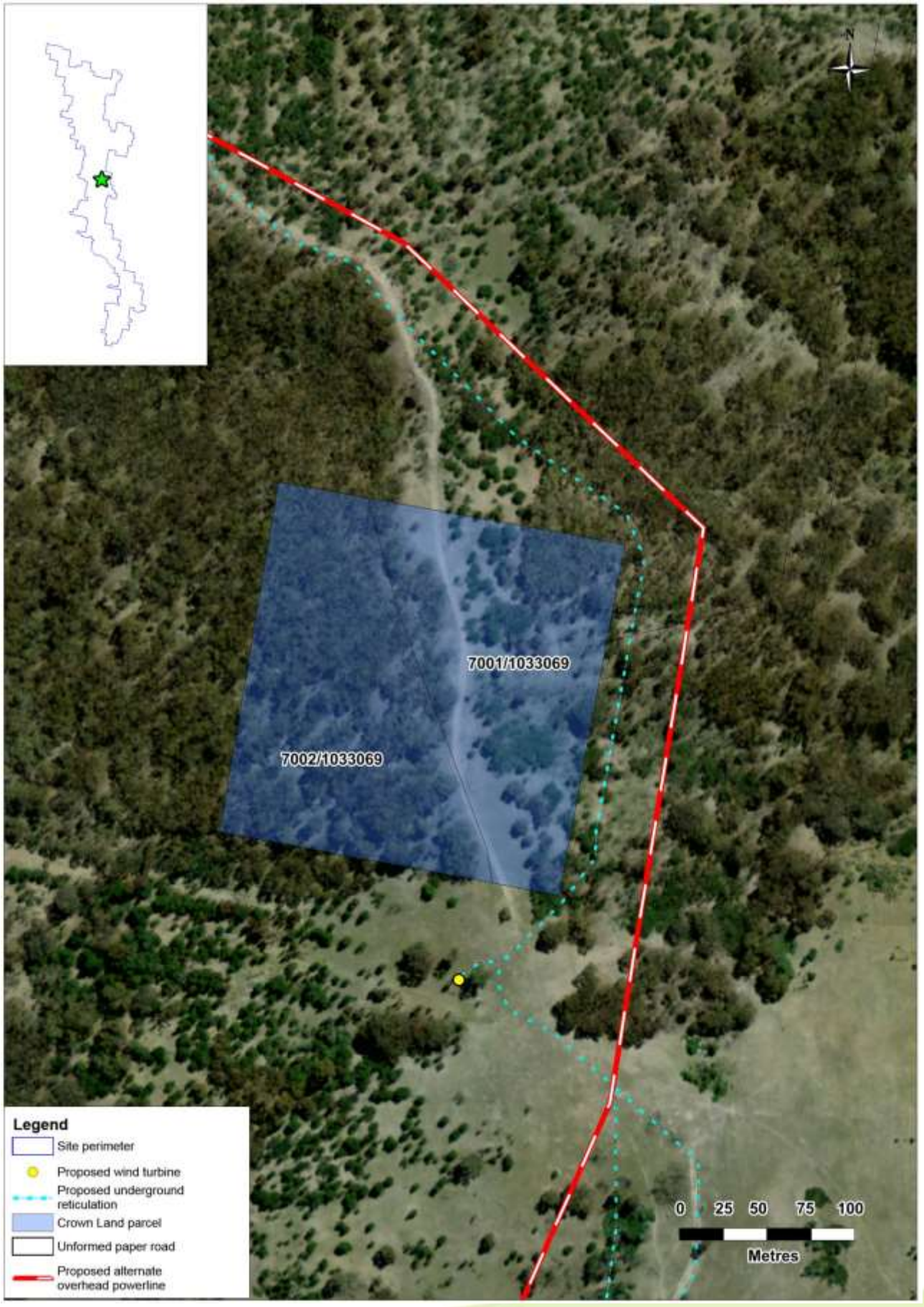


Figure 3-26 Crown Lands parcel located within the project boundary



Figure 3-27 Crown Lands parcel located within the project boundary

3.11 Local Government Areas

The proposed Rye Park Wind Farm is located across three LGAs; Boorowa Council, Upper Lachlan Shire Council and Yass Valley Council. The boundaries of the three LGAs can be seen in Figure 3-28, with the distribution of proposed wind turbines summarised in Table 3-7. The final number of wind turbines in each LGA may be subject to change as micrositing of turbines may occur later in the development process.

Local Government planning instruments and policies are discussed further in Section 6.1.10

Table 3-7 Summary of the number of proposed wind turbines in each LGA

Local Government Area	*Proposed number of turbines*
Boorowa Council	83
Upper Lachlan Shire Council	26
Yass Valley Council	17

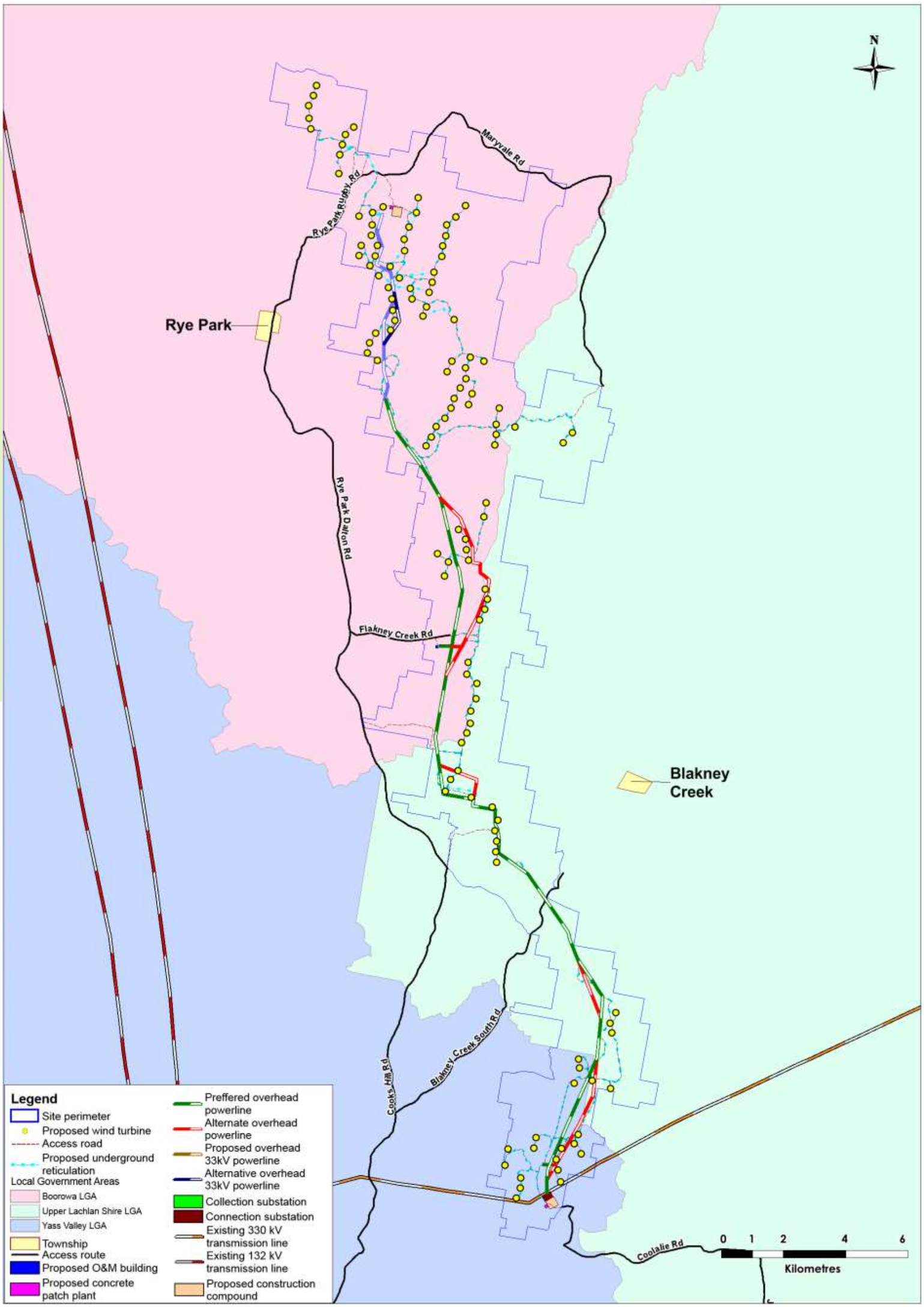
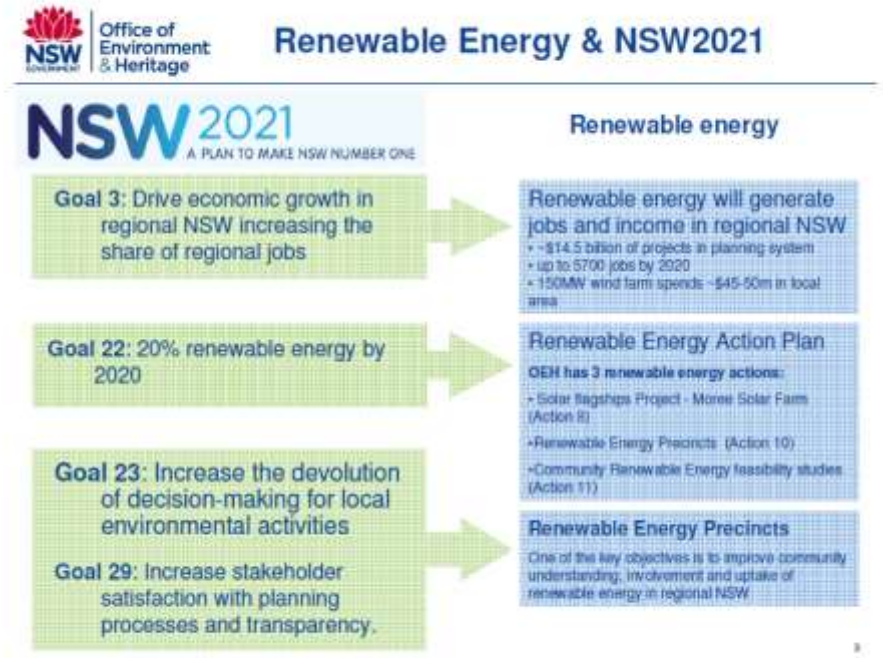


Figure 3-28 Distribution of wind farm infrastructure across the three LGA boundaries

4 Strategic Justification

This section provides a justification for the project in the context of its local and regional setting. It provides a summary of the energy context and in particular the need for additional electricity supply in NSW. It also outlines the benefits of the project including reducing Australia's greenhouse gas emissions, supporting Federal and State renewable energy targets as well as other local and wider community benefits.

The NSW State Plan has created specific goals underlining the States commitment to achieving 20% renewable energy by 2020 and driving economic growth in regional NSW. The Minister for Energy recently released the draft NSW Renewable Energy Action Plan which states that NSW is open for business in renewable energy and is keen to capture the jobs and investment that comes with it. Below is an outline of the NSW government's plans to assist the development of renewable energy in NSW.



The justification for the Rye Park Wind Farm development is based on the following forecasts:

- In full operation, it would generate more than 1,192 GWh of electricity per year - sufficient for the average consumption of around 149,000 homes.
- It would improve the security of electricity supply through diversification of generation locations.
- It would reduce greenhouse gas emissions by approximately 1,153,000 tonnes of carbon dioxide equivalent (CO_2e) per annum[1] or the equivalent of 314,000 cars removed from the roads
- It would contribute to the State and Federal Governments' target of providing 20% of consumed energy from renewable sources by 2020.
- It would contribute to the NSW Government's target of reducing greenhouse gas emissions by 60% by the year 2050.
- It would create local employment opportunities and inject funds of up to $556.4 million into the Australian economy.
- In addition to these primary benefits there are also secondary benefits and opportunities for improvement in infrastructure, tourism and ecology.

[1] Calculated using the NSW Wind Farm Greenhouse Gas Savings Tool developed by DECCW

4.1 Meeting Our Changing Electricity Demand

Electricity consumption continues to grow, and the additional demand must be met by either increased fossil fuel generation or an increase in generation from renewable sources such as wind power.

TransGrid's Annual Planning Report (2012) and AEMO's Annual Electricity Statement of Opportunities (2011) confirms that growth in electricity demand will soon exceed supply during peak times. Over the next 10 years energy use in NSW is expected to increase at an average of 1.6% per year (current total of 74,902 GWh for 2010/11). By 2020 NSW electricity demand is expected to be 87,745 GWh/an, an increase of approximately 13,000 GWh/an over today's consumption (AEMO, 2011; TransGrid, 2012).

Meeting this demand will require our existing electricity generators to increase their annual output, however at some point additional power generators will be also be required. AEMO has estimated that additional power generating capacity will be required to manage peak periods in NSW by summer 2018/19. Options need to be developed to meet this expected demand growth to ensure reliability of supply and evade power outages and blackouts (TransGrid, 2012). This is demonstrated in AEMO's Annual Electricity Statement of Opportunities report, as illustrated in Figure 4-1.

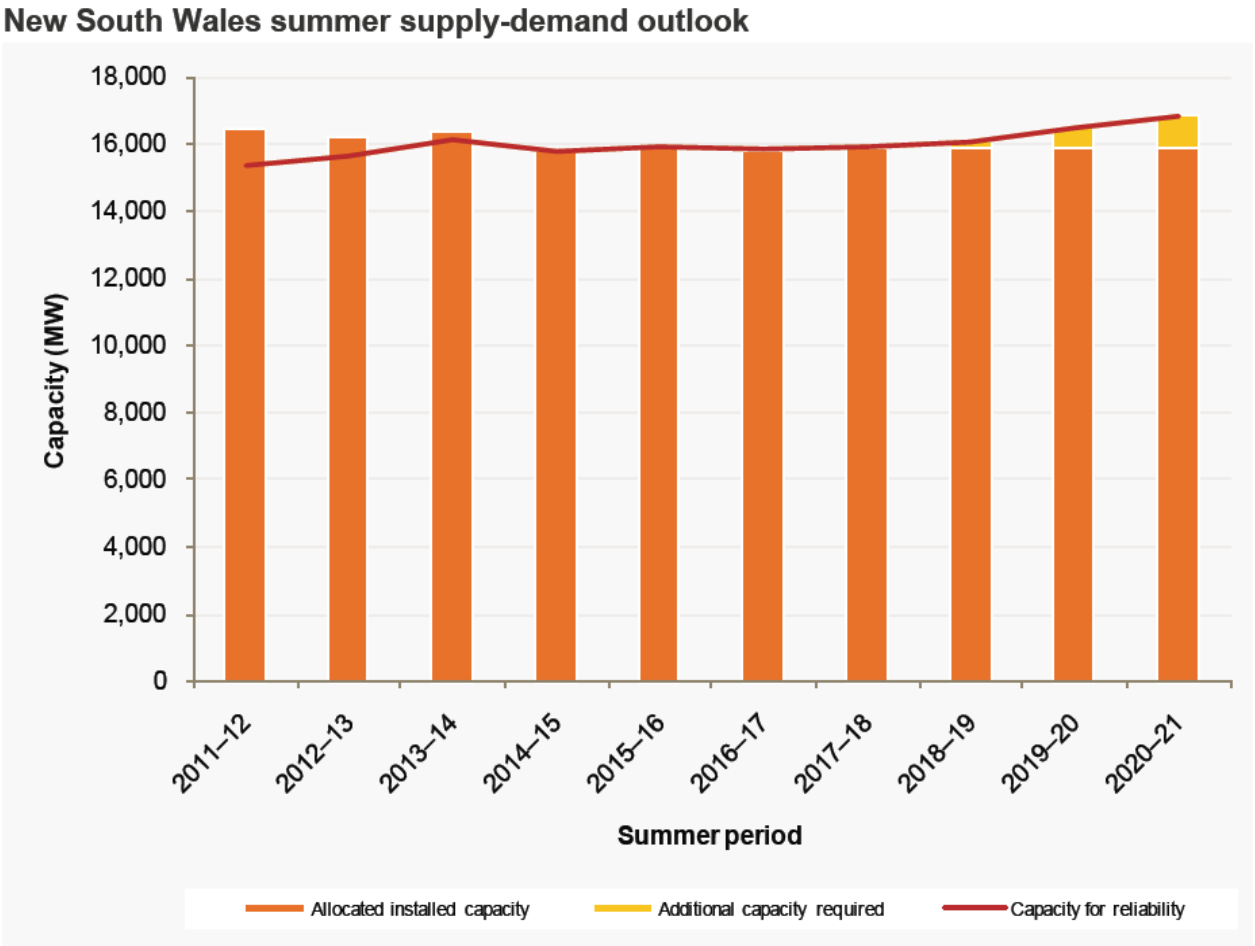


Figure 4-1 Test AEMO NSW Summer Generation Capacity Outlook (AEMO, 2010)

4.1.1 Quantifying the Electricity Generation from this Project

Electricity production from wind farms is variable. At any point in time a wind farm could be generating anywhere in the range of 0 to 100% of its power output, depending on the local wind speeds.

However, in the same way that the weather can be predicted hours to weeks in advance, the likely wind farm power output at any point in time can also be predicted with reasonable accuracy. In its role as electricity market operator, AEMO has established a Wind Energy Forecasting System to help it understand the likely wind farm production from minutes to days in advance. This system enables AEMO to reliably operate the electricity market taking into

consideration the variability of all components including the constantly changing load, availability of and loading on transmission lines, plant outages at major power stations, and the changing output of wind farms.

In that context, while the output of wind farms is variable, it is also predictable and dependable.

The Rye Park Wind Farm represents a large sized wind farm with an installed capacity likely to be approximately 378 MW (based on 126 wind turbines with a capacity of 3.0 MW).

Epuron has carried out significant wind monitoring on the site to confirm the expected long term wind regime. Based on Epuron's analysis of wind speeds at the site, the project is expected to produce in the order of 1,192 GWh of electricity per year over its operating life.

The energy produced from the wind farm would be 100% renewable energy and would be fed directly into the electricity grid and sold on the National Electricity Market (NEM).

4.2 Reducing Greenhouse Gas Emissions

4.2.1 Context

There is scientific evidence that the earth's climate is changing. Observations have shown global increases in air and ocean temperatures, the widespread melting of snow and ice and rising sea levels (IPCC, 2008). It has further been observed that many of the world's natural systems are already being affected by the change of regional climates, in particular temperature increases (IPCC, 2008). Other indicators include altered rainfall patterns and more frequent or intense weather patterns such as heatwaves, drought, and storms. In Australia, this change in the climate is anticipated to have an impact on water supply and quality, ecosystems and conservation, agriculture and forestry, fisheries, settlements and industry and human health.

The drivers for climate change have been identified as being from both natural and anthropogenic forces, however a main contributor is the release of greenhouse gases GHG into the atmosphere (IPCC, 2008).

The Intergovernmental Panel for Climate Change (IPCC) has acknowledged that it is very likely that human greenhouse gas emissions have directly influenced global temperatures to increase, as well as lead to other climate impacts. As greenhouse gas emissions stay in the atmosphere for decades, a predicted warming of around 0.2°C per decade is already expected regardless of future emission levels. However, if greenhouse gas emissions continue to be emitted at their current rate then further and more extreme changes to the global climate system will be experienced. Therefore, a reduction in greenhouse gas emissions would reduce the rate and magnitude of climate change. The IPPC recognises that mitigation efforts over the next 20-30 years will be crucial to stabilising the amount of change (IPCC, 2008).

Referring to the Australian context, Department of Climate Change and Department of Sustainability, Environment, Water, Population and Communities reports show that greenhouse gas emissions from the stationary energy sector, is the largest and fastest growing area in terms of greenhouse gas emissions in Australia. The stationary energy sector accounted for 52% of total emissions in 2009 and within this sector, emissions from electricity generation contributed over 70%. Furthermore, stationary energy emissions between 1990 and 2009 energy have increased by 51% (DSEWPC, 2011).

In regards to NSW, the vast majority of Greenhouse Gas Emissions in 2007 were from the stationary energy sector, emitting 61 Mt CO_2-e. During this year, the generation of electricity accounted for over 37% of all emissions in NSW. Between 1990 and 2007 emissions from stationary energy grew by 33% to a total amount of 79 Mt CO_2-e (OEH, 2009).

4.2.2 Options to Reduce our Emissions

The IPCC has identified key technologies and practices for the energy sector that are currently commercially available which could be used to mitigate the effects of Greenhouse Gas emissions. They include:

- improved supply and distribution efficiency (transmission and distribution of electricity);
- fuel switching from coal to gas;
- utilisation of nuclear power;
- utilisation of renewable heat and power (hydropower, solar, wind, geothermal and bioenergy);
- utilisation of combined heat and power technologies; and,
- early applications of carbon dioxide capture and storage (e.g. storage of removed CO_2 from natural gas).

In addition the IPCC has also identified policies, measures and instruments shown to be environmentally effective. These include:

- reduction of fossil fuel subsidies;
- an increase of taxes or carbon charges on fossil fuels;
- feed-in tariffs for renewable energy technologies;
- renewable energy obligations; and
- renewable energy producer subsidies.

In 2006 the NSW Government committed to reduce greenhouse gas emissions by 60% by 2050 (DECCW, 2009). In considering this level of reduction to the power generation sector in NSW, we should note:

- By 2050 electricity consumption is expected to more than double compared to 2006 (DPMC, 2006).
- Achieving a 60% reduction in emissions, whilst doubling our electricity use, requires an >70% reduction in greenhouse gas emissions per unit of electricity generated.
- Even if our entire fossil fuel power generation fleet was converted to natural gas, this would not even halve our existing level of emissions, and do nothing to address growth.
- Accordingly, to achieve this target, as a minimum all of our electricity growth over the next 40 years must be met with zero emission power sources.
- Wind energy is currently the most economic zero emission power source.

4.2.3 Contributions to reducing greenhouse gas emissions

During its operational phase, the Rye Park Wind Farm would generate electricity without producing greenhouse gas emissions. In addition the wind farm would be displacing electricity produced by fossil fuel sources (coal and gas), and hence, would reduce the overall amount of GHG emissions produced by the stationary energy sector (electricity generation).

To estimate the potential GHG emissions savings that large scale wind farm developments would have in NSW, DECCW commissioned McLennan Magasanik Associates to conduct a study and subsequently developed a tool to calculate the expected savings from the wind farm based on its size and location. This tool can be accessed via the DECCW website at http://www.environment.nsw.gov.au/climatechange/greenhousegassavingstool.htm.

The results of the study as they relate to this project showed the following:

- In NSW wind farms would initially almost exclusively displace fossil fuel generation from coal and, to a lesser extent, gas.
- The savings from a wind farm the size of Rye Park in the South Western Slopes would initially reduce GHG emissions by 1,153,000 t CO_2e per annum.
- If CPRS was introduced in 2015 the overall emissions in the NSW energy sector would be reduced as a result of gas generation replacing coal, therefore reducing the GHG emissions savings directly related to wind generation.
- The impact on the management of the network due to the variability of wind would be negligible and the emissions savings would greatly outweigh any such impact.

Figure 4-2 presents the results from the study, showing the estimated GHG emissions savings for three different scenarios; a single wind farm of 150 MW, 500 MW representing future developments in each region, and 3000 MW representing the total capacity estimated for wind development in NSW (DECCW, 2010c).

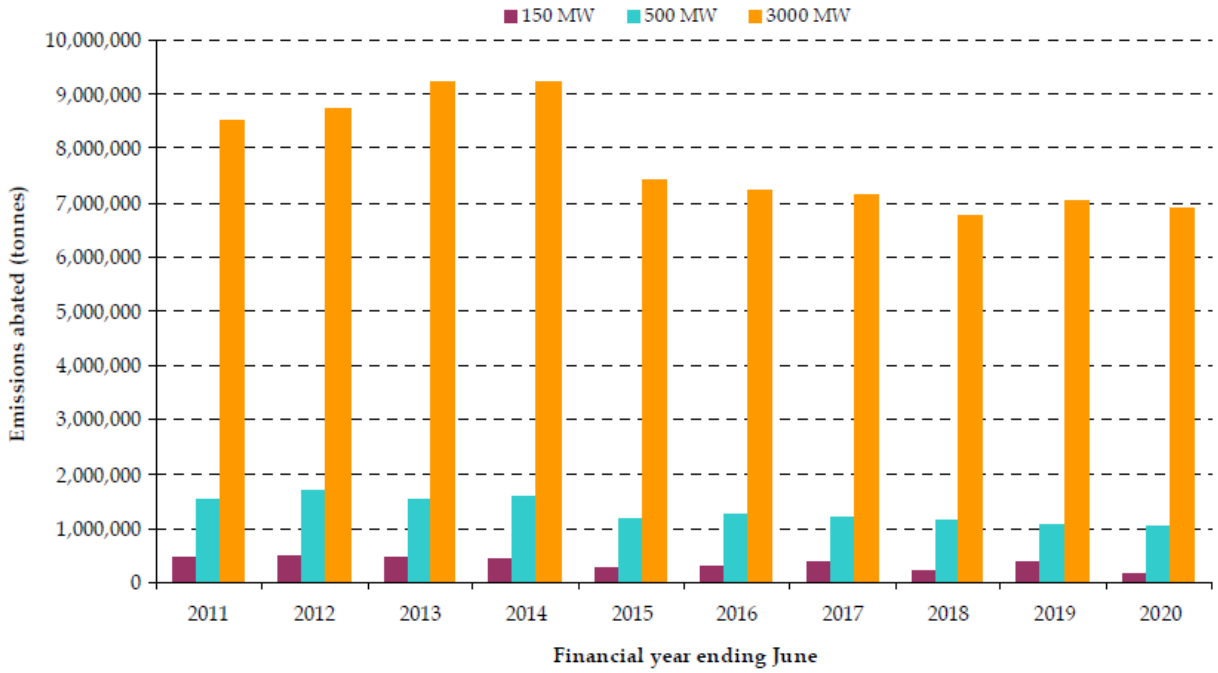


Figure 4-2 Estimated GHG emissions savings for three different scenarios

The greenhouse gas contributing the most to climate change is CO_2. Between 1970 and 2004 the amount of CO_2 being emitted from human-based activities increased by 80% and the current level of CO_2 in the atmosphere is now higher than ever measured (IPCC, 2008). This large increase is predominantly due to the burning of fossil fuels, such as coal, gas and oil. Between 1990 and 2007 emissions from stationary energy grew by 33% to a total amount of 79 $MtCO_2$-e (OEH, 2009).

An indicator used to determine the amount of greenhouse gases emitted per MWh of electricity supplied to the NSW grid in a particular year is the NSW Annual Pool Value (GGAS, 2011). Table 4-1 shows that the Annual Pool Value is calculated by dividing the total energy supplied to the NSW grid by the total NSW emissions in that year.

To account for one-off highs or lows that may be experienced in a particular year the Pool Coefficient is determined. This value is calculated by averaging the five Annual Pool Values from previous years, with a lag of two years (GGAS, 2010). So the NSW Pool Coefficient for 2011 is the average of the Annual Pool Values from 2003 to 2009.

Table 4-1 NSW Annual Pool Values and Pool Coefficients (2003-2009)

Year	Total NSW emissions (tco2-e)	Total NSW sent out generation (MWH)	Annual pool value tco2- e/MWH	Pool coefficient tco2- e/MWH
2003	63,431,793	66,800,866	0.950	0.897
2004	65,979,036	67,276,401	0.981	0.906
2005	65,896,606	69,341,455	0.950	0.913
2006	70,010,515	72,222,646	0.969	0.929
2007	69,810,669	71,015,242	0.983	0.941
2008	71,394,801	72,646,917	0.983	0.954
2009	68,585,696	69,450,575	0.988	0.967
2010	66,242,294	69,051,955	0.959	0.973
2011	TBA	TBA	TBA	0.975

Source: GGAS, 2011

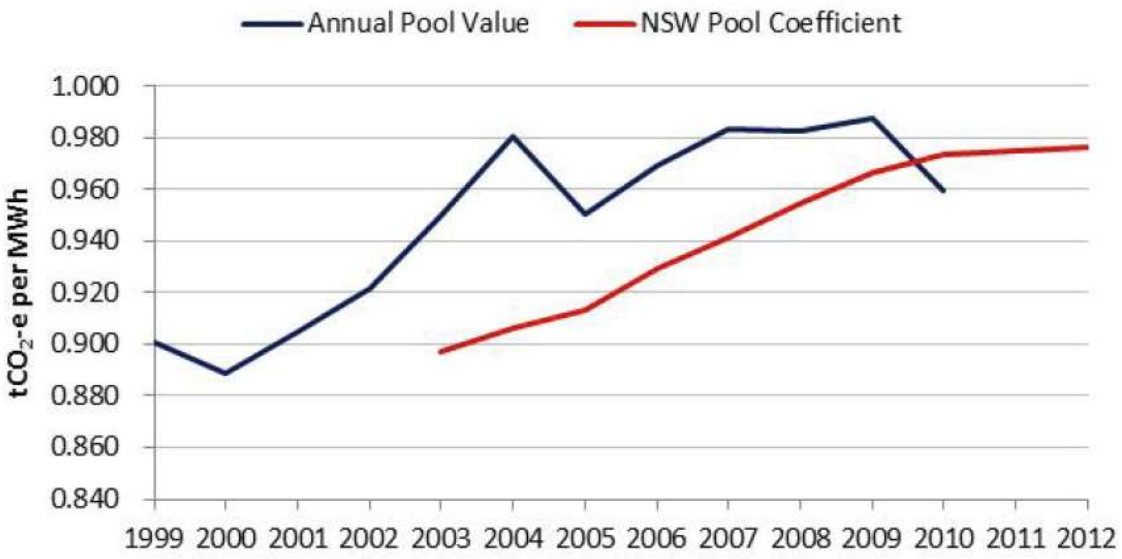


Figure 4-3 Historical NSW Pool Value and Pool Coefficient (2000-2010) (GGAS, 2012)

The 2012 Pool Coefficient value indicates that presently for every MWh of electricity supplied to the NSW electricity pool, 975 kg of greenhouse gases are emitted. At this point in time, approximately 90% of electricity in the NEM is generated by fossil fuel power stations, primarily coal fired. Therefore it can be assumed that for every megawatt-hour of electricity generated at a coal power station 975 kg of greenhouse gases are emitted.

The Annual Pool Value is calculated using the total sent out electricity from all technologies, including that from renewable energy. It is expected that the more electricity supplied to the pool from renewable sources, reducing the amount required from coal power stations, the lower the Annual Pool Value and the lower the Pool Coefficient.

The Rye Park Wind Farm will generate 1,192 GWh per annum and on this basis, would result in a reduction in greenhouse gas emissions of approximately 1,153,000 tonnes of $C0_2$.

4.3 The Role of Renewable Energy

4.3.1 Federal Renewable Energy Target

The Australian Government's Mandatory Renewable Energy Target (MRET) scheme was established in 2001 to expand the renewable energy market and increase the amount of renewables being utilised in Australia's electricity supply. The MRET advocated that an additional 2%, or 9,500 GWh, of renewable energy was to be sourced by 2010 (DCC, 2009a).

In 2007, the NSW State Government introduced new legislation called the Renewable Energy (NSW) Bill as part of their Greenhouse Policy to encourage additional generation of renewable energy. The NSW Renewable Energy Target (NRET) required 10% of electricity to be sourced from renewable energy by 2010 and 15% by 2020 (DEUS, 2006). This Bill was overtaken by the introduction of legislation at the Federal level and therefore not legislated.

In August 2009 the Federal Government introduced a revised renewable energy scheme. The Renewable Energy Target (RET) is an expansion of the MRET and required an additional 45,000 GWh of electricity (approximately 20% of Australia's total electricity supply) to be sourced from renewable projects by 2020 (DCC, 2009). This requires an additional 8,000 - 10,000 MW of new renewable energy generators to be built across Australia in the next decade.

In February 2010 the Federal Government amended the RET scheme by dividing the renewable sources into two categories, the small-scale renewable energy generators and large scale renewable energy generators. The purpose of this move was to ensure continued ongoing investment in large scale renewable energy projects (i.e. those projects greater than 30 MW).

Epuron estimates that around one third of the renewable energy generation required to meet this target will need to be built in NSW, and predominantly be supplied by wind generation.

The Rye Park Wind Farm would have a generation capacity of 378 MW (based on a 3.0 MW turbine) and would contribute directly to the RET.

4.3.2 State Renewable Energy Targets

The Draft NSW Renewable Energy Action Plan 2012 supports the national target of 20% renewable energy by 2020. In 2011 renewable generation in NSW was 7.8%. The plan promotes the use of energy from renewable sources at least cost to the energy consumer and with maximum benefits to NSW. The Plan cites Bureau of Resources and Energy Economics statistics 2012 indicating that wind is presently the lowest cost renewable technology but for biogas (landfill), and that wind is predicted to be the least cost renewable source of electricity beyond 2030.

The proposed Rye Park Wind Farm supports the Draft NSW Renewable Energy Action Plan 2012 objective of 20% renewable energy by increasing the supply of electricity from wind, the most economical form of large-scale renewable energy.

4.4 Economic Stimulus

The Clean Energy Council commissioned Sinclair Knight Merz (SKM) to prepare a report into the investment costs and benefits of wind farms in Australia. SKM released the report '*Wind Farm Investment, Employment and Carbon Abatement in Australia*' in June 2012 which presents an updated national and state-based snapshot of wind farm investment, jobs and carbon abatement.

The model used in this report has been applied to the proposed Rye Park Wind Farm to estimate the potential economic stimulus. It predicts that the Rye Park Wind Farm will have a capital expenditure of around $565 million and a direct impact of $115 million in the local region during the construction phase. It is expected to create 369 jobs in the region during the construction phase and 35 ongoing fulltime roles.

This economic injection would also contribute to the local economy through:

- use of local contractors (where possible) in construction of the wind farm;
- use of local services (food and accommodation, fuel, general stores etc.) during the construction period;
- ongoing use of these local services during the operation of the wind farm;
- lease payments to local landholders; and
- provision of ongoing local jobs in operating and maintaining the wind farm.

4.5 Secondary Project Benefits and Opportunities

In addition to the increase in renewable energy supply, the proposed Rye Park Wind Farm would provide a variety of benefits and opportunities.

4.5.1 Infrastructure

Infrastructure required for development of the wind farm would also benefit the local community. The proponent would fund the upgrading of some local roads as outlined in the Traffic and Transport report. The works that would mainly benefit the region include the modifications necessary to segments along the Rye Park Dalton and Coolalie Roads. Other infrastructure works would include the provision of traffic signs and guide posts.

4.5.2 Tourism

Although the establishment and operation of a tourist facility is not part of this proposal, the Rye Park Wind Farm would provide an opportunity to increase the regional tourism industry, which currently is a main contributor to the economy. In the year ending June 2012, domestic tourism generated $343 million in the Capital region of NSW (Tourism NSW, 2012b), in which the Rye Park Wind Farm would be situated. While initial interest is likely to be higher than on-going interest, the wind farm could be utilised as an additional attraction to secure visitors to the local townships. This would lead to further contributions to the local service industry.

4.5.3 Social impacts

Public perception studies have shown that more realistic and positive perceptions accompany actual physical experience of wind farms. Fear of the unknown can exaggerate perceptions of visual and noise impacts particularly (Tourism NSW, 2012a).

While it is certain that not all members of the community will view the proposed development of wind farms favourably, in some communities, investment in clean energy production can become a point of pride to local residents. For example, during wind farm community consultation in Berridale, NSW, many participants spoke with pride about the Snowy Hydro Scheme and the appropriateness of similar clean energy developments in their shire. The Southern Tablelands – South West Slopes region looks well placed to become a leader in the Australian wind industry. The results of the NSW DECCW Survey 2010 ((Warren et al., 2005)- refer to Section 7.1) indicate that support for renewables is high.

4.5.4 Community Enhancement Fund

Under the Part 3A planning process in NSW, contributions from a project to a community enhancement fund are voluntary.

During the consultation process for the project, particularly Community Consultation Committee (CCC) meetings, Epuron sought feedback on how best to establish a community fund and to identify what type of local support is required from the project.

In general the communities' consultation feedback was:

"How best to establish a community fund"

- Councils prefer that if a community fund is established it is managed by them (local councils).
- Community wants to have a say in where and how any community funds are managed and spent.
- Draft Wind Guidelines say community contributions may be required under the EP&A Act 1979 or through a voluntary planning agreement.
- Community funds where implemented for other projects have been considered through combinations of the above.

"Identify what type of local support is required from the project"

- Upgrade and improve local roads near the project.
- Improvements to the township of Rye Park and better local amenities.
- Better mobile phone and internet reception in town.
- Chance to reopen some businesses in town.
- Provide attraction to keep younger people and families in the local area through long term benefits and job creation.

Following this consultation feedback Epuron outlined its position, as follows, to the CCC and community regarding the establishment of a community fund for the project:

- Epuron designs its wind farms to minimise impacts to the environment and local community.
- Each project should be assessed (by DPI) and determined specifically on its merits (and without being influenced by any promise of community or other funding).
- Epuron strongly believes in the value of community contributions and believes that the final investor who funds the construction and operation of the project should engage with and support the local community, including through annual financial contributions to the community.
- Epuron believes that such community contributions should be:
    - applied towards local environmental, social and community initiatives led by local residents;
    - directed to initiatives raised by residents proximate to the development or likely to be impacted;
    - established at the commencement of operation and continue for the life of the development; and,
    - regularly reviewed to ensure they are providing ongoing benefits to the community.
- Epuron considers that the CCC, working with the developer and ultimate project owner, is ideally placed to help develop a community fund and its administration process.
- The project is a major infrastructure project that can only be built by a major energy utility. Epuron will not be the ultimate project owner and accordingly it is not appropriate for Epuron to determine the final details

of any community fund, and nor should these be determined as part of a development application or consent process.

- Accordingly, Epuron will not propose any specific amount payable to a community fund as part of its development application. However, it will commit to an ongoing consultation process to determine an appropriate basis for the establishment of a community fund.
- The EA's Statement of Commitments will set out the Community Fund details

Accordingly a community enhancement fund has not been proposed for the project, however, the proponent will continue consultation on a possible format for a community enhancement program, as well as suggesting useful projects for the local area, so as to maximise the benefit of the project to the wider community.

The statement of commitments proposed by Epuron will require that the proponent:

- At least 6 months prior to the commencement of operations, call a meeting of the Community Consultation Committee and consult with Council(s) with respect to establishment of the community fund;
- Prior to the commencement of operation of the project, establish that community fund as required and publically announce the administration processes and current funding commitments of the fund; and,
- Regularly make publicly available the details of the fund including its administration processes, funds made available, funding commitments and outcomes.

4.6 Suitability of the Project

A comprehensive assessment of the proposed project has recognised that the development is suitable on a local level in terms of existing and future land use impacts. The following sections outline where this EA discusses the suitability of the project and the reasons behind the justification.

4.6.1 Strategic Land Use

The proposed site and the adjacent land parcels are zoned as land use 1(a) Rural Agriculture, RU1 & RU2, as discussed in Section 6.1.10. This land has been set aside by the local councils for agricultural purposes, and the land is currently used for commercial agriculture (sheep and cattle grazing) and rural residences.

While in operation the proposed wind farm would not impact on the day-to-day farming activities currently being carried out by the existing landowners. The turbine footprint and access tracks would occupy only a few per cent of the landowners' property and through strategic planning and consultation infrastructure would not occupy productive land. Normal farming operations may be affected during the construction phase, primarily due to increased traffic and activity on site. The magnitude of these impacts is such that it is not expected to cause economic loss to the landowners.

When considering the existing and future land uses, the proposed site is suitable for a wind farm. All local councils have strategically identified the site and its surrounds as being important agricultural land and there is no future intention to modify this zoning. The wind farm would coexist with the existing farming operations without any major disturbances to productivity but would make the land more economically viable for agriculture.

4.6.2 Grid Connection

An assessment into the capacity and security of the existing transmission network was conducted to determine the feasibility of the site and the impact that the project could have on the network. Connection strategies for proposed projects in the area have been assessed using publicly available information and best estimates where this information is not available.

The likely timing for construction of the other proposed and approved wind farm projects in the area and the status of their grid connection process is unknown. Technical studies required as part of the connection process will ensure that there will be no material impact on the security or performance of the electricity network from other proposed wind farms connecting in the vicinity of the Rye Park Wind Farm.

A grid connection enquiry has been lodged with the Network operator, TransGrid.

A description of the grid connection works and wind farm powerline are set out in Section 3.4.

5 Consideration of Alternatives

5.1 Site Selection

Site selection is crucial in wind farm development due to the market based structure of the electricity industry. The projects that exhibit the best characteristics for wind farm development (best energy yield with the lowest cost) will be the projects that get built. It is the combination of these characteristics that makes suitable sites for wind farms reasonably rare in NSW. Appropriate locations are found where:

- wind speeds are consistently high (around 7.5-8 m/s as an annual hub height average);
- capacity at existing transmission lines is available on or near the project site;
- transportation of turbines would be possible with only minor upgrades to roads;
- native vegetation cover is sparse or would be minimally impacted;
- housing in the immediate vicinity is relatively sparse; and
- involved landowners are interested in hosting turbines on their land.

To date Epuron has successfully developed nine wind farm projects in NSW, six of which have been granted development approval, with the other three currently in the assessment phase.

Epuron has developed projects in the Northern Tablelands, the South-West Slopes, South Coast and Far West New South Wales, prior to investigating sites in the Southern Tablelands area. As a result Epuron has developed a wide network of monitoring masts with around 30 currently active across NSW and South Australia (including five on site). After modelling data from these masts further investigations were undertaken to assess the feasibility of the project. In addition to having a consistently high wind resource, the project area also featured:

- ridgelines suitable for turbine locations;
- a low population density (ABS, 2011a); and
- an existing transmission network.

In addition to these characteristics, the engagement of interested landowners enabled the project development to progress. The selected development envelope for the turbine and infrastructure layout was chosen over earlier alternatives based on its commercial viability, landowner consent and reduced environmental impacts.

5.2 Improvements to Infrastructure Layout

The current layout that is presented in this EA has gone through an iterative design and assessment process, with turbine locations being repositioned, deleted and in some cases added to areas previously not utilised. The purpose of this process is to design a layout that efficiently harnesses the energy in the wind with minimal impacts to the existing environment (including ecology, land use productivity as well as visual and noise amenity for surrounding residents) whilst considering community feedback and incorporating it where possible.

The layout initially proposed for the Rye Park Wind Farm contained around 145 turbines locations, proposed overhead power line corridor options, and two potential substation locations. This layout was developed using a wind resource map created from existing monitoring mast data, along with preliminary topographic features (contours) and satellite imagery. Experience gained from previous projects was applied to areas such as noise and ecology in determining the exact locations, however, detailed studies would be required to confirm these locations were appropriate.

Epuron received feedback from neighbouring dwelling landowners regarding nearby turbines. As such a number of turbines were removed to reduce both noise and visual impacts to neighbouring dwellings. Turbines were also relocated or removed from parts of the site to minimise impacts to native flora and other identified constraints, such as communications.

Figure 5-1 shows the initial layout overlaid on the current layout. The proposed overhead power line has been consolidated and a single wind farm connection substation is chosen and two other collection substations have also been included. Figure 5-2 and Figure 5-3 show in more detail the areas that have undergone the most significant changes.

Along with the relocation or deletion of turbines, the associated access tracks were modified. While the impact of an access track is less than a turbine, every attempt was made to reroute access tracks away from sensitive vegetation. In some cases, however, it was concluded that the impact caused in clearing a small area of vegetation on the top of the ridge would have a lower impact than relocating the track on the side of the slope where the overall impact of the cut and fill required to construct the track would have an impact over a much larger area.

Powerlines were rerouted or deleted, where possible, to: minimise the impact to biodiversity constrained areas and position powerlines in low lying and thus less visible areas.

In summary a total of 52 turbines were removed and 21 turbines relocated or microsited due to constraints identified such as environmental or feedback from consultation with surrounding landowners mostly regarding proximity, noise and visual impact.

Table 5-1 List of improvements made to the layout iterations

Turbine label (current layout)	*Reason for re-design*
RYP_1	Relocated by 150 m south due to feedback from R1. Reduction in noise and visual impact.
RYP_2	Relocated by 150 m south due to feedback from R1. Reduction in noise and visual impact.
RYP_5	Additional location in unconstrained area
RYP_7	Moved 150 m south due to turbine spacing constraint
{RYP_7_LayoutRev2}	Removed due to feedback from R2, R11, R13 and R14 regarding noise and visual impact
{RYP_8_LayoutRev3}	Removed due to ecological constraints and feedback from R24 regarding noise and visual impacts
RYP_9	Moved 150 m south due to turbine spacing constraint
{RYP_9_LayoutRev2}	Removed due to feedback from R2, R11, R13 and R14 regarding noise and visual impact
{RYP_10 – layoutRev3}	Removed to bird strike/operational issue and feedback from R11, R2, R13 and R14 regarding noise and visual impact.
{RYP_13 – layoutRev2}	Removed due to feedback from R11, R13 and R14 regarding noise and visual impacts
{RYP_14 – layoutRev2}	Removed due to feedback from R11, R13 and R14 regarding noise and visual impacts
{RYP_16 – layoutRev2}	Removed due to feedback from R11, R13 and R14 regarding noise and visual impacts
{RYP_16 – layoutRev3}	Removed due to feedback from R11, R13, R14 and R24 regarding noise and visual impacts
{RYP_17 – layoutRev2}	Removed due to feedback from R11, R13 and R14 regarding noise and visual impacts
RYP_16	Additional location in an unconstrained area. Feedback from R14 landowner to be an involved landowner
RYP_18	Microsited due to additional turbine on ridge
RYP_21	Microsited due to additional turbine on ridge
RYP_24	Microsited due to additional turbine on ridge
RYP_26	Microsited due to additional turbine on ridge
RYP_28	Microsited due to additional turbine on ridge
RYP_29	Microsited due to additional turbine on ridge
RYP_36	Microsite further away from ecology constraint
RYP_40	Microsite further away from ecology constraint
{RYP_45 - layout	Removed due to ecology constraint

Turbine label (current layout)	*Reason for re-design*
Rev3}	
{RYP_47 - layout Rev3}	Removed due to ecology constraint
{RYP_47 - layout Rev2}	Removed due to feedback from R30, R33 regarding noise and visual impact
RYP_48	Microsite - spacing constraint from RYP_50. Addition of new turbine RYP_141
{RYP_48 - layout Rev2}	Removed due to feedback from R30, R33 regarding noise and visual impact
RYP_49	Moved 100 m south on advice from NGH regarding potential ecological constraint
RYP_50	Microsited - spacing constraint from RYP_51 from addition of new turbine RYP_141
{RYP_50 - layout Rev2}	Removed due to feedback from R30, R33 regarding noise and visual impact
RYP_51	Microsited - spacing constraint from RYP_53 from addition of new turbine RYP_141
RYP_52	Microsited - spacing constraint from RYP_53
RYP_53	Microsited - spacing constraint from RYP_57 from addition of new turbine RYP_141
RYP_54	Removed due to NGH constraint - Fauna
RYP_55	Removed due to NGH constraint - Fauna
{RYP_55 - layout Rev2}	Removed due to ecological constraint and feedback from R30, R33 regarding noise and visual impact
RYP_56	Microsited - spacing constraint from RYP_52
{RYP_56 - layout Rev3}	Removed due to landowner feedback regarding proximity of turbines, house now not within 2 km of turbines. Feedback from R30, R33, R34, R35 regarding noise and visual impact
RYP_57	Microsited - spacing constraint from RYP_61 from addition of new turbine RYP_141
RYP_60	Removed due to ecological constraint and Feedback from R30, R33, R34, R35 regarding noise and visual impact
{RYP_60 - layout Rev3}	Removed due to ecological constraint and feedback from R30, R33, R34, R35 regarding noise and visual impact
RYP_61	Microsited - spacing constraint from RYP_62 from addition of new turbine RYP_141
{RYP_61 - layout Rev3}	Removed due to ecological constraint and feedback from R30, R33, R34, R35 regarding noise and visual impact
RYP_62	Microsite - spacing constraint from RYP_141 from addition of new turbine RYP_141
{RYP_65 - layout Rev2}	Removed due to consultation feedback from R41 regarding noise and visual impact
{RYP_66 - layout Rev2}	Removed due to consultation feedback from R41 regarding noise and visual impact
RYP_71	Microsited to highest point to avoid ecological constraints and feedback from R36 & R38 regarding noise and visual impact.
RYP_72	Microsited to highest point to avoid ecological constraints and feedback from R36 & R38 regarding noise and visual impact.
{RYP_75 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual impact
RYP_76	New turbine added
RYP_77	Relocated 200 m north to avoid ecological constraint
{RYP_77 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual impact

Turbine label (current layout)	*Reason for re-design*
RYP_78	New turbine added
{RYP_78 - layout Rev2}	Removed due to ecological constraint and feedback from R45 and R46 regarding noise and visual impact
RYP_79	New turbine added
{RYP_79 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual impact
RYP_80	Microsited 60 m south to avoid ecological constraint
{RYP_80 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual
{RYP_82 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual
{RYP_83 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual impact
{RYP_85 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual impact
{RYP_86 - layout Rev2}	Removed due to ecological constraint and feedback from nearby landowner, landowner now not within 2km of turbines
{RYP_87 - layout Rev2}	Removed due to ecological constraint and feedback from nearby landowner, landowner now not within 2km of turbines
{RYP_87 - layout Rev3}	Removed due to ecological constraint and feedback from R40 and R42 regarding noise and visual impact
RYP_90	Microsited based on consideration of feedback from R45 and R44 regarding visual and noise impact
RYP_92	Relocated further away from ecological constraint
RYP_93	Microsite based on consideration of feedback from R45 regarding visual and noise impact
RYP_94	Microsite based on consideration of feedback from R45 regarding visual and noise impact
RYP_95	Microsite based on consideration of feedback from R45 regarding visual and noise impact
{RYP_97 - layout Rev3}	Removed due to consultation feedback from R44, R45, R46 regarding noise and visual impact
{RYP_101 - layout Rev2}	Removed due to consultation feedback regarding noise and visual impact from R54, R55, R56, R57 and R58
RYP_107	Relocated further away from ecological constraint
{RYP_108, RYP_109, RYP_110, RYP_111, RYP_112, RYP_113, RYP114 – layout Rev3]	Removed due to ecological constraint and feedback from nearby landowner, landowner now not within 2km of turbines
[RYP_109 – layout Rev2]	Removed due to ecological constraint and noise and visual impact feedback from dwelling R56
RYP_110	Microsited 50 m south away from ecological constraint
{RYP_118, RYP_119, RYP122, RYP125, RYP127, RYP_130, RYP132 – layout Rev3}	Removed due to consultation feedback regarding noise and visual impact from R54, R55, R56, R57 and R58
RYP_126	Moved to create 50 m buffer from forest. Microsited a further 10m East due to ecological constraint

Turbine label (current layout)	*Reason for re-design*
[RYP_126 – layout Rev3]	Removed due to noise and visual impact feedback from dwelling R56
RYP_128	Microsited further noise due to turbine spacing and visual and noise impacts from R59, R60, R61, R63
RYP_130	Microsited further noise due to turbine spacing and visual and noise impacts from R59, R60, R61, R63
{RYP_130 - Layout Rev3}	Removed due to feedback from R56 and R58 regarding noise and visual impacts
RYP_131	Microsited further noise due to proximity to transmission line and visual and noise impacts from R59, R60, R61, R63
RYP_132	Microsited due to additional turbine on ridge
{RYP_132 - Layout Rev3}	Removed due to feedback from R56 and R58 regarding noise and visual impacts
RYP_133	New turbine added
RYP_134	New turbine added
RYP_135	New turbine added
RYP_136	New turbine added due to dwelling constraint relieved
RYP_137	New turbine added due to dwelling constraint relieved
RYP_138	New turbine added due to dwelling constraint relieved
RYP_139	New turbine added
RYP_140	New turbine added
RYP_141	New turbine added
RYP_142	New turbine added
{RYP_142 – Layout Rev3}	Removed due to ecological constraint and feedback from R54 and R56 regarding noise and visual impact
RYP_143	New turbine added
{RYP_143 - Layout Rev3}	Removed due to ecological constraint and feedback from R54 and R56 regarding noise and visual impact
RYP_144	New turbine added due to dwelling constraint relieved. Microsited a further 110m North-East due to consultation feedback from landowner regarding project involvement.
RYP_145	Relocated 300 m east due to feedback from dwelling R56 regarding noise and visual impact
Substations	One of the potential connection substation locations was removed due to ecology constraint. Three additional collection substations and an underground overhead termination compound were added due to detailed electrical study.
Overhead powerline (up to 330 kV)	Potential overhead power line options were removed due to selection of preferred routes. Additional power lines added due to detailed electrical study. Alternate power line location in low lying, less visible area.

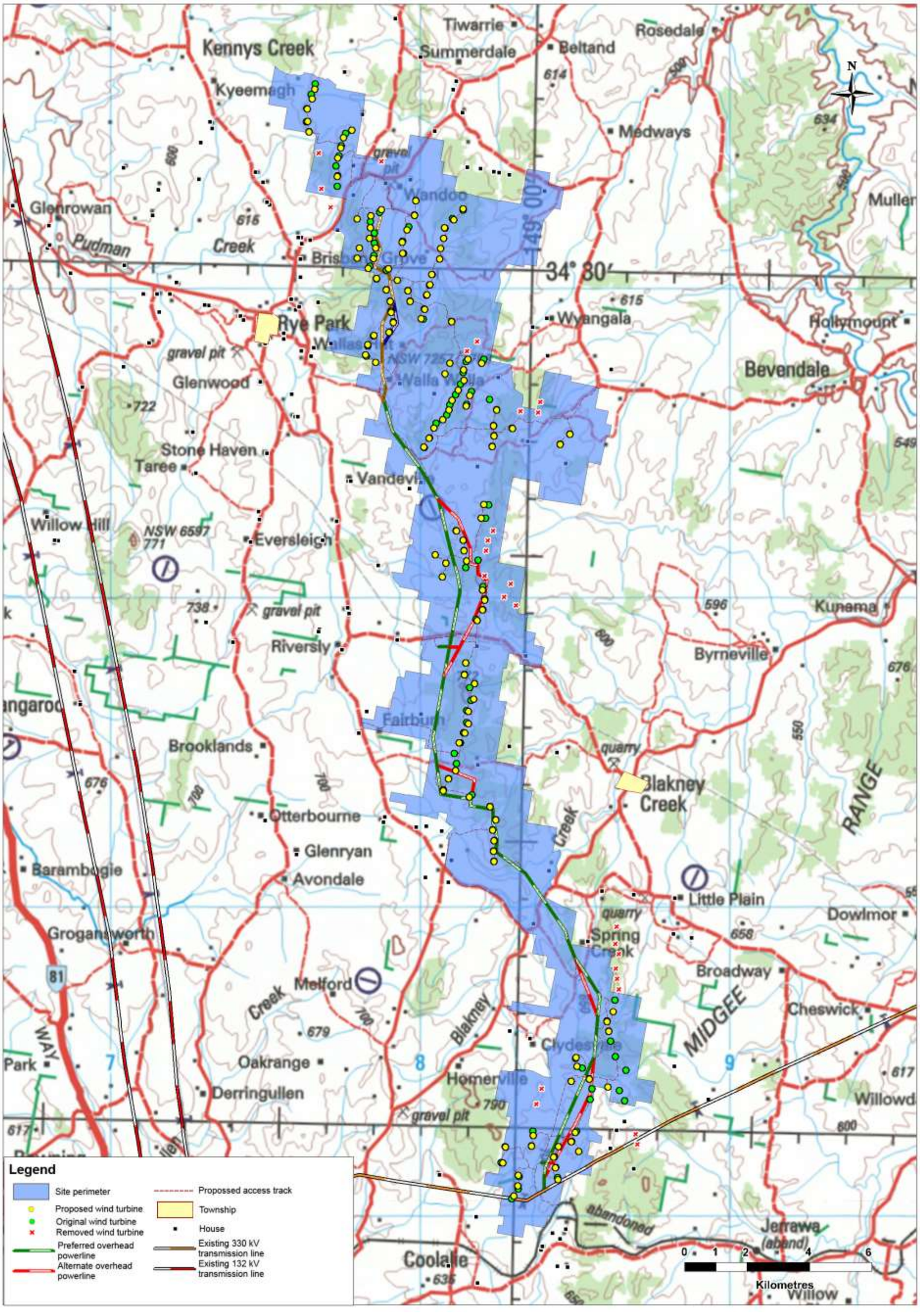


Figure 5-1 A comparison between the initial project layout and final infrastructure design

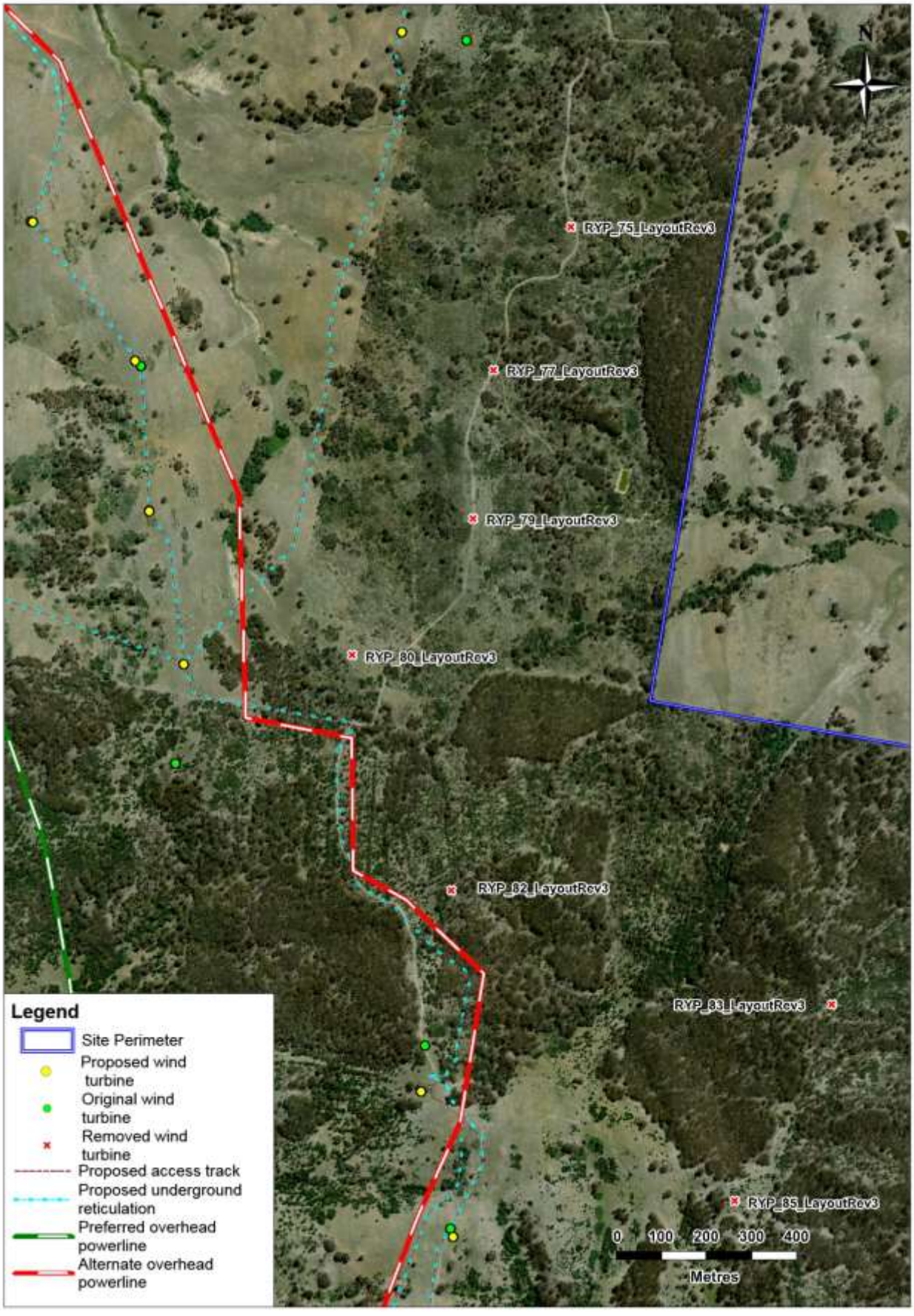


Figure 5-2 Example of revisions made to the layout

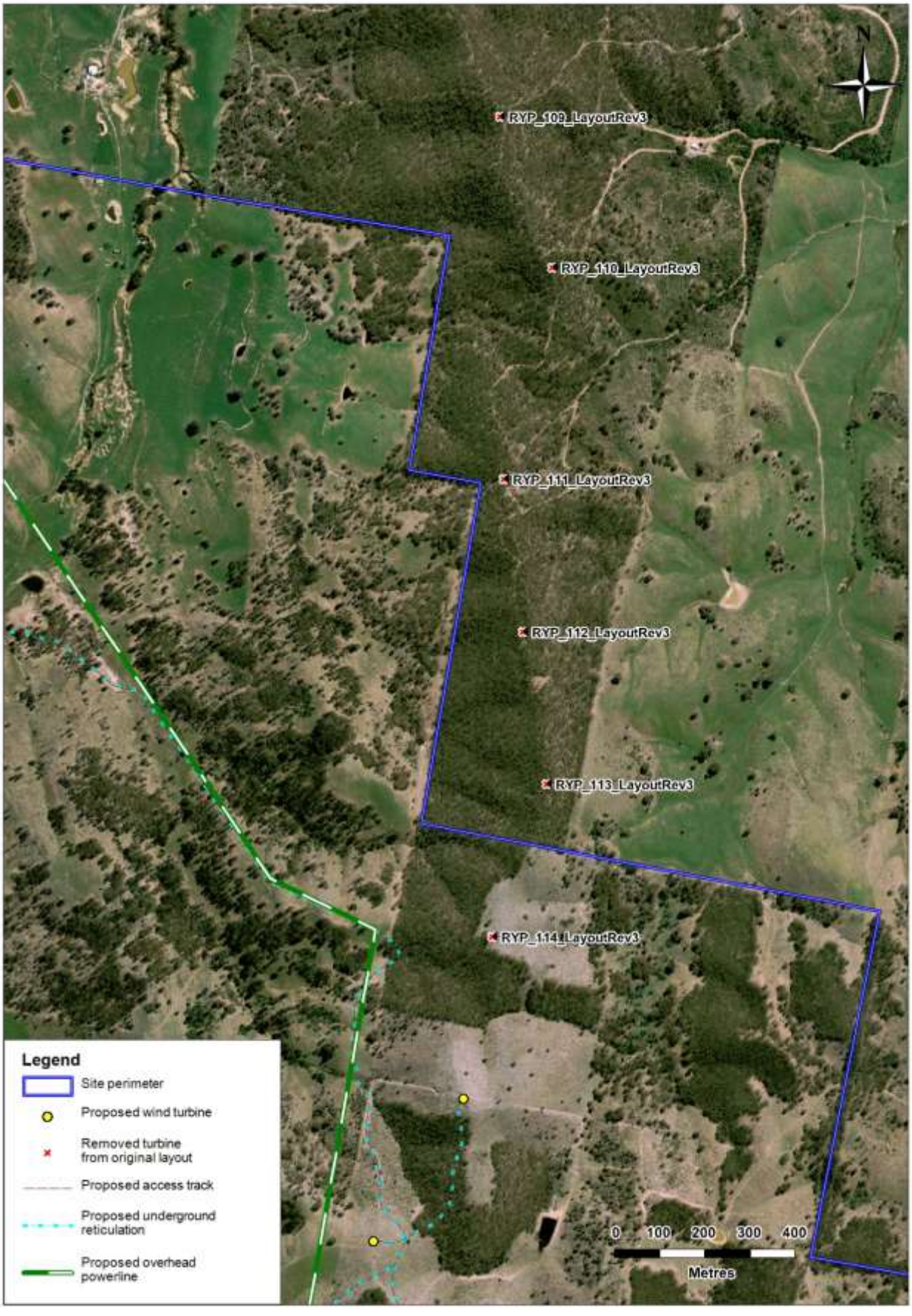


Figure 5-3 Example of changes to transmission line and turbine location

6 Planning Assessment Process

This section of the EA provides an outline of the relevant statutory provisions for the planning assessment process at the State, Local and Commonwealth levels.

6.1 State Government Legislation and Policy

6.1.1 Environmental Planning and Assessment Act 1979

Planning in NSW is governed by the *Environmental Planning and Assessment Act 1979* (*EP&A Act*).

The Director General of the Department of Planning and Infrastructure has issued the requirements for environmental assessment of the project.

Transitional Part 3A Project

Rye Park Wind Farm is a transitional Part 3A project (*EP&A Act,* Schedule 6A Transitional arrangements—repeal of Part 3A – clauses 1, 2 and 3).This is due to the fact that it has a capital investment value of more than $30 million and was confirmed to be a project to which Part 3A of the EP&A Act applies by the Director-General of the Department of Planning and Infrastructure on 2 June 2010, refer to Attachment 4. Part 3A continues to apply to Rye Park Wind Farm because Director General's Requirements were issued before 1 October 2011 (on 14 February 2011), and because this EA is lodged by 30 November 2012, or as extended by DPI.

Critical Infrastructure

Given that the proposed Rye Park Wind Farm will be capable of generating more than 30MW of electricity from renewable energy resources, it is a 'critical infrastructure project' under former Part 3A (former section 75C EP&A Act; *Government Gazette* 27 November 2009 page 5841; letter from Department of Planning to Proponent dated 10 December 2010*).*

Notice Requirement

The consent of the owner of land on which a critical infrastructure project is to be carried out is not required (clause 8F(1)9b) Environmental Planning and Assessment Regulation 2000). Instead, the Proponent is required to give notice of the application for the critical infrastructure project by newspaper advertisement before the start of the public consultation period (in the case of a linear infrastructure project, being development for the purpose of public utility infrastructure (clause 8F(3)(a)), or to the owner of the land before the end of a period of 14 days after the EA application is made (if the wind farm is not a linear infrastructure project (clause 8F(3)(c)). The Department's letter to the Proponent dated 10 December 2010 suggested that a project involving a grid connection would be a linear infrastructure project. However in the event that the generator component of a wind farm (in contrast to the transmission component) means that the proposal is not properly characterised as 'linear infrastructure project', the Proponent should comply with both the newspaper public notice requirement and the alternative landowner notification requirement.

Consent Authority

The Minister determines transitional Part 3A projects (former section 75J(1)). The Minister has delegated this power to the Planning Assessment Commission (Government Gazette, 28 September 2011, page 5682). If the Commission proposes a voluntary planning agreement, the instrument of delegation requires the Commission to first consult with the Minister.

Director General's Requirements

The Director General of the Department of Planning and Infrastructure has issued requirements for the Proponent to consider and address in this EA. These requirements incorporate input from the various government agencies that will provide input to the DPI in the assessment of this project.

The following table summarises the Director General's Requirements (DGRs) and indicates where they are addressed in this EA. The full DGRs are presented in Attachment 5.

Table 6-1 Summary of the Director-General's Requirements

Director-General Requirement's	*Addressed in:*
General Requirements	
The Environmental Assessment (EA) must include:	
➢ an executive summary;	Section 1
➢ a detailed description of the project (both the wind farm and associated infrastructure) including:	
○ construction, operation and decommissioning details;	Section 3.9 and Appendix G
○ the location and dimensions of all project components including the wind turbines (including map coordinates and AHD heights), underground/ overhead cabling between turbines, electrical substation and transmission line linking the wind farm to the grid, temporary concrete batching plant(s), construction compounds, access roads/road upgrades (including internal access tracks) and obstacle lighting;	Sections 3.3, 3.4, 3.5, 3.6, 3.7 and Attachment 3
○ a timeline identifying the proposed construction and operation of the project components including staging, their envisaged lifespan and arrangements for decommissioning;	Section 3.9
○ supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and land use (including nearby residences and approved residential developments or subdivisions, if any) and the location/ siting of the project including associated infrastructure in the context of this existing environment; and	See Figures index
○ resourcing requirements (including, but not limited to, water supply and gravel).	Section 16.5
➢ consideration of any relevant statutory provisions including the consistency of the project with the objects of the Environmental Planning and Assessment Act 1979 (i.e. Clause 5 of the Act) and any relevant development control plans;	Sections 6.1 and 6.2
➢ an assessment of the key issues outlined below, during construction, operation and decommissioning (as relevant). The Environmental Assessment must assess the worst case as well as representative impact for all key issues;	See 'Key Assessment Requirements' addressed below
➢ a draft Statement of Commitments detailing measures for environmental mitigation, management and monitoring for the project;	Section 17
➢ a conclusion justifying the project taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and	Section 18
➢ certification by the author of the EA that the information contained in the assessment is neither false nor misleading.	Section 20
Key Assessment Requirements	
The EA must include assessment of the following key issues for both the wind farm and transmission line:	
➢ Strategic Justification – the EA must:	
○ include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, predicted transmission constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies, and its role within the Commonwealth's Renewable Energy Target Scheme. The EA must clearly demonstrate that the existing transmission infrastructure has sufficient capacity to accommodate the project;	Sections 4.1, 4.2, 4.3, 4.4 and 3.4
○ include a clear demonstration of quantified and substantiated greenhouse gas benefits, taking into consideration sources of electricity that could realistically be replaced and the extent of their replacement, with reference to the Department of Environment, Climate Change and Water NSW wind farm greenhouse gas savings tool	Section 4.2

(http://www.environment.nsw.gov.au/climatechange/greenhousegassavingstool.htm);	
○ include an analysis of the suitability of the project with respect to potential land use conflicts with existing and future surrounding land uses (including rural residential development, building entitlements and subdivision potential, land of significant scenic or visual value, land of high agricultural value, mineral reserves, forestry, conservation areas and Crown land), taking into account local and strategic land use objectives and the potential for social and economic impacts on the local community. The analysis of site suitability shall consider the Environmentally Sensitive Area Mapping held by Boorowa, Yass Valley and the Upper Lachlan Shire Councils; and	Section 6.1
○ describe the alternatives considered (location and/or design) for all project components, and provide justification for the preferred project demonstrating its benefits on a local and strategic scale and how it achieves stated objectives and any measures to offset residual impacts (for example community enhancement programmes).	Sections 5.2 and 4.5.4
➢ Visual Impacts – the EA must:	
○ provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project, including an assessment of the significance of landscape values and character in a local and regional context. This should describe community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project based on surveys and consultation;	Sections 9.1 – 9.4 and Appendix A
○ assess the impact of shadow "flicker", blade "glint" and night lighting from the wind farm;	Sections 9.1, 14.1, 14.4 and Appendix A.1
○ identify the zone of visual influence of the wind farm including consideration to night lighting (no less than 10 kilometres) and assess the visual impact of all project components on this landscape;	Section 9.1
○ include an assessment of any cumulative visual impacts from transmission line infrastructure;	Section 9.3
○ include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures for both the wind farm and the transmission line. The photomontages must include representative views of turbine night lighting if proposed; and	Section 9.1 an Appendix A.10
○ provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented.	Section 9.4 and Appendix A.15
➢ Noise Impacts – the EA must:	
○ include a comprehensive noise assessment of all phases and components of the project including: turbine operation, the operation of the electrical substation, corona and / or aeolian noise from the transmission line, construction noise (focusing on high noise generating construction scenarios and works outside of standard construction hours), traffic noise during construction and operation, and vibration generating activities (including blasting) during construction and/ or operation. The assessment must identify noise/ vibration sensitive locations (including approved but not yet developed dwellings), baseline conditions based on monitoring results, the levels and character of noise (e.g. tonality, impulsiveness, low frequency etc.) generated by noise sources, noise/ vibration criteria, modelling assumptions and worst case and representative noise/ vibration impacts;	Section 10 and Appendix B
○ in relation to wind turbine operation, determine the noise impacts under operating meteorological conditions (i.e. wind speeds from cut in to rated power), including impacts under meteorological conditions that exacerbate impacts (including varying atmospheric stability classes and the van den Berg effect for wind turbines). The probability of such occurrences must be quantified;	Sections 10.2 – 10.6 and Appendix B.7.1, B.7.2 and B.7.4

○ include monitoring to ensure that there is adequate wind speed/profile data and ambient background noise data that is representative for all sensitive receptors;	Section 10.2 and Appendix B.6
○ provide justification for the nominated average background noise level used in the assessment process, considering any significant difference between daytime and night time background noise levels at background noise levels higher than 30 dB(A);	Section 10.2 and Appendix B.6
○ identify any risks with respect to tonal, low frequency or infra-noise;	Sections 10.3, 10.4, 10.5 and Appendix B.7.6 and B.9.2
○ clearly outline the noise mitigation, monitoring and management measures that would be applied to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been incorporated;	Section 10.2, Appendix B.7, B.7.5 and SoC 8 – 14
○ if any noise agreements with residents are proposed for areas where noise criteria cannot be met, provide sufficient information to enable a clear understanding of what has been agreed and what criteria have been used to frame any such agreements; and	n/a
○ include a contingency strategy that provides for additional noise attenuation should higher noise levels than those predicted result following commissioning and/or noise agreements with landowners not eventuate.	Section 10.1.10, 10.1.14, Appendix B.7.5 and SoC 15 and 16
The assessment must be undertaken consistent with the following guidelines:	
○ Wind Turbines - the South Australian Environment Protection Authority's Wind Farms- Environmental Noise Guidelines (2003);	Section 10 and Appendix B
○ Substation- NSW Industrial Noise Policy (EPA, 2000);	Section 10.8 and Appendix B.7.7
○ Site Establishment and Construction - Interim Construction Noise Guidelines (DECC, 2009);	Section 10.11 – 10.14 and Appendix B.10
○ Traffic Noise - Environmental Criteria for Road Traffic Noise (NSW EPA, 1999); and	Section 10.12 and Appendix B.10.10
○ Vibration - Assessing Vibration: A Technical Guideline (DECC, 2006).	Sections 10.5, 10.2 and Appendix B.10.8 and B.10.9
➢ Ecological Impacts – the EA must include an ecological assessment considering terrestrial and aquatic ecosystems (as relevant), including groundwater dependent ecosystems, consistent with Guidelines for Threatened Species Assessment (DEC, 2005); The EA must:	
○ identify threatened species, populations and communities listed under both State and Commonwealth legislation that have the potential to occur on site. In particular, the following must be addressed: box woodland, table basalt forest and natural temperature grassland communities, and crimson spider orchid, silky swainson-pea, Yass daisy, hoary sunray, small woodland birds, superb, turquoise & swift parrots, barking owl & powerful owl, raptors, squirrel glider, koala, spotted tailed quail, bats and golden sun moth;	Sections 11.2 – 11.4 and Appendix C
○ map existing vegetation by vegetation/ community type and include details on existing site conditions, including whether the vegetation comprises a highly modified or over-cleared landscape and the types and quality of habitat resources available. Vegetation mapping should consider any Environmentally Sensitive Area Mapping held by Boorowa Council, Yass Valley and the Upper Lachlan Shire Council;	Appendix C
○ provide details of the survey methodology employed including survey effort and representativeness for each species targeted and clear justification for species that were discounted from requiring field surveys or further assessment;	Sections 11.1 and 11.2
○ demonstrate a design philosophy of impact avoidance on ecological values, and in particular, ecological values of high significance;	Sections 11.8 and 5.2
○ provide a worst case estimate of vegetation to be cleared (in hectares), including quantifying impacts (in hectares) by vegetation type and threatened species	Sections 11.6, 11.7 and 11.9

habitat (as relevant);	
○ assess the significance of impacts to native vegetation, listed threatened species, populations and communities and their habitats with consideration to local and region-based ecological implications, including habitat connectivity and distribution of species. The assessment must consider impacts to in-stream and riparian ecology from works close to waterways and/ or waterway crossings. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips (barotrauma), and alteration to movement patterns resulting from the turbines must be assessed, including demonstration of how the project has been sited to avoid and/ or minimise such impacts;	Sections 11.5 – 11.7
○ include details of how flora and fauna impacts would be managed during construction and operation including adaptive management, rehabilitation/ regeneration measures and maintenance protocols;	Section 11.8
○ demonstrate how the project (with the incorporation of all proposed measures to avoid, mitigate and/ or offset impacts) achieves a biodiversity outcome consistent with "maintain or improve" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project and to secure these measures in perpetuity; and	Section 11.8 and SoC 38 and 39
○ address the risk of weed spread and identify mitigation measures.	SoC 28
➢ Heritage - the EA must include an assessment of the potential impact of the project components on Aboriginal heritage values (archaeological and cultural). The EA must demonstrate effective consultation with Aboriginal stakeholders during the assessment and in developing mitigation options (including the final recommended measures) consistent with Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation (DEC, July 2005). The EA must also consider impacts to historic (European) heritage values, as relevant.	Section 12 and Appendix D
➢ Traffic and Transport - the EA must assess the construction and operational traffic impacts of the project including:	
○ details of traffic volumes (both light and heavy vehicles) and transport routes during construction and operation;	Section 13.1.1 and Appendix E
○ assess the potential traffic impacts of the project on road network function (including intersection level of service) and safety;	Section 13.1.2 and Appendix E
○ assess the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over dimensional traffic) during construction and operation, including full details of any required upgrades to roads, bridges, site access provisions (for safe access to the public road network) or other road features;	Appendix E
○ details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control soil erosion and dust generated by traffic volumes;	Section 13.3 and Appendix E
○ details of access roads within the site including how these would connect to the existing public road network (i.e. site access) and ongoing operational maintenance requirements for on-site roads; and	Section 13 and Appendix E
○ consideration of relevant Council traffic/road policies.	Section 13.1 and Appendix E
➢ Hazard/Risks- the EA must include an assessment of the potential impacts on aviation safety, including the need for aviation hazard lighting, considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, approach/departure procedures, radar interference, communication systems, and navigation aids. Aerodromes within 30km of the turbines should be identified and impacts on obstacle limitation surfaces addressed. Attention is drawn to Airservices Australia's specific requirements (attached). In addition, the EA must assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line. Possible effects on telecommunications systems must be identified. Potential hazards and risks associated with electric and magnetic fields and bushfires/use of bushfire prone land must also be assessed.	Section 14

➢ Water Supply, Water Quality and Hydrology - The EA must identify water demands, and determine whether an adequate and secure water supply is available for the project, including the statutory (licensing) context of the water supply sources, and assess potential environmental impacts associated with use of identified sources including impacts on groundwater and implications for existing licensed users/basic landholder rights. The potential to intercept groundwater should be assessed. Where the project involves crossing or works close to waterways, the EA must identify likely impacts to the waterways and measures to minimise hydrological, water quality, aquatic and riparian impacts. The EA must identify how works within steep gradient land or highly erosive soil types will be managed during construction and operation.	Section 15
➢ General Environmental Risk Analysis - notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project, proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures·. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of the additional key environmental impact(s) must be included in the EA.	Section 16
Consultation Requirements	
The Proponent must undertake a consultation programme as part of the environmental assessment process, including consultation with, but not necessarily limited to, the following parties:	Section 7
➢ Boorowa Council	Section 7.3
➢ Yass Valley Council	Section 7.3
➢ Upper Lachlan Shire Council	Section 7.3
➢ Department of Environment, Climate Change and Water;	Section 7.3
➢ NSW Office of Water;	Section 7.3
➢ Industry and Investment NSW;	Section 7.3
➢ NSW Roads and Traffic Authority;	Section 7.3
➢ NSW Rural Fire Service;	Section 7.3
➢ Land and Property Management Authority;	Section 7.3
➢ Lachlan Catchment Management Authority;	Section 7.3
➢ Commonwealth Department of Defence;	Section 7.3
➢ Civil Aviation Safety Authority;	Section 7.3
➢ Airservices Australia;	Section 7.3
➢ Aerial Agricultural Society of Australia;	Section 7.3
➢ relevant service providers;	Section 7.3
➢ relevant minerals stakeholders (including exploration and mining title holders); and	Section 7.3
➢ the local community and landowners (including "associated" and "non-associated" properties).	Section 7.3
The consultation process shall include measures for disseminating information to increase awareness of the project as well as methods for actively engaging stakeholders on issues that would be of interest/concern to them. The EA must:	
➢ demonstrate effective consultation with stakeholders, and that the level of consultation with each stakeholder is commensurate with their degree of interest/concern or likely impact;	Section 7.2
➢ clearly describe the consultation process undertaken for each stakeholder/group including details of the dates of consultation and copies of any information disseminated as part of the consultation process (subject to confidentiality); and	Section 7.2 and Attachment 7
➢ describe the issues raised during consultation and how and where these have been	Section 7.2 and 5.2

addressed in the EA.	

Supplementary Director-General's Requirements

The Director-General of the Department of Planning and Infrastructure issued supplementary DGRs on 16 August 2011. These supplementary DGRs related to the requirement:

"…that the community must be consulted during the preparation of the Environmental Assessment and relevant issues must be addressed in the document."

Table 6-2 summarises the supplementary DGRs and highlights the sections in which the appropriate responses have been made. The full supplementary DGRs are presented in Attachment 5.

Table 6-2 Summary of the Supplementary Director-General's Requirements

Supplementary Director-General's Requirements	***Addressed In:***
A comprehensive, detailed and genuine community consultation and engagement process must be undertaken. This process must ensure that the community is both informed of the proposal and actively engaged in issues of concern to them, and is given ample opportunity to provide its views on the proposal. Sufficient information must be provided to the community so that it has a good understanding of what is being proposed and of the impacts. There should be a particular focus on those non wind farm associated community members who live in proximity to the site;	Section 7 and Attachment 6 and 7
The EA must clearly document and provide details and evidence of the consultation process and who was consulted with;	Sections 7.2 and Attachment 6 and 7
All issues raised during the consultation process must be clearly identified and tabulated in the EA; and	Sections 7.2 and 5.2
The EA must state how the identified issues have been addressed, and how they have informed the proposal as presented in the EA. In particular, the EA must state how the community's issues have been responded to.	Section 7

6.1.2 Draft NSW Wind Farm Planning Guidelines

The Draft NSW Wind Farms Planning Guidelines have been prepared to ensure effective consultation with local communities and to deliver improved consistency, transparency and rigour in the planning assessment process. These guidelines were exhibited from 23 December 2011 to 14 March 2012 and public comments on the draft guidelines were sought.

Correspondence was received from the Director-General on 18 April 2012 in regards to the changes that the guidelines would introduce. A list of key aspects that must be considered has been provided for projects that have received their DGRs but where the project has not yet been exhibited.

The Draft Guidelines provided a table of key aspects relevant to applications. See Table 6-3.

Table 6-3 Key issues of the Draft NSW Planning Guidelines for Wind Farms

Potential Issues for Consideration	***Addressed In:***
Consultation	
Form a Community Consultation Committee	Section 7.2
Document the consultation process undertaken, including the stakeholders consulted. Identify and tabulate the issues raised by the stakeholders during consultation. Describe how the issues raised have been addressed.	Section 7
Consult with all neighbours with dwellings within 2km of a proposed wind turbine.	Section 7.2
Consider seeking an agreement with neighbours with dwellings within 2km of a proposed turbine.	Section 7.2.2.3
Landscape and Visual Amenity	
Provide photomontages from all non-host dwellings within 2km of a proposed wind turbine.	Section 9 and Appendix A

Potential Issues for Consideration	*Addressed In:*
Identify the zone of visual influence of the wind farm (no less than 10km) and likely impacts on community and stakeholder values. Consider cumulative impacts on landscapes and views.	Section 9
Outline mitigation measures to avoid or manage impacts.	Section 9.4
Noise	
Undertake assessment based on separate daytime (7am to 10pm) and night time (10pm to 7am).	Section 10 and Appendix B
Predict noise levels at all dwellings within 2km of a proposed turbine.	Section 10
Consider special audible characteristics, including tonality, amplitude modulation, and low frequency noise (apply penalties where relevant)	Section 10
Outline measures to avoid, minimise, manage and monitor impacts.	Section 10
Health	
Consider and document health issues, focusing on neighbours with dwellings within 2km of a proposed wind turbine.	Sections 8.1 and 14.7
Ecological Issues	
Consider the impact on birds and bats, particularly migratory species and outline the proposed monitoring and mitigation strategy.	Section 11 and Appendix C
Aviation Safety	
Outline current agricultural aerial uses on neighbouring properties.	Section 14.1
Consider the potential for the proposed wind farm to impact on aviation safety associated with agricultural aerial uses consistent with the draft guidelines.	Section 14.1
Bushfire Hazard	
Consider bushfire issues consistent with the draft guidelines, including the risks that a wind farm will cause bushfire and any potential impacts on the aerial fighting of bushfires.	Section 14.5
Blade Throw	
Assess blade throw risks consistent with the draft guidelines.	Section 14.6
Outline measures to avoid, minimise, manage and monitor impacts.	Section 14.6
Economic Issues	
Consider whether the wind farm is consistent with the relevant local or regional land use planning strategies	Section 6.1.10
Consider the potential impact upon mining/petroleum leases and exploration licenses.	Section 16.3
Consider any potential impacts upon property values consistent with the draft guidelines, including properties within 2km.	Sections 16.6 and 8.1
Decommissioning	
Include a Decommissioning and Rehabilitation Plan in the EA, including proposed funding arrangements.	Section 3.9.4 and Appendix G
Confirm that the proponent not the landowner is responsible for decommissioning.	Section 3.9.4 and Appendix G
Monitoring and Compliance Program	
Outline program to monitor the environmental performance to ensure compliance including mechanisms for reporting outcomes and procedures to rectifying non-compliance – including any provisions for independent reviews.	Statement of Commitments
Council Planning Controls	
Outline whether the proposal is consistent with any relevant provisions of the relevant council's Development Control Plan and list any variations	Section 6.1.10

6.1.3 State Environmental Planning Policies

State Environmental Planning Policies (SEPPs) only apply to the carrying out of a critical infrastructure project 'to the extent that the provisions of such a policy expressly provide that they apply to and in respect of the particular project' (former section 75R(2)(b) EPA&A). No SEPPs expressly provide that they apply to and in respect of the Rye Park Wind Farm project, with the result that SEPPS do not apply to this application. However 'In deciding whether or not to approve the carrying out of a project, the Minister may (but is not required to) take into account the provisions of any environmental planning instrument that would not (because of section 75R) apply to the project if approved' (former section 75J(3)). Accordingly, the Minister may wish to take into account *State Environmental Planning Policy No 44 – Koala Habitat Protection ('Koala SEPP').*

The *Koala SEPP* applies to the Boorowa and Yass local government areas (Schedule 1, *Koala SEPP*). While Upper Lachlan local government area is not listed in Schedule 1 as an area to which the *Koala SEPP* applies, the former local government areas of Gunning and Mulwaree, which were amalgamated to form Upper Lachlan Shire Council after the date of last amendment of the *Koala SEPP,* are listed in Schedule 1. Accordingly, the Minister may wish to take into account the provisions of the *Koala SEPP* in considering the Rye Park Wind Farm application.

The Minister may also wish to take into account *SEPP (Infrastructure) 2007*. Electricity generating works, such as the Rye Park Wind Farm, may be carried out with consent in certain prescribed zones (clause 34). These zones, defined in clause 33, are consistent with the rural zonings in the Rye Park Wind Farm local government areas, as further discussed in 'Local Government Instruments and Policies' in this EA.

6.1.4 Protection of the Environment Operations Act 1997

The proposed development of the Rye Park Wind Farm does not require an environment protection licence under the Protection of the Environment Operations Act 1997 (POEO Act) because wind power generation is excluded from the definition 'general electricity works' that must be licensed (POEO Act, section 48 and Schedule 1, clause 17(1)).

However, at the time of writing this EA, we understand the Environmental Protection Authority is proposing an amendment to the POEO Act requiring wind farms to be licensed. In the event this amendment comes into force during the assessment of this EA the granting of a license is required.

6.1.5 Roads Act

The Roads Act 1993 provides certain rights with respect to public roads and the regulation of activities relating to public roads. The project would require minor upgrade works to various public roads as outlined in Section 13, Traffic and transport, enabling access to wind farm access roads for construction vehicles. Under Section 138 of the Roads Act 1993, approval is sought under this EA from the appropriate road authority for proposed upgrade works on public roads.

6.1.6 Crown Lands Act

Under the Crown Lands Act 1989 proposed access via an existing Crown road to a proposed development must obtain the approval of the Land and Property Management Authority. The proposed road works must be approved by the Land and Property Management Authority under sections 71 or 138 of the Roads Act 1993 on behalf of the Minister for Lands as the designated Roads Authority. As sections of some wind farm access roads are proposed over existing Crown roads, this approval is sought under the EA.

6.1.7 Ecologically Sustainable Development

Ecologically sustainable development (ESD) involves the effective integration of social, economic and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the *National Strategy for Ecologically Sustainable Development*. In NSW, the concept has been incorporated in legislation such as the *EP&A Act* and Regulation.

Ecologically sustainable development (ESD) involves the effective integration of social, economic and environmental considerations in decision-making processes. In 1992, the Commonwealth and all state and territory governments endorsed the National Strategy for Ecologically Sustainable Development. In NSW, the concept has been incorporated in legislation such as the EP&A Act and Regulation.

For the purposes of the *EP&A Act* and other NSW legislation, the Intergovernmental Agreement on the Environment (1992) and the *Protection of the Environment Administration Act 1991* outline the following principles which can be used to achieve ESD:

The precautionary principle: that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

- In the application of the precautionary principle, public and private decisions should be guided by:
    - Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and
    - An assessment of the risk-weighted consequences of various options.
- Inter-generational equity: that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations;
- Conservation of biological diversity and ecological integrity: that conservation of biological diversity and ecological integrity should be a fundamental consideration;
- Improved valuation, pricing and incentive mechanisms: that environmental factors should be included in the valuation of assets and services, such as:
    - Polluter pays: that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;
    - The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; and
    - Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, which enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The precautionary principle has been adopted in the assessment of impact. All potential impacts have been considered and mitigated where a risk is present. Where uncertainty exists, measures have been suggested to address the uncertainty.

The impacts of the project on ecology, including EPBC listed species, have been assessed in detail in the attached Ecology Assessment (summarised in Section 11).

The aims, structure and content of this EA have incorporated these ESD principles. The Draft *Statement of Commitments* in Section 17 provides an auditable environmental management commitment to these parameters. Based on the social and environmental benefits accruing from the project at a local and broader level, and the assessed impacts on the environment and their ability to be managed, it is considered that the development would be ecologically sustainable within the context of the above ESD principles.

6.1.8 Catchment Action Plans

Catchment Action Plans (CAPs) are strategic, statutory plans under the *Catchment Management Authorities Act 2003* that provide a framework for natural resource management in a catchment. CAPs include general principles for biodiversity, land and water management.

Each catchment management authority is required to prepare a catchment action plan in partnership with regional community and government agencies. Catchment action plans guide natural resource management investment in the 13 catchment regions across NSW. They bring together government priorities, best available science and the values of catchment communities into a strategic plan for making improvements in NSW's natural resources (ABS, 2010).

The proposed Rye Park Wind Farm falls across the border of the Lachlan and Murrumbidgee Catchment Management Authorities.

Overall, the Rye Park Wind Farm will only have a small effect on the key principles of:

- water management;
- regional vegetation management;

- floodplain management;
- regional action plans;
- property management;
- local environment plans.

While vegetation clearing would be required on site, the amount required would be relatively small in size. The impact to native vegetation has been assessed as part of the proposal and was concluded to be manageable with effective implementation of the Construction Environmental Management Plan.

Of these other principles which the development may affect, prevention and mitigation measures identified to reduce potential impacts have been developed using best practice and will be implemented into both the Construction and Operational Environmental Management Plans.

6.1.9 Renewable Energy Precincts

In February 2009 the NSW Government created six renewable energy precincts in areas where significant future renewable energy development is expected, especially wind farms. The precincts were each assigned a coordinator with the purpose of enabling local communities to have a voice and a stake in renewable energy development

The proposed wind farm is located within the NSW/ACT Border East and ACT/NSW Border West Precincts.

6.1.10 Local Government Instruments and Policies

Local Environment Plans

As stated above (in relation to SEPPs) 'In deciding whether or not to approve the carrying out of a project, the Minister may (but is not required to) take into account the provisions of any environmental planning instrument that would not (because of section 75R) apply to the project if approved' (EP&A Act, former section 75J(3)). Local Environmental Plans are environmental planning instruments (EPA&A section 4). Accordingly the Minister may (but is not required to) take into account the applicable Local Environmental Plans (LEPs), namely:

- Yass LEP 1987;
- Upper Lachlan LEP 2010; and
- Boorowa LEP 2012

Yass LEP 1987

Yass Valley Council was created by council amalgamation in 2004, and as a result three LEPs (Gunning, Yarrowlumla and Yass) currently apply in different parts of the local government area. The project passes through land subject to Yass LEP 1987 only.

The part of the project site under Yass LEP is zoned No 1(a) Rural Agriculture. Wind farms are permissible with consent in Zone 1(a) Rural Agriculture.

The objective of Zone No 1 (a) (Rural Agriculture Zone) is 'to set aside certain land for agricultural purposes and purposes incidental thereto'.

The project is 'generating works' or 'public utility undertaking' (being one for the supply of electricity in pursuance of the National Electricity (New South Wales) Act 1997) or both (Environmental Planning and Assessment Model Provisions 1980, as adopted by clause 6 Yass LEP 1987. Both generating works and public utility undertakings may be undertaken with consent in zone 1(a) (clause9, Yass LEP 1987).

Draft Yass Valley Local Environmental Plan was endorsed by Yass Valley Council on 14 November 2012, and as at 18 February 2013 awaits making by the Minister. The part of the project site under Draft Yass Valley Local Environmental Plan is zoned RU1 (Primary Production). The objectives of the draft RU1 zone include 'To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.' Wind farms would be prohibited in that zone, however State Environmental Planning Policy (Infrastructure) 2007 would override the prohibition (clauses 8,33 and 34), resulting in development for the purpose of electricity generating works, such as the proposed wind farm, being permissible with consent.

Upper Lachlan LEP 2010

The part of the project site which is in the area of Upper Lachlan LEP 2010 is zoned RU2 Rural Landscape. The objectives of Zone RU2 Rural Landscape are as follows:

- to encourage sustainable primary industry production by maintaining and enhancing the natural resource base;
- to maintain the rural landscape character of the land;
- to provide for a range of compatible land uses, including extensive agriculture;
- to preserve environmentally sensitive areas including waterways and prevent inappropriate development likely to result in environmental harm;
- to protect the Pejar catchment area from inappropriate land uses and activities and minimise risk to water quality;
- to minimise the visual impact of development on the rural landscape;
- to minimise the impact of development on the existing agricultural landscape character;
- to protect and enhance the water quality of watercourses and groundwater systems and to reduce land degradation; and
- to maintain areas of high conservation value vegetation.

As above the project is 'electricity generating works' or 'public utility undertaking' (being one for the supply of electricity in pursuance of the National Electricity (New South Wales) Act 1997). Electricity generating works and public utility undertakings may be undertaken with consent in zone RU2 Primary Production (Dictionary and Land Use Table to the Upper Lachlan LEP 2010).

Boorowa LEP 2012

The part of the project site under Boorowa LEP 2012 is zoned RU1 (Primary Production), the objectives of which are:

- to encourage sustainable primary industry production by maintaining and enhancing the natural resource base;
- to encourage diversity in primary industry enterprises and systems appropriate for the area;
- to minimise the fragmentation and alienation of resource lands;
- to minimise conflict between land uses within this zone and land uses within adjoining zones;
- to encourage development that is in accordance with sound management and land capability practices, and that takes into account the natural resources of the locality; and
- to support rural communities.

The project is 'electricity generating works' or 'public utility undertaking' (being one for the supply of electricity in pursuance of the National Electricity (New South Wales) Act 1997). Electricity generating works and public utility undertakings may be undertaken with consent in zone RU1 Primary Production (Dictionary and Land Use Table to the Boorowa LEP 2012).

Development Control Plans and local council policies

In the same way that the Minister may wish to (but is not required to) take into account the provisions of LEPs (EPAA former section 75J(3)), the Minister may wish to take into account the current Development Control Plans (DCP) and other policies of Upper Lachlan Shire which specifically addresses the development of wind farms.

Upper Lachlan Economic Development Plan and Strategy

The Economic Development Plan and Strategy includes as a current strength of the Shire 'potential to leverage off the wind farms for a potential renewable energy/clean energy hub or businesses attracted by this' (ULSC, 2007).

Upper Lachlan Development Control Plan 2010

Section 3.17 (Community Enhancement Programs), section 9.5 (Wind Farms) and Appendix A (Wind Farm Planning Agreement) of Upper Lachlan Development Control Plan 2010 (including amendments up to 22 September 2011) provide a guide to the Council's expectations in relation to wind farms, and accordingly have been considered by the Proponent as indicated in Table 6-4.

While the project does comply with most of the controls proposed by the DCP (see Table 6-4), it should be noted that there are some exceptions.

The project does not comply with set-back distances suggested in this DCP; however, it achieves compliance with the SA EPA Guidelines. Furthermore, the layout has been assessed for visual impact. The noise and visual studies are based on an assessment of amenity and consider site specific factors relating to the project design and minimisation of overall impacts. In Gullen Range Wind Farm Pty Limited v Minister for Planning [2010] NSWLEC 1102 (at [167]) the Court described the 2km setback proposed in the DCP as arbitrary, and rejected it. The project achieves the desired objectives of the DCP and complies with the other requirements, particularly the noise criteria.

Table 6-4 Criteria from the Upper Lachlan Shire DCP 2010 relating to wind farms

Special Development types – Wind Farms DCP Criteria	***Relevant section in this EA***
Any EIS (EA) as a minimum to contain:	
The location details of all wind farm infrastructure with accompanying maps at 1:25,000 scale including a site plan for turbines, access points, powerlines and native vegetation.	Section 3
Specifications of the proposed wind turbines	Section 3
Description of land use of the adjoining land	Discussed in Section 1.13
A detailed noise assessment of the noise impact of the proposal, including construction and operation of the wind turbines.	Section 10
An assessment on the visual impact for a distance of at least 10 kilometres	Section 9
Evaluation of electromagnetic radiation from the proposed infrastructure	Section 14.3
A construction program and environmental management plan	Discussed in Section 8
Evaluation of flora and fauna impacts	Section 11
The heritage significance of the site and surroundings	Section 12
A decommissioning and site restoration plan and program	Section 17
Demonstration that adequate consultation has been conducted with all issues addressed	Section 7
A post construction and commissioning program	Section 17
An assessment of any risks involved in soil disturbance, including contamination impacts on hydrology and archaeology issues	Sections 16 & 12
Assessment of the development regarding all relevant legislation and applicable policies	Section 1 & 6
Project design and development application guidelines:	
Development to be sited to minimise impacts to farming, grazing, forestry practices and tourism as well as adjoining land	Discussed in Sections 3 & 14
Assess the cumulative impact of the proposal in relation to existing or proposed wind farm developments	Section 9 & 10
Comply with the SA EPA noise criteria guidelines	Section 10
Locate the development 2km from any non-associated dwelling.	Section 6.1.10
Locate the development more than 2 times the tip height from a formed public road	Section 6.1.10
Locate the development more than two times the tip height from a non-associated property boundary	Section 6.1.10
Turbine locations to be sensitive to existing associated dwellings	Sections 9 & 10
Turbine locations should not surround a non-associated residence	Section 3.2
A communications study should address any potential interference and mitigation measures	Section 14.2

Special Development types – Wind Farms DCP Criteria	*Relevant section in this EA*
Construction to only occur on identified roads/routes	Section 13
Substantial investigation to be undertaken into the roads chosen for the preferred route, with bonds required for any potential damage to roads during construction. Internal roads to be adequately designed by the developer.	Section 13 & 17
All related infrastructure to the wind farm should be included in the Development Application and located in areas of low visual impact	Section 3 & 9
If appropriate, a safe viewing area for the public be provided	Not considered necessary
Within 6 months of wind turbine generators ceasing to operate, any right of carriage way are to be extinguished	Section 3
Within 12 months of wind turbine generators ceasing to operate, they are fully dismantled and removed from the site	Section 3
Details of the proposed electricity grid connection	Section 3.4

Yass Valley Policy: Development on Elevated Land

Yass Valley Policy on Development on Elevated Land (YVC, 2012) requires visual impacts of development from public roads, public places and adjoining allotments to be considered in relation to bulk and scale, and impacts on the skyline or significant views. Such visual assessment is contained in Section 9 of this EA.

6.2 Commonwealth Legislation

6.2.1 Environment Protection and Biodiversity Conservation Act 1999

This *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides for a Commonwealth assessment and approvals system for:

- actions that have a significant impact on 'matters of national environmental significance';
- actions that (indirectly or directly) have a significant environmental impact on Commonwealth land; and
- actions carried out by the Commonwealth Government.

A Proposal requires the approval of the Environment Minister if an action is likely to have a significant impact on a matter of national environmental significance or listed as a matter of national significance which includes:

- World heritage properties;
- National heritage places
- wetlands of international importance (Ramsar wetlands);
- Commonwealth listed threatened species and ecological communities;
- Commonwealth listed migratory species;
- nuclear actions;
- the Great Barrier Reef Marine Park;
- Commonwealth marine areas; and
- a water resource, in relation to coal seam gas and large mining development.

Threatened Species and Ecological Communities

The EPBC Act aims to ensure the conservation and recovery of flora and fauna species and communities at a state and national level. The requirements of EPBC Act under Part 13 - Species and communities, are that the Minister must establish a list of threatened species, threatened communities and key threatening processes. The list must contain threatened species and communities as contained in Schedules 1 and 2 of the *Endangered Species Protection Act 1992*. Listed species are divided into the following categories: Extinct, extinct in the wild, critically endangered, vulnerable and conservation dependent. Threatened communities are divided into the following categories: Critically endangered and endangered. Key threatening processes are contained in Schedule 3 of the *Endangered Species Protection Act 1992*.

A search for Matters of National Environmental Significance based on the study area and a 10 kilometre buffer was undertaken using the Commonwealth Government's Protected Matters Search Tool. This tool covers World Heritage properties, National Heritage places, significant wetlands, migratory species, nationally listed threatened species and communities and other matters protected by the EPBC Act. The report generated by the Matters of National Environmental Significance Commonwealth Government's Protected Matters Search Tool is provided in full and discussed within the Ecology Assessment, provided in Appendix C. A summary of the results of the Protected Matters Search Tool is provided in Table 6-5 below.

Table 6-5 Summary of the results of the Protected Matters search tool

Rye Park Wind Farm	
Threatened Species	21
Migratory Species	14
World Heritage Properties	-
Australian Heritage Sites	-
Ramsar Wetlands	3
Commonwealth Marine Areas	-
Commonwealth land	-

On the basis of the ecological investigations, the project is not considered likely to have an impact on EPBC listed species. To obtain certainty however, Epuron will submit an EPBC Act referral to the federal Department of the Environment to determine whether, on the basis of Matters of National Significance, the project would be considered a 'controlled action'.

Bilateral agreement

In accordance with subsection 45(4) of the EPBC Act and Division 16.1 of the EPBC Regulations 2000, the Commonwealth of Australia entered into an Assessment Bilateral Agreement with New South Wales in December 2013. One of the aims of the agreement is to minimise duplication of environmental impact assessment processes, ensuring a co-ordinated assessment approach for actions requiring approval from both the Commonwealth and the State. In the event the project is considered a 'controlled action' under the EPBC Act the referral would likely be further assessed by the NSW Department of Planning under the bilateral arrangement in place.

Figure 6-1 below highlights the likely assessment process the project would follow should the EPBC Act referral be determined a Controlled Action by the Commonwealth.

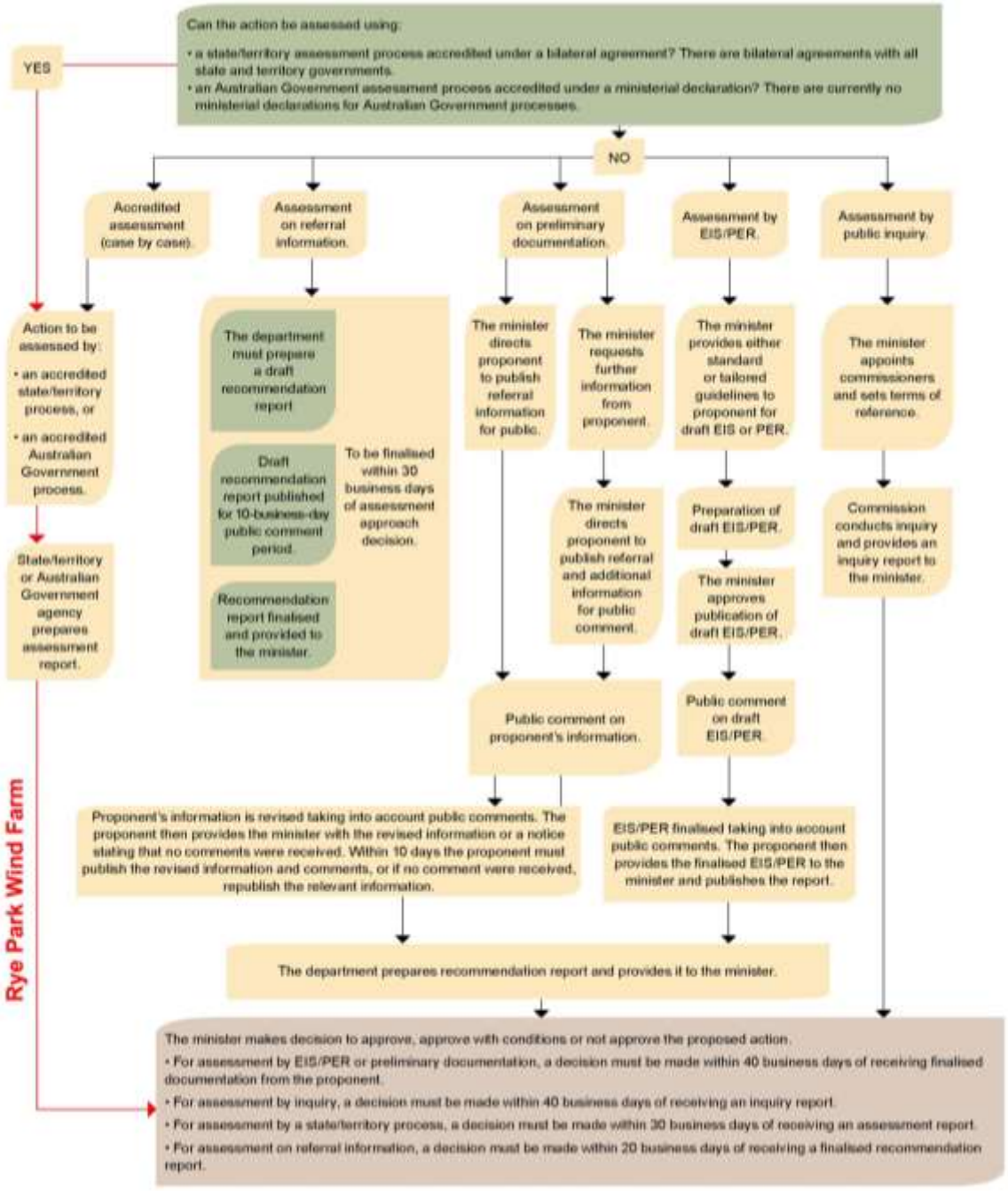


Figure 6-1 EPBC Act environment assessment process – assessment/decision whether to approve

6.2.2 DEH Supplementary Significant Impact Guidelines 2.1.1: Wind Farm Industry Sector 2005

The purpose of these guidelines is to assist operators in the wind farm industry to decide whether or not actions which they propose to take require assessment and approval under the *Environment Protection and Biodiversity Conservation Act 1999* (*EPBC Act*).

These guidelines have been considered in the preparation of this EA, particularly with reference to Section 11, Ecology Assessment.

7 Public Consultation

7.1 Community Attitudes

NSW Government Report 'Community Attitudes to Wind Farms in NSW', DECCW, 2010

In 2010 the NSW Government commissioned the report *'Community Attitudes to Wind Farms in NSW'* to assess residents attitudes towards targets set to achieve 20% renewable energy consumption by 2020 (Warren, Lumsden et al., 2005). The survey was conducted by telephone of 2022 resident's aged 18 years and older and 300 businesses across the 6 Renewable Energy Precincts, including the NSW/ACT Border East and ACT/NSW Border West Precincts and a control area in regional NSW.

The outcomes of the study are as follows:

- Of the total surveyed 81% believed wind power was acceptable for power generation.
- General awareness of wind turbines was very high, with 97% of people having heard about wind farms or wind turbines generating electricity and 81% of the population had seen a wind farm or wind turbine in person or via media.
- The majority (68%) of the population living in these precincts knew about wind farms currently operating in NSW.
- Eighty five per cent (85%) of the population across the precincts support wind farms in NSW, with 80% supporting them within their local precinct, and 79% support for a wind farm being built 10 km from their residence.
- A similar trend occurs with business opinion with 88% support for wind farms within NSW, 83% support for a wind farm in the precinct, 82% support for a wind farm 10 km from the residence and 60% support for a wind farm within 1-2 km of the residence or business.

The NSW Government study concludes that the general adult residents of the survey area are well aware of the potential of wind farms or wind turbines to generate renewable energy. Additionally, the respondents were generally aware of wind turbines and how wind turbines appear within the landscape and are generally supportive. The results further indicated that the respondents were generally not averse to the development of wind farms in the immediate locality.

CSIRO Report 'Exploring community acceptance of rural wind farms in Australia: a snapshot', CSIRO, 2012

The CSIRO released a report in 2012 exploring community acceptance of wind farms in rural Australia. This research explores community acceptance levels regarding Australian wind farms. The research employed a range of methods, including a literature and information review, a media analysis of newspaper articles, case studies, and semi-structured qualitative interviews with a range of stakeholders associated with wind farms.[2]

A summary of the outcomes of the study are as follows:

- There is strong community support for the development of wind farms, including support from rural residents who do not seek media attention or political engagement to express their views.
- The actual and perceived local costs and benefits of wind farms are strongly influenced by the design, implementation, and community engagement processes. Many of the benefits can be shared or communicated in ways that would enhance community support for the development of wind farms in a region. Many of the potential costs can be reduced by appropriate design, siting, and project implementation.

Based on the above independent surveys, it is reasonable to assume that the communities within the ACT/NSW Border Areas Precinct are generally supportive of wind farms. However, the surveys showed that a majority of the population did not feel like they had adequate information about wind farms, even in areas where general wind farm awareness was much greater.

2 'Exploring community acceptance of rural wind farms in Australia: a snapshot' N Hall, P Ashworth, H Shaw, CSIRO Science into Society Group 2012

7.2 Community Consultation

Wind farm developments and their approval in Australia have, at times, elicited polarised responses from the community, highlighting the need to appropriately identify and commence consultation with community stakeholders early in the development process.

Prospective wind energy projects in NSW are generally limited to sites with large elevated land parcels, good wind speeds, usually in rural areas, and with good electricity transmission line access. Such sites are relatively rare, and often, these sites are located in the vicinity of rural dwellings and in some cases in the vicinity of small to medium sized regional communities. This can cause conflict where some local community members feel impacted by the development and yet do not see any direct benefits from the development.

While unfortunate, the limited number of appropriate wind farm sites means that this conflict is often unavoidable and cannot be eliminated by simply moving the wind farm to a different location.

Accordingly, community consultation is focussed on understanding and mitigating the impacts of the wind farm, and on showing and maximising its benefits to the local community.

7.2.1 Project Consultation Plan

A Project Consultation Plan (PCP) was prepared by Epuron for the proposal (Attachment 6).

The PCP was prepared to guide stakeholder engagement and consultation activity during the development phase (up to project approval). The plan reflects the corporate requirements set out in Epuron's Community Consultation Framework and the Director Generals Requirements issued for the project by the NSW Department of Planning and Infrastructure.

The PCP is dynamic and can be periodically updated, as required, during the course of the development phase and community engagement activity.

The PCP highlights the key objectives of consultation for the proposal, which are:

- to minimise undue community concern in relation to the proposal, particularly at an early stage where little information on the project is known;
- to ensure the community and other stakeholders are fully informed and aware of the proposal, it's likely impacts, and its likely benefits;
- to ensure that Epuron fully understands the local context for the proposal, including any local impacts that the proposal may have or opportunities that it could provide;
- to incorporate the community's suggestions and feedback into the design of the wind farm where possible;
- to explain where and how this feedback can be and has been incorporated; and,
- in that context, to provide multiple opportunities for dialogue in various forms to allow the community to receive information and provide feedback about the proposal.

The approach taken to the project consultation plan was to use a variety of communication channels to achieve the desired objectives. These included:

- access to website containing corporate and project details;
- periodical project newsletters;
- media opportunities where available;
- public open house / information day in the local area;
- establishment of a Community Consultation Committee;
- letters to identified residents at a minimum within 2km of a proposed turbine; and
- phone calls and/or individual meetings with landowners at a minimum within 2km of a proposed turbine.

The plan was used to guide consultation during the development of the project. The plan was reviewed and adapted where necessary as community feedback was received so that consultation activities were a pragmatic response to the issues raised by the community.

Key consultation activities included a community open house day attended by specialists working on the project, the establishment of a Community Consultation Committee, follow-up phone calls, emails and other correspondence, including face-to-face meetings with neighbouring and concerned landowners.

As a result of the ongoing engagement and consultation with community stakeholders, as guided by the Project Consultation Plan, various matters were raised in the form of feedback in response to the available project information. As a result of this feedback a number of layout changes were incorporated into the project's design and or preparation of this EA. Design changes accommodated into the layout resulting from community feedback are listed in Table 5-1 and feedback matters raised by the CCC and incorporated into the project are listed in Table 7-3.

7.2.2 Implementation of the Project Consultation Plan

While the majority of the consultation process focussed on informing the community about issues relating to the project, activities to engage the community in two-way dialogue were also undertaken for the purpose of receiving feedback for incorporating community concerns, local knowledge and thereby maximising the suitability of the project to the site and the community's acceptance of the project. A schedule of the key consultation activity undertaken for the project prior to lodgement of the EA is outlined below and consultation activities are ongoing.

Table 7-1 Rye Park Wind Farm project consultation timeline

Activity	*Timing*	*Objectives*	*Stakeholders*	*Status*
Community Information Workshop	November 2009	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	Completed
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	Completed
Consultation with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours house within 2km of turbine	Completed (but ongoing)
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	Completed
Establishment of Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	Completed
CCC Meeting 1	27 June 2012	Provide project information and seek feedback	Invited members	Completed
Newsletter 5	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	Completed
Community Open House	26 July 2012	Display revised layout, public road photomontages and traffic and transport plan. To discuss issues and seek feedback.	All project stakeholders and community	Completed
CCC Meeting 2	2 August 2012	Provide updated information and consider feedback including revised layout	Invited members	Completed
Newsletter 6	22 August 2012	Update on studies and consultation feedback contributing to preparation of the proposed final layout	Involved and uninvolved landowners (mail-out)	Completed

Activity	*Timing*	*Objectives*	*Stakeholders*	*Status*
CCC Meeting 3	24 October 2012	Provide proposed final layout incorporating consultation feedback and study results	Invited members	Completed
CCC Meeting 4	17 December 2012	Reviewed key elements of finalised EA and layout	Invited members	Completed
Pre DA submission follow up	December 2012 / January 2013	Consider feedback and any final amendments required prior to lodging EA for exhibition	Involved and uninvolved landowners, CCC, stakeholders and consultants (phone calls and meetings as required)	Completed
Newsletter 7	7 May 2013	Update community of EA planning process, wind farm layout and current industry news.	Involved and uninvolved landowners (mail-out)	Completed
CCC Meeting 5	22 July 2013	Discuss EA planning and exhibition process including project risks such as bushfire.	Invited members	Completed
CCC Meeting 6	30 September 2013	Discuss EA planning and exhibition process including proposal to establish a community enhancement fund.	Invited members	Completed

7.2.2.1 Community Open House

The community open house forum allows the opportunity for members of the community to speak individually or in small groups to the Proponent representatives. The open house format is helpful in avoiding potential conflict in a public meeting for contentious issues, allowing a flow of stakeholder dialogue throughout the event rather than a more constrained discussion that can be hijacked by the most vocal individuals. It allows for a larger proportion of stakeholders to voice their individual concerns with the relevant representatives in a non-confrontational situation. It also allows the presentation of issues and information to be tailored to individual queries.

The community open house session for the project was held on the 26 July 2012 at the Memorial Hall in Yass Street Rye Park. A community newsletter, distributed to residents, preceded the event that was also advertised in the local Yass and Boorowa newspapers beforehand.

The event ran from 9:00 am to 5:00 pm and representatives from the Proponent were present to discuss the project specifics (including general questions about wind farms and wind farm development) and the environmental planning process.



Figure 7-1 Rye Park Wind Farm Community Open Day at Rye Park Memorial Hall

The objective of the open house was to display current project information and to seek feedback that would ultimately contribute towards preparation of the final design and wind farm layout.

On the day 51 people attended the event, primarily local residents within the vicinity of the wind farm, as well as community stakeholders. Outcomes and statistics observed from the event included;

- of the 51 people in attendance, the majority (approximately 40) were supportive of the project;
- approximately 11 people were opposed or expressed negative views to the project;
- 12 people asked for follow up information to be sent to them or arranged a follow up meeting; and
- 3 people/companies registered their interest in construction jobs and tender contracts.

Details of the proposed wind farm project that were on display included:

- latest wind farm layout showing the planned locations of wind turbines and other associated infrastructure including construction compounds, substations, overhead powerlines and access tracks;
- photomontages showing the likely view of the completed wind farm from a number of public road locations around the site;
- Traffic and Transport Report including a large map of the access roads and routes;
- general wind farm, industry and corporate information;
- the recent project newsletter; and
- member nomination forms for the Community Consultation Committee.

Notable observations or comments made on the day included:

- Some attendees were interested in the flora and fauna studies and also the construction management plan in relation to weed and erosion control.
- Most people were interested in viewing the photomontages to gain an understanding of the visibility of the project from public road routes such as Rye Park to Yass.
- Some people were concerned about the potential noise and health impacts that may result from the operation of the wind farm.
- Concerns for impacts to property values were also expressed.

- Copies of the following reports were on hand during the open day as reference for people to view on these two matters and to alleviate any concerns in this regard;
    - NSW Valuer General – Impact of Wind farms on Property Values – August 2009
    - NHMRC (National Health & Medical Research Council) Review of Wind Turbines & Health – July 2010
- A number of people expressed their support for the project and the potential benefits available to the local area (such as jobs and investment), including general support for renewable energy and wind farms.

7.2.2.2 Face-to-face consultation

A common criticism of major project developers is a lack of consultation with surrounding neighbours. While newsletters, websites and open houses forums are effective at engaging with the wider community, there is no guarantee that this information will be received or interpreted correctly by everyone.

Epuron has taken this on board in designing the project consultation plan and has placed an importance on consultation with the immediate neighbours of the project. During the feasibility phase of the project representatives from Epuron identified all landowners that reside or have property within a few kilometres of the project, particularly those residents within 2 km of a proposed turbine, and proceeded to make contact for consultation purposes as described in further detail in Section 7.2.2.3.

Landowners that reside or have property within 2km of a proposed turbine were contacted for consultation. In all cases this involved an initial phone conversation, email or letter box drop to introduce the proponent and the project, and in most cases a face-to-face meeting or discussion followed to provide additional detail about the project and to answer any questions raised by the landowner. Some absentee landowners have not engaged in consultation but remain on the project database to receive information such as newsletters. Landowner contact details were entered on the Epuron database to enable follow up dialogue and for future information about the project to be sent to landowners when required. At the time of this EA the database for the project had more than 150 landowner contact details which include those within 2 km of a proposed turbine and many other stakeholders beyond this group.

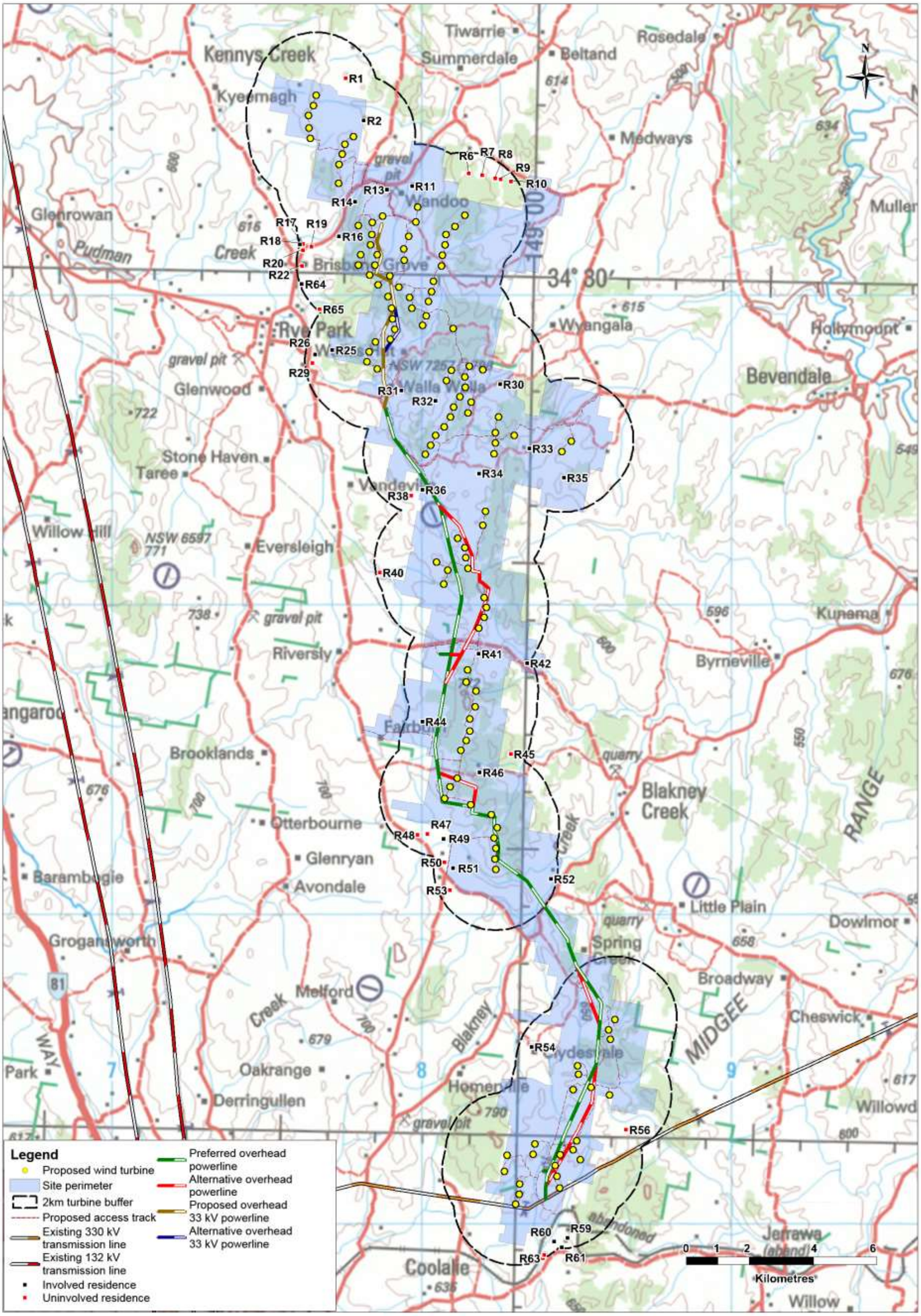


Figure 7-2 Involved and uninvolved residences within 2 km

7.2.2.3 Residents within 2 km

Uninvolved landowners with a dwelling within 2 km

Consistent with corporate requirements set out in Epuron's Community Consultation Framework and in consideration of the draft NSW Wind Farm Planning Guidelines, Epuron specifically focussed consultation efforts on those uninvolved landowners identified to have a dwelling within 2 km of a proposed wind turbine.

Uninvolved landowners that have a dwelling within 2km of a proposed turbine were contacted for consultation on a range of issues including an offer to prepare a photomontage. Many other stakeholders outside the 2 km group were also consulted as evidenced by the more than 150 entries in the projects contact database.

As set out in the DGR's and DP&I correspondence, consultation obligations and scope with this uninvolved landowner group included, but was not limited to, potential impacts around landscape and visual amenity issues, noise, health, property values, blade glint and shadow flicker. These landowners were also offered a photomontage from their dwelling to show what the wind farm would like, and if accepted, a photomontage was prepared and forwarded to the landowner at the EA lodgement stage. A photomontage was prepared for a few residents outside the 2 km group where required as a result of consultation about the project. All photomontages prepared are included in Appendix A.

Under the project consultation plan this group of uninvolved landowners were identified early on and actively contacted for an initial discussion. Wherever possible further engagement followed which included a meeting and or written correspondence to ensure information and feedback about the project was communicated in both directions with landowners or those occupants renting/living in the dwelling.

There are 22 uninvolved landowner dwellings that have been identified as being located within 2 km of a proposed wind turbine.

The following table lists the identified uninvolved landowner dwellings within 2 km of a proposed turbine and the consultation activity undertaken. These landowners are also shown in Figure 7-2.

Table 7-2 Consultation activity with uninvolved landowners with a dwelling within 2 km

Residence ID	Newsletter List	Telephone Contact	Face to Face Meeting	Written Correspondence	Photomontage Offered & Accepted
R1	yes	yes	no	yes	yes & yes
R6	yes	yes	yes	yes	yes & yes
R7	yes	yes	yes	yes	yes & yes
R8	yes	yes	yes	yes	yes & yes
R9	yes	yes	yes	yes	yes & yes
R10	yes	yes	yes	yes	yes & yes
R17	yes	yes	yes	yes	yes & yes
R19	yes	yes	yes	yes	yes & no
R20	yes	yes	yes	yes	yes & yes
R22	yes	yes	yes	yes	yes & yes
R29	yes	yes	yes	yes	yes & yes
R38	yes	yes	no	yes	yes & yes
R40	yes	yes	yes	yes	yes & yes
R45	yes	yes	no	yes	yes & yes
R47	yes	yes	no	yes	yes & yes
R48	yes	yes	yes	yes	yes & yes
R50	yes	yes	yes	yes	yes & no
R53	yes	yes	yes	yes	yes & yes
R56	yes	yes	yes	yes	yes & yes

Residence ID	Newsletter List	Telephone Contact	Face to Face Meeting	Written Correspondence	Photomontage Offered & Accepted
R62	yes	yes	yes	yes	yes & no
R63	yes	yes	yes	yes	yes & yes
R65	yes	yes	yes	yes	yes & yes

Involved landowners with a dwelling within 2 km

There are 26 involved landowners that have been identified to have a dwelling located within 2 km of a proposed wind turbine. This group was actively consulted in accordance with the project consultation requirements and have wind farm agreements in place for participating in the project.

Involved and uninvolved landowners with a property within 2 km

There are 16 involved landowners and 66 uninvolved landowners that have been identified to have a property, but no dwelling, that is in some part within 2 km of a proposed turbine. This group was actively consulted in accordance with the project consultation requirements.

7.2.2.4 Residents outside 2 km

Landowners and residents outside the 2 km dwelling consultation zone were engaged and consulted with as necessary and any feedback received was incorporated where possible. Landowner details were entered on the mail-out data base to receive correspondence such as newsletters and meetings/discussions were held with them as required.

A photomontage was prepared for a few residents outside the 2 km group where required as a result of consultation about the project.

7.2.2.5 Newsletters

Newsletters have been used throughout the development process as a means of informing the local community about the project, announcing upcoming activity and progress of development phases, as well as any status updates that may be relevant when milestones are achieved. Newsletters were also used to advertise events such as the community open house day.

Newsletters were distributed by mail and or email to all residents on the project database, which included those properties within a few kilometres of the project and many other stakeholders from nearby towns. At the time of this EA the database for the project had more than 150 landowner/stakeholder contact details entered. Additionally newsletters are also distributed by hand to letterboxes when visiting local towns such as Rye Park, Bevendale, Blakney Creek, Jerrawa, and Rugby and other community stakeholders outside the immediate project area. Newsletters were also distributed to identified absentee landowners and broader community stakeholders such as councils and local groups. Newsletters were also available on the project website, are delivered to letter boxes in the general area and were handed to stakeholders during consultation meetings.

Newsletter 1 - The first newsletter introduced the project in December 2009, introduced Epuron and the Rye Park Wind Farm project and advised residents of opportunities for community input.

Newsletter 2 - The second newsletter in June 2010 provided updated project information including grid connection plans and specialist studies to be undertaken.

Newsletter 3 - In December 2011 a newsletter provided updated project information including details related to receiving the Director General's Requirements for the project. It also described new 'SODAR' technology being utilised to measure wind speeds on site.

Newsletter 4 – The newsletter in April 2012 generally updated project information including a revised map showing the wind farm turbine layout, and information about the Community Consultation Committee to be established for the project.

Newsletter 5 - In July 2012 a Community Open House day was planned at the local Memorial Hall in Rye Park. Invitations were sent out to all landowners on the project database (including newspaper ads) informing them of the time and location of the event and the information to be displayed.

Newsletter 6 – A sixth newsletter was released in August 2012 providing results from field studies and feedback outcomes from the community consultation and their incorporation into the proposed final layout.

Newsletter 7 – In May 2013 a seventh newsletter was released to provide the community with an update on the EA process and timing. A project layout was provided including current industry information.

Further newsletters will continue to be provided to the community, including a newsletter to advise the Community of the submission and exhibition of the EA, and to indicate where the EA can be viewed by the public.

Copies of all relevant community consultation material including the project consultation plan, surveys, community newsletters, media releases, presentations and letters received from key stakeholders are included within Attachments 6 & 7.

7.2.2.6 Community Consultation Committee

Consistent with corporate requirements set out in Epuron's Community Consultation Framework and in consideration of the draft NSW Wind Farm Planning Guidelines, Epuron established a Community Consultation Committee (CCC) for the project. The proponent consulted with DPI in establishing the CCC for the project.

In April 2012 a CCC member nomination form was distributed to community stakeholders in the following manner by the proponent seeking expressions of interest from willing participants.

- project newsletter to all stakeholders on project database (more than 150),
- hand delivered by letterbox drop to residents in Rye Park, Rugby, Bevendale, Blakney Creek and Jerrawa,
- people attending the Community Open Day;
- project website; and
- notification letter to Yass Valley, Boorowa and Upper Lachlan Shire Councils.

The first meeting was held at the Yass Valley council chambers on 27 June 2012. During the first meeting the committee chairman asked that a letter be written to local residents, particularly those within 2 km of a proposed turbine, to advise them of the establishment of the committee and to determine their interest to be involved in the projects consultation process as a potentially affected party.

The purpose and objectives of the CCC are;

- to enable Epuron to formally provide the local community with information about the proposal;
- to enable the community to express and for Epuron to understand any concerns regarding the potential impacts of the proposal;
- to enable Epuron to consider whether and how to incorporate any suggestions and feedback into the design of the proposal;
- to demonstrate how and where feedback has been incorporated and resulted in amendments to the proposal;
- to formally advise potential community benefits that can be integrated into the proposal; and,
- to establish and strengthen good working relationships between the proponent and the local community.

While individual membership of the CCC changes from time to time, the committee membership generally comprises representation from the following groups within the community;

- an independent chairman;
- two involved landowners;
- two uninvolved landowners;
- a representative local community group;
- a representative from each of the three local councils (Yass Valley, Boorowa and Upper Lachlan); and
- the proponent (Epuron).

Around 8-10 members attended each CCC meeting and were representing one of the above groups. Other interested community members are generally welcome to attended meetings of the CCC as observers.

During the development phase the CCC met on six occasions at local venues including the Yass Valley council chambers and Rye Park Memorial Hall. Copies of the meeting presentation material, minutes of the meetings and CCC members in attendance are made available to the public on the project website and are included within Attachment 7. A summary of proceedings and key outcomes from meetings are also outlined in project Newsletters.

- meeting 1 – 27 June 2012;
- meeting 2 – 2 August 2012;
- meeting 3 – 24 October 2012; and
- meeting 4 – 17 December 2012
- meeting 5 – 22 July 2013
- meeting 6 – 30 September 2013

Epuron would like to sincerely thank those people who participated in the CCC meetings and contributed feedback about the project, on behalf of the community. This fed into the wind farm layout and design process wherever possible.

The CCC reviewed and discussed a wide range of matters and material relating to the project. The key feedback points provided by the CCC based on these matters, and how that feedback was considered or incorporated into the project, is set out in the following table.

Table 7-3 Key issues raised during the Community Consultation Committee meetings

Issue	*CCC Feedback Provided*	*How Considered or Incorporated into Project*
Construction access roads and access routes.	Members asked that all three involved councils are consulted when the Traffic and Transport report is released for consultation. Need to ensure nominated construction access routes are acceptable and any impacts on local roads are considered.	Epuron forwarded copies of the Traffic and Transport report to the three involved councils. Follow up discussions and or meetings have been held with councils and any feedback provided has been incorporated into the final version of the report. In some instances a more appropriate access route was identified.
Construction roadwork contracts.	Members from council, in particular Upper Lachlan, expressed a desire to tender for any roadwork contract associated with construction of the project.	Epuron has entered each council on the construction contractor's database for the project to be notified when any roadwork tenders are available for pricing.
Community fund….."*Epuron has been seeking feedback on how best to establish a community fund and to identify what type of local support is required from the project".*	"How best to establish a community fund". ▸ Councils prefer that if a community fund is established it is managed by them (local councils). ▸ Community wants to have a say in where and how any community funds are managed and spent. ▸ Draft Wind Guidelines say community contributions may be required under the EP&A Act 1979 or through a voluntary planning agreement. ▸ Community funds where implemented for other projects have been considered through combinations of the above. "Identify what type of local support is required from the project". ▸ Upgrade and improve local roads near the project. ▸ Improvements to the township of Rye	Following consultation feedback Epuron outlined its position, as follows, to the CCC regarding the establishment of a community fund for the project; ▸ Epuron designs its wind farms to minimise impacts to the environment and local community. ▸ Each project should be assessed (by DPI) specifically on its merits (no cash fund influences). ▸ Epuron strongly believes in the value of community contributions and believes that the final investor who will commit funds to the construction and operation of the project should engage with the community in a meaningful way. ▸ Epuron believes that such community contributions should be: ○ applied towards local environmental, social and community initiatives led by local residents; ○ directed to initiatives raised by

Issue	*CCC Feedback Provided*	*How Considered or Incorporated into Project*
	Park and better local amenities. ▸ Better mobile phone and internet reception in town. ▸ Chance to reopen some businesses in town. ▸ Provide attraction to keep younger people and families in the local area through long term benefits and job creation.	residents proximate to the development or likely to be impacted; ○ established at the commencement of operation and continue for the life of the development; and, ○ regularly reviewed to ensure they are providing ongoing benefits to the community. ▸ Epuron considers that the CCC working with the developer and ultimate project owner, is ideally placed to help develop a community fund and its administration process. ▸ Epuron, like most wind farm proponents, is not the ultimate project owner and accordingly it is not appropriate for Epuron to determine the final details of any community fund, and nor should these be determined as part of a development application or consent process. ▸ Accordingly, Epuron will not propose any specific amount payable to any community fund in its development application. However, it will commit to an ongoing consultation process to determine an appropriate basis for the establishment of a community fund. ▸ The EA's Statement of Commitments will set out the Community Fund details
Photomontages	Consistent with the draft wind guidelines the proponent should offer a photomontage to all uninvolved landowners with a dwelling within 2km of a proposed turbine.	All uninvolved landowners who have a dwelling within 2km of a wind turbine have been offered, and where accepted by the landowner, will be provided with a photomontage at the EA lodgement stage. A few landowners have declined to have a photomontage prepared. If requested by a landowner with a dwelling beyond the 2km boundary a photomontage will be considered and prepared on a merits basis. Epuron has received a request from two landowners beyond the 2 km boundary and has prepared photomontages.
Fire risk	A CCC member raised concern for potential increase to fire risk from the wind farm, particularly around Coolalie Road proximate to the existing transmission lines and nearby forested areas.	Consideration has been given in the EA to address issues including; Use of aerial water bombing during a fire. Consultation with local RFS. EA outlines wind farm operating protocol during a fire.
Increased CCC participation	Following the first CCC meeting it was requested that a letter be sent to all neighbouring landowners to seek interest for increased community participation on the CCC.	A letter was sent to neighbouring landowners seeking increased CCC membership and some landowners sought participation on the CCC as a result.

7.2.2.7 Media

Various forms of media have been utilised for communicating details about the project. Information articles have appeared in the local newspapers from time to time, Yass Tribune and Boorowa News, including advertisements for events such as the community open house day. Radio stations have featured various stories on the projects development progress from time to time usually coinciding with a project event or milestone.

Epuron's corporate website is also available for viewing company and project details at www.epuron.com.au

7.3 Government Consultation

7.3.1 Initial meetings

The proponent began consultation with the consent authority, the NSW Department of Planning and Infrastructure, during the second half of 2010, introducing the project and seeking advice on the assessment process.

During the development process the proponent and their consultants liaised with governmental stakeholders including:

- Neville Osborne, Kate Masters and Toby Philp, Department of Planning and Infrastructure.
- Chris Mackenzie Davey, Regional Coordinator NSW Renewable Energy Precincts, Office of Environment and Heritage, Department of Premier and Cabinet.
- Queanbeyan office of NSW Office of Environment and Heritage regarding ecology and cultural heritage matters.
- Three involved Local Councils, Yass Valley Council, Boorowa Council and Upper Lachlan Shire Council including their participation in the Community Consultation Committee.
- National Party Policy Committee, Chaired by Mike Blake, including a presentation and a wind farm site visit.
- State and Federal Members including visit to electoral office to provide project information.

7.3.2 Key Stakeholders

Planning for the development of the Rye Park Wind Farm has included specific consultation, including written correspondence and telephone discussions, with the stakeholders listed in Table 7-4.

Table 7-4 Key stakeholders

Sector	*Organisation or Group*
Local Community	The local community and landowners Local media Local groups and associations
Local Government	Boorowa Council Upper Lachlan Shire Council Yass Valley Council
NSW Government Agencies	Office of Environment and Heritage (OEH, formally DECCW) TransGrid NSW Roads and Maritime Service (RMS) NSW Rural Fire Service (RFS) Australian Rail Track Corporation (ARTC) Boorowa CMA NSW Renewable Energy Precincts Manager State Member NSW Department of Primary Industries NSW Office of Water NSW Trade and Investments NSW Land Property Management Authority

Federal Government Agencies	Civil Aviation Safety Authority Commonwealth Department of Defence Airservices Australia Federal Member
Additional Stakeholders	Aerial Agricultural Association of Australia Service providers and telecommunications operators

Consultation with stakeholders has occurred through a variety of means including phone conversations, face-to-face meetings, email and letter correspondence and in some cases attendance at local information days.

Through the feasibility and design stages of the project, consultation has involved the proponent informing the relevant stakeholders of the project details and seeking advice to enable the design of the wind farm and to reduce potential impacts to the existing environment. Specific issues raised by these stakeholders have been discussed within the relevant sections of this EA. The consultation process will continue through the development and operation of the wind farm.

8 Approach to Environmental Assessment

The approach to this Environmental Assessment was developed and submitted for the Preliminary Environmental Assessment (PEA), which accompanied the project application sent to the Department of Planning and Infrastructure on 14 January 2011. During the assessment the approach was expanded to include a wider range of issues as they were identified, however it has largely remained as described in the PEA.

8.1 Initial General Risk Analysis

The following section outlines the key issues in relation to the Rye Park Wind Farm, and summarises Epuron's approach to addressing each issue. As a general rule, in undertaking this assessment:

- Issues identified as "Key Issues" will be addressed through the engagement of an independent expert together with specific on-site assessment and field work.
- "Additional issues" will be addressed, where necessary, via desktop assessment, precedent and consultation.

The focus on this delineation is to ensure that every issue is adequately addressed considering the potential risks and impacts associated with the issue, and without burdening the EA with details which are unlikely to affect the ultimate assessment of the project.

Epuron has carried out a risk analysis based on the requirements of the DGRs and information collected to date on site, at nearby sites, generally within the region and based on similar proposals in other regions.

In relation to each risk, Epuron has established a priority which takes into consideration:

- the level of information already available about that issue;
- the extent to which site specific assessment is required to define that issue;
- the likelihood of that issue occurring, and potential impacts of that issue if it did occur; and
- the extent to which standard industry practice, statutory requirements, and standard consent conditions adequately address the issue.

The results of this general risk analysis can be seen in Table 8-1. The model considers the key assessment requirements from the DGRs and the nature of the potential impact on them (i.e. is it temporary, reversible, likelihood of secondary impacts), the receiving environment and the likelihood of the impact occurring. The assessment strategy was then determined based on the overall risk rating for each issue.

Where the overall risk rating was very low and where the issues have previously been assessed in relation to wind farms in general and have been demonstrated to not affect the assessment or the consent conditions, no further assessment was carried out.

Table 8-1 Risk analysis of additional issues

Aspect	Potential Impacts	Likelihood	Consequence	Level of Risk	Proposed Management	Mitigated Risk
Visual						
Visual impacts of turbines	Visual impact of turbines on the local community and significant vistas	Almost Certain	4	High	The results from visual assessment have led to the removal of a number of turbines that are prominent. See Table 5-1. The visual impact of the project has been assessed in Section 9 and vegetative screening will be offered to landowners who are in areas of high visual sensitivity.	Low – moderate
Visual impacts of infrastructure	Visual impact of supporting infrastructure on the local community and significant vistas	Likely	3	Moderate	Permanent supporting infrastructure will generally be located away from the community. Temporary infrastructure will be as unobtrusive as possible and will be removed after construction.	Low
Shadow flicker	5 involved dwellings have been assessed to experiences shadow flicker. Of which, 1 will exceed the limitations. 1 uninvolved dwelling has been assessed to experiences shadow flicker. It will exceed the limitations.	Likely	4	High	Appropriate mitigation measures will be negotiated and implemented, where necessary, including potential limiting hours of operation on selected turbines. The impact of shadow flicker has been assessed in Section 14.4.	Low
Blade glint	Sun reflecting off blades at certain times causing annoyance to local community and distraction to road users	Possible	3	High	Modern turbine blades have been designed to limit reflections with the use of matte finishes. The impact of shadow flicker has been assessed in Section 14.4.	Low
Cumulative impact within the area	Other wind farm developments in the vicinity compounding the above stated impacts to local community	Possible	3	High	Consider other projects proposed in the area to understand adjacent issues regarding cumulative effects.	Low – moderate
Noise Impacts						
Operational noise including low frequency noise or infrasound	Potential of exceedance of operation noise guidelines and limits at receptor locations nearby.	Unlikely	3	Moderate	The wind farm has been designed and modelled with extensive background noise monitoring to comply with the relevant standards. The results from background noise modelling have led to the removal of a number of turbines. See Table 5-1. In the event that noise from a turbine is exceeding the operational standards, mitigation measures would be investigated and implemented to ensure compliance	Low

Aspect	Potential Impacts	Likelihood	Consequence	Level of Risk	Proposed Management	Mitigated Risk
					including potentially operating the turbine in a reduced noise mode.	
Construction noise including traffic and vibration generating activities	Potential for exceedance of construction noise limits through activities such as increased traffic, heavy machinery, blasting and vibration.	Unlikely	4	Low	Construction activities would be located away from residential areas where possible and during permissible times. A construction noise management plan will be developed as part of the CEMP.	Low
Substation operation and transmission line noise	Potential for noise associated with the operation of electrical and substation equipment	Unlikely	4	Low	Substations and electrical infrastructure will be located away from residents	Low
Ecological Impacts						
Avifauna strikes	Potential of avifauna deaths or injury due to blade strike.	Likely	Minor	High	Wind farm design has implemented the recommendations from the BA and sited infrastructure away from sensitive areas i.e. rocky outcrops, identified nests and hollow bearing trees.	Low
Removal of vegetation or habitats	Local vegetation being removed or altered from the site to accommodate turbines associated infrastructure	Almost Certain	Minor	High	Turbines and infrastructure will be microsited where possible to avoid where possible or minimise the loss of vegetation. The loss of vegetation will be offset where required	Low
Threatened species	The development of wind farm infrastructure adversely effects identified species population	Possible	Minor	Moderate	Wind farm infrastructure has been microsited away from known threaten species populations where ever possible to minimise impacts	Low
Heritage Impacts						
Impact on Indigenous heritage values	Potential for disturbance to Indigenous heritage sites or objects.	Unlikely	Moderate	Moderate	Studies have shown that the site is of low Indigenous cultural significance. The impact on Indigenous heritage values has been assessed in Section 12.	Low
Impact on European heritage values	Potential for disturbance to European heritage sites or objects.	Unlikely	Moderate	Moderate	Studies have shown that the site is of low European cultural significance. The impact on European heritage values has been assessed in Section 12.	Low

Aspect	Potential Impacts	Likelihood	Consequence	Level of Risk	Proposed Management	Mitigated Risk
Traffic & Transport						
Overweight loads causing damage to local roads Impact of increased traffic loads	Impacts caused to the roads and users by over mass and oversized vehicles used during construction, operation and decommissioning periods.	Likely	Moderate	High	Careful selection of access routes and roads to be used during construction. Local improvements and upgrades will be applied where necessary. A Traffic Management Plan (TMP) will be developed in consultation with local councils and RMS. The impact on traffic and transport routes has been assessed in Section 13.	Low - moderate
Off-road driving causing erosion and disturbing natural habitats	Impacts caused to natural habitats when driving to off-road locations on site.	Possible	Moderate	High	The roads constructed on site will be well designed, all weather access tracks. A TMP will be prepared to guide the use, restriction, speed limits and maintenance requirements to ensure safe and proper use of off access tracks	Low
Hazards & Risks						
Impact of wind turbines on commercial and agricultural aircraft safety	Turbines may impact upon the safe operation of aircraft in the region for recreational and agricultural purposes.	Likely	Moderate	High	A 500 m no-fly zone has been implemented around the operation turbines and local air operators will be notified. Aircraft landing areas have been identified around the site and turbine placements comply with CASA take-off and landing clearance restrictions. The impact on aviation has been assessed in Section 14.1.	Low - moderate
Interference of television, radio, mobile phone coverage or electromagnetic fields	Potential signal interferences to services as a result of operational wind turbines.	Unlikely	Moderate	Moderate	A comprehensive study was undertaken using ACMA data or registered transmitters and receivers and this has been taken into account for the design of the wind farm. It is unlikely that that wind farm will affect signals from existing mobile phones towers, microwaves or digital television signals. The impact on communications has been assessed in Section 14.2.	Low
Fire or bushfire near the turbines or local	Ignition of a bushfire as a result of construction or operational activities.	Possible	Moderate	High	A bushfire management plan will be created in consultation with the RFS	Low – moderate

Aspect	Potential Impacts	Likelihood	Consequence	Level of Risk	Proposed Management	Mitigated Risk
community	Any compounding risk caused by the wind farm to an existing bush fire in the region.				While the use of aerial fire fighting may be limited in some situations, the wind farm access tracks will provide a small fire break and improved access for fire fighting. In the event of a bush fire on or in close proximity to the wind farm would be operated in accordance with the Bushfire Management Plan. Fire and Bushfire risks have been assessed in Section 14.5.	
Water Supply, Water Quality and Hydrology						
Impact of erosion and sediment run-off Use of local water and its effects on the waterways	Increase sediment run off and erosion. Excessive use of local water supply.	Possible	Moderate	High	Water will be sourced on and offsite and will be stored on site in temporary tank facilities, in addition to small amounts of captured rain water from buildings. A CEMP will be developed to manage soil erosion, drainage and sediment control. Hydrological impacts have been assessed in Section 15.	Low
Third order watercourse crossings	Increased sediment and erosion at existing road crossing on Blakney Creek	Possible	Minor	Moderate	Road crossing will be consistent with the Guidelines for Controlled Activities on Waterfront Land as assessed by the NSW Office of Water	Low
General Environmental Assessment						
Impacts on soils & landforms	Soil erosion due to inadequate construction techniques. Poor management controls for excavated materials and stockpiles.	Possible	Minor	Moderate	Vegetation removal will be minimised to prevent soil erosion and controls will be in place to minimise erosion and runoff due to high rainfall and wind events. The CEMP will address the impacts on soils and landforms	Low
Impacts on climate & air emissions	Dust and vehicle emissions may affect the local area during the construction and decommissioning periods	Possible	Minor	Moderate	During construction and high wind events, water trucks will be used to minimise dust. The exposed area of the construction footprint will only be a very small percentage of the overall site.	Low
Impacts on mineral exploration	Future prospecting may be limited due to wind farm infrastructure	Unlikely	Minor	Low	Consultation has occurred with the current mineral license holders and their future plans. The infrastructure footprint of the wind farm is a very small percentage of the total site.	Low
Social and economic	The flow on effects of investments and jobs in the local community are less than	Rare	Unlikely	Low	It is not anticipated that the wind farm will cause any negative social or economic impacts as they are generally	Low

Aspect	*Potential Impacts*	*Likelihood*	*Consequence*	*Level of Risk*	*Proposed Management*	*Mitigated Risk*
impacts	anticipated				considered to be possible. The benefits anticipated have been modelled against other constructed and operational projects in Australia.	
Property values	Potential of the wind farm to affect local land and property values	Unlikely	Minor	Low	A review of published studies in New South Wales confirms that wind farms do not negatively impact on property values.	Low
Impacts on health (electromagnetic fields & epilepsy)	Potential to impact human health as a result of wind farms and electrical infrastructure	Unlikely	Minor	Low	There is currently no published scientific evidence to link wind turbines with adverse health effects. Transmission lines would be constructed in accordance with the appropriate safety standards.	Low

8.2 Assessment Approach

8.2.1 Director General's Requirements

The DGRs are compiled by the DPI, with consultation from various government departments in order to identify the issues that the proponent must address in their Environmental Assessment.

Epuron has used these DGRs to structure this EA and has ensured that all issues raised have been individually addressed and consultation requirements have been met. A copy is found in Attachment 5.

8.2.2 Best Practice Guidelines

Epuron's assessment has in general followed the advice provided in a number of industry guidelines, including:

- the Draft NSW Planning Guidelines: Wind Farms; and
- Auswind's Best Practice Guidelines for the Implementation of Wind Energy Projects in Australia (ABS, 2008).

While much of the assessment pre-dated the draft NSW Wind Farm Planning Guidelines (2012), these draft guidelines have also been taken into account to the fullest extent possible.

The above guidelines were developed to establish the process for identifying, developing and implementing wind energy projects, recognising that each project would require assessment on its individual merits. They are focused primarily on technical and planning issues.

These guidelines have been considered in the preparation of this EA, particularly with respect to the chronological flow of the project phases.

8.2.3 Consultation

Epuron's approach is designed to satisfy the supplementary DGRs for community consultation (see Attachment 5), in addition to making use of all information provided by the relevant parties in relation to environmental issues which were identified though the consultation processes outlined in Section 7. This includes consultation with stakeholders and their input and which was used to refine the design of the project.

8.2.4 Specialist Studies

Independent consultants were engaged to complete specialist reports on the following key issues:

- Landscape and Visual – summarised in Section 9 and in full in Appendix A;
- Environmental Noise – summarised in Section 10 and in full in Appendix B;
- Ecology – summarised in Section 11 and in full in Appendix C; and
- Aboriginal and European Heritage – summarised in Section 12 and in full in Appendix D.

8.2.5 Wind Turbine Selection for Assessments

Some impact assessments require an understanding of specific wind turbine characteristics which are not known until the final wind turbine model has been selected. An approach is therefore required to carry out an assessment based on reasonable assumptions, and ultimately confirming that these assumptions are valid.

The majority of issues identified with respect to this proposed development are not impacted by specific turbine model selection. For example, the assessment of ecology and archaeology constraints is based on a development envelope, that is, the entire geographic area where infrastructure may be located. This approach allows ecological and archaeological constraints to be defined within the development envelope and as a consequence allows for minor relocation of infrastructure within the development envelope without further assessment.

However, the final turbine selection could have a material impact on some issues and in these cases the decision as to whether to present a representative or worst case turbine must be considered.

The approach taken is to present the worst case impact assessment for specialist studies where physical dimensions and technical characteristics of turbines are related to the extent of the potential impact. Examples of this are visual impacts and noise propagation. However as discussed in Section 3.1, the most likely turbine model to be ultimately selected for the project are not the largest and sit in the middle of the turbine size range (physical size and generation capacity). Therefore in this context, the EA also considers and presents the indicative or likely impacts.

Wind Farm Layout

The wind turbine layout design is based on a Vestas V112 turbine.

Wind farm layout and design is impacted by the minimum required spacing between turbines, which is a function of their rotor diameter. Therefore an assumption of the likely rotor diameter must be made at the time of the assessment.

The Vestas V112 is a mid to upper range turbine, known to be suitable for the site and has been installed in Australia. If a larger physical turbine is selected, fewer turbines may be installed, a consequence of the requirement for larger separation distances between turbines. In this scenario, some associated impacts may be reduced (such as visual impacts). Conversely, a layout using the smallest turbine option would represent the worst-case scenario in terms of the number of turbines able to be developed but may overstate other impacts. Use of the Vestas V112 is therefore considered a likely and representative turbine for the purposes of assessment.

Energy and Greenhouse Gas Calculations

The energy production and greenhouse calculations are based on an indicative 3.0 MW turbine.

Energy production calculations are most important for determining the options for connecting the wind farm into the transmission network. A wind farm output may be restricted by the size of the transmission line running through the site, or if other generators are already attached to the line. Energy production is also used to calculate the potential greenhouse gas emissions that would be reduced by the project.

A turbine with a name plate rating of 3.0 MW sits in the middle of the range of turbines under consideration and is a likely turbine size to be ultimately selected. It is therefore considered representative of the energy production and greenhouse abatement benefits from the project.

Visual Impacts

The photomontages, Zone of Visual Influence, and Shadow Flicker analysis are prepared using the Vestas V112, which is a turbine with a 112m rotor diameter on a 101 m hub height.

Photomontages, Zone of Influence and Shadow Flicker maps are created to assess the potential impact to visual amenity. Using a turbine with a large rotor diameter (blades) and a large overall tip height allows for the worst case scenario to be assessed. While there are turbines that have a tip height in excess of 157 m it is unlikely that these configurations would be used on this site.

In some cases, the worst case presents an unrealistic portrayal of impacts when compared to the most likely turbines to be selected for the project. Therefore, in some areas, the EA also considers and presents the indicative or likely impacts for comparison. Noting that the layout would require review and likely removal of a number of turbines to accommodate the physically largest turbine, this assessment would overstate the visual impacts. The photomontages were prepared using the likely turbine sizing of a 101 m hub height with a 112 m rotor diameter (tip height of 157 m) to present the likely and representative scenario.

Noise Impacts

The noise assessment was conducted using the Vestas V112 3.0 MW

Each turbine has a slightly different noise curve, and must be individually assessed prior to construction taking place to ensure that compliance will be achievable. Rather than testing every turbine model available, a

conservative approach has been adapted to demonstrate that compliance is achievable. Thus other turbines considered would theoretically comply with the same criteria.

The noise assessment presents the modelling of the Vestas V112 3.0 MW turbine as a conservative estimate for the project. The V112 presents the representative impacts as it has noise characteristics typical of modern wind turbines and therefore offers a good approximation of the likely noise impacts of the project. The physical and noise characteristics of these turbines are considered to be indicative of the wind turbines available. The analysis demonstrates that it is possible to achieve the noise limits set by the SA EPA guidelines and WHO guidelines using the Vestas V112.

The current layout, as presented in this EA, has been prepared to demonstrate that compliance can be achieved across a wide range of turbine models. Accordingly by contemplating that turbines can be relocated within a reasonable distance of their proposed location or removed to achieve the SA EPA Guidelines, a single flexible indicative layout can be presented and assessed. Additional analysis of the sensitivity of the physical dimensions (hub height and maximum tip height) on noise propagation and a worst case scenario, requiring mitigation, is presented in the noise assessment.

The approach undertaken simplifies the noise assessment process by avoiding a different layout for each proposed turbine model. The Statement of Commitments affirms that modelling of the final turbine on the final layout would be undertaken to ensure compliance with the SA EPA guidelines and NSW draft Guidelines.

8.3 Environmental Management Plans

A Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP) will be prepared to manage and mitigate environmental impacts on the wind farm site. The CEMP will incorporate all relevant processes and mitigation measures for the development/construction phase while the OEMP will incorporate measure for operations phase. The CEMP will be prepared prior to the commencement of construction and the OEMP will be prepared prior to the commencement of operations. The plans will generally address:

- Soil & Water Management;
- Fuel and Chemical Storage - to avoid the pollution of surface and ground waters;
- Erosion & Sediment Control Plan;
- Landscape Management Plan;
- Traffic and Transport;
- Fire Management;
- Waste Generation and Disposal;
- Rail Safety Management Plan; and
- Additional measures mentioned in the Statement of Commitments

The CEMP and the OEMP will follow the philosophy of adaptive management. The philosophy of adaptive management is followed when policies and practices are continually improved by learning from the outcomes of previous work. As part of the adaptive management process the management measures provided by the EMP will also include a review and assessment program where works and monitoring are regularly reviewed and reassessed to ensure the environmental outcomes are achieved. This process is illustrated in Figure 8-1.

During construction, the site will be protected from erosion and sedimentation by the installation and maintenance of standard erosion and sediment control measures, such as sedimentation fences and swales in accordance with *Managing Urban Stormwater: Soils and Construction 4th Edition* – Vol 1 (the "Blue Book") (CSIRO, 2012) and Managing Urban Stormwater: Soils and Construction (DEWHA, 2009).

Surface water management procedures will be maintained in accordance with an Erosion and Sediment Control Plan. This plan will detail the use of sedimentation fences, and drainage controls to direct surface water into appropriate sediment basins and through a filter before being discharged into the site drainage system.

Specific environmental management measures will be used around the batching plant area and other temporary facilities. The temporary concrete batching plants will have a bunded storage area and a temporary concrete slab beneath the loading area. To capture surface water, sediment runoff (including any imported materials which may influence the pH and water quality) a swale drain is anticipated around the perimeter of the batching plant. This will be channelled into an enclosed retention pond, where water will be evaporated off and any solid waste disposed of at landfill. To ensure water pH levels remain at a reasonable level as a result of the potential of mixing with imported materials, checks will be set up and if deemed appropriate acid dosing (anticipated to be hydrochloric) will be added to ensure pH is controlled or alternatively the contaminated water would be transported by tanker off site. This type of approach is common in the construction industry.

Controls to avoid spillage of oil or erosion and sediment loss from the site will be supported by emergency response procedures where required.

These management procedures will remain in place until the site is rehabilitated suitable for the intended land use. This will effectively protect the site and its surrounding areas from any significant impacts on topography, surface water and water quality.

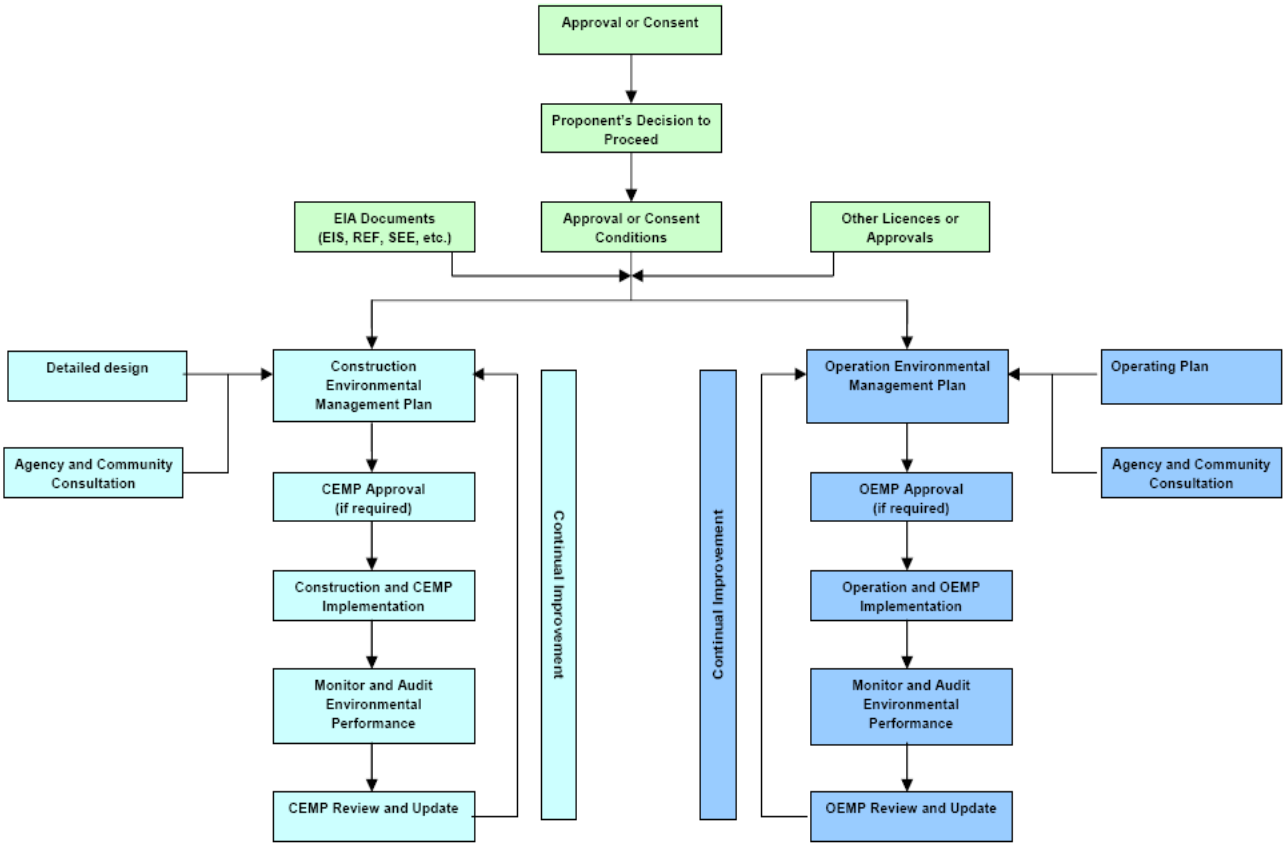


Figure 8-1 Post approval Environmental Management Plan process

9 Visual Assessment

9.1 Visual Amenity

The Rye Park Wind Farm Landscape and Visual Impact Assessment (LVIA) has been prepared by the landscape architectural consultancy and LVIA specialist Green Bean Design (GBD). The LVIA involved a comprehensive evaluation of the visual character of the landscape in which the wind farm would be located, and an assessment of the potential significance of landscape and visual impacts that may result from the construction and operation of the wind farm, taking into account appropriate mitigation measures.

This section presents a summary of the LVIA methodology as well as the key results and findings arising from the assessment. The detailed LVIA and photomontages prepared from publically accessible areas and uninvolved landowner dwellings within 2km of a wind turbine are included in Appendix A.

9.1.1 Methodology

The LVIA was undertaken in accordance with the DGRs and, although not directly applicable to the assessment process, is cognisant with the Upper Lachlan Shire Council's Development Control Plans (DCP) for Wind Power Generation.

The LVIA addresses key issues outlined in the Australian Wind Energy Association and Australian Council of National Trust's publication *Wind Farms and Landscape Values National Assessment Framework* (AusWEA, 2007), and encompasses the general assessment framework outlined in the National Assessment Framework. The LVIA has also given regard to the Draft NSW Planning Guidelines for Wind Farms (December 2011).

As well as consideration of existing guidelines, the LVIA methodology has been applied to a number of similar Part 3A Major Project wind farms prepared by GBD, for assessment by the NSW Department of Planning and Infrastructure (DoP&I).

The LVIA methodology included the following key activities:

- desktop study addressing visual character and identification of view locations within the surrounding area;
- fieldwork and photography;
- preparation of ZVI diagrams;
- assessment and determination of landscape sensitivity;
- assessment of significance of visual impact
- describing the potential impact of night time lighting
- determining the potential for cumulative impacts; and
- preparation of photomontages and illustrative figures.

9.1.2 Assessment

Visual components of the wind farm

The key visual components of the wind farm that are likely to be visible from surrounding areas include, but are not limited to:

up to 126 wind turbines;

- up to 126 individual 33kV external kiosk transformers and switchgear with associated control systems to be located in the vicinity of the wind turbine towers (in some turbine models transformer equipment will be integrated within the tower or nacelle);

- underground and overhead electrical and communication cable network linking turbines to each other within the project boundary;
- a new 330 kV wind farm connection substation located adjacent to the existing TransGrid 330 kV powerline (Yass – Bannaby) that traverses the southern section of the site;
- up to two new 22 kV or 33/330 kV or similar collection substations located across the wind farm;
- a new overhead powerline approximately 35 km in length, rated at up to 330 kV (nominal) capacity, running north-south along the length of the wind farm site to the two collection substations. The new powerline would be mounted on a single pole type structure and may be single-circuit or double-circuit as required;
- up to 6 permanent wind monitoring masts. The permanent monitoring masts may be either static guyed or un-guyed structures and will be to a minimum height of the wind turbine hubs;
- on site access tracks for construction, operation and ongoing maintenance; and
- Rye Park wind farm signage and maintenance facilities.

Temporary works associated with the construction of the wind farm that may be visible during construction and operational phases include mobile concrete batching plant and rock crushing facilities.

The wind turbines would be the most visible element of the wind farm from the majority of surrounding view locations. The final selection for the turbine model will be made closer to construction; however, a turbine representative of the larger options was selected for the visual assessment, with a tip height of 157m.

Table 9-1 Wind turbine parameters for LVIA (based on Vestas V112 3MW)

Element	*Description*
Tower height	101 m
Rotor Diameter	112 m
Overall height from ground level to tip of blade	157 m
Proposed number of wind turbines	126

Community Perceptions and Public Consultation

Individual perception is an important issue to consider in any visual impact assessment, as the attitude or opinion of an individual receptor adds significant weight to the level of potential visual impact. These attitudes or opinions of individual receptors toward wind farms can be shaped and formed through a multitude of complex social and cultural values.

Whilst published research into the potential landscape and visual impacts of wind farms is limited in Australia, there are general corresponding results between the limited number that have been carried out when compared to those carried out overseas.

A recent survey was conducted by ARM Interactive on behalf of the NSW Department of Environment, Climate Change and Water (September 2010). The survey polled 2,022 residents across the 6 Renewable Energy Precincts established by the NSW Government; including the NSW/ACT Border Region Renewable Energy Precinct. Key findings of the survey indicated that:

- 97% of people across the Precincts had heard about wind farms or turbines, and 81% had seen a wind farm or turbine (in person or the media);
- 85% of people supported the construction of wind farms in New South Wales, and 80% within their local region; and
- 79% supported wind farms being built within 10km of residences and 60% of people surveyed supported the construction of wind turbines within 1 to 2km from their residences.

These results are reflected in other surveys including the community perception survey commissioned by Epuron for the Gullen Range Wind Farm Environmental Assessment in (REARK, 2007). The results of the survey, which targeted a number of local populations within the Southern Tablelands, suggested that around 89% of respondents were in favour of wind farms being developed in the Southern Tablelands, with around 71% of respondents accepting the development of a wind farm within one kilometre from their residential dwelling.

Whilst individual perception and local community attitudes toward wind farm development are an important issue, these need to be considered in terms of potential landscape and visual impacts from a broad community perspective.

Proximity to Urban Areas

Larger urban centres and smaller localities surrounding the proposed Rye Park wind farm include:

- Rye Park (approximately 3.3 km to the west)
- Rugby (approximately 9.3 km to the north east)
- Yass - outlying north east portion (approximately 9.3 km to the south west);
- Bevendale (approximately 8.5 km to the east); and
- Jerrawa (approximately 6.9 km to the south east).

Existing Landscape

The landscape surrounding the wind farm is predominantly rural in character and occupied by medium sized landholdings as well as larger commercial pastoral operations. Areas of cultivated farmland and livestock pasture are interspersed with occasional rural homesteads surrounded by cultural planting and windbreaks.

Human modifications within the broader landscape are consistent with common adaptations to rural life and include roads (sealed and unsealed), drainage structures, agricultural buildings, electrical transmission infrastructure, and communication structures.

A series of hills are joined by ridgelines extending north to south across the wind farm site with areas of timber located on hillside slopes. The undulating topography within and surrounding the wind farm also creates a series of valleys from which views are largely contained and restricted.

Viewshed, Zone of Visual Influence and Visibility

A core component of the LVIA is defined by the description, assessment and determination of the viewshed, zone of visual influence and visibility associated with the wind farm. The relationship between viewshed, zone of visual influence and visibility is outlined in the following table. Extended descriptions are found in the full report in Appendix A.

Table 9-2 Definitions used in Landscape and Visual Impact Analysis

Term	*Definition*	*Relationship*
Viewshed	An area of land surrounding (up to 20km) and beyond the wind farm area which may be potentially affected by the wind farm from a visual impact perspective.	Identifies the majority of the LVIA study area that incorporates receptors that may be subject to a degree of visual impact.
Zone of Visual Influence (ZVI)	A theoretical area of landscape from which the wind farm structures may be visible.	Determines areas within a viewshed from which some or all wind turbines may be visible.
Landscape Character	Defined as 'the distinct and recognisable pattern of elements that occur consistently in a particular type of landscape' (SNH, 2009).	Determines the ability of the landscape to accommodate change.
Landscape Sensitivity	The British Landscape Institute describes Landscape Sensitivity as 'the degree to which a particular LCA can accommodate change arising from a particular development, without detrimental effects on its character'.	Quantifies the level of impact that a development would have on the landscape.
Visibility	A relative determination at which a wind turbine or group of turbines can be clearly discerned and described.	Describes the likely number and relative scale of wind turbines visible from a receptor location.

The distance effect within the 10 km viewshed is outlined in the following table. Distance effect is not site specific and can be applied consistently to any wind farm based on the size and distance of turbines to the viewer. Note, in all cases visibility is Nil where influenced or screened by surrounding topography and vegetation.

Table 9-3 Visual effect based on distance from wind turbines

Distance from turbine	*Distance effect*
>20 km	Wind turbines become indistinct with increasing distance. Rotor movement may be visible but rotor structures are usually not discernible. Turbines may be discernible but generally indistinct within viewshed resulting in Low level visibility and Nil where influenced or screened by surrounding topography and vegetation.
10 km – 20 km	Wind turbines noticeable but tending to become less distinct with increasing distance. Blade movement may be visible but becomes less discernible with increasing distance. Turbines discernible but generally less distinct within viewshed (potentially resulting in Low level visibility).
5 km – 10 km	Wind turbines visible but tending to become less distinct depending on the overall extent of view available from the potential view location. Movement of blades discernible where visible against the skyline. Turbines potentially noticeable within viewshed (potentially resulting in Low to Moderate level visibility).
3 – 5 km	Wind turbines clearly visible in the landscape but tending to become less dominant with increasing distance. Movement of blades discernible. Turbines noticeable but less dominant within viewshed (potentially resulting in Moderate level visibility).
1 – 3 km	Wind turbines would generally dominate the landscape in which the wind turbine is situated. Potential for high visibility depending on the category of view location, their location, sensitivity and subject to other visibility factors. Turbines potentially dominant within viewshed (potentially resulting in Moderate to High level visibility).
<1 km	Wind turbines would dominate the landscape in which they are situated due to large scale, movement and proximity. Turbines dominant and significant within viewshed (potentially resulting in High level visibility).

Landscape Character Areas and Landscape Values

Landscape character is defined as 'the distinct and recognisable pattern of elements that occur consistently in a particular type of landscape' (SNH, 2009).

The LVIA identified five Landscape Character Areas (LCAs), which generally occur within the viewshed of the project and include:

- LCA 1 – Undulating grassland;
- LCA 2 – Drainage lines;
- LCA 3 – Hills and ridgelines;
- LCA 4 – Timbered areas; and
- LCA 5 – Settlement.

The British Landscape Institute describes landscape sensitivity as 'the degree to which a particular LCA can accommodate change arising from a particular development, without detrimental effects on its character'.

In terms of overall landscape sensitivity, the LVIA determined that in aggregate each of the five LCAs within the 10km wind farm viewshed had a medium/medium to high sensitivity to accommodate change, and represents a landscape that is reasonably typical of other landscape types found in surrounding areas of the Southern Tablelands.

With a medium/medium to high sensitivity to accommodate change, some characteristics of the landscape are likely to be altered by the wind farm development; however, the landscape is likely to have some capability to accommodate change. This capability is largely derived from the presence of predominantly large scale features within the landscape character areas and portions of the wind farm area, together with the relatively low density and dispersed nature of human settlement patterns and potential receptors located within the wind farm viewshed.

The LVIA landscape values have been considered as a set of professional judgements on the importance to society of the local and regional landscape surrounding the proposed wind farm development. Whilst the landscape is likely to hold more significant value at a local level, for those who both work and reside within the landscape surrounding the proposed wind farm development, there are no specific references to designations or policies which indicate or recognise a 'high value' landscape. There are no 'iconic' landscape elements (including constructed or natural features) that occur within the local or regional landscape which have a broader public value or that are recognised at a national level. The majority of land within and surrounding the wind farm development is privately owned and, at a local and regional scale, opportunities for the broader public to access and explore the landscape and obtain distant and panoramic views are largely limited to existing rights of way such as road corridors. The proposed wind farm development is not considered to have the potential to have a significant impact on existing landscape values.

Table 9-4 Landscape Character Areas and Landscape Sensitivity

Landscape Character Area	Description	Landscape Sensitivity
LCA 1	Undulating grassland	Medium
LCA 2	Drainage lines	Medium
LCA 3	Hills and ridgelines	Medium
LCA 4	Timbered areas	Medium
LCA 5	Settlement	Medium



Typical view across undulating grassland (LCA 1)



Typical view across drainage lines (LCA 2)



Typical view across hills and ridgelines (LCA 3)



Typical views across timbered areas (LCA 4)



Typical views across settlement (LCA 5)

Figure 9-1 Example of Landscape Character Areas

Zone of Visual Influence Diagrams (ZVI)

The ZVI diagrams are used to identify theoretical areas of the landscape from which a defined number of wind turbines, or portions of turbines, may be visible within the viewshed. They are useful for providing an overview as to the extent to which the Rye Park Wind Farm may be visible from surrounding areas.

Three ZVI diagrams have been prepared to demonstrate the extent to which the wind turbines would be visible at a distance up to 20 km from the site. Three different ZVI diagrams have been prepared to show the zone of visual influence from:

- any part of the wind turbines (i.e. tip of blade).
- half the swept path of rotor (i.e. hub height to tip of blade); and
- the entire turbine structure (i.e. ground to tip of blade).

The ZVI methodology is conservative as the screening effects of any structures and vegetation above ground level are not considered in any way. Therefore the wind farm may not be visible at many of the locations indicated on the ZVI diagrams due to the presence of trees or other screening elements. A summary of the ZVI analysis in included in Appendix A.

The level of wind turbine visibility within the viewshed can result from a number of factors including the distance between a receptor and the wind farm, static or dynamic receptor locations (e.g. residents or motorists) or the relative position of the receptor to the wind turbines. Whilst the distance between a receptor and the wind turbines is a primary factor to consider when determining potential visibility, there are other issues, for example the level of tree cover, which may also affect the degree of visibility.

The ZVI diagrams are illustrated in Figure 9-2 to Figure 9-4, which show from each location the number of turbines visible in each category.

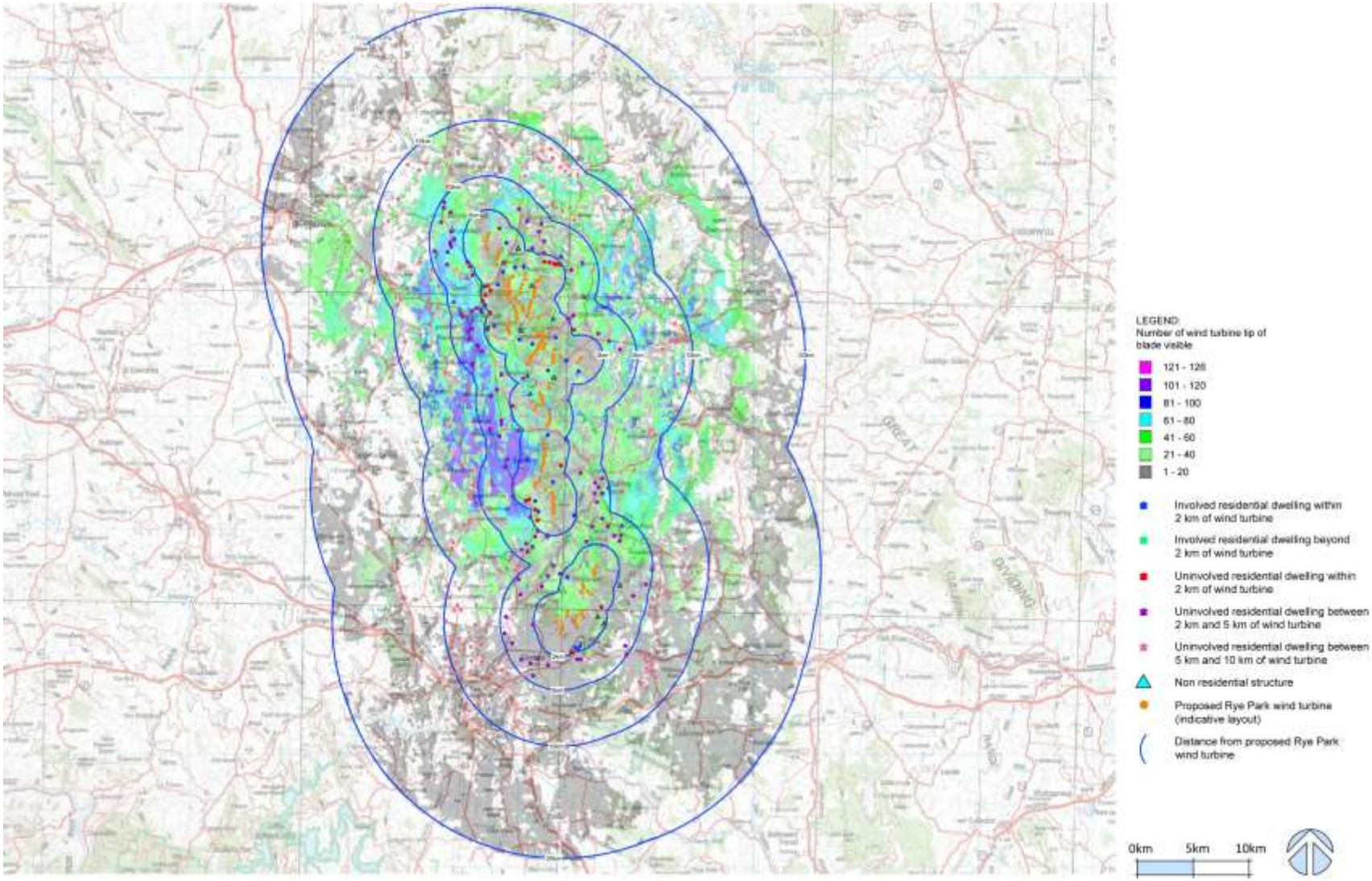


Figure 9-2 Zone of Visual Influence (turbine tips visible)

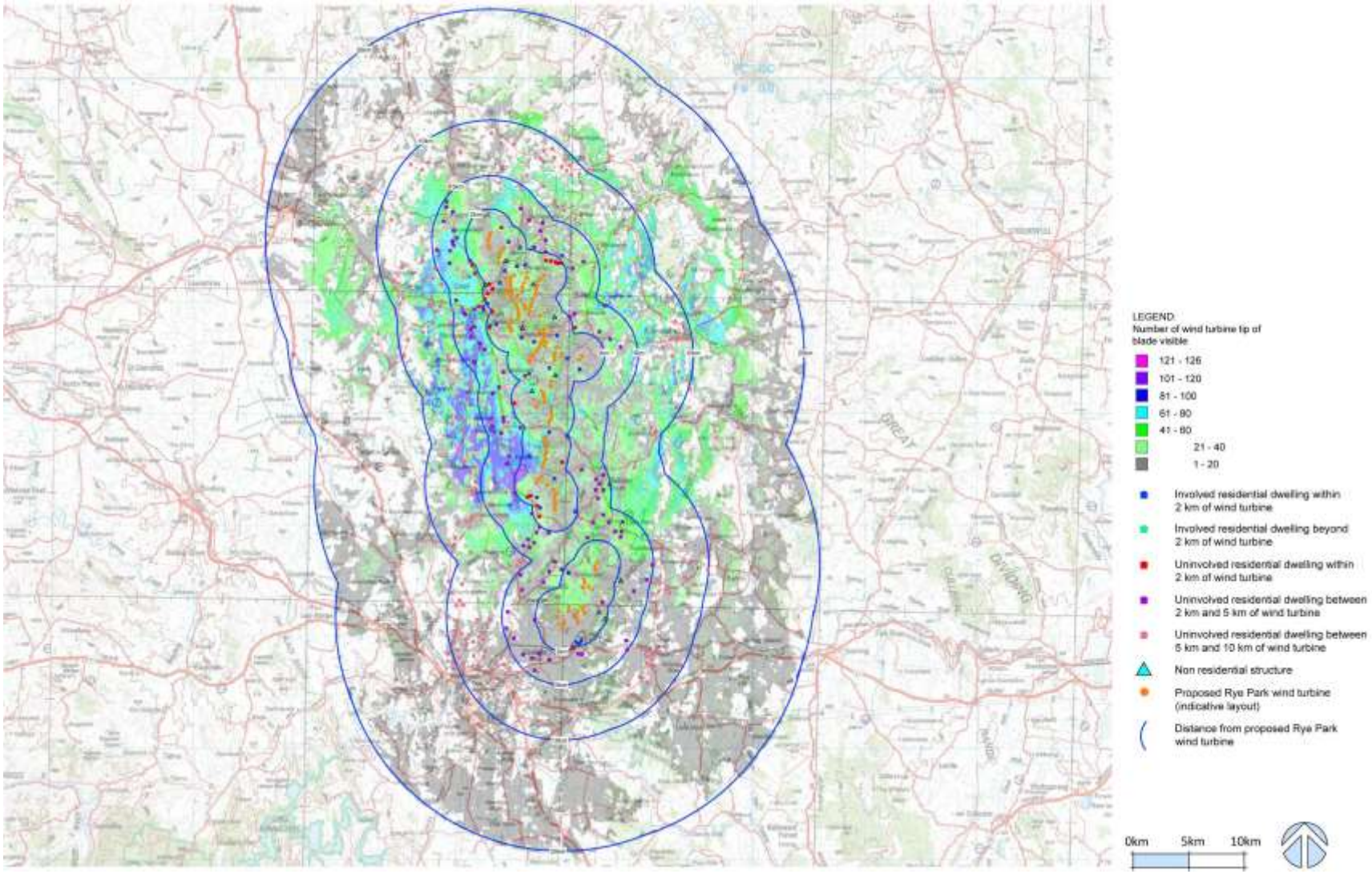


Figure 9-3 Zone of Visual Influence (turbine hubs visible)

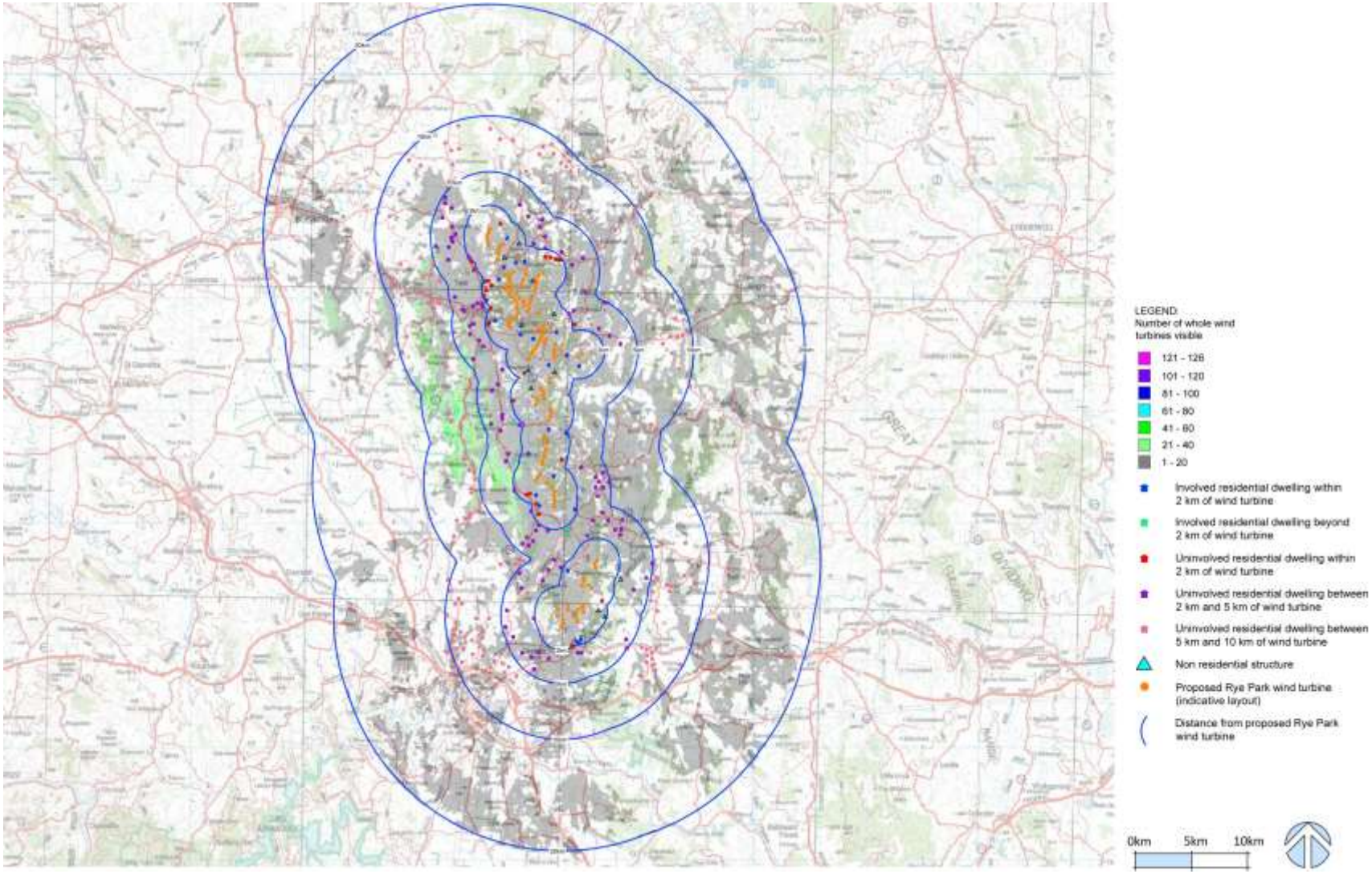


Figure 9-4 Zone of Visual Influence (whole turbines visible)

Photomontages

Photomontages have been prepared to illustrate the general appearance of the wind farm following construction. Nine locations were selected to illustrate the wind farm from public view points in the landscape surrounding the wind farm project area. These locations are shown in Figure 9-5 and listed below:

Table 9-5 Public photomontages locations

Photomontage Location	*LVIA Figure ref*	*Status:*
PM 1 Coolalie Road	Figure 32	Unsealed road corridor (minor local road)
PM 2 Rye Park Dalton Road	Figure 33	Sealed road corridor (minor local road)
PM 3 Maryvale Road	Figure 34	Unsealed road corridor (minor local road)
PM 4 Maryvale Road	Figure 35	Unsealed road corridor (minor local road)
PM 5 Little Plains Road	Figure 36	Unsealed road corridor (minor local road)
PM 6 Kershaw Street, Rye Park	Figure 37	Sealed road corridor (minor local road) within Rye Park village
PM 7 Wargeila Road	Figure 38	Unsealed road corridor (minor local road)
PM 8 and 10 Rye Park Dalton Road	Figure 39 and 70	Unsealed road corridor (minor local road)
PM 9 Blakney Creek Road	Figure 40	Unsealed road corridor (minor local road)

The public photomontages locations were selected following a review of preliminary ZVI maps, together with a site inspection to identify potential representative viewpoints. The public photomontage locations were selected from publically accessible sections of surrounding road corridors.

In addition to the public photomontages locations, a total of twenty two photomontages were prepared from uninvolved residential dwellings within 2 km of the Rye Park wind farm turbine locations. These photomontages locations are included in Appendix A.

The process used to generate the photomontages is detailed in Appendix A. An example of a public and uninvolved photomontage is illustrated in Figure 9-6 and Figure 9-7. All thirty two photomontages are included in Appendix A.

GBD undertook to independently verify the scale of the Rye Park wind turbines within the photomontages through a photographic comparison of the photomontage methodology against constructed and operational wind turbines. The results of this verification are included in Appendix A.

Whilst a professional photomontage provides an image that illustrates a realistic representation of a wind turbine, both in relation to its proposed location and its scale relative to the surrounding landscape, the LVIA acknowledges that large scale objects in the landscape can appear smaller in photomontage than in real life, and is partly due to the fact that a flat image does not allow the viewer to perceive any information relating to depth or distance.

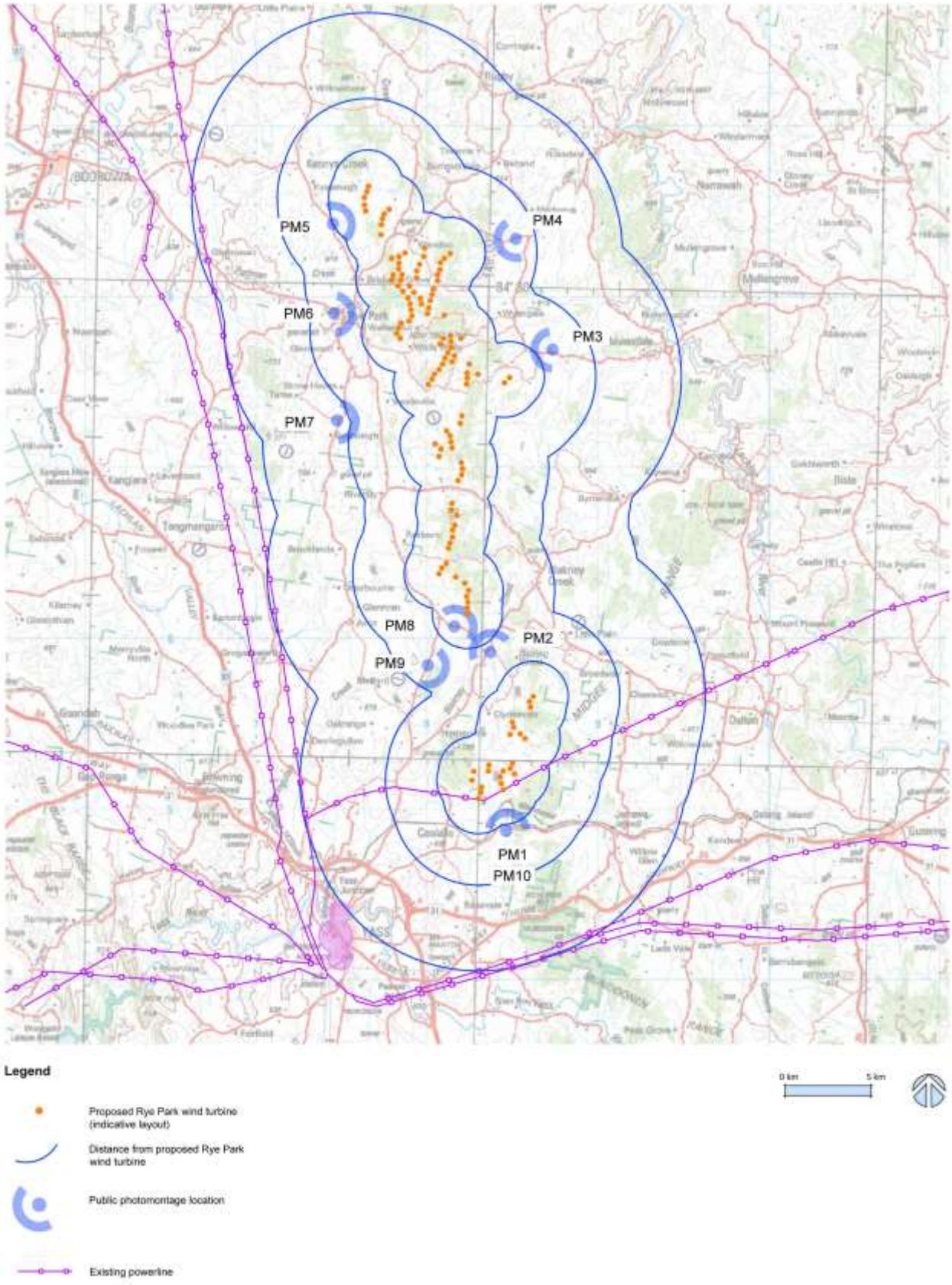


Figure 9-5 Photomontage Locations



Public view location PM8 Rye Park Dalton Road - Existing view north north west to east. Photo coordinate Easting:680991 Northing:6161071 (MGAz55)



Public view location PM8 Rye Park Dalton Road- Proposed view through 120°. Approximate distance to closest visible wind turbine 1,200 m

Notes

Composite panorama photograph taken with a Nikon D700 digital SLR camera with 50 mm prime lens.

Individual panorama photograph coordinate map datum is MGAz55 to ± 5 m.

Extent of potential wind turbine visibility and directional bearing illustrated on each photomontage is indicative only.

The Nikon D700 digital SLR camera with a 50mm lens results in a single photograph with a view angle equivalent to a 35mm digital SLR camera photograph taken with a 50mm lens.

Refer Figure 31 for photomontage locations

Indicative extent of a single frame photograph (in landscape format) taken with the Nikon D700 digital SLR camera with a 50mm lens

Figure 9-6 Public Photomontage Location PM8



Uninvolved residential dwelling R17- Existing view north to east south east. Photo coordinate Easting:676148 Northing:6181529 (MGAz55)



Uninvolved residential dwelling R17 - Existing view through 120°. Approximate distance to closest visible Rye Park wind turbine 1,960 m

Notes

Composite panorama photograph taken with a Nikon D90 digital SLR camera with 50 mm prime lens.

Individual panorama photograph coordinate map datum is MGAz55 to ± 5 m.

Extent of potential wind turbine visibility and directional bearing illustrated on each photomontage is indicative only.

The Nikon D90 digital SLR camera has a crop factor of 1.6. A single photograph taken with a 50mm lens will result in a view angle equivalent to a single 35mm SLR camera photograph taken with a 75mm lens.

Refer Figure 28 for residential dwelling locations

Indicative extent of a single frame photograph (in landscape format) taken with the Nikon D90 digital SLR camera with a 50mm lens

Figure 9-7 Photomontage for uninvolved residential dwelling R17

Night Lighting

Although not currently proposed, the Rye Park wind farm may require obstacle lighting in the future. The future requirement for lighting would be subject to the advice and endorsement of the Civil Aviation Safety Authority (CASA) (see Section 14.1). CASA is currently undertaking a safety study into the risk to aviation posed by wind farms to develop a new set of guidelines to replace the Advisory Circular with regard to lighting for wind turbines that was withdrawn by CASA in mid-2008.

Should future CASA regulations require a lighting assessment; the proponent will undertake an Aeronautical Impact Assessment, to first determine the risks posed to aviation activities by the wind farm. If required, an Obstacle Lighting Assessment would be undertaken by an Aeronautical Impact Assessment expert to stipulate the turbine lighting layout which would mitigate any risks to aviation. The outcomes of the Aeronautical Impact Assessment and the Obstacle Lighting Assessment would then be submitted to CASA for their comment.

A small number of existing night time light sources are present in the vicinity of the wind farm, including lights within and surrounding settlements, dispersed homesteads, vehicles travelling along local roads and communication towers. Potential night time light sources from the wind farm could result from:

- low intensity night lights for substations, control and auxiliary buildings; and
- night time obstacle lights mounted on some wind turbines (if required in the future).

Night time lighting has the potential to be visible from distant view locations, and well beyond the 10km viewshed for the Rye Park wind farm, although the level of impact will diminish when viewed from more distant view locations, with a greater probability of night time lighting being screened by landform and/or tree cover.

Electrical works

The Rye Park wind farm would include a range of electrical infrastructure to collect and distribute electricity generated by the wind turbines. Electrical works would include elements such as:

- 2 collection substations and 1 connection substation;
- a double circuit 330 kV powerline;
- generator transformers; and
- underground and overhead electrical and control cables.

These elements of the project are fully described and illustrated in Appendix A. The potential visual impact of electrical infrastructure works, including the proposed 330kV powerline route (and alternate route), has been assessed and is unlikely to have a significant impact on surrounding residential view locations.

The LVIA identified 27 residential view locations within 2 km of the proposed 330 kV powerline route (including the three alternative route options). An assessment of the potential visual significance of the proposed powerline indicated that:

- 9 of the 27 residential dwellings would have a Nil visual significance;
- 12 of the 27 residential dwellings would have a Low visual significance;
- 3 of the 27 residential dwellings would have a Low to Medium visual significance; and
- 3 of the 27 residential dwellings would have a Medium visual significance.

The electrical works would be contained within a landscape with an overall moderate visual absorption capability, which would have some ability to accept modifications and alterations without the loss of landscape character or significant deterioration of existing levels of visual amenity.

Pre-Construction and Construction Activities

The key pre-construction and construction activities that may be visible from areas surrounding the proposed wind farm include:

- ongoing detailed site assessment including sub surface geotechnical investigations;

- various civil works to upgrade local roads and access point;
- construction compound buildings and facilities;
- construction facilities, including portable structures and laydown areas;
- various construction and directional signage;
- mobilisation of rock crushing equipment and concrete batching plant (if required);
- excavation and earthworks; and
- various construction activities including erection of wind turbines, monitoring masts and substation with associated electrical infrastructure works.

The majority of pre-construction and construction activities, some of which would result in physical changes to the landscape, are generally temporary in nature and for the most restricted to various discrete areas within or beyond the immediate wind farm wind farm area. The majority of pre-construction and construction activities would be unlikely to result in an unacceptable level of visual impact for their duration and temporary nature.

The LVIA determined that the wind farm is likely to be an acceptable development within the viewshed, which in a broader context also contains approved wind farm developments and built elements such as roads, agricultural industry, aircraft landing strips, communication and transmitter towers and powerlines.

9.2 Results of Visual Impact Assessment

The significance of visual impact resulting from the construction and operation of the Rye Park wind farm would result primarily from a combination of:

- the overall sensitivity of visual receptors in the surrounding landscape; and
- the scale or magnitude of visual effects presented by the wind farm development.

The sensitivity of visual receptors has been determined and described in this LVIA by reference to:

- the location and context of the view point;
- the occupation or activity of the receptor; and
- the overall number of people affected.

The scale or magnitude of visual effects associated with the project have been determined and described by reference to:

- the distance between the view location and the wind farm turbines;
- the duration of effect;
- the extent of the area over which the wind farm could be theoretically visible (ZVI hub height)
- the degree of visibility subject to existing landscape elements (such as forested areas or tree cover).

The LVIA notes that although a large number of viewers in a category that would otherwise be of low or moderate sensitivity may increase the sensitivity of the receptor, it is also the case that a small number of people (such as residents) with a high sensitivity may increase the significance of visual impact.

The criteria used to establish the significance of visual impact are detailed in Appendix A. Residential dwelling locations are presented in Figure 28, located in Appendix A.

Residential viewpoints within 2km of the proposed wind turbine locations

The LVIA identified a total of 51 potential involved and uninvolved residential view locations within the Rye Park wind farm 2 km viewshed. Unoccupied residential dwellings have been included and assessed as part of this LVIA where structures and buildings were considered to be habitable at the time of the field work.

An assessment of each potential residential view location indicated that for the Rye Park wind turbine design layout:

- 10 of the 51 residential view locations have been determined to have a low visual significance;
- 10 of the 51 residential view locations have been determined to have a low to medium visual significance;
- 12 of the 51 residential view locations have been determined to have a medium visual significance;
- 17 of the 51 residential view locations have been determined to have a medium to high visual significance; and
- 2 of the 51 residential view locations have been determined to have a high visual significance.

Other viewpoints

The LVIA determined that the majority of residential dwellings and public viewpoints located beyond the 2 km wind turbine offset are unlikely to be significantly impacted by the wind farm development. The localised influence of topography, as illustrated in the ZVI diagrams, has a direct and marked impact on the extent and nature of views within the 2 km and wider viewshed.

Overall conclusion

Taking into account the mitigation measures outlined in Section 9.4, the LVIA concludes that the Rye Park wind farm project would have an overall medium visual significance on the majority of uninvolved residential view locations within the 10 km viewshed as well public view locations.

9.3 Cumulative Visual Impact Assessment

An assessment of cumulative environmental impacts considers the potential impact of a proposal in the context of existing developments and future developments to ensure that any potential environmental impacts are not considered in isolation.

'Direct' cumulative visual impacts may occur where two or more winds farms have been constructed within the same locality and are simultaneously viewed from the same receptor location.

'Indirect' cumulative visual impacts may also arise as a result of multiple wind farms being observed from the same receptor location, but do not overlap or occur within a single field of view.

'Sequential' cumulative visual impacts may also arise as a result of multiple wind farms being observed at different locations during the course of a journey (e.g. from a vehicle travelling along a highway or from a network of local roads), which may form an impression of greater magnitude within the construct of short term memory.

Existing, approved and proposed wind farms within the regional locality of the Rye Park wind farm are identified in Appendix A.

Following consultation with a number of Local Government Authorities there are no known smaller wind farm developments that have been approved, or are currently being assessed by Boorowa Council, Upper Hunter Shire Council or Yass Valley Council.

Long distance views (around 30 km) can be obtained toward the operational Gunning and Cullerin wind farms from elevated areas of the landscape to the south east of the Rye Park project area. Although visible, these wind farm developments are unlikely to result in any significant additional level of 'direct' and 'indirect' cumulative impact for view locations within the Rye Park 10 km viewshed due to the distance effect on overall visibility between the wind farm developments.

Intervisibility with the proposed Bango and Rugby wind farms

The proposed Bango and Rugby wind farm developments are currently in the planning stage. The proposed location and number of turbines associated with each development was not publically known or made available during the preparation of this LVIA. The potential for cumulative impact will be dependent on a number of factors such as the separation distance between turbines and layout of turbines relative to the proposed Rye Park project.

Whilst some degree of intervisibility between all 3 projects is expected, the nature and extent of the undulating landform surrounding each of the project sites, would partially limit the overall potential for 'direct' and 'indirect' views for many of the residential dwellings located between them.

A sequential view would occur for motorists travelling along local roads although the journey between the wind farms would include a range of views extending toward and beyond turbines. The extent and overall visibility of turbines would be influenced by the direction of travel relative to the alignment of wind turbines as well as the relatively short travel time along the local road network alongside and between the wind farm turbines.

Although there are other wind farm developments proposed in the vicinity of the Rye Park wind farm it is not certain all projects will be constructed, if approved, due to competing access to the electricity network and economic market limitations.

9.4 Mitigation Measures

It is inevitable that wind turbines of the size proposed for the Rye Park wind farm will have some significance of visual impact. However, a number of mitigation measures have been incorporated into the design of the wind farm, or form wind farm commitments, with the aim of minimising visual impact. These include:

- Consideration of a non-reflective finish of the structures to reduce visual contrast between turbine structures and the viewing background (this is subject to final turbine selection and supplier specifications);
- A commitment to consult and negotiate visual impact mitigation measures, where required, which may include landscape planting at landowner residence within 3km of a wind turbine.
- A commitment to minimise activities that may require night time lighting and, if necessary, use low intensity lighting designed to be mounted with the light wind farming inwards to the site to minimise glare;
- Substation and other ancillary infrastructure have been sited sympathetically with the nature of the locality and away from major roads and residential dwellings where practical to minimise visual impact;
- The majority of electrical connections within the site (i.e. cables between the turbines) have been designed to be located underground (where practical), in order to further reduce potential visual impacts.

These are outlined in the Statement of Commitments in Section 17.

10 Operational and Construction Noise

10.1 Noise

10.1.1 Background

SLR Consulting Australia Pty Ltd (SLR Consulting) were engaged as the acoustic consultants for the proposed Rye Park Wind Farm. A full Noise Impact Assessment (NIA) of the operational and construction noise has been completed and can be found in Appendix B.

The assessment predicts noise levels for receptors within 2 km of a proposed WTG and compares the predicted level to the limits set out in the South Australian Environmental Protection Authority (SA EPA) Environment Noise Guidelines for Wind Farms (February 2003) and World Health Organization (WHO) limits, as appropriate. The assessment procedure involved the following:

- Noise monitoring was conducted by Epuron in the period 8 June 2012 through to 22 August 2012 at twenty locations to determine baseline conditions and establish indicative criteria for surrounding residential receivers.
- The captured data was screened for validity, with data monitored during periods of rain or where the average wind speed at the microphone position likely exceeded 15 m/s (10 m AGL) being discarded from the data set. A regression analysis of all valid data is used to determine a line of 'best fit' from which the noise limit is established.
- Noise was predicted using ISO 9613-2:1996 as implemented in the SoundPLAN computer noise model. The model predicts noise levels through spherical spreading and includes the effect of air absorption, ground attenuation and shielding. The predicted noise levels for the wind range 3 to 12 m/s are then calculated from the sound power levels determined in accordance with the recognised standard IEC-61400-11:2002.
- WTG noise was then assessed against relevant criteria prescribed by the SA EPA Guideline and World Health Organisation (WHO) goals where appropriate to determine compliance.
- The model was then mitigated using Sound Management Mode for some turbines.

10.2 Assessment

The criteria were determined using the following approach:

- Unattended noise loggers were deployed at receptor locations around the proposed wind farm site by Epuron Pty Ltd.
- The loggers were set up to collect background noise data (L_{A90}) in 10-minute intervals. Simultaneous wind speed measurements at wind masts around the site were used to correlated wind speed to background noise.
- The data set was then analysed by SLR Consulting to exclude data that is not representative due to influence of rain or other localised, non-wind induced sources of noise.
- A polynomial line is then plotted through the data set to establish a background noise regression curve. This sets the noise limit for that measurement site, which is either:
    - 35 dBA or Background Noise (L_{90}) + 5 dBA, whichever is higher; for non-project involved receivers (SA EPA Criteria)
    - 45 dBA or Background Noise (L_{90}) + 5 dBA, whichever is higher; for project involved receivers (WHO Criteria)

The assessment of noise from WTG's was completed by plotting the predicted noise levels against the limit curves for all wind speeds. The assessment was conducted for WTG's at 80 m hub height with data based on 84 m as supplied by

the WTG manufacturer, as no 80 m data was available. This difference in height is considered immaterial given the small difference in height relative to the uncertainty in the measurement data. An example regression plot is shown in Figure 10-1; the assessment curves for the same location are shown in Figure 10-2. Note that '*' indicates that a location is project-involved.

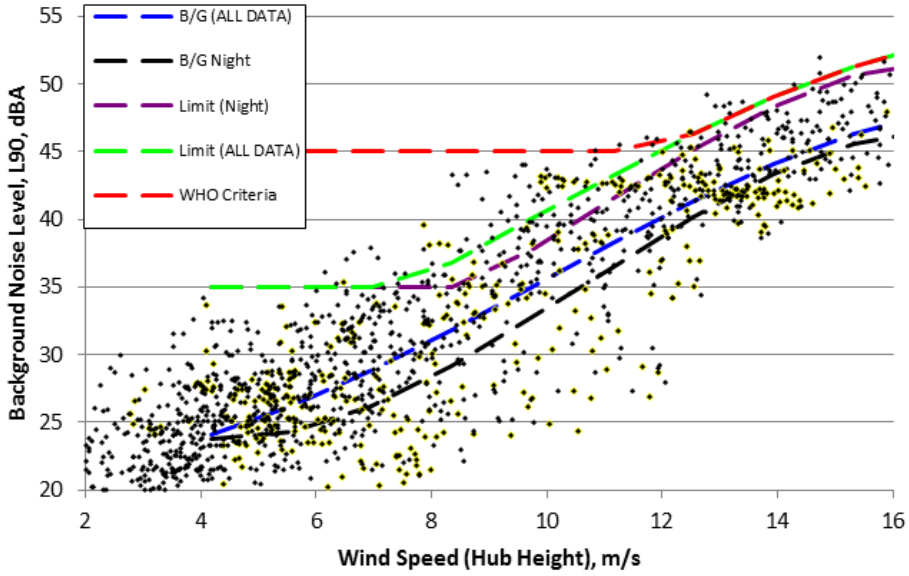


Figure 10-1 Example Background Noise Regression Curve (R44)*

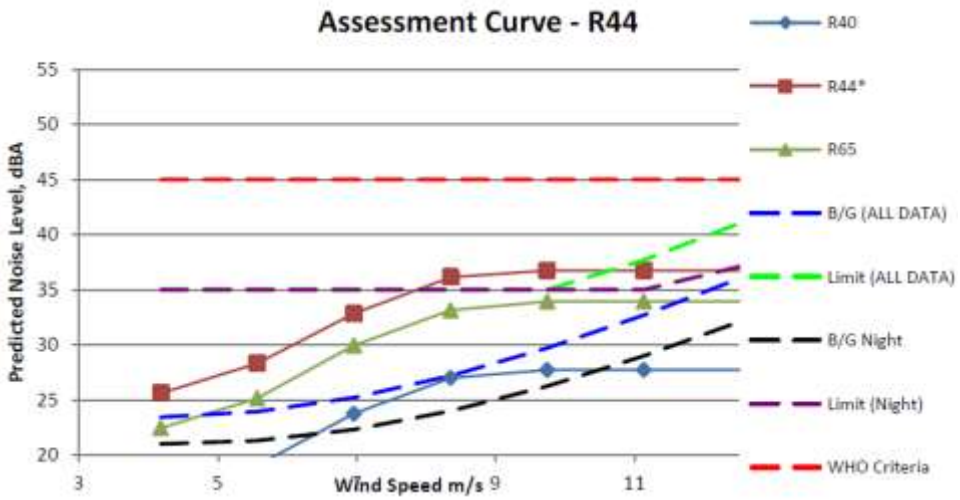
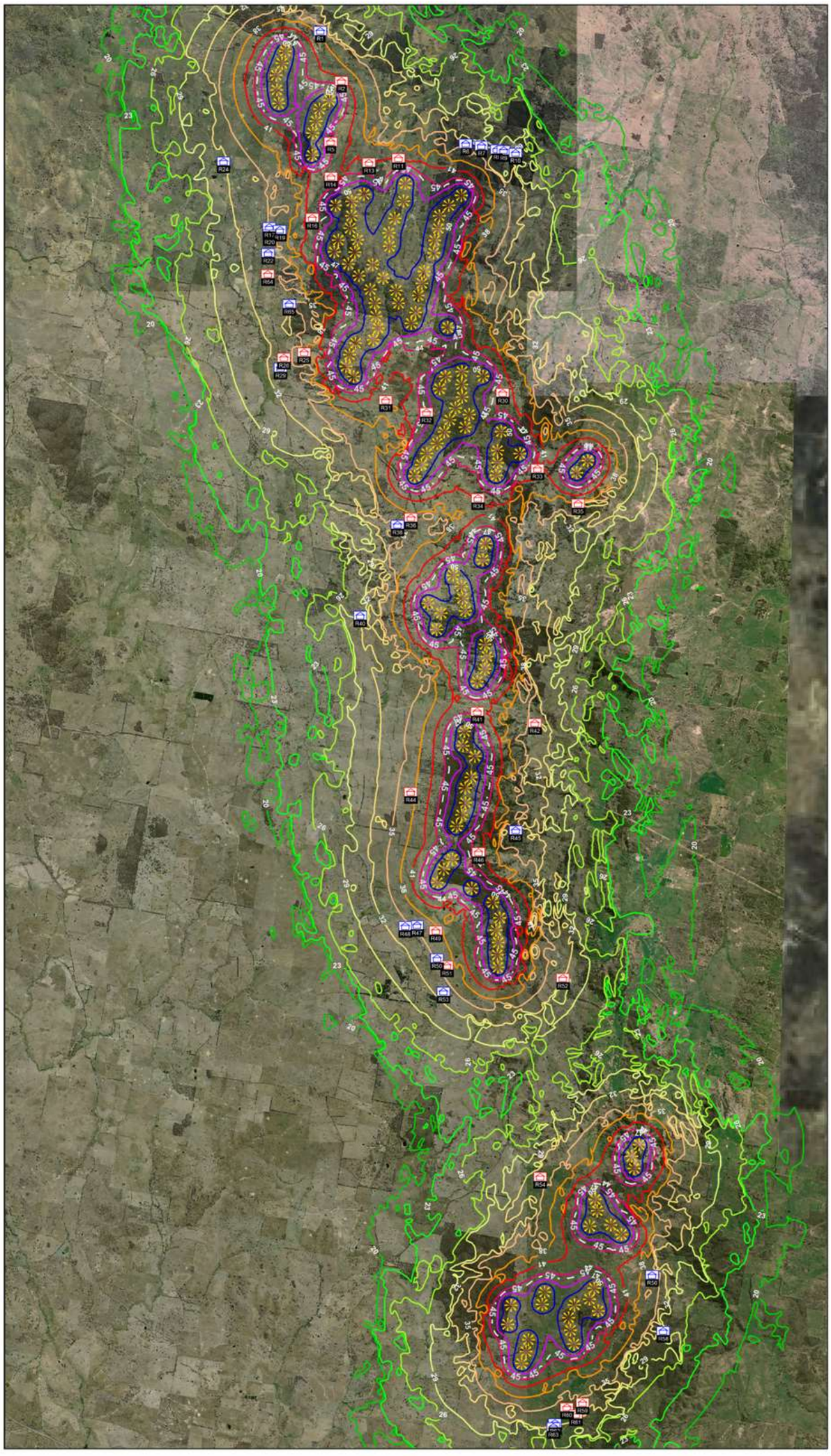


Figure 10-2 Example Assessment Curve (R44)*

In addition to these assessment curves, predicted noise contours have been created for the project, these are shown in Figure 10-3.



CLIENT:
Epuron Projects Pty Ltd
EPURON

PROJECT:
Rye Park Wind Farm
Noise Impact Assessment

TITLE:
Layout Revision 5

DESCRIPTION:
126 X Vestas V112 3.0 MW
Hub Height - 80 m

MAP NO: 1

Predicted
Noise Level
dBA, Leq

	<=	20
20 <	<=	23
23 <	<=	26
26 <	<=	29
29 <	<=	32
32 <	<=	35
35 <	<=	38
38 <	<=	41
41 <	<=	44
44 <	<=	47
47 <	<=	50
50 <		

PREDICTION METHOD: ISO 9613-2:1996

PROJECT NO.: 640.01808

REPORT NO.: 640.01808-R1

DATE: 18/04/2013

PREPARED: PS

LEGEND

- Project Involved Receiver
- Wind Turbine
- Non Project Involved Receiver
- Limit line

SCALE AND ORIENTATION

N

Scale 1:96145
0 0.5 1 2 3 4 km

SLR
SLR Consulting Australia Pty Ltd
ABN 29 001 584 612
Suite 6, 131 Bulleen Rd
Balwyn North VIC 3104

Figure 10-3 Predicted Noise Levels Contour Map, LAeq, vref=8m/s

Noise predictions were made for receptors within 2 km of a proposed WTG. Dwellings further than this distance are deemed to comply if dwellings closer to turbines comply with the SA EPA noise limit. WTG noise for a layout of 126 Vestas V112 WTG's of hub height 80m has been predicted and assessed against relevant criteria prescribed by the SA EPA Guideline and World Health Organisation (WHO) goals where appropriate. As some minor exceedances (1.0 dBA or less) were predicted in the initial layout, additional analysis was conducted to determine if full compliance can be achieved using the Sound Management Mode on some turbines. The contribution of each turbine to the receiver locations was calculated. Those turbines that contributed most to the overall noise level were remodelled in Sound Management Mode (Mode 2). The mitigated scenario was then remodelled in SoundPLAN software and compared to the noise limit curve for all wind speeds. A total of 12 turbines were set to Sound Management Mode. The results are shown in Table 10-1, Note that '*' indicates that a location is project-involved. The results display the anticipated noise levels and noise criteria. As there are no exceedances none are shown. It is recommended that consideration of noise predictions with respect to criteria require reading the full Noise Assessment in Appendix B.

The noise levels of the mitigated layout were predicted to meet the relevant criteria at all receptor locations. It should be further noted that all predicted noise levels are considered to be conservative with the model assuming 'hard ground' and average downwind propagation from all WTG's to each receiver or a well-developed moderate ground based temperature inversion.

The project is yet to select and finalise the WTG make and model. Upon finalising the WTG selection a revised noise prediction and assessment will be completed to confirm compliance. The proponent is committed to ensuring compliance with the appropriate standards and noise criteria. The compliance program will commence 3 months before construction commencement and continue on a permanent basis for 2 years post commissioning. Permanent noise loggers will be installed at selected receivers for the duration of the compliance program, with noise data regularly downloaded and any potential exceedances noted for detailed analysis. The selected house locations will comprise of all houses within 2km of a turbine and selected representative houses within 2-5km.While the appropriate standards and noise criteria are met there may be situations and conditions where the wind farm can be heard but it should be at levels that will not cause any undue nuisance or interference with amenity values.

As requested by the NSW Department of Planning and Infrastructure, additional assessments have been undertaken under the recently released NSW Draft Wind Farm Noise Guidelines. Assessments into low frequency noise and tonality have been undertaken and the results do not indicate any further investigation into these Special Audible Characteristics is required under the draft guidelines. Tonality compliance measurements will be demonstrated at nearby receptors in accordance with the SA EPA guidelines.

*Table 10-1 Anticipated noise levels and noise criteria (note * denotes project involved landowner and highlighted green cells refer to reference wind speed)*

Background Location = R2		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0039x^3 + 0.0826x^2 - 0.533x + 29.031	29	29	31	33	36	40	44	50	57	64
SA EPA Criteria		35	35	36	38	41	45	49	55	62	69
NIGHT BG Regression Line	-0.0146x^3 + 0.5005x^2 - 3.2897x + 32.238	26	27	29	32	35	38	42	45	48	49
EPA Night Criteria		35	35	35	37	40	43	47	50	53	54
WHO Criteria		45	45	45	45	45	45	49	55	62	69
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R1		25.1	27.9	31.5	34.9	36.6	37.1	37.1	37.1	37.1	37.1
*R2**		29.7	32.5	36.1	39.5	41.2	41.7	41.7	41.7	41.7	41.7

Background Location = R6		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0091x^3 + 0.3063x^2 - 1.804x + 28.225	25	26	28	30	32	34	36	39	40	42
SA EPA Criteria		35	35	35	35	37	39	41	44	45	47
NIGHT BG Regression Line	-0.0145x^3 + 0.4377x^2 - 2.8665x + 30.122	25	25	27	29	31	33	35	36	37	37
EPA Night Criteria		35	35	35	35	36	38	40	41	42	42
WHO Criteria		45	45	45	45	45	45	45	45	45	47
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R6	22.2	22.2	25.0	28.6	32.0	33.7	34.2	34.2	34.2	34.2	34.2
R7	20.9	20.9	23.7	27.3	30.7	32.4	32.9	32.9	32.9	32.9	32.9
R8	19.4	19.4	22.2	25.8	29.2	30.9	31.4	31.4	31.4	31.4	31.4
R9	18.8	18.7	21.5	25.1	28.5	30.2	30.7	30.7	30.7	30.7	30.7
R10	18.8	18.8	21.6	25.2	28.6	30.3	30.8	30.8	30.8	30.8	30.8

Background Location = R13		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0038x^3 + 0.0503x^2 - 0.0495x + 25.298	26	27	29	31	34	37	41	46	52	59
SA EPA Criteria		35	35	35	36	39	42	46	51	57	64
NIGHT BG Regression Line	0.0176x^3 - 0.2545x^2 + 1.994x + 20.174	25	27	28	30	32	36	41	48	57	69
EPA Night Criteria		35	35	35	35	37	41	46	53	62	74
WHO Criteria		45	45	45	45	45	45	46	51	57	64
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R11**		29.0	31.8	35.4	38.8	40.5	41.0	41.0	41.0	41.0	41.0
*R13**		29.2	32.0	35.6	39.0	40.7	41.2	41.2	41.2	41.2	41.2

Background Location = R14		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0021x^3 + 0.0772x^2 - 0.2551x + 24.263	25	26	27	29	32	35	38	43	48	53
SA EPA Criteria		35	35	35	35	37	40	43	48	53	58
NIGHT BG Regression Line	0.02x^3 - 0.2626x^2 + 1.0216x + 24.109	25	25	25	26	28	31	37	44	53	66
EPA Night Criteria		35	35	35	35	35	36	42	49	58	71
WHO Criteria		45	45	45	45	45	45	45	48	53	58
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R5**		32.4	35.2	38.8	42.2	43.9	44.4	44.4	44.4	44.4	44.4
*R14**		30.3	33.1	36.7	40.1	41.8	42.3	42.3	42.3	42.3	42.3
*R16**		30.7	33.5	37.1	40.5	42.2	42.7	42.7	42.7	42.7	42.7

Background Location = R19		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0063x^3 - 0.0518x^2 + 0.3486x + 29.281	30	31	31	32	34	36	39	42	47	52
SA EPA Criteria		35	36	36	37	39	41	44	47	52	57
NIGHT BG Regression Line	0.0022x^3 + 0.0703x^2 - 0.6383x + 29.799	29	29	30	31	33	35	38	42	46	51
EPA Night Criteria		35	35	35	36	38	40	43	47	51	56
WHO Criteria		45	45	45	45	45	45	45	47	52	57
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R17		23.1	25.9	29.5	32.9	34.6	35.1	35.1	35.1	35.1	35.1
R19		24.8	27.6	31.2	34.6	36.3	36.8	36.8	36.8	36.8	36.8
R20		23.2	26.0	29.6	33.0	34.7	35.2	35.2	35.2	35.2	35.2
R22		22.6	25.4	29.0	32.4	34.1	34.6	34.6	34.6	34.6	34.6

Background Location = R24		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0006x^3 + 0.1121x^2 - 0.721x + 29.856	29	30	31	32	35	37	41	44	49	54
SA EPA Criteria		35	35	36	37	40	42	46	49	54	59
NIGHT BG Regression Line	-0.0012x^3 + 0.2153x^2 - 1.8413x + 31.706	28	28	29	31	34	37	41	46	52	58
EPA Night Criteria		35	35	35	36	39	42	46	51	57	63
WHO Criteria		45	45	45	45	45	45	46	49	54	59
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R24		19.4	22.2	25.8	29.2	30.9	31.4	31.4	31.4	31.4	31.4

Background Location = R25		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0114x^3 - 0.1507x^2 + 0.8519x + 21.455	23	24	24	25	26	29	32	36	42	50
SA EPA Criteria		35	35	35	35	35	35	37	41	47	55
NIGHT BG Regression Line	0.0022x^3 + 0.0046x^2 + 0.1516x + 19.907	21	21	22	23	24	26	27	30	32	35
EPA Night Criteria		35	35	35	35	35	35	35	35	37	40
WHO Criteria		45	45	45	45	45	45	45	45	47	55
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R25**		25.4	28.2	31.8	35.2	36.9	37.4	37.4	37.4	37.4	37.4
*R26**		21.6	24.4	28.0	31.4	33.1	33.6	33.6	33.6	33.6	33.6
R29		21.7	24.5	28.1	31.5	33.1	33.6	33.6	33.6	33.6	33.6

Background Location = R30		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0021x^3 + 0.0379x^2 - 0.071x + 26.561	27	28	29	30	32	34	36	40	43	47
SA EPA Criteria		35	35	35	35	37	39	41	45	48	52
NIGHT BG Regression Line	8E-05x^3 + 0.1703x^2 - 2.0978x + 31.624	26	25	25	26	28	30	33	37	41	46
EPA Night Criteria		35	35	35	35	35	35	38	42	46	51
WHO Criteria		45	45	45	45	45	45	45	45	48	52
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R30**		31.0	33.8	37.4	40.8	42.4	42.9	42.9	42.9	42.9	42.9
*R33**		29.4	32.2	35.8	39.2	40.9	41.4	41.4	41.4	41.4	41.4

Background Location = R32		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.002x^3 + 0.1453x^2 - 0.8862x + 31.129	30	30	32	33	35	37	40	42	45	49
SA EPA Criteria		35	35	37	38	40	42	45	47	50	54
NIGHT BG Regression Line	-0.0001x^3 + 0.121x^2 - 0.9889x + 31.088	29	29	30	31	33	36	38	42	45	49
EPA Night Criteria		35	35	35	36	38	41	43	47	50	54
WHO Criteria		45	45	45	45	45	45	45	47	50	54
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R31**		27.9	30.7	34.3	37.7	39.1	39.5	39.5	39.5	39.5	39.5
*R32**		33.7	36.5	40.1	43.7	44.5	44.7	44.7	44.7	44.7	44.7

Background Location = R34		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0104x^3 + 0.3096x^2 - 0.7489x + 22.545	24	26	29	32	36	39	42	45	47	48
SA EPA Criteria		35	35	35	37	41	44	47	50	52	53
NIGHT BG Regression Line	-0.0233x^3 + 0.7447x^2 - 5.1951x + 34.199	24	25	27	30	34	37	41	44	46	47
EPA Night Criteria		35	35	35	35	39	42	46	49	51	52
WHO Criteria		45	45	45	45	45	45	47	50	52	53
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R34**		29.5	32.3	35.9	39.3	40.8	41.2	41.2	41.2	41.2	41.2
*R35**		25.9	28.7	32.3	35.7	37.4	37.8	37.8	37.8	37.8	37.8

Background Location = R36		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0018x^3 + 0.0976x^2 - 1.1709x + 25.238	22	22	23	24	25	27	30	34	38	43
SA EPA Criteria		35	35	35	35	35	35	35	39	43	48
NIGHT BG Regression Line	-6E-05x^3 + 0.1693x^2 - 2.0032x + 24.906	19	19	19	20	22	24	27	31	35	40
EPA Night Criteria		35	35	35	35	35	35	35	36	40	45
WHO Criteria		45	45	45	45	45	45	45	45	45	48
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R36**		25.2	28.0	31.6	35.2	35.8	36.0	36.0	36.0	36.0	36.0
R38		23.9	26.7	30.3	33.9	34.7	35.0	35.0	35.0	35.0	35.0
*R64**		22.0	24.8	28.4	31.8	33.5	34.0	34.0	34.0	34.0	34.0

Background Location = R41		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0129x^3 + 0.408x^2 - 2.1358x + 21.869	19	21	23	25	29	32	35	37	39	40
SA EPA Criteria		35	35	35	35	35	37	40	42	44	45
NIGHT BG Regression Line	-0.0324x^3 + 0.894x^2 - 5.6692x + 26.728	16	18	20	24	27	30	33	34	33	29
EPA Night Criteria		35	35	35	35	35	35	38	39	38	35
WHO Criteria		45	45	45	45	45	45	45	45	45	45
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R41**		31.1	33.9	37.5	40.9	42.6	43.1	43.1	43.1	43.1	43.1
*R42**		22.0	24.8	28.4	31.9	33.5	34.0	34.0	34.0	34.0	34.0

Background Location = R44		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0064x^3 + 0.3077x^2 - 2.1782x + 27.62	23	24	25	28	30	33	37	41	45	49
SA EPA Criteria		35	35	35	35	35	38	42	46	50	54
NIGHT BG Regression Line	-0.0051x^3 + 0.2755x^2 - 2.1163x + 25.414	21	21	23	24	27	30	33	37	41	45
EPA Night Criteria		35	35	35	35	35	35	38	42	46	50
WHO Criteria		45	45	45	45	45	45	45	46	50	54
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R40		15.9	18.7	22.3	25.7	27.3	27.7	27.7	27.7	27.7	27.7
*R44**		25.2	28.0	31.6	35.1	36.4	36.7	36.7	36.7	36.7	36.7
R65		21.9	24.7	28.3	31.7	33.4	33.9	33.9	33.9	33.9	33.9

Background Location = R46		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0034x^3 + 0.0984x^2 - 0.7685x + 26.6	25	26	27	29	32	36	40	46	52	60
SA EPA Criteria		35	35	35	35	37	41	45	51	57	65
NIGHT BG Regression Line	-0.0223x^3 + 0.7267x^2 - 5.1643x + 33.143	23	23	25	28	32	36	40	43	45	46
EPA Night Criteria		35	35	35	35	37	41	45	48	50	51
WHO Criteria		45	45	45	45	45	45	45	51	57	65
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R45		24.2	27.0	30.6	34.1	35.2	35.6	35.6	35.6	35.6	35.6
*R46**		30.6	33.4	37.0	40.4	41.9	42.4	42.4	42.4	42.4	42.4

Background Location = R49		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0042x^3 + 0.1889x^2 - 0.8856x + 25.226	25	26	27	29	31	34	36	39	42	45
SA EPA Criteria		35	35	35	35	36	39	41	44	47	50
NIGHT BG Regression Line	-0.0258x^3 + 0.7838x^2 - 5.8263x + 32.991	20	20	22	24	27	30	33	35	35	33
EPA Night Criteria		35	35	35	35	35	35	38	40	40	38
WHO Criteria		45	45	45	45	45	45	45	45	47	50
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R47		23.5	26.3	29.9	33.4	35.0	35.4	35.4	35.4	35.4	35.4
R48		22.3	25.1	28.7	32.1	33.7	34.1	34.1	34.1	34.1	34.1
*R49**		25.4	28.2	31.8	35.2	36.7	37.2	37.2	37.2	37.2	37.2

Background Location = R51		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0112x^3 + 0.4204x^2 - 3.0804x + 31.643	25	26	27	29	32	35	38	41	44	46
SA EPA Criteria		35	35	35	35	37	40	43	46	49	51
NIGHT BG Regression Line	-0.018x^3 + 0.7135x^2 - 5.7973x + 34.583	21	21	23	26	30	35	40	45	50	54
EPA Night Criteria		35	35	35	35	35	40	45	50	55	59
WHO Criteria		45	45	45	45	45	45	45	46	49	51
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R50		23.4	26.2	29.8	33.3	34.5	34.9	34.9	34.9	34.9	34.9
*R51**		24.5	27.3	30.9	34.4	35.4	35.7	35.7	35.7	35.7	35.7
R53		21.4	24.2	27.8	31.3	32.2	32.5	32.5	32.5	32.5	32.5

Background Location = R52		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	0.0016x^3 + 0.1009x^2 - 0.9471x + 30.519	28	29	30	31	33	35	39	42	47	52
SA EPA Criteria		35	35	35	36	38	40	44	47	52	57
NIGHT BG Regression Line	-0.0062x^3 + 0.2728x^2 - 2.0066x + 26.692	23	23	24	26	28	30	33	36	39	41
EPA Night Criteria		35	35	35	35	35	35	38	41	44	46
WHO Criteria		45	45	45	45	45	45	45	47	52	57
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R52**		20.3	23.1	26.7	30.2	31.1	31.5	31.5	31.5	31.5	31.5

Background Location = R54		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0033x^3 + 0.3137x^2 - 2.6897x + 34.152	28	28	30	32	35	40	45	50	57	64
SA EPA Criteria		35	35	35	37	40	45	50	55	62	69
NIGHT BG Regression Line	-0.0094x^3 + 0.4771x^2 - 3.5489x + 32.598	25	26	28	31	36	40	46	52	58	65
EPA Night Criteria		35	35	35	36	41	45	51	57	63	70
WHO Criteria		45	45	45	45	45	45	50	55	62	69
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R54**		21.3	24.1	27.7	31.2	32.7	33.2	33.2	33.2	33.2	33.2

Background Location = R56		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0086x^3 + 0.321x^2 - 2.0034x + 29.155	26	27	28	30	33	35	38	41	44	46
SA EPA Criteria		35	35	35	35	38	40	43	46	49	51
NIGHT BG Regression Line	-0.0136x^3 + 0.5228x^2 - 4.3054x + 33.647	24	24	25	27	29	33	36	39	42	45
EPA Night Criteria		35	35	35	35	35	38	41	44	47	50
WHO Criteria		45	45	45	45	45	45	45	46	49	51
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
R56		23.7	26.5	30.1	33.5	34.6	35.0	35.0	35.0	35.0	35.0
R58		16.3	19.1	22.7	26.2	27.5	27.9	27.9	27.9	27.9	27.9

Background Location = R60		3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s
B/G Regression Line	-0.0195x^3 + 0.5635x^2 - 3.7504x + 38.008	31	31	33	35	37	40	42	43	43	41
SA EPA Criteria		36	36	38	40	42	45	47	48	48	46
NIGHT BG Regression Line	-0.0316x^3 + 0.8557x^2 - 5.917x + 41.243	29	29	31	34	36	38	39	39	37	32
EPA Night Criteria		35	35	36	39	41	43	44	44	42	37
WHO Criteria		45	45	45	45	45	45	47	48	48	46
Wind Speed (Hub Height)		4.3	5.7	7.2	8.6	10.0	11.5	12.9	14.3	15.8	17.2
*R59**		22.2	25.0	28.6	32.0	33.6	34.1	34.1	34.1	34.1	34.1
*R60**		20.9	23.7	27.3	30.7	32.4	32.9	32.9	32.9	32.9	32.9
*R61**		20.0	22.8	26.4	29.8	31.5	32.0	32.0	32.0	32.0	32.0
R62		20.4	23.2	26.8	30.2	31.8	32.3	32.3	32.3	32.3	32.3
R63		19.9	22.7	26.3	29.7	31.3	31.8	31.8	31.8	31.8	31.8

10.3 Detailed Tonality Assessment

Examining the Vestas V112 data provided by the manufacturer3, $\Delta L_{A,k}$ is less than 4 dB at all wind speeds and therefore does not attract a penalty under the Joint Nordic Method. In addition to this test a one-third octave band test was completed using the noise levels as predicted by the SoundPLAN model. Levels were assessed against the description of tonality as defined in the NSW Industrial Noise Policy. The policy states that the presence of excessive tonality is defined as when the level of one-third octave band measured in the equivalent noise level L_{eq}(10 minute) exceeds the level of the adjacent bands on both sides by:

- **5 dB or more** if the centre frequency of the band containing the tone is above 400Hz
- **8 dB or more** if the centre frequency of the band containing the tone is 160 to 400Hz inclusive
- **15 dB or more** if the centre frequency of the band containing the tone is below 160Hz

The predicted noise level in one third octave bands did not meet the descriptions as stated above and would therefore be deemed 'non tonal' in the field.

10.4 Van den Berg Effect

The phenomena commonly referred to as the 'van den Berg effect' actually includes several effects. They are:

- Increased WTG Sound Power Level due to higher wind shear across the blade of the turbine
- Enhanced propagation of noise due to higher wind shear
- Lower ground level background masking noise for a given operational wind speed due to higher wind shear
- Increased modulation character of the turbine due to higher wind shear

These effects all occur as a result of high wind shear (stable atmosphere) conditions. A brief evaluation of various wind shear values at the site using a simplified model has been undertaken for Rye Park Wind Farm. This may better direct decisions regarding the potential for increased noise impact under different atmospheric conditions once further research findings improves the general understanding of these phenomena. Several values of wind shear exponent value (α) have been proposed as defining a stable atmosphere. A wind shear exponent value of greater than 0.55 has been suggested as a 'highly stable' atmosphere for rural environments; van den Berg suggests that a wind shear exponent value of 0.41 is appropriate. To further examine the prevalence of high wind shear values, detailed analysis of wind shear was conducted, with the percentage likelihood of wind shear exponent for each season and time period (Day/Evening/Night). Figure 10-2 shows the results for two values of (α) presented in research papers discussed.

Table 10-2 Likelihood of high wind shear exponent

Season	α > 0.41 Day	Evening	Night	α > 0.55 Day	Evening	Night
Summer	2.1%	7.2%	13.9%	0.5%	0.7%	1.9%
Autumn	4.5%	6.1%	10.4%	1.4%	0.6%	2.6%
Winter	9.8%	14.7%	18.9%	2.1%	2.2%	3.8%
Spring	4.9%	7.9%	14.6%	1.4%	0.7%	2.3%

The values presented show that high wind shear does not occur for more than 30% of any time period in any season. The NSW INP deems this as being sufficiently occurring to define it as a prevailing meteorological feature for a site.

While the data shows that stable atmosphere conditions may exist for short periods of time, the results of the analysis undertaken indicate that stable atmospheres do not to occur at this site on a long term basis and are not deemed a feature of the site under NSW INP.

10.5 Wind Turbine Vibration

Vibration or more specifically the oscillatory movement of receptor structures could potentially propagate from a source (in this case a wind farm) through either a ground path (ground borne vibration) or an airborne path as sound which could couple with lightweight structures and produce a movement in the structure.

Ground borne vibration levels attenuate with distance with varying amounts dependent upon such variables as frequency and geotechnical parameters. There are a few documented research reports with regards to wind farm generated ground vibration. These are: The Snow Report (*Low Frequency Noise & Vibration Measurements at a Modern Wind Farm*, ETSU W/13/01392/REP, D J Snow, 1997) and Detailed *Microseismic and Infrasound Monitoring of Low Frequency Noise and Vibrations from Wind Farms* were undertaken by the Applied and Environmental Geophysics Group of Keele University as part of a comprehensive report giving '*Recommendations on The Siting of Wind Farm in the Vicinity the Eskdalemuir, Scotland*'. The Eskdalemuir report details results taken from St Breock Downs Wind Farm (possibly the same measurements taken in the Snow Report). From the documented seismic vibration measurements taken at 25 metres from a single WTG a peak particle velocity (PPV) of approximately $8x10^{-5}$ mm/s has been calculated. This is approximately 2500 orders of magnitude lower than project criteria. Whilst we note that turbines proposed for Rye Park Wind Farm are larger than those measured above we are confident that ground vibration will be completely imperceptible at surrounding receptors. Furthermore, our own experience and observations at other operating wind farms has not indicated perceptible ground vibration at any distance from turbines.

A good deal of misunderstanding and attention has been given in recent times to low frequency noise and infrasound generated by wind farms. Infrasound at sufficient levels has the potential to be perceived as vibration or alternatively cause the movement of lightweight structures which then in turn are perceived as vibration. It should be noted that the sometimes audible cyclical modulation of aerodynamic noise, the '*swish swish*' of blades, is often mistakenly identified as low frequency noise, where it actually is the low frequency modulation of audible noise.

The subject of infrasound is most complex, dealing with frequencies that are sub audible, requiring alternative frequency weighting scales, specialist measurement equipment and techniques, and evaluating the variance of hearing sensitivity in a population at low frequency. Furthermore, infrasound levels depend on many variables including turbine type and size, wind conditions (including turbulence), propagation distance, building structure and materials, room sizing and positioning within room.

Comprehensive review, measurement testing and evaluation are offered in numerous technical reports investigating infrasound and low frequency noise from wind farms including;

- *A Review of Published Research on Low Frequency Noise and its Effects* - Report for Defra by Dr Geoff Leventhall assisted by Dr Peter Pelmear and Dr Stephen Benton - 2002 (refer to http://www.defra.gov.uk/environment/quality/noise/research/lowfrequency/documents/lowfreqnoise.pdf)
- *The Measurement of Low Frequency Noise at Three UK Wind Farms* - report for DTI by Hayes McKenzie Partnership – 2006 (refer to http://www.berr.gov.uk/files/file31270.pdf)
- *Wind turbines & Infrasound 2006* - Report for Canadian Wind Energy Association (CanWEA) by Howe Gastmeier Chapnik Limited (HGC Engineering) - 2006 (refer to http://www.canwea.ca/images/uploads/File/CanWEA_Infrasound_Study_Final.pdf)
- *Wind Farms Technical Paper – Environmental Noise* – report for Clean Energy Council Australia by Sonus Pty Ltd – 2010 (refer to http://www.cleanenergycouncil.org.au/cec/mediaevents/media-releases/November2010/sonus-report.html)

The consensus drawn by all investigations is that infrasound noise emissions from modern WTG's are significantly below the recognised threshold of perception for acoustic energy within this range.

10.6 Night time operational noise

The NSW Draft Guidelines section of the NIA (Appendix B, Section 9) assesses the noise against night-time criteria for the mitigated scenario, a process has also been completed for the full (non-mitigated scenario, as shown in the NIA

for comparative purposes (Appendix B, Section 7.1 Table 15). The function of this NIA is to show that compliance is possible; night-only criteria are considered from that point onwards.

For clarity night-only criteria is considered when compliance for the all-day criteria is achieved. With the full layout (non-mitigated scenario) the all-day criteria is not met and subsequently the night time criteria cannot be achieved, but has been presented for comparative purposes. Wind turbines were placed into sound-management mode i.e. mitigated layout to achieve compliance and subsequently the night-only criteria are considered.

The background noise data was reprocessed to define background noise curves for the daytime period (7.00 am to 10.00 pm) and night-time period (10.00 pm to 7.00 am) as defined by the draft guideline. Daytime background noise curves were typically 0.5 to 1dB higher than the background noise curves based on the full data set. Night-time background noise curves were typically 2 to 4 dB lower than the background noise curves based on the full data set. For further technical information refer to the NIA in Appendix B

The new background noise curves were used to update the noise limit curves for all receptors and all predicted results for the mitigated and non-mitigated were assessed against these criteria. There were no exceedances of the daytime only criteria for any receiver. Table 10-3 shows the exceedances for all project uninvolved locations for the night-time criteria. Only R47 has a night time exceedance. The exceedance for this location is 0.4dBA. Note that Max exceedance refers to the maximum exceedance out of all the wind speeds, in the case of R47 this is 0.4dBA. This is a relatively minor exceedance which would be difficult to measure in the field.

Table 10-3 NSW Draft Wind Farm Guidelines exceedances – night-time criteria

			Wind speed (m/s, 10m AGL)										
Receiver	**Background Location**		3	4	5	6	7	8	9	10	11	12	Max
R47	R49* (* refers to project associated landowner)	**Exceedance dBA**						0.4					0.4
		NSW Draft Guideline Night Criteria dBA	35.0	35.0	35.0	35.0	35.0	35.0	38.0	40.0	40.0	38.0	
		Mitigated Predicted Noise Levels dBA	23.5	26.3	29.9	33.4	35	35.4	35.4	35.4	35.4	35.4	

10.7 Cumulative impacts

The background noise monitoring carried out for the purpose of the assessment is not impacted by an existing wind farm and is thus in accordance with the SA EPA guidelines that state:

> *"Separate wind farm developments in close proximity to each other may impact on the same relevant receiver. Therefore, as for staged development, any additional wind farm that may impact on the same relevant receiver as an existing wind farm should meet the criteria using the background noise levels as they existed before the original wind farm site development. The noise generated by existing WTGs from another wind farm should not be considered as part of the background noise in determining criteria for subsequent development"*

Despite none of the wind farms having a confirmed layout, turbine selection or approval/construction go ahead a preliminary evaluation has been made on the cumulative impacts and compliance.

There are three wind farms currently in development in the vicinity of Rye Park Wind Farm: Rugby Wind Farm, Bango Wind Farm, and Yass Valley Wind Farm. There is one approved wind farm in the vicinity, Conroy's Gap Wind Farm. The cumulative impact of both Yass Valley Wind Farm and Conroy's Gap Wind Farm on noise levels will be negligible as they are over 20km from Rye Park Wind Farm.

Both Bango Wind Farm and Rugby Wind Farm are not yet approved and are currently in the development process. As such final turbine locations and turbine models have yet to be chosen and confirmed. The cumulative noise impact has been modelled using both wind farms based on available public data.

The impact of Bango Wind Farm on dwellings assessed in the NIA in Appendix B is likely negligible. The cumulative noise levels are likely to meet the compliance criteria at all dwellings assessed in the NIA in Appendix B.

The preliminary cumulative impact of Rugby Wind Farm on noise levels is predicted to only marginally increase the predicted noise levels at some receivers. The likely cumulative noise level at each dwelling still meets the relevant compliance criteria.

The small increase in noise levels due to cumulative impact from both Bango and Rugby is due to:

- the distance of the adjacent wind farms to Rye Park Wind Farm; and
- the dominant contribution of predicted noise levels is from Rye Park Wind Farm turbines itself.

A more detailed explanation is detailed below. It is important to emphasise that all modelling has been conducted based on a worst case model and is considered conservative (ISO9613-2).

A further factor to consider is the operational timing of the wind farms. If the Rye Park Wind Farm begins construction or operates before other wind farms in the area then the predicted noise levels would not need to factor in cumulative impacts against the criteria. If other wind farms begin operation before the Rye Park Wind Farm then cumulative impacts become a factor. In the case that all wind farms are operating the assessment shows that all relevant receivers in the NIA in Appendix B are predicted to be within the nominated WHO guideline noise limits. A revised NIA will be completed once the turbine layout and model are finalised. At this point the latest information about neighbouring wind farms will be addressed.

Bango Wind Farm

Publicly available information for Bango Wind Farm shows that that the wind turbine area is at least 4 km's from any dwelling assessed in the NIA in Appendix B (Bango Wind Farm Newsletter #2 February 2012). At this distance the impact of the addition of one wind turbine at a sound power level of 106.5dBA would increase the noise level at a dwelling by a small amount in the order of 0.1dBA based on conservative modelling assumptions (ISO9613-2). In reality the potentially most impacted dwellings would be those that sit in between the two wind farms, however these dwelling would not receive the full predicted noise level from both wind farms at the same time as the wind cannot blow from two different directions (noting that the greatest noise impact on a dwelling is when the dwelling is downwind from a turbine – as assumed in ISO9613-2).

The small increases in noise levels are due to the noise impact being greatest from the closest noise sources, in this case Rye Park Wind Farm. The compliance margin or difference between predicted noise levels and compliance criteria is greater than 0.9dBA at all receivers except R32 and R38. To increase the predicted noise level at a receiver by 0.9dBA, 9 turbines located at 4km from the receptor would be required. This is unrealistic given the minimum spacing requirements of wind turbines of at least 250m and as such would not affect compliance at these receptors.

For the two receptors that have a compliance margin less than 0.9dBA, they both are at least 7km from the closest wind turbine area of Bango Wind Farm. In addition to this considerable distance over 25 turbines are closer to each receptor and dominate the noise level contribution. As such compliance remains unchanged at all receptors with cumulative impacts accounted for.

Rugby Wind Farm

Publicly available information for Rugby Wind Farm shows that that the wind turbines are located directly north of Rye Park Wind Farm. Noise modelling of this layout (ref: WTG_Rev63) was carried out based on an indicative turbine, in this case a turbine with Sound Power Level of 106.5dBA and based on conservative modelling (ISO9613-2). The predictions show that the cumulative wind farm noise level increases by less than 0.9dBA at all assessed receptors except one, in most instances the predicted cumulative increase is negligible and less than 0.1dBA. As such the compliance criteria is met based on predicted cumulative noise levels.

We note that the receiver R1 is an uninvolved landowner with Rye Park Wind Farm, however, it is an involved landowner as part of Rugby Wind farm. Should Rugby Wind Farm proceed to be constructed first (or both wind farms are operating), receptor R1 will have a noise criteria of 45dBA according to the WHO guidelines. The cumulative noise modelling shows that compliance is predicted to be achieved. If Rye Park Wind Farm proceeds to be constructed first R1 will comply according to SA EPA guidelines as assessed in the NIA in Appendix B.

10.8 Substations

Australian Standard AS 60076 Part 10 2009: "Power Transformers – Determination of sound levels" indicates that the 200 MVA transformer facility may produce sound power levels up to 98 dBA and a 450 MVA transformer may produce sound power levels up to 103 dBA. The dominant frequency of such transformers is 100 Hz.

Noise predictions for transformer substations have been made using CONCAWE algorithms assuming an absolute 'worst case' meteorology enhancement condition of downwind 3 m/s and Pasquill Stability Class F temperature inversion. Noise predictions for transformer substations have been made and compared to the appropriate NSW INP limit and were found to comply at all receptor locations. The modelling results are shown in Table 10-4.

Table 10-4 Anticipated substation noise level and NSW industrial noise policy criteria

Location	Predicted Noise Level, Leq dBA	RBL (Night)	Noise Limit (Intrusive Criteria)	Compliance
R41	30.6	20	35	Yes
R59	29	31	35	Yes
R61	27.3	31	35	Yes
R62	27	31	35	Yes
R63	26.5	31	35	Yes
R60	22.5	31	35	Yes

10.9 Transmission Line Noise

The appropriate criteria as determined by the NSW Industrial Noise Policy (INP) would be 35dBA assuming a minimum RBL value of 30dBA. It is conservatively estimated that the minimum criteria level of 35dBA would be complied with at a distance of 240 metres. The proposed transmission line is further than 240m from any receptors and as such any transmission line noise will comply with the NSW INP minimum limit at all residential receivers.

10.10 Contingency Strategy and Adaptive Management for Operational Noise

If noise impact complaints arise and upon assessment the wind farm exceeds the relevant criteria then a contingency strategy will be implemented that consists of an 'adaptive management' approach which could be implemented to mitigate or remove the impact. This process could include;

- receiving and documenting noise impact complaint through 'hotline' or other means;
- investigating the nature of the reported impact;
- identifying exactly what conditions or times lead to the impacts;
- operating WTGs in a reduced 'noise optimised' mode during identified times and conditions (sector management);
- turning off WTG's that are identified as causing the impact; and
- providing acoustic upgrades (glazing, façade, masking noise etc.) to affected dwellings

The type of mitigation required would depend on the conditions which occur when the noise is shown to have an impact as well as site-specific details at the location where the impact is demonstrated. Any noise impact would need to be appropriately investigated by a qualified acoustics consultant to understand which mitigation strategy is most appropriate. Nominating an appropriate management technique is the responsibility of the wind farm operator and would depend on the nature and times of the impact. Specific details of the steps to mitigate potential adverse noise impacts would form a part of an Operational Environmental Management Plan for the project which would be completed following approval of the wind farm. The Operational Environmental Management Plan would also include a noise and vibration management plan that would detail how monitoring and compliance checks will be carried out and steps/methods that would be taken to address adverse noise impacts.

10.11 Construction

The criteria for construction noise are provided in the Interim Construction Noise Guidelines (ICNG) (DECCW, 2009).

Proposed construction activities associated with the wind farm include construction of access roads, establishment of turbine tower foundations and electrical substation, digging of trenches to accommodate underground power cables, erection of turbine towers, and assembly of WTG's.

The anticipated construction period is anticipated to be less than 24 months, with civil works expected to span approximately 12 to 15 months, however, due to the large area of the wind farm site, intensive works will be located within close proximity to individual residential receivers for only very short and intermittent periods of time.

Construction noise has been predicted at all receivers using SoundPlan Noise modelling software. To examine the possible worst case construction noise impacts for all nearby receivers, four different construction scenarios were modelled at each turbine location and the highest noise levels for each receiver predicted. These are:

- construction of access roads;
- establishment of turbine foundations;
- trench excavation; and
- WTG erection and assembly.

The equipment required to complete the above tasks will typically include;

- excavator/grader, bulldozer, dump trucks, vibratory roller
- bucket loader, rock breaker, drill rig, excavator/grader, bulldozer, dump truck, flatbed truck, concrete truck
- cranes, fork lift, and various 4WD and service vehicles.

Predicted construction noise levels against the relevant criteria are shown in Table 10-5. A number of receivers are deemed 'noise affected' under the ICNG. As per the Guidelines, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. No receptors would be considered as being 'highly noise affected' as defined by the Guideline. In order to ensure all appropriate measures are being taken to manage construction noise, a more detailed construction management plan should be developed by the proponent. This document will provide detailed guidance on various noise mitigation strategies for the construction stage.

Table 10-5 Predicted construction noise levels

*Location**	*Construction Activity*				*RBL*	*Noise Management Level*
	Establishment of Turbine Tower Foundations	*Trench Excavation*	*Construction of Access Roads*	*WTG Erection & Assembly*	*Day*	*Day (RBL+10) OR 40 dBA*
R1	52	39	41	39	26	36
R2	59	45	48	45	26	36
R6	49	36	38	36	26	36
R7	49	35	37	35	26	36
R8	47	34	36	34	26	36
R9	47	33	36	33	26	36
R10	45	32	34	32	26	36
R11	50	37	39	37	26	36
R13	55	42	44	42	26	36
R14	56	43	45	43	23	35

Location*	Construction Activity				RBL	Noise Management Level
	Establishment of Turbine Tower Foundations	Trench Excavation	Construction of Access Roads	WTG Erection & Assembly	Day	Day (RBL+10) OR 40 dBA
R16	57	43	46	43	23	35
R17	45	31	34	31	27	37
R19	47	33	36	33	27	37
R20	44	31	34	31	27	37
R22	43	29	32	29	27	37
R24	43	29	32	29	27	37
R25	49	35	38	35	22	40
R26	44	31	33	31	22	40
R29	46	32	35	32	22	40
R30	57	44	47	44	25	40
R31	48	35	37	35	28	40
R32	55	42	44	42	28	40
R33	49	36	39	36	25	40
R34	56	42	45	42	24	40
R35	55	42	44	42	24	40
R36	52	38	41	38	22	40
R38	49	36	38	36	22	40
R40	35	21	24	21	27	40
R41	59	45	48	45	20	40
R42	45	32	34	32	20	40
R44	45	31	34	31	27	40
R45	46	32	35	32	23	40
R46	53	40	43	40	23	40
R47	50	37	39	37	26	40
R48	48	35	37	35	26	40
R49	49	36	38	36	26	40
R50	46	33	35	33	26	40
R51	48	34	37	34	26	40
R52	45	31	34	31	31	40
R53	46	33	35	33	26	40

*Location**	*Construction Activity*				*RBL*	*Noise Management Level*
	Establishment of Turbine Tower Foundations	*Trench Excavation*	*Construction of Access Roads*	*WTG Erection & Assembly*	*Day*	*Day (RBL+10) OR 40 dBA*
R54	47	34	36	34	25	40
R56	49	36	38	36	24	40
R58	37	24	27	24	24	40
R59	44	31	34	31	31	40
R60	46	33	35	33	31	40
R61	44	31	33	31	31	40
R62	45	32	34	32	31	40
R63	45	31	34	31	31	40
R64	43	29	32	29	22	410
R65	45	31	33	31	27	40

10.12 Blasting, Traffic and Night Time Deliveries

Blasting impact has been assessed and found to be acceptable. With a maximum instantaneous charge (MIC) of up to 80 kg, the air blast overpressure is anticipated to be below the acceptable level of 115 dB Linear for all existing residences. Similarly, vibration levels are anticipated to be well below the acceptable criteria.

Should blasting be required there would be specific notification to nearby residences.

Construction traffic noise impact has been assessed and the 'worst case' maximum construction traffic generated scenario would comply with the NSW Road Noise Policy requirements. The projected increase in road traffic noise levels on all local roads is expected to be greater than 2 dBA during peak construction periods, however, road traffic noise levels are anticipated to meet the *Environmental Criteria for Road Traffic Noise (ECRTN)* and subsequent *Road Noise Policy (RNP)* target for a local road of daytime $L_{Aeq(1\ hour)}$ = 55 dBA at a typical setback distance of 50m. We note that being a rural farming community that most receptors are at much greater setback distances from their road frontage and therefore will easily meet the ECRTN requirement.

There could potentially be deliveries of equipment scheduled for out of hours, necessitated by traffic congestion considerations and safe passage of heavy vehicle convoys or especially long loads. Night-time traffic has the potential to cause sleep disturbance to residential receivers along the route.

Preliminary calculations indicate that maximum noise levels at a residence approximately 50 metres from the road as a result of a heavy vehicle pass-by would be in the range 45-55 dBA. Assuming a 10dBA transmission loss through an open window this would result in 35 to 45 dBA inside.

The NSW RNP states that:

> *"Maximum internal noise levels below 50-55dBA are unlikely to awaken people from sleep" and "One or two noise events per night, with maximum internal levels of 65-70 dBA are not likely to affect health and wellbeing significantly."*

In order to further minimise potential noise impacts associated with night-time deliveries some potential measures to be considered are:

- Prior notification of affected public where night-time convoys are scheduled
- Restricted use of exhaust/engine brakes in built up areas
- where possible deliveries will be organised for standard hours

- consultation with neighbours about scheduling activities to minimise noise impacts
- deliveries and access will have a nominated off site truck parking area away from residences for trucks arriving prior to gates opening
- the number of trips and vehicles to and from the site will be optimised e.g. amalgamation of loads instead of multiple smaller loads
- organise designated access routes to the site through consultation with potentially noise-affected residences and other sensitive land uses, and make drivers aware of nominated vehicle routes.

In addition respite periods will be provided which will restrict the number of nights per week and/or the number of nights per calendar month that deliveries are made in consultation with residences who will be most affected.

10.13Night time construction noise

Construction activities associated with the project are planned to be undertaken during standard construction hours as set out in the Interim Construction Noise Guideline (ICNG). Any construction activities outside of the standard construction hours will only be undertaken in the following circumstances;

- Construction activities that generate noise that is:
  - no more than 5dB(A) above rating background level at any residence in accordance with the ICNG (Table 2 of the ICNG); and
  - no more than the noise management levels specified in Table 3 of the ICNG at other sensitive receivers; or
- for the delivery of material required outside those hours by the NSW police Force or other authorities for safety reasons (section 10.11.2); or
- where it is required in an emergency to avoid the loss of life, property and/or to prevent environmental harm; and
- works as approved through the out-of-hours work protocol outlined in the Construction Noise and Vibration Management Plan as part of the Construction Environmental Management Plan.

Table 10-6 shows all noise affected receivers for this construction activity for the night period. Note that the minimum RBL under NSW INP is 30 dBA which therefore creates a minimum noise management level of 35 dBA for the night-time period.

Table 10-6 Night Construction Noise Levels – Noise Affected Receivers

Location	*Construction Activity*	*RBL*	*Limit*
	WTG Erection & Assembly	*Night*	*Night (RBL+ 5) OR 35 dBA*
R1	39	29	35
R2	45	29	35
R6	36	28	35
R7	35	28	35
R11	37	24	35
R13	42	24	35
R14	43	24	35
R16	43	24	35
R25	35	21	35
R26	31	21	35

Location	Construction Activity	RBL	Limit
	WTG Erection & Assembly	Night	Night (RBL+ 5) OR 35 dBA
R29	32	21	35
R30	44	23	35
R32	42	30	35
R33	36	23	35
R34	42	26	35
R35	42	26	35
R36	38	18	35
R38	36	18	35
R41	45	18	35
R42	32	18	35
R44	31	21	35
R45	32	24	35
R46	40	24	35
R47	37	18	35
R48	35	18	35
R49	36	18	35
R50	33	19	35
R51	34	19	35
R52	31	20	35
R53	33	19	35
R54	34	24	35
R56	36	23	35
R64	29	18	35
R65	31	21	35

A total of 19 locations are deemed 'noise affected' by the Guideline for night-time construction. Tower erection near these locations should occur during the daytime, if possible. No predicted levels exceed 75 dBA and therefore no receptors would be considered as being 'highly noise affected'.

A number of portable concrete batching plants with a combined Sound Power Level of 115 dBA will be required to supply concrete onsite. The proposed locations of these batching plants are listed in

Table 10-7. They are often located within or near to the construction compounds where equipment is stored for the duration of the construction phase of the project.

Table 10-7 Concrete Batch Plant Locations

Name	Easting	Northing	Nearest Receivers
CBP1	683952	6150712	R59, R60, R61
CBP2	678143	6183725	R13, R14

Using the existing SoundPLAN noise model, predicted noise levels for the proposed batch plant site at the nearest affected properties were calculated under worst case conditions. Results for those locations that exceed the night-time criteria are shown in Table 10-8.

Table 10-8 Concrete Batch Plant Noise Level Prediction

Location	Predicted Noise Level, dBA	RBL – Night, dBA	Night-time Noise Management Level, dBA
R2	35.6	29	35
R13	36.9	24	35
R14	49	24	35
R16	37.6	24	35
R41	41.9	18	35
R59	36.6	30	35
R61	35.1	30	35
R62	39.4	30	35
R63	38.7	30	35

All other locations are predicted to be below the night-time Noise Management Levels in the Interim Construction Noise Guideline. Some mitigation may be possible for these sources, particularly if they are near other project equipment infrastructure which may provide some localised shielding of the concrete batching plants. This should be addressed in any further management plans for construction noise for the project, as described in Section 10.14

10.14 Mitigation for Construction Noise

The Interim Construction Noise Guidelines recommend that where residences are deemed 'noise affected', that work practices and mitigation measures deemed feasible and reasonable should be applied. Possible mitigation measures may include:

- Scheduling construction works for less critical times of day
- Using alternative, quieter equipment
- Noise controls including temporary walls/earth berms and exhaust silencers
- Keeping the community informed about upcoming works in the area
- Detailed tracking regarding complaints about construction noise, including how each complaint was addressed.

A detailed construction noise management plan will be developed closer to the construction of the wind farm to ensure that all reasonable steps are taken to reduce noise from construction sources including batching plants, and that appropriate community engagement occurs with respect to construction noise.

11 Ecology

11.1 Introduction

A Biodiversity Assessment (BA) has been prepared to assess the ecological impacts of the proposal, as required in the DGR table in 6.1 of this EA. The BA covers construction and operational impacts of the proposed wind farm.

The BA provides an assessment of impact under s.5a of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This specifies factors to be considered for species, population and ecological communities listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act). Additionally, the BA characterises the nature and potential magnitude of impacts for threatened and migratory species, communities and populations listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in accordance with the *Significant Impact Guidelines* (2006).

The report can be seen in its entirety in Appendix C.

11.1.1 Site description

11.1.1.1 Regional

The project area is located on the edge of the Southern Tablelands and South West Slopes of NSW. It lies within the Murrumbateman subregion of the South Eastern Highlands IBRA region, characterised by undulating topography with rounded hills and plateaus, and also within the Northern Inland Slopes (formerly the Upper Slopes) subregion of the South Western Slopes IBRA region. The latter subregion is characterised by steep granite hills with small basalt outcroppings, shallow soils and dry forest types (Morgan, 2011).

The project area is mostly located within the Dalton Hills Mitchell Landscape extending slightly into the Boorowa Volcanics Mitchell Landscape to the west. It is located at the intersection of four sub-regions of two Catchment Management Areas (CMA):

- Upper Slopes and Murrumbateman sub-regions of the Lachlan CMA.
- Upper Slopes and Murrumbateman sub-regions of the Murrumbidgee CMA.

Bango Nature Reserve is located adjacent to the south-western border of the project area.

The region has extensive areas of clearing for agriculture including grazing and cropping with significant loss of biodiversity (ACTCOE, 2000; DSEWPC, 2009) . Regional biodiversity issues include fragmentation, managing weeds and pest vertebrates and providing conservation outcomes for native grasslands and woodlands and associated flora and fauna species on private land (CMA, 2012).

11.1.1.2 Project area

The project area encompasses the property boundaries of involved landholders and is approximately 14, 000 ha.

The project area is characterised by cleared farmland, mostly derived from Box Gum Woodland on the lower slopes and flats with Inland Scribbly Gum Dry Forest vegetation on the steeper sheltered slopes. Remnant stands of the original vegetation remain as paddock trees or larger scattered patches of forest/woodland on the lower slopes with more extensive forested areas on the ridge tops. The pasture ranges from exotic to native species dominated. This pattern of vegetation and land use onsite is common across the locality.

11.2 Approach, Survey Methods and Effort

11.2.1 Impact assessment approach

The BA was preceded by a Biodiversity Constraints analysis to spatially identify key ecological values that represent a constraint to the proposal. The layout was iteratively refined by the Proponent in response to the identified

constraints. All field surveys and the *Biodiversity Constraints Analysis* were undertaken based on a development envelope, that is, a broad area within which the wind farm components and associated infrastructure would be located. A larger area than needed is considered, giving the proponent flexibility to make design changes in response to biodiversity values and constraints identified.

The development envelope has been progressively refined over the course of the assessment phase from zones covering ridgelines (termed 'clusters' in **ngh**environmental 2012) and wide buffers around proposed track and electricity transmission lines (ETL) (November 2011 surveys) to a 100 m buffer around indicative layout for April 2012 and November 2013 surveys. The impact assessment relates to discreet turbine and associated infrastructure locations rather than a development envelope.

11.2.2 Desktop assessment

A desktop assessment was undertaken involving database searches of NSW and Commonwealth threatened (and migratory) species, populations and communities. Database searches included the *Atlas of NSW Wildlife* database, searched by the Upper Slopes sub-region of the Lachlan CMAs (searched 14 October 2011). For flora species additional searches were also undertaken for the Murrumbateman sub-region of the Lachlan CMA and the Upper Slopes and Murrumbateman sub regions of the Murrumbidgee CMA (16 August 2012). An EPBC Act *Protected Matters Search* was also completed using 10 km radius from the centre ridge line of the project area (searched 14 October 2011).

Topographic maps, aerial imagery, previous surveys, web-based literature and other databases (i.e. Department of the Environment (DEH) website for Species Profiles and Threats (SPRATs), Birds Australia and Shorebirds 2020 websites), recovery plans, conservation advice and policy statements for nationally listed species and ecological communities were also consulted. These information sources were used to identify known and potential ecological values, as well as analyse landscape connectivity.

11.2.3 Field work

The project area has been visited several times during the preparation of the BA and includes:

- A broad brush site two-day reconnaissance was undertaken by two ecologists over 26-27 October 2011, prior to field surveys, to understand the variability of the site and general habitat types and condition.
- A suite of field surveys were undertaken over five days within the development envelope and project area between 31 October and 4 November 2011.
- Further flora and fauna surveys, including assessments of new areas and targeted surveys of more constrained areas, were undertaken over five days between 10 and 14 April 2012.
- A suite of targeted surveys were undertaken for specific threatened species, primarily fauna, between July and December 2013; these surveys ranged from two to seven days in duration.

11.2.3.1 Flora methods and effort

Approximately 180 person hours was spent in total on the general flora survey incorporating 59 quadrat/random meander sites and 128 inspection points. Approximately 7 and 5.5 person hours was spent on specific targeted searches within the originally proposed substation site and higher quality areas in the vicinity of RYP_120 during the November 2011 and November 2013 surveys respectively. Survey methods are described in detail in the appended BA and included:

- quadrats;
- random meanders;
- inspections;
- threatened flora targeted searches; and
- understorey condition assessment.

11.2.3.2 Fauna methods and effort

Fauna survey comprised of a series of general and species-specific targeted methodologies to evaluate the potential impact of the wind farm on species known for the project area, or with potential to occur. Survey types and methods are listed below and Table 11-1 shows the target species for each survey type and total survey effort:

General surveys included:

- habitat assessment;
- hollow-bearing tree survey
- bird utilisation surveys including recording abundance and classifying flight height;
- reptile hand searches targeting the potential threatened reptile habitat;
- microbat census using 'Anabat' ultrasonic microbat call detection recording equipment; and
- nocturnal surveys including call playback and spotlighting, focussing on threatened owls and mammals in suitable habitat.

Targeted surveys included:

- Squirrel Glider cage-trapping and targeted nocturnal survey;
- Swift Parrot surveys (capture migration to mainland);
- Superb Parrot surveys (habitat use and flight path mapping);
- Koala RapSAT surveys (scat search surveys);
- Striped Legless Lizard artificial tile surveys;
- Golden Sun Moth surveys; and
- Threatened large forest owls call playback and spotlighting surveys.

Table 11-1 Fauna surveys, target species and survey effort

Survey Type	Target Species	Date	Sampling Method	Survey Effort	Comment
Habitat Assessment	All species, predominantly threatened	November 2011	100 x 100 quadrat	• 54 quadrats	
		April 2012	100 x 100 quadrat	• 20 quadrats	
Hollow-bearing Trees	All hollow-dependent fauna	November 2011	100 x 100 quadrat	• 35 quadrats	
		April 2012	100 x 100 quadrat	• 2 quadrats	
		November 2013	HBTs mapped within 100m of infrastructure in mod-good condition vegetation	• 7 search areas	
Birds	All birds	November 2011	Utilisation Surveys	• 18 surveys of 30 minutes duration **Total effort = 9 person hrs**	
		April 2012	Utilisation Surveys	• 6 surveys of 20 minutes duration **Total effort = 2 person hrs**	
		November 2013	Utilisation Surveys	• 8 surveys of 20 minutes duration **Total effort = 2.7 person hrs**	All birds observed during Superb Parrot transects were also recorded substantially increasing survey effort for birds in general (25 hrs).
	Swift Parrot / All birds	July 2013	Point-count method	• 10 search areas • 6 surveys at 60 mins each (2 people) (1 site visited twice) • 5 surveys at 45mins each (1 person) (3.75 person hrs) **Total effort = 15.75 person hrs**	Surveys undertaken to coincide with the winter migration of the Swift Parrot to mainland from Tasmania.
	Superb Parrot	November 2013	1km transects Flight path mapping	• 25 transects of 1 hr duration **Total effort = 25 person hrs** • 3 days x 8 people of flight path mapping **Total effort = 72 person hrs**	Method and survey effort developed in consultation with Damon Oliver (OEH Threatened Species Team Leader)
Reptiles and Amphibians	All species, primarily Pink-tailed Worm-lizard	November 2011	Active searching (rock, log, branch rolling)	• 11 surveys of 20 – 60 minutes duration **Total effort = 4 person hrs**	

Survey Type	Target Species	Date	Sampling Method	Survey Effort	Comment
	All species, primarily Striped Legless Lizard	November 2012	Funnel Traps	• 2 sites off Flakney Ck Rd along proposed TL **Total effort = 24 traps x 4 nights (96 traps nights)**	Method and survey effort developed in consultation with Rod Piestch (OEH Senior Threatened Species Officer)
	Striped Legless Lizard	November to December 2012	Artificial Tiles	• 10 sites of 50 tiles each • 10 independent checks **Total effort = 50 tiles x 10 sites (500 tiles) checked 10 times each**	
	All Frogs	November 2011	Frog vocalisation survey	• 10 minutes duration	
Microbats	All microbats	November 2011	Anabat surveys	• 9 overnight surveys	
		April 2012	Anabat surveys	• 6 overnight surveys	
		November 2013	Anabat surveys	• 7 overnight surveys	Additional survey effort developed in consultation with Martin Henery (OEH Conservation Planner)
Squirrel Glider	Squirrel Glider	April 2012	Cage trapping	• 2 trap sites near RYP_92 and RYP_105 **Note: RYP_105 is now removed from layout* **Total effort = 8 traps x 4 nights, 8 traps x 3 nights (56 trap nights)**	
Golden Sun Moth	Golden Sun Moth	November 2012		**Total effort = 10 sites visited between 1 and 4 times each.**	
Koala	Koala	July 2013, November 2013	Spot Assessment Technique (RapSAT)	**Total effort =** 7 grids (33 plots)	Method and survey effort developed in consultation with Rod Piestch (OEH Senior Threatened Species Officer)
Nocturnal Survey					
Evening listening / stagwatch	Forest Owls Squirrel Glider	November 2011	N/A	• 3 surveys each by 2-3 people for 30 minutes **Total effort = 3.5 person hrs**	
		April 2012		• 6 surveys by 60 minutes **Total effort = 6 person hrs**	

Survey Type	*Target Species*	*Date*	*Sampling Method*	*Survey Effort*	*Comment*
Call Playback (including listening period)	Forest Owls Squirrel Glider	November 2011		• 5 surveys of 20 minutes duration **Total effort 1.6 person hrs**	
		April 2012		• 3 surveys of 30 minutes duration **Total effort = 1.5 person hrs**	
		November 2013		• 4 surveys of 30 minutes duration **Total effort = 2 person hrs**	Additional survey effort developed in consultation with Martin Henery (OEH Conservation Planner)
Spotlighting	Squirrel Glider Arboreal mammals	November 2011	Vehicle and foot surveys	• 3 vehicle-based surveys • 5 foot-based surveys between 15 minutes and 2 hours **Total effort = 11.75 person hrs**	
		April 2012	Foot surveys	9 foot-based surveys between 30 and 50 minutes **Total effort = 5.5 person hrs**	
		November 2013	Foot surveys	4 foot-based surveys between 30 and 60 minutes **Total effort = 3.5 person hrs**	Additional survey effort developed in consultation with Martin Henery (OEH Conservation Planner)

11.2.3.3 Target species listed by Office of Environment and Heritage

Table 11-2 addresses each species-specific survey requirement recommended by OEH (received by **ngh**environmental 11 June 2013). The table considers the survey effort implemented for this assessment and provides a justification for any deviation from the OEH requirements (for, example, where no suitable habitat for the species occurs or where the level of impact that would be imposed by the wind farm is manageable with regard to the species).

After the initial November 2011 survey was undertaken, further targeted surveys were undertaken to fill survey effort gaps and to determine the presence / absence of a species. OEH requested specific survey requirements for the Superb Parrot, Koala, Striped Legless Lizard, Squirrel Glider, threatened forest owls, threatened microbats, woodland birds, and Golden Sun Moth. Substantial targeted surveys were therefore undertaken in November to December 2013 for the above species; the survey effort and survey locations for these species-specific surveys were developed in consultation with OEH and documented in *Rye Park Biodiversity Assessment - targeted fauna survey V2 2013)*.

Table 11-2 Species specific survey requirements issued by OEH

Species	*OEH recommended survey requirements (paraphrased)*	*Surveys in accordance with OEH*	*Justification for any deviation from OEH requirements*
Flora			
Box Gum Woodland	Identify the extent and condition of this community in the study area and locality.	Yes.	59 quadrat/random meander sites and 128 inspection points (approximately 180 person hours). Vegetation type mapped to the site boundaries. Condition mapped for the development envelope. Infrastructure was designed to avoid good condition areas for Box Gum Woodland (i.e. turbines moved out of Box Gum Woodland remnants or removed from layout altogether). The community has a long history of grazing, with much of the development located within low condition areas. The survey effort employed is considered adequate to the nature and quality of habitat found within the project area.
Silky Swainson Pea, Mountain Swainson Pea, Tarengo Leek Orchid, Crimson Spider Orchid, Yass Daisy.	Systematic surveys using 10m transects through woodland and grassland areas. Surveys should be undertaken during the flowering periods.	Yes, within the originally proposed substation site. Random meanders substituted for transects within proposed transmission line routes	59 quadrat/random meander sites and 128 inspection points (approximately 180 person hours) Box Gum Woodland and derived grassland in moderate or good condition is considered to be the most likely habitat these species would be found. Targeted transects for threatened flora were conducted in higher quality areas of Box Gum Woodland and derived grassland within the originally proposed eastern substation site (removed during layout modifications to avoid sensitive areas). Random meanders were substituted for transects within the high quality habitat in between RYP_109 and RYP_120 given the large area to be covered and the nature of the impacts in this area (limited to the establishment of transmission pole footings and an access track). Both methods are considered acceptable under the Draft Threatened Species Survey Guidelines (DECC 2004). These surveys failed to locate any threatened flora. In addition, five flora quadrat surveys were conducted in moderate or good condition Box Gum Woodland and failed to detect any threatened flora. No threatened flora were detected during the other 54 quadrat/random meander sites and 128 inspection points (approximately 180 person hours) conducted across the broader site or while travelling between these sites.
Fauna			
Regent Honeyeater	Diurnal fixed-width transects or point counts surveys and call playback during breeding season. Surveys can be conducted at any time of year, but optimal conditions during spring and summer.	No. But the species was indirectly surveyed through utilisation bird surveys.	26 bird surveys (11.5 person hours) were conducted across the project area during November 2011 and November 2012. Primary breeding and foraging habitat is not widely available within the project area (i.e. riparian areas of Red Ironbark, Red Gum and Casuarinas, or wetter areas supporting Box-ironbark Eucalypt associations). Two species of mistletoe were recorded on site, but are not widely distributed and occur in low densities. Casuarina and Red Gum are not recorded on site. Potential foraging habitat is primarily present within the Box Gum Woodland within the project area. The Guidelines suggest bird searches of woodland patches with heavily flowering trees, especially around water points, such as creek lines. Woodland patches within the impact area were surveyed during bird surveys. The method employed such as listening for calls during the known breeding season (November) within the most appropriate habitat type available within the impact area is considered adequate to

			detect this species. Given that core breeding habitat is not available on site, foraging resources are generally limited (i.e. not wetter more fertile areas), and known records indicate movement of the species east of the project area, the proposal is not considered to adversely affect the existence of this species
Swift Parrot	Diurnal fixed-width transects and/or point-count surveys during Autumn-Winter.	Yes.	10 point-count surveys undertaken during July 2013 during the species winter migration to the mainland from Tasmania.
Brown Treecreeper, Diamond Firetail, Hooded Robin, Speckled Warbler, Grey-crowned Babbler, Little Lorikeet, Black-chinned Honeyeater, Turquoise Parrot, Varied Sittella.	Diurnal bird census in the early morning or late afternoon at a minimum of three locations within the subject site. Surveys should be 45 minutes duration and separated by a period of one week. Can be undertaken at any time of the year, but not in high-wind and/or rainy days.	Yes.	42 bird surveys (29.45 person hours) were conducted across the project area during November 2011, April 2012, July 2013, and November 2013, with emphasis on wooded areas. The survey effort undertaken is above that recommended by OEH. Additionally, infrastructure has been designed to avoid high habitat value areas for woodland birds and to maintain habitat connectivity (i.e. turbines moved out of Box Gum Woodland remnants or removed from layout altogether).
Scarlet Robin, Flame Robin	As above, but surveys are optimal between July-January, but can be undertaken at any time of the year.	Yes.	As above.
Gang-gang Cockatoo, Glossy Black-cockatoo	Diurnal bird surveys, using a combination of stag-watching and listening for calls of the birds returning to nests in the late afternoon during the known breeding season. Surveys should target hollow-bearing trees (hollows > 10 cm).	No. But both species were not observed during bird surveys	Both species were not observed during bird surveys despite a total of 42 bird surveys undertaken, indicating they are unlikely to be a permanent resident of the project area. Both foraging (Casuarina) and nesting resources for the Glossy Black-cockatoo are absent from the project area and the species is not expected to occur there. The gang-gang was not observed during bird surveys and therefore stag watch surveys were not considered necessary for this species. The survey effort employed is considered adequate for the extent and quality of habitat found within the project area.
Superb Parrot.	Undertake surveys during breeding season using 1 km transects within the project area to determine local flight	Yes.	Surveys deviated from initial OEH requirements but subsequent transect and flight path mapping methodology was developed in consultation with OEH specific to this species.

	paths and usage of the project area. Undertake flight path mapping at advantage points across the project area.		
Barking Owl, Powerful Owl	Nocturnal call playback (1 site per 100 ha). Identify and map all hollow-bearing trees and estimate the availability within the locality.	Slight deviation	10 nocturnal surveys conducted (spotlighting, evening listening, and call playback). Nocturnal call playback was undertaken in suitable potential habitat for these species in accordance with the draft guidelines for threatened species assessment (DEC 2005); however, call playback targeted potential habitat of this species and was not undertaken every 100 ha across the project area given much of the habitat in other unsurveyed areas was unsuitable or marginal. These species are considered further in the impact assessment.
Squirrel Glider	Live-trapping in trees, with traps spaced 50-100m apart, for minimum of 4 nights. Infra-red cameras are supported as a trade-off survey intensity.	Yes.	Cage trapping (56 trap nights) was conducted at two locations of suitable habitat in April 2012, with 9.5 hrs of evening listening, and 20.75 hrs of spotlighting (foot and vehicle) also completed in total. Additional survey effort completed in November 2013 was developed in consultation with OEH and constituted targeted spotlighting in areas of potential habitat that were considered the most appropriate habitat for this species. This species is considered further in the impact assessment.
Koala	Undertake regularised Grid Based Spot Assessment Technique (RapSAT). Map potential Koala habitat in the study area.	Yes.	Survey effort and location of RapSAT grids were developed in consultation with OEH prior to field surveys.
Spotted-tailed Quoll	Use digital infrared cameras in suitable habitats, such as drainage lines. Install cameras for a minimum of four weeks.	No.	The project area does not support habitat for this species. The spotted-tailed Quoll was given a low potential impact rating as rocky habitats (i.e. boulders and cliff faces) required for breeding by quolls are not present within the project area. While this species can also den in large logs and hollows these habitat features are absent from the impact area. Therefore impact of the proposal is negligible and intense survey effort was not warranted.
Eastern False Pipistrelle, Eastern Bentwing-bat, Greater Broad-nosed bat, Yellow-bellied Sheathtail-bat, Greater Long-eared Bat.	Conduct surveys using Anabat recorders and stag-watching. Identify important foraging habitat in the study area and locality. Hollow-bearing tree surveys of the subject site, study area, and locality.	Yes.	23 Anabat surveys were undertaken in 22 different locations. Hollow-bearing trees were mapped in areas of mod-good condition habitat considered potential habitat for these species. As it is difficult to determine abundance or flight paths from Anabat survey there are limitations to determining important foraging habitat given the mobility of microbat species. It is therefore considered that forest and woodland areas in general represent a constraint for these species, as do hollow-bearing trees. However, infrastructure has been designed to avoid high habitat value areas (woodland habitat) to mitigate impact to microbats. Microbats were considered further in the impact assessment and were noted as focus species for a bird and bat monitoring program.
Grassland Earless	Spider tubes should be used to	No.	11 herpetofauna searches in suitable habitat including active searching and rolling of rocks, logs and other debris.

Dragon	survey areas of suitable habitat (natural temperate grassland or nearby secondary grassland dominated by Wallaby Grass). 10-wk survey season from February to April with tubes checked twice a week.		In the project area, rocky outcrops generally occur on hill crests in cleared and forested areas and are sparsely distributed, occurring mostly in the northern portion of the site. Primary habitat for these species does not occur within the project area. The survey effort is considered adequate for the extent and quality of habitat available within the project area.
Pink-tailed Worm-lizard, Little Whip Snake	Rock rolling and active searching under logs and debris. Undertake surveys between mid-August and end of October. Daily temperatures to not exceed 25 degrees. Surveys in the locality for habitat of the species.	Yes, for the Pink-tailed Worm-lizard.	
Striped Legless Lizard	Pitfall trapping in suitable habitat (natural temperate grassland or nearby secondary grassland dominated by Kangaroo Grass). Trapping should last for 6 weeks (mid-November to mid-late December). Roof tiles should also be used 4 months prior to checking.	Yes.	Survey effort and location of artificial tiles sites were developed in consultation with OEH prior to field surveys.
Golden Sun Moth	Surveys should target areas with greater than 40% *Austrodanthonia* (Wallaby Grass) in ground cover. Conduct surveys when known populations in the local area are in flight.	Yes.	Surveys undertaken by Kris Nash, an expert in Golden Sun Moth survey especially within the ACT region.

11.3 Results - Flora

11.3.1 Disturbance and weeds

Most areas of forest have a low diversity of tree age groups, being mostly dense young regrowth as a result of previous clearing. Many areas of the site have been grazed and show evidence of this in the low diversity of native pasture species and forbs.

Common weeds associated with grazing are widespread and have invaded areas of more intact woodland and forest vegetation. Two noxious weeds declared for the Boorowa LCA were detected during the surveys:

- Scotch Thistle; and
- Blackberry

Large areas of the site are now dominated by the colonising species Sifton Bush, declared noxious in many shires within NSW however, it is not declared noxious within the Boorowa Local Control Area (LCA) (within which the site occurs).

11.3.2 Vegetation types

Eleven vegetation types occur within the development envelope. These vegetation types are described in the BA, and their distribution across the project area shown in the BA. Vegetation types include:

- Inland Scribbly Gum – Red Stringybark open forest;
- Blakely's Red Gum - Yellow Box grassy tall woodland;
- Blakely's Red Gum - Yellow Box grassy tall woodland derived grassland;
- Argyle Apple – Acacia mearnsii valley open forest;
- Brittle Gum - peppermint open forest;
- Red Box Woodland;
- Phragmites Swamp;
- Sifton Bush Shrubland;
- native pasture;
- exotic pasture; and
- planted vegetation.

These vegetation types and their distribution across the project area are described in the BA in Appendix C.

11.3.3 Threatened flora and vegetation communities

The database searches (EPBC Act protected matters search and NSW Wildlife Atlas) indicated 27 threatened species or their habitat and five endangered ecological communities could occur in the project site. No threatened flora species were detected during the surveys. A threatened species evaluation was undertaken to evaluate the presence of habitat in the project area and the likelihood of occurrence and impact from the proposal for each species and community returned from database searches. This evaluation is presented in full in Appendix B.1 of the BA. Table 11-3 below lists threatened flora species or EECs that are considered possible to occur and have at least marginal or (potential or known) habitat present in the project area.

Table 11-3 Threatened flora and ecological communities with potential to occur in the project area

Species	*Status*	*Habitat*	*Identified on site?*	*Further Assessment of Significance (Y/N)?*
Hoary Sunray	E EPBC	Grasslands and grassy woodlands, often	No	No

Species	Status	Habitat	Identified on site?	Further Assessment of Significance (Y/N)?
(Leucochrysum albicans var. tricolor)		colonising disturbed sites such as road verges.		
Yass Daisy (Ammobium craspedioides)	V TSC V EPBC	Moist or dry forest communities, Box-Gum Woodland and secondary grassland derived from clearing of these communities. Can persist in lightly grazed situations.	No	Yes
Tarengo Leek Orchid (Prasophyllum petilum)	E TSC E EPBC	Box Gum Woodland and Natural Temperate Grassland.	No	No
White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and derived native grasslands	EEC TSC CEEC EPBC	Open woodland community occurring on the slopes and in valleys at the project area	Yes	Yes

11.3.3.1 Endangered Ecological Community: Box-Gum Woodland

The definition of Box Gum Woodland listed under the NSW TSC Act includes White Box, Yellow Box and Blakely's Red Gum Woodland recorded during the surveys and includes: 1) Woodland areas with or without native understorey; and 2) Grasslands and pastures dominated by native grasses that are derived from this community. The Commonwealth EPBC Act sets more stringent criteria for the recognition of the Box Gum Woodland Critically Endangered Ecological Community (CEEC) listed under that Act.

The proposal would require the removal of both TSC and EPBC listed EEC as follows:

- TSC EEC Up to 28 ha to be removed or modified.
- EPBC EEC Up to 12 ha to be removed or modified.

All areas of EEC identified within the project area would be classified as 'moderate to good' condition under the NSW OEH Biometric condition definition (DECC 2008).

11.3.4 Vegetation Condition

Vegetation condition varies considerably throughout the project area and includes woodland and fragmented woodland which has been logged and is regenerating, native pasture with scattered trees, pasture dominated by exotic species, and to a lesser degree relatively undisturbed forest. Woodland areas do not support a mosaic of tree ages and largely consist of regrowth and single age stands. The majority of the site has been subject to long-term grazing which has reduced native flora species diversity. In many areas, the canopy layer is present but the mid- or shrub-layer is absent.

Common weeds associated with grazing are widespread and have invaded areas of more intact woodland and forest vegetation. Two noxious weeds declared for the Boorowa LCA were detected during the surveys:

- Scotch Thistle
- Blackberry

Large areas of the site are now dominated by the colonising species Sifton Bush, declared noxious in many shires within NSW however, it is not declared noxious within the Boorowa Local Control Area (LCA) (within which the site occurs).

11.4 Results - Fauna

11.4.1 Habitat types

Fauna habitat in the project area includes:

- woodland;
- forest;
- mixed native/exotic pasture with scattered trees; and
- native pasture.

Additional habitat features occur within the four main habitat types:

- hollow-bearing trees;
- rocky outcrops; and
- aquatic areas.

Habitat condition across the project area was variable due to different soil types, disturbance histories and land management. Generally the habitat quality was higher in the southern portion of the proposal area, and more degraded in the northern portion. Areas where habitat types intersect, providing ecotones, tended to provide the highest habitat quality.

11.4.2 Fauna species recorded during field surveys

A total of 143 fauna species were recorded during the field surveys and these are listed in Appendix A.2 of the BA. In summary the total numbers for each fauna group included:

- Ninety-nine bird species;
- Fifteen mammal species (excluding microbats) of which five are introduced species;
- Twelve microbat species;
- Fifteen reptile species; and
- Two amphibian species.

11.4.3 Raptors

Five species of raptors were seen in the project area, all considered common in the region:

- Brown Falcon Falco berigora.
- Nankeen Kestrel Falco cenchroides.
- Black-shouldered Kite Elanus axillaris.
- Brown Goshawk Accipiter fasciatus.
- Wedge-tailed Eagle Aquila audax.

Raptors were seen in a variety of landscape positions, mostly in pasture with scattered trees or along the edges of forest or woodland. One inactive Wedge-tailed Eagle nest was identified. A Nankeen Kestrel nest was observed along Flakney Creek Road near a proposed transmission line and access tracks.

11.4.4 Threatened and migratory fauna

The Commonwealth and State online database searches and NSW Wildlife Atlas threatened species records returned two amphibian, five microbat, 33 bird, one invertebrate, five marsupial and three reptile species listed as threatened in the Upper Slopes sub-region of the Lachlan CMA. A threatened species evaluation was

undertaken to evaluate the presence of habitat in the project area and the likelihood of occurrence and impact from the proposal for each species and community identified. This evaluation is presented in full in Appendix B.2 of the BA. The evaluation concluded that 17 threatened species have potential to be present on parts of the project area, based on habitat and site quality and known distribution. Additionally, 16 threatened species were recorded during the field surveys including: one invertebrate species, one reptile species, nine birds, and three microbats. Table 11-4 lists threatened fauna species that were recorded during field surveys and species considered possible to occur.

Table 11-4 Threatened fauna with potential to occur in the project area

Species	Status	Habitat	Likelihood of occurrence	Location in project area	Further Assessment of Significance (Y / N)
Invertebrates					
Golden Sun Moth Synemon plana	E TSC CE EPBC	Grassy Box Gum Woodlands and natural temperate grasslands.	Present	South of RYP_144 near proposed transmission line; north of RYP_73; west of RYP_99; south of RYP_101 near proposed transmission line; west of RYP_120 and RYP_127; and east of RYP_131.	Yes
Amphibians					
Sloane's Froglet *Crinia sloanei*	V TSC	Periodically inundated areas in grassland, woodland and disturbed habitats.	Possible	N/A	No
Reptiles					
Pink-tailed Legless or Worm Lizard *Aprasia parapulchella*	V TSC V EPBC	Open woodland with predominantly native grasses and natural temperate grasslands on well-drained slopes with scattered, partially-buried rocks.	Possible	N/A	No
Rosenberg's Goanna *Varanus rosenbergi*	V TSC	Heath, open forest and woodland.	Possible	N/A	No
Striped Legless Lizard *Delma impar*	V TSC V EPBC	Temperate lowland grasslands, secondary grasslands and occasionally open Box Gum Woodland.	Present	RYP_27	Yes
Birds					
Barking Owl *Ninox connivens*	V TSC	Dry box-dominated forest and woodlands and roosts in dense foliage of *Acacia, Casuarina* or *Eucalyptus* species.	Possible	N/A	No
Black-chinned Honeyeater *Melithreptus gularis gularis*	V TSC	Drier open forests or woodlands most often dominated by box and ironbark eucalypts.	Possible	N/A	No
Brown Treecreeper (eastern subspecies) *Climacteris picumnus*	V TSC	Occurs in eucalypt woodlands, mallee and drier open forest, preferring woodlands lacking dense understorey	Present	RYP_102-104 in November 2011, April 2012, and November 2013.	No

Species	Status	Habitat	Likelihood of occurrence	Location in project area	Further Assessment of Significance (Y / N)
victoria					
Diamond Firetail *Stagonopleura guttata*	V TSC	Woodland remnants of grassy eucalypt woodlands, including Box-Gum, grassland and riparian areas, and sometimes lightly wooded farmland.	Present	In paddock tree east of the transmission line between RYP_101 and RYP_102 in November 2011 (outside project area); north of RYP_102 in November 2013 (outside project area).	No
Flame Robin *Petroica phoenicea*	V TSC	Native vegetation with an open understory. It breeds in upland forests and woodlands and migrates to more open lowland habitats in winter.	Present	Near RYP_95 in November 2011 and April 2012; near RYP_103 during November 2013; near Flakney Ck Rd in November 2013.	No
Gang-gang Cockatoo *Callocephalon fimbriatum*	V TSC	Varies from open forests and woodlands to heavily timbered and mature wet forest.	Possible	N/A	No
Grey-crowned Babbler (eastern subspecies) *Pomatostomus temporalis temporalis*	V TSC	Box Gum Woodlands, open forests, scrub lands, even farmlands and suburbs.	Possible	N/A	No
Hooded Robin (South eastern form) *Melanodryas cucullata cucullata*	V TSC	Woodland remnants with high habitat complexity and uses stumps, posts or fallen timber.	Present	RYP_103 and around RYP_106 and RYP_107 in April 2012; near RYP_120 in November 2013; east of RYP_53 in November 2013.	No
Little Eagle *Hieraaetus morphnoides*	V TSC	Open eucalypt forest, woodland or open woodland.	Possible	N/A	No
Little Lorikeet *Glossopsitta pusilla*	V TSC	Open eucalypt forest and woodland.	Possible	N/A	No
Painted Honeyeater *Grantiella picta*	V TSC	Dry open forests and woodland with mistletoe.	Present	All records in November 2013: west of RYP_4; Flakney Ck Rd; and west of RYP_106 to RYP_120.	Yes
Powerful Owl *Ninox strenua*	V TSC	Dry sclerophyll forest including Argyle Apple and roosts in dense mid-canopy trees or tall shrubs, often associated with drainage lines.	Possible	N/A	No
Regent Honeyeater *Xanthomyza phrygia*	V TSC	Box-ironbark eucalypt associations including Yellow Box and Blakely's Red Gum.	Possible	N/A	Yes

Species	*Status*	*Habitat*	*Likelihood of occurrence*	*Location in project area*	*Further Assessment of Significance (Y / N)*
Scarlet Robin *Petroica boodang*	V TSC	Dry eucalypt forests and temperate woodland. Fallen timber is an important habitat feature	Present	In forest south of RYP_105 (now removed from layout) in November 2011; south of RYP_56 in April 2012; and near Flakney Ck Rd in November 2013.	No
Speckled Warbler *Pyrrholaemus saggitatus*	V TSC	Eucalypt woodland with a grassy understorey.	Present	Near RYP_106 and RYP_107 in April 2012 and November 2013; east of RYP_42 in November 2013.	No
Spotted Harrier *Circus assimilis*	V TSC	Grassy open woodland and riparian woodland.	Possible	N/A	No
Square-tailed Kite *Lophoictinia isura*	V TSC	Open forest, woodlands and mallee.	Possible	N/A	No
Superb Parrot *Polytelis swainsonii*	V TSC V EPBC	Box Gum Woodland and can nest in isolated paddock trees.	Present	On transmission line between RYP_101 and RYP_102 in November 2011; Flakney Ck Rd in November 2013, and south of project area between RYP_110 and RYP_120 in November 2013; several records along access roads outside of project area and to west of project area in November 2011 and November 2013. Nests near RYP_120 and east of RYP_143.	Yes
Swift Parrot *Lathamus discolour*	E TSC E EPBC	Eucalypt forests and woodlands.	Possible	N/A	No
Turquoise Parrot *Neophema pulchella*	V TSC	Grassy woodland and open forest including Box Gum Woodland.	Possible	N/A	No
Varied Sittella *Daphoenositta chrysoptera*	V TSC	Eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches.	Present	RYP_106 and RYP_107 in April 2012 and November 2013.	No
White-fronted Chat *Epthianura albifrons*	V TSC	Open grassland habitats inland form the coast or damp open habitats.	Present	Outside of impact area in April 201; north of RYP_27 and west of RYP_120 in November 2013.	No
Mammals (excluding microbats)					
Koala *Phascolarctos cinereus*	V TSC	Eucalypt woodland and forest communities.	Possible	N/A	No
Squirrel Glider *Petaurus norfolcensis*	V TSC	Mature or old growth Box, Box-Ironbark woodlands and River Red	Possible	N/A	No

Species	*Status*	*Habitat*	*Likelihood of occurrence*	*Location in project area*	*Further Assessment of Significance (Y / N)*
		Gum forest.			
Microbats					
Eastern Bent-wing Bat *Miniopterus orianae oceanensis*	V TSC	Forage over canopy in range of forest types. Breeds in caves and mine tunnels.	Present	RYP_104 and in the forest south of this site, near RYP_143, RYP_82, RYP_80, RYP_25 and RYP_9 in November 2011. One location in April 2012 (RYP_105 – now removed from layout). At RYP_84 and RYP_90 during November 2012.	Yes
Eastern False Pipistrelle *Falsistrellus tasmaniensis*	V TSC	Forages below or near the canopy and along tracks, uncommon on ridge tops where soil fertility is low. Roosts in tree hollows and buildings.	Present	RYP_80 in November 2011	No
Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris*	V TSC	Wide-ranging species across northern and eastern Australia. It roosts in tree hollows.	Present	Near RYP_7 in November 2011	Yes

11.5 Impact Assessment

11.5.1 Types of impacts

Three primary adverse biodiversity effects were assessed:

- Habitat loss (vegetation clearance);
- Blade-strike (bird and bat collisions with turbines or barotrauma); and
- Alienation or barrier effects (behaviour change in fauna).

Additionally, as there are a number of developments including wind farms in the region, cumulative impacts from vegetation clearing and operational or alienation effects were assessed.

11.5.2 Flora impacts (vegetation clearance)

At the time of this assessment, the proposal included scope for the development of 126 turbines. This may be reduced, however the calculations for magnitude of impact remain based on the worst-case scenario (126 turbines). The proposal would result in the removal of vegetation under the development footprint, including the turbine towers and surrounding hardstand and crane operation areas, substation and control building and access tracks. Electrical cabling (33kV) would be installed within areas disturbed for the access tracks.

Estimates of permanent habitat loss for each of the affected vegetation types are presented in the tables below Table 11-5, Table 11-6), based on the final indicative infrastructure layout provided by the proponent (several layout revisions have taken place to reduce impacts since the beginning of site investigations – refer Section 11.7.1).

Overall impact areas have been determined based on worse case infrastructure footprints provided by the proponent. Impact areas by vegetation type were calculated using GIS mapping software, however it should be noted that some total habitat loss figures are likely to be *overestimated* due to overlaps of infrastructure, for example tracks crossing hardstand areas and tracks within overhead transmission easements. It should be noted that for the purposes of these calculations, exotic dominated pasture is not considered to constitute habitat.

Table 11-5 Estimated permanent impact areas by vegetation condition

Vegetation types	***Permanent habitat loss within each condition class (ha)***					***Total within project area (ha)***
	Good	**Moderate**	**Poor**	**Unknown**	**Total**	
Box Gum Woodland	10	1	14	0	25	1,555
Box Gum Woodland Derived Grassland	0	1	6	0	6	1,513
Inland Scribbly Gum Forest	41	30	19	0	90	3,753
Argyle Apple Forest	0	0	0	0	0	59
Brittle Gum Forest	0	0	2	0	2	175
Sifton Bush Shrubland	14	15	2	0	30	1,720
Native pasture	2	22	36	0	60	4,374
Exotic/planted	0	0	23	0	23	887
				Total	**235.93**	**14,035.99**

Table 11-6 Estimated TSC Act EEC permanent impact areas by condition class

EEC	Permanent habitat loss within each condition class (ha)			
Box Gum Woodland and Derived Grassland	Good	Moderate	Poor	Unknown
	10	2	28	0
Total area within the site boundary	• **353**	• **27**	• **357**	• **2,331**

11.5.2.1 Impacts to Endangered Ecological Community (Box Gum Woodland EEC/CEEC)

Within the project area few areas were defined as moderate or good condition EEC areas. Good condition areas estimated to be cleared account for approximately 10 ha of the 3,068 ha Box Gum Woodland area assessed. One area in the south of the project area (in the vicinity of RYP_110 and RYP_120 and to the west of these) consists of higher diversity Box Gum woodland and would be directly impacted by the proposal due to the establishment of a 45m wide easement for the 132kV overhead transmission line and some smaller areas for access tracks. Of all the Box Gum Woodland mapped, this area supported the largest patches of this community within the project area and the highest abundance of mature box trees. This area was also identified as important habitat for the Superb Parrot and Painted Honeyeater. These areas have high conservation value and also qualify as the Commonwealth Box Gum Woodland CEEC and have been mapped as a high constraint. Approximately 2 ha of moderate condition Box Gum Woodland would also be permanently cleared by the proposal. Although modified, areas in moderate condition are considered to have potential for recovery and have also been mapped as a high constraint.

The infrastructure layout has been refined to avoid, where possible, Box Gum Woodland habitat, especially moderate to good condition areas. As a result the turbines RYP_14, RYP_108, RYP_111, and RYP_116, were moved out of Box Gum Woodland remnants. In particular, at least 4 km of proposed transmission line has been removed to avoid good condition EEC in the southern section of the project area.

The EEC over the vast majority of the project area is characterised by low diversity native pasture in poor condition. Of the EEC within the project area (3,068 ha), the estimated amount of poor condition EEC to be cleared accounts for 28 ha. Predominately, the areas to be impacted contain a moderate to low tree density with an understorey of native grass dominated pasture with a relatively low native forb and shrub diversity (0 – 11 non-grass species in poor and moderate condition). This structural and understorey configuration is common and widespread in farmland throughout the region, and particularly within high elevation areas on the ridgetops of the project area. The areas of habitat within the site are already fragmented due to previous clearing, grazing pressure, the planting of exotic pastures, the ingress of weeds and the occurrence of other vegetation communities in habitats not suitable for Box Gum Woodland. The long history of grazing, fertiliser use and weed invasion means that the potential for natural regeneration is likely to be very low. Given the low conservation value of this vegetation and the highly localised and limited impacts associated with the proposal, impacts to poor condition Box Gum Woodland are not expected to be significant.

As a precautionary approach, this assessment has considered that the worst case scenario would be the total loss of this vegetation type within the 132 kV transmission line easement; however in reality the vegetation is open woodland meaning that only scattered trees would need to be cleared. The understorey would also be mostly retained excluding small areas required for footings and tracks. It is considered likely that the community would maintain its existing functionality following construction.

Where occurrences of EEC are along established roads or tracks it may be possible to further avoid or minimise impacts in these areas. Impacts to areas in transmission line clearing corridors of the study areas may also have the potential to be avoided or minimised by micrositing infrastructure with input from an ecologist. Where new tracks, turbines or other infrastructure are placed within identified areas of EEC impacts are unavoidable and offsetting these impacts would be required. Higher offset ratios apply to higher value habitat, providing an incentive throughout the construction process to minimise impacts in high value areas.

Offsetting is recommended by this report to maintain or improve the biodiversity values associated with the EEC/CEEC within the proposal site. Large areas potentially exist within the site boundary that if properly managed can assist with the recovery of this community, arresting existing threats and managing the land for biodiversity

outcomes in perpetuity. With the implementation of the controls and recommendations of this report the proposal is considered unlikely to have a significant impact on the Box Gum Woodland EEC/CEEC.

Box Gum Woodland provides habitat for several threatened fauna species, particularly the Superb Parrot, Painted Honeyeater, Golden Sun Moth, and Striped Legless Lizard. These species were detected in this habitat type within the project area.

11.5.2.2 Impacts to threatened flora species

Yass Daisy

The Yass Daisy is a rare perennial herb, 30-60 cm high, inhabiting sclerophyll woodland, forest and roadsides (Harden 1992). It appears to be unaffected by light grazing, with some populations persisting in grazed sites (OEH 2012). In surveys conducted in the Boorowa Shire, all of the occurrences of this species were on land characterised by a light grazing regime. The Yass district is the centre of distribution for this species (Fallding 2002). Most populations occur in the Yass District, at Lake Burrinjuck, Bookham, Rye Park and Dalton. The Yass Daisy has been recorded within 2.5 km west and south-east of the project area. Current threats to the species include agricultural developments, intensification of grazing regimes, invasion of weeds, road works (particularly widening or re-routing) and inappropriate mowing or slashing in cemetery sites (OEH 2012).

Targeted searches were undertaken for this species in higher quality areas of Box Gum Woodland and derived grassland immediately north of RYP_120 and within the proposed overhead transmission line routes to the north-west of RYP_120 and south west of RYP_110. These areas have a long and continuing grazing history. Much of the total area of disturbance would involve tree clearing for a 45m wide easement for the 132kV overhead powerlines. The groundlayer habitat under the powerlines would be largely undisturbed, with the exception of small areas required for pole footings and a maintenance track. In view of the limited extent and pattern of clearing and the low impact on groundlayer vegetation within the transmission line, the works are not expected to add to the existing level of fragmentation or isolation of potential Yass Daisy habitat. The proposal would result in the permanent loss of up to 12 ha of moderate and good condition Box Gum Woodland, which provides potential habitat for the threatened Yass Daisy.

The potential habitat at the subject site is considered unlikely to support the species given the species was not detected during targeted searches; these areas considered as potential habitat are now assessed as low importance for the Yass Daisy. The proposal will not result in significant impact to this species.

11.5.3 Fauna impacts (habitat loss, collision, Alienation)

As a worst-case scenario, the proposal involves the permanent removal of up to approximately 235.93 ha of potential habitat for a variety of species, including 92 ha of forest, 26 ha of woodland, 30 ha of shrubland, 60 ha of native pasture and 23 ha of exotic vegetation. Given the proposal is linear in structure, involves narrow clearance corridors and as such does not result in large consolidated areas of clearing, the proposed habitat removal is unlikely to be considered large with respect to the remaining areas of potential habitat present throughout the project area.

11.5.3.1 Habitat loss (hollow-bearing trees)

Hollow-bearing trees are present across the project area, and may occur in all habitat types and condition classes. Using the estimates above of vegetation community extent and total clearing (Table 11-5), an approximation of the number of hollow-bearing trees that may occur within the project area and the number that may be cleared by the proposal is given in Table 11-7. The average number of hollow-bearing trees per hectare for each vegetation type is derived from hollow-bearing tree data recorded from the 35 plots surveyed.

Table 11-7 Estimates of number of hollow-bearing trees (HBT) in project area (HBT extent) and the number and percentage of total that may be cleared by the proposal

Vegetation	Av. HBT per hectare	Veg extent (ha)	HBT extent	Clearing (ha)	No. HBT cleared	Per centage of total
Forest	13.5	4,654	62,829	53	715.5	1.1%
Woodland	13.5	3,048	41,148	21	283.5	0.7%

Vegetation	Av. HBT per hectare	Veg extent (ha)	HBT extent	Clearing (ha)	No. HBT cleared	Per centage of total
Paddock	1	7,307	7,307	30	30	0.4%
Total worst-case HBT cleared			**111,284**		**1,029**	**0.9%**

Note: Forest amalgamates Argyle Apple, Brittle Gum and Scribbly Gum forest types. Woodland is equivalent to Box Gum Woodland and paddock combines Box-Gum Woodland derived grassland and native pasture.

11.5.3.2 Impacts to threatened or higher risk fauna species

Several fauna species with potential to occur or those recorded during field surveys were assessed in detail within the impact assessment of the BA and are detailed below.

Koala

The main threats to the Koala are the ongoing loss, fragmentation and degradation of habitat, vehicle strike, disease and predation by the domestic dog (SEWPAC 2013). As direct clearance of habitat for the Koala is defined to limited areas the proposal will not increase the main threats of loss of habitat and fragmentation. Furthermore, vehicle strike is not anticipated as the movement of trucks transporting turbines will be temporary and confined to the construction stage; due to steep terrain and land access trucks will be moving at slow speeds within the project area at this time. Vehicle movement will be limited during the operational phase of the project to a single 4WD vehicle for routine maintenance checks. Therefore, the proposal will also not enhance other key threats from indirect impacts of vehicle strike.

Given evidence of the Koala was not detected during the 33 RapSAT surveys, the Koala is not expected to occupy the habitat in high numbers and severity of impact is not considered to be adverse on the Koala (if it were to occur). Additionally, a substantial amount of available habitat will remain within the project area and locality and the proposal will not fragment habitat for this species. Therefore, the proposal is not considered to significantly impact on this species.

Squirrel Glider

Similar to the Koala, construction disturbance and vegetation clearance impacts will occur from the proposal, however these impacts are considered minor due to the nature of clearing and the location of clearing in the context of the available habitat remaining within the landscape. Potential habitat for the Squirrel Glider is limited to a number of proposed turbine sites and the access tracks that will connect these to the main access network (none is present in transmission line easements, the main access track network or proposed substation locations). Within the area of available habitat for this species, clearance for wind turbines will be nil in many locations and minor in other areas, as the main access tracks and turbine sites are predominantly located in cleared or non-forested areas with many tracks already 20m wide due to existing agricultural land practices. The species typically requires sufficient connectivity of tree cover within their maximum gliding distance (70m) (Van der Ree *et al.* 2003) to move through the landscape. The proposal will not fragment existing habitat given the minor amount of clearance and access tracks will be no larger than 70m wide.

In total 90 ha (41 ha of good condition) of Inland Scribbly Gum will be removed for the proposal, with 3,753 ha remaining within the project area. Given the Squirrel Glider was not detected during targeted field survey, clearance impacts are not considered to be adverse on this species, and a substantial amount of available habitat will remain within the project area and locality, the proposal is not considered to significantly impact on this species.

Golden Sun Moth

The Golden Sun Moth was observed at seven of the ten sites surveyed and approximately 200 moths were observed in total. In particular, the southern section of the site appears to support larger numbers of Golden Sun Moth, as well as the area surveyed east of RYP_72. The habitat within these sites was variable and supported a mixture of native grasses and exotic grasses including Weeping Grass, Brush-tail Spear Grass, Wattle Matrush, Wallaby Grasses and localised patches of bracken. Large areas could also be dominated by the annual *Vulpia* spp.

The locations moths were observed are currently impacted by transmission lines, access tracks and substation infrastructure, but no turbines. For these infrastructure types, the proposal has potential to primarily directly impact the emerged phase of the Golden Sun Moth during habitat clearance (i.e. not below ground other than for pole

excavation). However, as the species was detected on site in variable quality habitats it is likely it could occur elsewhere not assessed during the November 2013 survey.

Therefore, as a precautionary measure, the habitat in which the species was located and all contiguous habitat of similar structure and condition has been delineated as potential habitat. This includes all Box Gum Woodland, derived grassland and native pasture habitats across the project area. To determine the extent of impact in this habitat type and specifically quantify habitat for this species within the project area, management measures have been prescribed to undertake further preconstruction surveys of the final infrastructure layout in accordance with the relevant survey guidelines (Significant Impact Guidelines for the critically endangered Golden Sun Moth *Synemon plana;* DEWHA 2009a) for this species. The results of these surveys would be used to minimise impacts and ensure offsetting requirements, where avoidance is not possible. The management protocols for this species would be documented within a management plan, to be implemented as part of the construction process.

However, assuming the Golden Sun Moth occurs in all grassland habitats of the project area, the current total impact for this species is 66 ha. Of these habitat types, 5,887 ha is available within the project area and therefore the ability to offset impact to this species within the immediate area of proposed infrastructure is achievable. Offset sites would target better quality areas of Wallaby Grasses.

Furthermore, there are 15 known populations of the Golden Sun Moth in the general area between Yass and Boorowa, including at Rye Park (DEWHA 2009b) and this species has recently been shown to be more widespread than currently thought, particularly within the Yass Valley region. Recent survey results at another wind farm in the region (Yass Valley Wind Farm) have also shown the species to occur in high numbers (i.e. > 200 individuals). In light of the above, a significant impact to this species is not expected and impacts are considered manageable.

Striped Legless Lizard

One individual of the Striped Legless Lizard was recorded at tile plot 10 (RYP_27) in the northern section of the project area. The species was located on a grazed ridge top supporting a predominantly exotic grassland, with some native species. The Striped Legless Lizard tile surveys sampled areas of potential habitat across the project area to determine presence or absence of the species. The survey was confined to areas where potential habitat was most likely to coincide with areas to be impacted by the proposed development. As the species was detected the habitat in which it was located and all contiguous habitat of similar structure and condition has been assessed as potential habitat for this species.

Assuming the Striped Legless Lizard could occur in all grassland habitats of the project area, the total impact to potential habitat of this species is 66 ha (including Box Gum Woodland Derived grassland and native pasture habitat). Of these habitat types, 5,887 ha is available within the project area and therefore the ability to offset impact to this species within the immediate project area is achievable. To determine the extent of impact, management measures have been developed and are prescribed and include undertaking more detailed microhabitat survey of the site (referencing habitat attributes where the species was located) prior to the end of February 2014 to determine the extent of similar habitat within the project area and quantify the extent of clearance impact. These survey results would be used to minimise impacts and ensure offsetting requirements, where avoidance is not possible.

Woodland Birds

Eight threatened woodland bird species were recorded within the project area during the surveys and are detailed in Table 11-8. Table 11-8 details the amount of habitat present within the project area for these bird species and the amount likely to be impacted by the proposal. Given the habitat present for these species within the project area is substantial in comparison to that to be cleared, it is unlikely that the proposal would result in a significant reduction in habitat for these species. In addition, areas of good quality woodland or forest, including patches comprising movement corridors, have been avoided in the majority of instances. As a result woodland and forest patches would not become fragmented as a result of the proposal.

Collision with turbines is not considered a risk for these species as these species were not recorded within the rotor-swept-area during utilisation data or during general observations. These species were observed to stay below 15 m the majority of the time, with many records observed of these species on, or near the ground.

Table 11-8 Likely habitat loss impacts to threatened woodland birds recorded within the project area

Species	Habitat within project area	Total habitat (ha) within project area	Total habitat to be impacted within project area	% of total habitat to be impacted
Brown Treecreeper	Predominantly Inland Scribbly Gum Forest	3,753	90	2.4%
Diamond Firetail	Box Gum Woodland Native Pasture	7,442	91	1.2 %
Flame Robin	Inland Scribbly Gum Forest Native Pasture	8,127	150	1.8 %
Hooded Robin	Inland Scribbly Gum Forest Native Pasture	8,127	150	1.8 %
Scarlet Robin	Inland Scribbly Gum Forest Native Pasture	8,127	150	1.8 %
Speckled Warbler	Inland Scribbly Gum Forest	3,753	90	2.4 %
Varied Sittella	Inland Scribbly Gum Forest	3,753	90	2.4 %
White-fronted Chat	Native Pasture	4,374	60	1.3 %

Superb Parrot

Superb Parrots were regularly observed during field surveys but results show that the parrot is common to the west of the project area, but is not moving across the ridges proposed for turbines and are not undertaking large-scale movements at higher elevations (i.e. at rotor-swept-area height) and risk of collision impact is low overall. Rather, movement nearby the project area consists of local movements within discrete areas where foraging habitat is available. Superb Parrots generally followed corridors of vegetation and flew below canopy height (i.e. less than 20 m). In particular, Rye Park Road is regularly utilised by the parrot and is considered important roadside vegetation for this species in the locality. The species was recorded in higher abundance along this road than anywhere else within the project area.

Primary flight paths appear to run in a north-south alignment along the western edge of the project area, or from the western edge of the project area further west towards Boorowa (Appendix E.4 of the BA). It is expected that Superb Parrots are moving regularly between the western edge of the project area and Boorowa (a known important breeding area for the species), but are not coming from further east of the project area.

The total clearance impact to Superb Parrot habitat (Box Gum Woodland) would be 25 ha, with 1,555 ha remaining within the project area; however, the greatest impact to this species is considered to occur where the Superb Parrot was observed regularly in one area at the southern end of the project area. This habitat coincides with proposed infrastructure of turbines RYP_106 to RYP_110 and an area proposed for a transmission line. It is possible the parrot is using the Box Gum Woodland that runs in a north to north-east direction as a movement corridor for local movements to forage and breed in this area. This is also the only location parrots were recorded flying at higher elevations (up to 50m).

However, as Superb Parrots are making localised movements in this area and staying within Box Gum Woodland habitat they are considered unlikely to collide with turbines as they are not making long range and large-scale movements. Their foraging movements comprise of tree hopping and rest-stops and it is considered the spacing of turbines at a minimum of 300 m would allow safe passage of this species within the area during these types of movement. The potential collision risk to this species overall is therefore not considered to result in a significant impact to this species, especially as the majority of the population within the locality occurs outside the project area and was observed flying within the tree canopy or below 20 m on most occasions.

Nest trees were identified for this species; however these nests are buffered by at least 600 m to the nearest turbine. Additionally, two potential nest trees were also mapped in the same vicinity. Transmission lines are proposed in the areas of identified nest trees and recommendations to apply a minimum of 100 m buffer to both

known and potential nests trees is prescribed. Tracks and transmission lines will require micro-siting with the aid of an ecologist within these areas. Impacts to known breeding resources of the Superb Parrot will therefore be avoided.

Powerful Owl and Barking Owl

Habitat for threatened large forest owls is marginal within the wind farm site, especially for the Powerful Owl. Several rounds of design layout changes have been undertaken to remove the majority of turbines away from woodland / forest areas. In recent surveys (July 2013), hollow bearing trees were mapped where they occurred within 100m of indicative turbine locations in high quality forest habitat. This survey confirmed one location only (near RYP_104) supports mature eucalypt species with numerous hollows of varying size near a proposed turbine site. This area will not require clearance for this turbine and has been identified as a high constraint area to avoid. The areas where turbines remain are unlikely habitat for these species given the lack of flora diversity and mature woodland / forest. Large hollow-bearing trees and suitable nesting and roost sites are absent in these areas. Foraging resources also appear to occur in low abundance for these owl species. While the Common Brush-tailed Possum occurs within the project area and would be a prey species, results of Koala scat searches suggest the possum does not occur in high densities given scats can be easily identified but were rarely observed within any of the Koala scat search areas. The possum was also not readily detected during 17.25 hours of spotlighting surveys across forested areas of the site.

Based on these factors (paucity of mature habitat, low abundance of prey species), the project area does not support roosting or breeding habitat and is unlikely to provide important foraging habitat, especially for the Powerful Owl. The Barking Owl is more likely to forage through the area than the Powerful Owl but no records are known for this species within at least 40 km of the project area. The proposal is therefore not considered to have a significant impact on these species.

Painted Honeyeater

Approximately 10-12 Painted Honeyeater individuals were observed foraging in Box Gum Woodland in the south of the site on a regular basis in November 2013. Individuals of this species were also observed along Flakney Creek Road (outside the project area) and west of RYP_4, however Box Gum Woodland is not widely available in the north of the site and is reduced to scattered trees, therefore the lower numbers observed at RYP_4 are reflective of the amount of available habitat. The area used by Painted Honeyeaters in the south of the project area also corresponds to the Box Gum Woodland habitat being used by Superb Parrots. As mentioned for Superb Parrots, a transmission line was proposed for this area but has been removed from the layout to avoid the better quality Box Gum Woodland within the site; most of the records observed for this species were in this area and consequently the majority of habitat utilised by this species has been avoided. The remaining Box Gum Woodland habitat will be affected by the existing transmission lines but this area is highly fragmented and trees supporting mistletoe are in lower abundance (i.e. scattered across paddocks). Recommendations have been made to micro-site the transmission line in areas of Yellow Box trees supporting mistletoe in this area to avoid further impact to potential foraging resources for this species. The impact of the proposal to Box Gum Woodland habitat for this species is therefore considered low.

Swift Parrot (Migratory)

The Swift Parrot was not recorded within the project area during targeted field surveys. The species migrates to the Australian south-east mainland between March and October to forage. During the non-breeding season this Swift Parrot feeds extensively on nectar and lerp and other items from eucalypt foliage. Mugga Ironbark (*E. sideroxylon*), Red Ironbark (*E. tricarpa*), Yellow Box (*E. melliodora*), White Box (*E. albens*), Grey Box (*E. macrocarpa*) and Yellow Gum (*E. leucoxylon*) are important sources of nectar in the box-ironbark forests and woodlands of NSW (Kennedy & Tzaros, 2005). Of these feed trees only two are known for the project area, Yellow Box and Mugga Ironbark. Yellow Box is located within Box Gum Woodland habitat as scattered trees. Mugga Ironbark is rare to the project area and was only identified in one location in the north of the site as scattered individuals; this area will not be impacted by the proposal. In general, the areas surveyed are heavily degraded and exist as either open woodland over grassland (with no mid- or understorey stratums) or as derived grassland with scattered trees. The abundance of flowering feed trees within the project area for the Swift Parrot are therefore low in abundance and the species is more likely to use roadside vegetation or larger remnants where greater diversity of feed trees are present.

As impacts to Box Gum Woodland have been largely avoided in the project design and little habitat is present within the project area for the Swift Parrot, apart from those areas targeted for survey in July 2013 in which the species was not detected, the project area is not considered to support an important foraging area for this species.

White-throated Needletail (Migratory)

White-throated Needletail was not recorded during surveys, but based on records in the Atlas of Living Australia there is potential for the species to occur. The species is a seasonal migrant present in Australia outside of breeding season, and may occur in large flocks foraging aerially at heights of up to 1,000 m above the ground (SEWPAC 2012). As the species breeds overseas, the potential for impact would be upon migration resulting in potential collision risk during the operational phase of the wind farm. It appears to collide with wind turbines in some areas and the species has been affected at other wind farms around eastern Australia, with one Bird Monitoring Report recording that "no other non-raptor species had more than four mortality events over the 3 year period" (Roaring 40s Renewable Energy 2010).

Based on the collision data from literature, on average there may be around four collisions of White-throated Needletails per year at Rye Park. Although the species' total population is unknown, it is thought to be abundant in areas where it is found (SEWPAC 2012). Given this species was not detected during surveys, and the huge area of occupancy of this species, the Rye Park wind farm is unlikely to affect an ecologically significant proportion of the population.

Regent Honeyeater (Migratory)

The Regent Honeyeater was not detected during bird surveys of the project area and the project area is not considered to support primary breeding and foraging habitat (i.e. wetter areas supporting Box-ironbark Eucalypt associations or feed trees). Two species of mistletoe were recorded on site, but are not widely distributed and occur in low densities. However, as this species is nomadic and movement patterns are often linked to availability of resources, it can be assumed that they may travel through the project area to other foraging grounds. Therefore it is considered there may be a potential operational risk of blade-strike to this species; however, at the time of survey this species was not observed to utilise the project area.

Records across NSW indicate a strong presence of this species to the south, east and north-east of the project area in better quality habitat (i.e. National Parks) and could be considered an important landscape connection. This area traverses Namadgi NP, Morton NP, Nattai NP and Blue Mountains NP. It is expected the movement of this species would commonly occur through this connection where better quality foraging resources exist.

Given the species was not detected during bird surveys and the species distribution does not show it to commonly occur within the project area, the impact of the proposal to this species is therefore considered low.

Rainbow Bee-eater (Migratory)

The Rainbow Bee-eater inhabits a variety of habitats including open woodlands, it also occurs in riverbanks, sandspits, road cuttings, beaches and golf courses. The species is a summer breeding migrant (Sept-Apr) to south-eastern Australia, but winters in northern Australia, Solomon Islands, PNG and Indonesia, moving in large flocks (SEWPAC 2012). This species was detected outside the project area to the west on Flakney Creek Road. Potential habitat for this species is present on site and this species is considered most at risk from blade-strike during operation. However, as the Rainbow Bee-eater is a common and secure species and widespread within its Australian and global distribution and given the high manoeuvrability of the species it is considered unlikely that the proposal would result in impact such that there would be a population scale effect on the Rainbow Bee-eater.

Wedge-tailed Eagle and Little Eagle

Although Wedge-tailed Eagle (*Aquila audax*) does not have a rating under legislation, it is recognised as an at risk and flagship raptor species in relation to wind farm developments. As mentioned, Wedge-tailed Eagles exhibit a lower collision avoidance rate than other species of birds. Reasons for this including size, manoeuvrability and hunting style are discussed in the literature. If turbines are placed within the core territory of an individual Wedge-tailed Eagle, for example, then the likelihood of a collision is greatly increased for this individual due to the high proportion of flights made within the rotor-swept area by the species and their regular use of updraughts in certain landscape positions (often coinciding with turbine placements). To minimise risk to Wedge-tailed Eagles, proposed turbine locations at Rye Park were classed as high or moderate risk based on landscape position, such as on an

escarpment, at the head of a valley or atop an isolated peak away from other turbines. Turbines in high risk locations have been moved in the design phase of the project (refer to Section 11.7.1).

Little Eagles were not recorded during surveys at Rye Park but are known to occur in the locality. The species it is a medium sized raptor with similar soaring and prospecting foraging behaviour (Aumann 2001) as the Wedge-tailed Eagle and may be similarly at risk from turbines in certain landscape positions. Should a Little Eagle forage or nest in the project area, the proposal has potential to affect the species during the operational phase. As no Little Eagle nests were found within 100 m of surveyed proposed turbine locations, the risk to fledging Little Eagles is considered low. Adult birds, including raptors, have generally shown an ability to habituate to the turbines by taking avoidance action around rotors or by modifying their behaviour (such as approach a root at the head of a gully from below rather than above – EBS Ecology 2012). It therefore appears unlikely that a viable local population of Little Eagle at Rye Park would be placed at risk of extinction from the wind farm proposal.

Eastern Bentwing Bat

The Eastern Bentwing Bat is reported to be a fast and direct flier that forages above the canopy and in open areas and will travel up to several hundred kilometres to over-wintering roosts (Churchill 2008, Lloyd *et al.* 2006), which place it at risk of collisions. Thirty-six calls of the Eastern Benting Bat were recorded within the project area primarily within Inland Scribbly Gum Forest along the ridgeline supporting turbines RYP_80 to RYP_143. This habitat type is considered the most suitable within the project area for temporary roosting sites and a total of 90 ha will be removed, with 3753 ha remaining within the site boundary.

Given the mobility of the species it could forage anywhere within the project area, and the relatively small areas of forest, woodland and grassland habitat to be removed or modified over the project area are not considered to adversely affect the foraging ability of this species. The species is considered more at risk from the proposal from potential collision with operational turbines. The flight height and migratory movements of this species make it potentially vulnerable to blade-strike.

The risk of the proposal impacting on breeding populations (i.e. maternity caves) is low as the nearest maternity cave is 40 km away. There is a staging area and maternity cave in the region (near Bungendore approximately 65 km away and Wee Jasper approximately 40 km away, respectively) for Eastern Bentwing Bat; these are used by a large proportion of the female and juvenile population. It is possible that the local population of Eastern Bentwing Bats may spike slightly when a large proportion of the female and juvenile population migrate to and from the maternity cave (November and February-March); however Anabat results were recorded within November 2011 and 2013 and suggest a relatively low abundance of this species within the project area at this time.

It appears unlikely that the local population would be placed at risk of extinction from the wind farm proposal given that the proposal is not near Wee Jasper or the Bungendore staging area and a relatively low number of calls of this species were detected. However, this species should be a focal species of an operational Bird and Bat Management Plan to confirm the assumptions of this assessment, addressing inherent uncertainty.

Yellow-bellied Sheathtail Bat

Four calls of the Yellow-bellied Sheathtail-bat were recorded within the project area within one location. Although this species occurs across much of Australia, it is never found in large numbers. The species migrates from northern Australia into south-eastern Australia during the summer months (Churchill 2008), but as it flies predominately above the tree canopy, it is rarely trapped or detected via AnaBat. This species is considered an occasional seasonal visitor that may roost temporarily in tree hollows within the project area. The flight height of this species make it potentially vulnerable to turbine strike, however given it is an infrequent visitor, the overall risk to the species is considered low. However, this species should be a focal species of an operational Bird and Bat Management Plan to confirm the assumptions of this assessment, addressing inherent uncertainty.

White-striped Freetail-bat and Gould's Wattled Bat

Although the White-striped Freetail-bat does not have a rating under legislation, it is recognised as an at risk bat species in relation to wind farm developments due to their foraging and flight behaviour. The White-striped Freetail Bat is a relatively large microbat that pursues prey in open air above canopy height (around 50 m above ground – within RSA) at high speed (up to 60 km per hour). Due to speed and wing structure, they are not a highly manoeuvrable bat (Churchill 2008). While White-striped Freetail Bats occupy a wide range of habitats including

woodland, forest, agricultural land and grasslands (Churchill 2008), habitat preferences are correlated with open areas in canopy gaps and along the edge of vegetation and it is more active on upper slopes (Lloyd *et al.* 2006).

Like the White-striped Freetail Bat, the Gould's Wattled Bat does not have a rating under legislation, but it is a relatively large microbat and a fast, high flier with restricted manoeuvrability (Herr 1998) the may put it at higher collision risk. This species hunts most in the sub-canopy and along flyways, particularly on upper slopes (Lloyd *et al.* 2006), so turbines located between closely linked patches of bush or within patches are likely to present the highest risk to Gould's Wattled Bat.

While these species are not threatened they should also be a focal species of an operational Bird and Bat Management Plan. Management measures to reduce risk to common species will also be considered at the operational stage of the proposal.

11.5.4 Fauna alienation or barrier effects

Each bird species and/or individuals response to turbines is likely to differ based on their own sensitivities or tolerances. There have been no published studies of the effects of wind farms on the behaviour of Australian birds, so it is difficult to evaluate the extent to which bird communities will be adversely affected. The distance over which disturbance effects can extend from a wind farm varies considerably. A distance of 600 m is often reported as the zone of disturbance around turbines, however this ranges, e.g. from 80 m (for a grassland songbird), to 800 m (for waterfowl) and 4 km (for seabirds) (Sharp 2010).

The most obvious approach to mitigate the risks posed by a wind farm on bird movements and behaviour would be to space turbines at a distance that allow birds to fly between them. There are no generally accepted minimum separation distances for turbines. The Rye Park layout has two distinct areas of turbines with a spacing of approximately 5 km between them, and in specific areas clusters of turbines are separated by at least 1 km to the next cluster. Spacing between individual turbines within clusters in the current layout is generally around 300 - 500m. There is no evidence to suggest that this spacing is sufficient to manage the risk of potential bird strike, but it is generally considered that the greatest the distance allowed between turbines, the better. For the majority of birds recorded within the project area, such as woodland birds which were not recorded to make large movements above the canopy, the distance between turbine clusters and also the distance between individual turbines is likely to allow for safe bird passage between turbines, without creating a barrier effect. Additionally, the arrangement of turbines into clusters in may better enable birds to use the gaps between turbine clusters when travelling across the landscape.

11.5.5 Indirect and peripheral impacts

As well as direct impacts already discussed, ecological impacts may arise from vehicle access and parking, materials laydown and stockpiles. Peripheral impacts may include:

- smothering of vegetation;
- soil compaction and erosion;
- introduction and spread of weed species;
- pollution associated with the generation of dust and use of concrete, fuels and lubricants and construction chemicals; and
- noise, vibration and activity during construction phase.

With the implementation of specific measures for these peripheral impacts such as weed control, erosion and sediment control, these risks are considered manageable. Further it is noted that indirect impacts are likely to be of low magnitude temporally and spatially, considering the spread out pattern of infrastructure proposed.

11.5.6 Cumulative impacts

There are a number of developments including wind farms in the region and the proposal may contribute to cumulative impacts from vegetation clearing and operational or alienation effects. In terms of operational impact, there are three operating wind farms within approximately 50 km of the project area. These comprise a total of 54

wind turbines (Cullerin Range Wind Farm: 15, Gunning Wind Farm: 31, Crookwell Wind Farm: 8). Several other wind farms are proposed within approximately 60 km of the project area including Rugby Wind Farm, Bango Wind Farm, Conroys Gap Wind Farm, and Yass Valley Wind Farm). The cumulative operational impact of these wind farms is unknown. The difficultly in drawing conclusions about cumulative operational risk is highlighted in a report commissioned by the Commonwealth Department of Environment and Heritage (Biosis 2006), *Wind Farm Collision Risk for Birds: Cumulative Risks for Threatened and Migratory Species* (species considered included Swift Parrot and Tasmanian Wedge-tailed Eagle).

Biological impacts of wind farms can be far-reaching, because of the mobility of migratory, nomadic and territorial fauna species such as bats and birds, with the biggest concern stemming from potential bird and bat collision with operating turbines (Parsons & Battley 2013). The operational and proposed wind farm localities in the district may involve overlapping raptor territories and bird and bat migration routes. However, based on the available habitat which has primarily been cleared in the local area and elsewhere in the district (especially to the west), and the absence of major wetlands, with the closest being Lake Burrinjuck (approximately 47 km to the south-west), the project site is not likely to be located on a major migratory route for wetland birds, seasonally migrating birds or microchiropteran bats. Visits from migratory or nomadic species are expected to be infrequent and sporadic. Additionally, given the low rate of raptor bladestrike recorded at other Australian wind farms, as well as the more recently documented avoidance of turbines by Wedge-tailed Eagles at three wind farm sites in northern Tasmania (Hull & Muir 2013), mortalities are not expected to affect local or regional populations by outstripping the reproductive capacity of any species. The location of the proposed wind farm turbines on largely cleared ridgetop sites already compromised from long-term grazing, coupled with avoidance of clearing good condition woodland, should restrict the potential to affect locally declining woodland or wetland species.

For these reasons, the proposal is not expected to significantly add to the collective impacts of wind farms in the region nor is it expected to significantly affect migratory species such that whole populations would be at risk. However, if the ongoing monitoring and assessment of the operational impacts of all wind farms operating in the region becomes publicly available, the data should be reviewed to ensure cumulative impacts remain within acceptable limits. An adaptive monitoring and management program would be implemented to ensure that any unforeseen impact on bird or bat species are detected and addressed in a timely manner.

11.6 Conclusion of Impact Assessment

Based on the extent of clearance associated with the proposal, impacts arising from the wind farm upon the EEC and species known and likely to occur in the project area are manageable and unlikely to be significant. Further survey is required for the Golden Sun Moth and Striped Legless Lizard to validate this assessment. Further surveys have been prescribed for these species and will ensure that the project is responsive to the results (exclusion zones or management prescriptions, as required). Those species considered to be most affected by the project occur within Box Gum Woodland or grassland habitats. The worst-case scenario for clearing of these habitats is estimated at 66 ha (including poor condition vegetation), with a total of 5,887 ha remaining indicating the ability to offset impact to these species within the immediate project area is achievable. Assessments of Significance are provided in Appendix C of the BA for those species considered most at risk for the proposal to further support the conclusions of the above impact assessment. Assessments of Significance were undertaken for the following species:

- Box Gum Woodland;
- Yass Daisy;
- Golden Sun Moth;
- Striped Legless Lizard;
- Superb Parrot;
- Painted Honeyeater;
- Regent Honeyeater;
- Little Eagle;
- White-throated Needletail;

- Eastern Bentwing-bat; and
- Yellow-bellied Sheathtail-bat.

Impacts have been avoided where possible through design changes based on information and constraints and recommendations have been given to confirm assumptions made in the assessment and further minimise and manage impacts during the final design, construction and operational phases of the wind farm.

Presently, the land in the project area is agricultural utilised for production which has been subject to prior clearing. The management measures and offsets presented in this report provide an opportunity to arrest existing pressures in the project area such as weeds, and conserve a portion of land for biodiversity outcomes resulting in a positive gain.

11.7 Management Measures

11.7.1 Measures to avoid impacts

The proponent has undertaken several reviews of layout revisions to avoid impacts in areas identified as a high constraint in **ngh**environmental (2012) and subsequent correspondence. Design measures to avoid impacts associated with vegetation clearing including loss of Box Gum Woodland EEC and connectivity, are given in Table 11-9. Design measures to avoid blade-strike impacts associated with the operational phase of a wind farm including proximity to nest trees, are given in Table 11-10. These design measures are already part of the proposal. Recommendations given in Section 11.7.2 are supplementary to the design measures incorporated by the proponent.

Table 11-9 Design measures by the proponent to avoid vegetation clearing in areas identified to have a high risk of impact to threatened ecological communities or species

Constraint type	*Design measures to avoid impact*
EEC: Box Gum Woodland	The following turbines moved out of Box Gum Woodland remnants: RYP_14, RYP_111, RYP_116 and RYP_108. At least 4 km of transmission line in the southern section of the project area in the vicinity of RYP_120 removed. Proposed substation in the south-east corner of the site moved.
Fauna habitat: Patch size and integrity	RYP_36, RYP_53 moved to a 50 m buffer from high conservation value fauna habitat
Fauna habitat: Connectivity	RYP_59, RYP_55, RYP_54, RYP_60 removed from layout due to high conservation value fauna habitat. RYP_64, RYP_107 moved to a 50 m buffer from high conservation value fauna habitat.
Fauna habitat: Key features	RYP_96 moved slightly but still within high conservation value fauna habitat.

Table 11-10 Design measures by the proponent to avoid high and moderate operational risks to bird and bat species

Operational constraint types	*Risk description*	*Design measures to avoid impact*
High risk locations		
Proximity to nests	Proximity to Wedge-tailed Eagle nest tree: RYP_91, RYP_92. Proximity to Superb Parrot nest tree: RYP_117, RYP_118.	RYP_91 removed from layout. RYP_92 shifted further south.
Proximity to Superb Parrot, Painted Honeyeater habitat. Potential habitat for Golden Sun Moth and Striped Legless Lizard.	Transmission line in the southern section of the project area in the vicinity of RYP_120 traverses good quality Box Gum Woodland habitat used by these species.	132 kV transmission line in part of this area removed from layout.
Landscape position	RYP_10 was a high risk to all birds that may fly in the rotor sweep area because of isolated position	RYP_10 has been removed from layout and replaced by RYP_16.

Operational constraint types	*Risk description*	*Design measures to avoid impact*
	on a low hill between two much taller ridges.	
Landscape position	These two turbines were outliers from the rest of the layout and were positioned on peaks in a key movement corridor.	Turbines have been relocated to be within the main layout area.
Moderate risk locations		
Landscape position	Turbines in higher risk locations for blade-strike such as along an escarpment or at the head of a valley	RYP_28-30, RYP_32, RYP_36, RYP_41, RYP_52, RYP_56, RYP_83 have been repositioned in line with the recommendation to move turbines back from heads of valleys or escarpments.
Layout position	Turbines in higher risk locations such as isolated (>800 m) from other turbine clusters.	RYP_113 and RYP_115 removed from layout, repositioned to RYP_124 and RYP_145.
Proximity to Bango Nature Reserve	Proximity to Bango Nature Reserve.	Turbines shifted for a 70 m buffer from reserve.

11.7.2 Measures to minimise impacts

Mitigation measures recommended to minimise impacts during the design, construction and operational phase of the wind farm proposal are highlighted in Table 11-11. These measures to minimise impact were developed to ensure potential impacts are minimised at: 1) a broad level in which general management or control measures can be applied to the entire proposal; or 2) at a defined level in which management or control measures can be applied to particular areas, individual species, faunal groups, or a vegetation type.

In particular, a Flora and Fauna Management Plan as well as an adaptive Bird and Bat Management Plan should be prepared prior to construction. These management plans would focus on migratory and at risk bird and bat species, and any threatened species found during further survey work. Particularly, the latter is required to address inherent uncertainty related to bird and bat collision risks at this site. Management strategies for the construction phase of the proposal need to be developed and incorporated into the Flora and Fauna Management Plan. Prescriptions for inclusion in the plan are set out in the tables below. These measures are required to ensure a significant impact is avoided.

The construction footprint should be kept to a minimum for least impact on flora and fauna. The proponent commits to upfront offset ratios before clearing proceeds which is an incentive to achieve 'minimal clearance' during the detailed design and construction phases.

11.7.3 Measures to offset impacts

Measures to offset impacts are provided within Table 11-12 to ensure that an overall 'maintain or improve' outcome is met for the proposal; where impacts cannot be avoided, or sufficiently minimised, the residual impact will be offset in perpetuity. Appendix F of the BA details the biodiversity offset principles developed by the former DECCW (now OEH) and how these guide the identification and management of the offset site. Appendix F of the BA also details how offsets are proposed to be identified, managed, and the offset ratios to be applied. An Offset Plan would be developed with input from OEH and the CMA and finalised prior to any construction impacts.

The Offset Plan would achieve:

- For common vegetation types a ratio of approximately 1:2 (cleared: offset) is proposed. Where vegetation is listed as an endangered community, such as the Box Gum Woodland EEC, a ratio of 1:5 to 1:10 (cleared:offset) is proposed, depending on the quality of habitat.
- Hollows removed would be offset at a ratio of 1:1 (offset site vegetation must contain the same number of hollows, artificial hollows may need to be installed to achieve this ratio).

- The offset site would be protected in perpetuity and appropriate management actions attached to the land title. For example, fencing and signage maintained, minimum biomass to be retained (through controlled grazing if appropriate), regular weed control and pest fauna management.

11.7.4 Decommissioning Phase

A flora and fauna management plan would be developed prior to decommissioning to manage decommissioning impacts on biodiversity values. Biodiversity investigations would be required prior to decommissioning, to update the knowledge of site attributes and evaluate specific impact types (given the life span of the proposal is in the order of 30 years) and to minimise biodiversity impacts related to the removal of infrastructure. New measures to avoid and mitigate impacts may be required depending on: 1) the results of the investigation; and 2) outcomes of the monitoring programs implemented during the operational phase of the proposal. Any implementation of a rehabilitation plan would consider the implemented plans and the environment at the time of decommissioning.

Table 11-11 Design measure to avoid and minimise impacts for Rye Park Wind Farm

Item	Area	Target Species	Objective	Timing	Proponent Commitment	Avoid or Minimise Impact
Design Phase						
General measures	Project area	N/A	Ensure all infrastructure will be sited entirely within the areas assessed in the Biodiversity Assessment.	After final alignments / development envelopes confirmed	• If infrastructure is required outside of the areas surveyed in this biodiversity assessment, more survey and assessment in this area will be required.	Avoid
General Measures	Project area	High risk birds and bats	Turbine infrastructure design to minimise operational impacts on birds and bats.	Prior to operation	• If possible, red flashing lights[3] should be fitted to turbine towers to reduce insect attraction and potentially night-flying birds. • No guy lines to be fitted to turbine towers. • Flags and/or marker balls to be fitted to wind monitoring mast guy lines • Turbines (e.g. nacelles) should minimise perching opportunities.	Minimise
Striped Legless Lizard habitat	Identified areas of potential habitat for the Striped Legless Lizard (i.e. all grassland habitats)	Striped Legless Lizard	Further targeted survey in all grassland habitat of the project area to avoid and minimise impacts.	Prior to construction (February 2014)	• Undertake more detailed micro-habitat survey of the site (referencing habitat attributes where the species was located) prior to the end of February 2014. • Use survey results to minimise impacts and ensure offsetting requirements, where avoidance is not possible. • Document management protocols for this species within a management plan, to be implemented as part of the construction process.	Avoid, minimise, offset
Superb Parrot nest trees and impacts to breeding, Painted	Where all nests trees and Painted Honeyeater records identified in	Superb Parrot	Avoid impact to known and potential nests trees and construction impacts during	Prior to construction (for avoidance of nests trees); During construction	• Maintain a 100 m buffer around identified and potential Superb Parrot nest trees (refer Appendix E.4 of the BA) in the southern section of the project area. • Micro-site all transmission lines and access tracks near	Avoid, minimise

[3] Although lighting effects are poorly understood at this time, migrating birds and bats appear to be attracted to steady burning lights and red flashing lights are said to decrease insect activity and reduce bird and bat activity at turbines.

Item	*Area*	*Target Species*	*Objective*	*Timing*	*Proponent Commitment*	*Avoid or Minimise Impact*
Honeyeater foraging habitat	Appendix E.4 of the BA.		breeding period for the Superb Parrot. Avoid impacts to foraging habitat (Yellow Box) for the Pained Honeyeater.	(for no clearance near nests trees during this time)	known nest trees and Yellow Box trees between RYP_110 and RYP_120.	
Raptor nest trees	Where all nests trees identified in Appendix E.4 of the BA.	Wedge-tailed Eagle, Nankeen Kestrel	Avoid impact to known nests trees.	Prior to construction	• Maintain a 100 m buffer around identified nest trees.	Avoid
Good condition fauna habitat	Project area	All species, primarily threatened woodland birds	Avoid impact to woodland and forest habitat.	Prior to construction	• Maintain a 70 m buffer around turbines in good condition fauna habitat, especially turbines RYP_17 in the north of the project and turbines near Bango NR (RYP_123 & RYP_126).	Avoid
Construction Phase						
Golden Sun Moth habitat	Identified areas of potential habitat for the Golden Sun Moth (i.e. all grassland habitats)	Golden Sun Moth	Further targeted survey in all grassland habitat of the project area avoid and minimise impacts.	Prior to construction	• Undertake preconstruction surveys of the final infrastructure layout in accordance with the relevant survey guidelines (Significant Impact Guidelines for the critically endangered Golden Sun Moth *Synemon plana;* DEWHA 2009). • Results of these surveys used to minimise impacts and ensure offsetting requirements, where avoidance is not possible. • Document management protocols for this species within a management plan, to be implemented as part of the construction process.	Avoid, minimise, offset
Box Gum Woodland and Good quality fauna habitat	Project area, particularly good condition EEC/CEEC between RYP_110 and RYP 120 and within transmission line south of RYP_110	Box Gum Woodland areas and threatened species	Prevent unauthorised clearance. Minimise track and transmission line impacts in areas of high conservation value.	During construction	• Clearly define works areas nearby or within Box Gum Woodland areas to strictly defined permitted clearance zone. • Minimise track width, where possible, to the minimum required for safe access and operation. • Install the 33kV powerlines (co-aligned with roads) as underground, where possible. • Removal of topsoil and subsoil for trenching to be	Minimise

Item	Area	Target Species	Objective	Timing	Proponent Commitment	Avoid or Minimise Impact
					replaced and revegetate disturbed areas with local native grasses (i.e. Kangaroo Grass, Wallaby Grass or Spear Grass).	
Woodland bird habitat	Around the transmission line and turbines near RYP_102-110	Brown Treecreeper, Diamond Firetail, Flame Robin, Hooded Robin, Scarlet Robin and Speckled Warbler	Minimise track and transmission line impacts in areas of high conservation value for these species.	During construction	• Clearly define works areas nearby this area. • Micro-site all infrastructure in this location with the input from an ecologist.	Minimise
Hollow-bearing Trees	Project area where targeted hollow-bearing tree survey not previously undertaken	Threatened hollow dependent fauna	Targeted hollow-bearing trees survey to accurately record the number of hollows to be cleared to ensure impacts are offset.	After final alignments / development envelopes confirmed	• Pre-clearance survey within final development envelope and alignment for hollow-bearing trees. • Infrastructure micro-sited to avoid hollow-bearing trees, where possible. • For hollow-bearing trees to be cleared a management plan should be prepared by an ecologist detailing: procedures to minimise impacts to, and relocate resident fauna; timing of works to avoid breeding periods, where possible; number and type of hollow-bearing trees to be removed and offset (to be included in Flora & Fauna Management Plan). • Where hollow-bearing trees are to be cleared a standard pre-clearance survey, such as that described in *Biodiversity Guidelines* (**ngh**environmental / RTA 2011), should be undertaken and details of hollow-bearing trees cleared including number and size of hollows and number of hollow-bearing trees recorded.	Minimise
Reptile Species habitat	Project area	All reptiles, primarily Pink-tailed Worm-lizard	Pre-clearance surveys in Box Gum Woodland and native pasture to identify rocky outcrops for avoidance, where possible.	During construction and as required	• Turbines and infrastructure would be micro-sited to avoid rocky outcrops in this habitat, where possible. • Where rocky outcrops cannot be avoided, replace rock in nearby areas in consultation with an ecologist. • Fallen timber > 50cm to be left in place or moved to a nearby area to retain fauna habitat.	Minimise
General Measures	Project area	All species and vegetation communities	Minimise clearance and disturbance.	During construction and as required	• Clearly define works areas and restricting impacts to these. Including vehicle and equipment parking and access routes. • Co-locating underground and overhead 33kV powerlines	Minimise

Item	Area	Target Species	Objective	Timing	Proponent Commitment	Avoid or Minimise Impact
					with the track network to minimise additional impact area, where possible. • Establish construction compound in a disturbed area. • Use disturbed areas for vehicle and machinery access, materials laydown, stockpiling of cleared vegetation and deposition and retrieval of spoil, wherever practicable. • Fill in trenches as soon as possible. Trenches left open overnight to be inspected at first light for trapped fauna. Trapped fauna to be released appropriately in a nearby location. • Hollow-bearing trees and sensitive features to be retained to be communicated to staff via inductions and other methods.	
Riparian Area Management	Project area	All species and vegetation communities	Minimise clearance and disturbance.	During construction	• Creek crossing to be designed in accordance with: NSW Fisheries Policy and Guidelines for Fish Friendly Waterway Crossings (2003). • Creek works not to be undertaken when heavy rain is forecast and should be avoided when there is flow. • Implement sedimentation and erosion controls in accordance with best practice guidelines.	Minimise
Weed Management	Project area	All species and vegetation communities	Pre-construction inspection for noxious weeds within project area. Prevention of spread of weeds and pathogens. Weed monitoring.	Before commencement of works and as required Monitoring – late spring / early summer after construction	• Control noxious weeds in works area according to plans and control measures of the LGAs. • Minimise use and adhere to best practice guidelines for herbicide treatment in environmentally sensitive areas (i.e. Box Gum Woodland). • Establish a machinery hygiene plan to ensure vehicle and machinery is absent of organic matter pre- and post-site access. • Sign environmentally sensitive areas (i.e. CEEC areas) and designate clean-down area for entry / exit points into these areas. • Monitoring and weed control in areas of known noxious or invasive species. • Understorey vegetation in easements should be managed to maintain composition and quality to prevent	Minimise

Item	*Area*	*Target Species*	*Objective*	*Timing*	*Proponent Commitment*	*Avoid or Minimise Impact*
					weed invasion	
Pollution Prevention	Project area	All species and vegetation communities	Prevention of contaminants and erosion outside works zones.	As required	• Establish a spill plan to prevent chemicals or pollutants from having an adverse effect on the environment. • Backfill cable trench where cement is used; at least 20 cm of cement free topsoil to be replaced as the top layer in the back fill. • Establish an erosion and sediment control plan so appropriate controls are in place prior to commencement of works.	Minimise
Site Management	Project area	All species and vegetation communities	Stabilisation of soil, rehabilitation and revegetation to be undertaken progressively to re-establish ground cover.	As required	• Lightly mulch exposed soils with chipped vegetation or sterile hay in areas dominated by exotic groundcover species. Sow with an appropriate cover crop in consultation with land owners. • Lightly mulch exposed soils with chipped vegetation or sterile hay in areas dominated by native grasses using local provenance species. • Fertiliser should not be used to promote revegetation in areas dominated by native grasses.	Minimise
Operational Phase						
Flora & Fauna Management Plan	Project area	All species and vegetation communities	To avoid significant impact to flora and fauna outside of the accepted clearance boundaries and prevent 'unassessed' impacts occurring.	Implement prior to construction	• An ecological professional to develop and implement a Flora and Fauna Management Plan to report on and manage impacts. • The management plan should highlight ecological important areas (vegetation communities and threatened fauna species habitat) and their management. • Specific areas requiring monitoring or management should be highlighted as well as timing for monitoring. • Weed species should be highlighted along with prescriptions for their management.	Minimise
Adaptive Bird & Bat Management Plan	Project area	Superb Parrot, Painted Honeyeater, Regent Honeyeater, Wedge-tailed Eagle, Little Eagle, Eastern	Development of an 'insurance' monitoring program to address uncertainty inherent in the assessment.	Implement prior to construction. Survey and monitor during 'high risk' periods, when species may be	• An ecological professional to develop and implement a Bird and Bat Monitoring Program to report on, and manage impacts with potential to be significant. • Monitoring surveys should include an understanding of breeding activity (i.e. nest locations) and foraging	Minimise

Item	Area	Target Species	Objective	Timing	Proponent Commitment	Avoid or Minimise Impact
		Bent-wing Bat, Yellow-bellied Sheathtail-bat, Gould's Wattled Bat and White-striped Freetail Bat.		moving through or foraging in the area	movements. • Baseline (pre-construction) and operational collision and abundance data would be collected, focused on higher risk species and higher risk locations in order that actions can be taken to address unforseen impacts, should they occur. • Management Plan methods would utilise AusWEA (2006) best practice guidelines. • Management Plan should include management response options (i.e. restriction of lambing on ridges with high raptor activity to reduce collision risks) to be implemented where significant impacts are anticipated.	
Habitat Connectivity	Transmission Line Easement	All common species, as well as threatened fauna, particularly threatened parrots, gliders and bats	Minimise fragmentation of landscape connectivity.	After construction	• Promote growth of vegetation under the transmission line to the maximum allowable height to maintain fauna habitat connectivity. • Understorey vegetation in easements should be managed to maintain composition and quality to prevent weed invasion. • Near areas of intact woodland or forest a spacing of 600m should be considered for turbines.	Minimise

Table 11-12 Offset measures to maintain or improve biodiversity for Rye Park Wind Farm

Item	Area	Target Species	Objective	Timing	Proponent Commitment
Construction Phase					
Development of offset strategy and offset plan	Project Area	Box Gum Woodland, Hollow-bearing trees, Threatened species habitat	Proponent will develop an offset plan to offset all permanent native vegetation removal to maintain or improve biodiversity in the longer term.	Prior to construction	• Develop an offset strategy and finalise prior to any construction impacts an ecological professional, in accordance with Appendix F of the BA. • Develop an offset plan prior to operation, demonstrating the suitability of the final offset site and providing detailed management actions specific to the site. • Ensure the offset strategy complies with the *Principles for the use of biodiversity offsets in NSW* guidance document. • The offset ratio will be determined with reference to: the conservation status of the vegetation, the condition of the vegetation, and the actual threatened species habitat value lost (i.e. known threatened species habitat, not potential habitat). • Where vegetation is listed as an EEC, a ratio of 1:5 to 1:10 is proposed, depending on quality of habitat. • Where non-threatened vegetation is cleared an offset ratio to be applied at 1:2. • Where hollow-bearing trees are to be cleared and cannot be avoided an offset ratio to be applied at 1:1 and is supplementary to other areas offset. • Include provisions for offsetting Commonwealth listed EEC to demonstrate compliance with the Commonwealth offset policy.

12 Aboriginal and European Heritage

12.1 Overview

New South Wales Archaeology Pty Ltd has conducted an Aboriginal and European cultural heritage assessment of the proposed Rye Park Wind Farm.

The assessment has been conducted in accordance with the Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation (DEC, 2005), the NSW Office of Environment and Heritage's Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, 2011a) and Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010b).

The study has sought to identify and record Aboriginal cultural areas, objects or places, assess the archaeological potential of the proposal areas, and formulate management recommendations based on the results of the community consultation, background research, field survey and a significance assessment.

12.2 Aboriginal Consultation

A process of Aboriginal community consultation has been undertaken in accordance with the *Draft Guidelines for Aboriginal Cultural Heritage Impact Assessment and Community Consultation* (NSW DEC July 2005) and OEH's *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW, 2010a).

The registered Aboriginal parties for this project are:

- Buru Ngunawal Aboriginal Corporation
- Gundungurra Aboriginal Heritage Association Inc
- Carl and Tina Brown
- Gunjeewong Cultural Heritage Aboriginal Corporation
- Onerwal Local Aboriginal Land Council

An outline of the scope of the project, the proposed cultural heritage assessment process and the heritage assessment methodology was forwarded to the registered parties following receipt of their registration of interest. No responses were received from registered parties in regard to the consultation process and methodology. However, Wally Bell, Buru Ngunawal Aboriginal Corporation, provided valuable information in regard to the archaeological sensitivity and potential of the study area. Sharyn Halls, Gundungurra Aboriginal Heritage Association, discussed her ancestors' connections to Blakney Creek, located in the local area.

For review and comment, a copy of the draft cultural heritage report was forwarded to the registered parties; no responses were received at the time of submitting this EA.

12.3 Results

A search of the NSW OEH Aboriginal Heritage Management Information System (AHIMS) has been conducted for this project on the 11 April 2012 (Client Service ID: 67566). The search area measured 756 km² and encompassed the area between eastings 672000 – 690000, and northings 6147000 – 6189000.

Three Aboriginal object sites, none of which are in the proposed impact area, are recorded on AHIMS as present in the search area. The most common Aboriginal object recordings in the region are distributions of stone artefacts. Rare site types include rock shelters, scarred trees, quarry and procurement sites, burials, stone arrangements, contact sites, carved trees and traditional story or other ceremonial places. Searches have been conducted of the NSW State Heritage Inventory and the Australian Heritage database. No Aboriginal heritage sites are listed on these as being in the proposed activity area.

One previously recorded Aboriginal site, AHIMS #51-4-0058 is located along Flakney Creek Road near to the project boundary. The original recording indicates artefacts on the road, spread over a distance of 181 metres (x 5m wide). This site was inspected during the current study. Artefacts were found distributed along the edge of the road. No exposures were present off road, however, artefacts would be present across the broader toeslope landform in low

density and a relatively undisturbed context. It is possible that this site could sustain impacts if the road were to be upgraded for site access during construction of the wind farm.

Thirteen Aboriginal object locales were recorded during the field survey, 10 of which are single stone artefacts. Undetected or subsurface stone artefacts are predicted to be present in extremely low density. In addition, three quartz outcrops have been recorded which may have been used as stone procurement areas (SPAs) by Aboriginal people. Establishing the artifactual status of these has not been possible based on a visual assessment alone. However, as a precautionary measure it is recommended that they be avoided during construction by implementing a strategy of micro-siting of turbines, roads etc. Three European heritage items have been recorded, and while these do not warrant heritage listing, it is recommended that they also be avoided by micro-siting the relevant components during construction.

The Effective Survey Coverage achieved during the survey is considered to have been sufficient to characterise the nature of artefact distribution. The survey results are therefore assessed to be a relatively accurate reflection of the archaeological status and artefact density in the proposal area. Accordingly, based on the relevant predictive model of site distribution and the results of the field survey, the proposal area is assessed to be of generally low cultural and archaeological potential and significance. This assessment forms the basis for the formulation of recommendations relating to the proposal.

12.4 Conclusions and recommendations

The 13 Aboriginal sites identified in the subject area are assessed to be representative of extremely low density artefact distribution. Their cultural and archaeological heritage value is low. The AHIMS site #51-4-0058 is likewise assessed to be of low archaeological heritage significance. The archaeological status of the three SPAs is uncertain, and accordingly, their cultural and archaeological values are unknown.

The Aboriginal object locales comprised of stone artefacts (and any undetected and subsurface artefacts) do not surpass archaeological and cultural significance thresholds which would act to preclude the construction of the proposed wind farm.

Based on a consideration of the predictive model applicable to the environmental context in which impacts are proposed, and the results of the study, it is concluded that the proposed impact areas do not warrant further investigation such as subsurface test excavation.

The following recommendations are made:

- The 13 recorded Aboriginal object locales are assessed to be representative of a very low density distribution of stone artefacts. The cultural and archaeological heritage significance of these locales is assessed to be low. Accordingly, unmitigated impact is considered to be appropriate. A management strategy of impact avoidance is not warranted, except in respect of the three quartz outcrops. It is recommended also, that the three European heritage items are avoided during construction.
- There are no identified Aboriginal archaeological and cultural constraints relating to the proposal.
- It is recommended that additional archaeological assessment is conducted in any areas which are proposed for impacts that have not been surveyed during the current assessment. It is predicted that significant Aboriginal objects can occur anywhere in the landscape and, accordingly, they need to be identified and impact mitigation strategies implemented prior to impacts.
- The proponent should, in consultation with an archaeologist, develop a Cultural Heritage Management Plan. The development of an appropriate Cultural Heritage Management Plan should be undertaken in consultation the registered Aboriginal parties and the NSW Office of Environment and Heritage.
- The Cultural Heritage Management Plan would set out procedures relating to the conduct of additional archaeological assessment, if required, and the management of any Aboriginal cultural heritage values which may be identified.
- Personnel involved in the construction and management phases of the project should be trained in procedures to implement recommendations relating to cultural heritage, as necessary.
- Cultural heritage should be included within any environmental audit of impacts proposed to be undertaken during the construction phase of the development.

13 Traffic and Transport

13.1 Approach

A Traffic Impact Study was prepared by Epuron. A full copy of the study is presented in Appendix E. The assessment considered the potential impacts of the proposed wind farm and provides mitigation measures to minimising potential traffic impacts associated with the project. The Traffic Impact Study was prepared in consultation with and considering the relevant local council traffic road policies, and is primarily focused on the construction phase as it is considered that the construction phase would generate the greatest volume of traffic.

The methodology adopted for the assessment included:

- reviewing the RMS checklist for preparing traffic impact studies;
- mapping of the proposed wind farm site and surrounding area;
- review of planning documentation for other wind farm developments in the area;
- roads were inspected and photographed;
- RMS data was reviewed to establish traffic volumes on the main roads;
- personal communication with the RMS;
- consultation with Boorowa, Upper Lachlan and Yass Valley Councils;
- considering relevant local council traffic and road policies;
    - Yass Valley
        - Property Vehicular Access
        - Roadside Clearing and Trees Planting
        - Road Naming
        - Unsealed Rural Roads
        - Road Standards
        - Stock Grazing and Movement on Council Roads
    - Boorowa
        - Road Naming
        - Approved B Double Route for Boorowa LGA
        - Road Closure
        - Road and Street Planting
    - Upper Lachlan
        - Road Management
        - Roads – Permission to Use
        - Street and Road Naming
- information on road conditions from property owners at the Information Day on 26/07/2012; and
- information from turbine suppliers on access track requirements and turbine component transport.

13.1.1 Existing Environment

The roads in the vicinity of the project area are generally classified as follows:

- State Highway – Hume Highway is owned and maintained by the RMS.

- Regional Roads – Part funded by a grant agreement administered by the local RMS.
- Local Roads – All other roads that are owned by the council.

The southern end of the wind farm site is located 10 km north north-east of Yass, a significant country town and service centre. The Hume Highway provides a safe, dual carriage way connection with up to 110 km/h travel speed.

Access requirements for the proposed wind farm can be separated into the following categories:

- Standard road vehicles ranging from 2 wheel drive cars to B-Double trucks. These vehicles are required to access the site as far as the construction compound and associated equipment storage area. They represent the largest portion of vehicles. It would be anticipated that light vehicles would be the source of transport within the construction area of the site.
- 4 wheel drive vehicles may be required for most transport to the turbine locations and would provide ongoing maintenance.
- Specialist vehicles may include off-road construction vehicles, for example vehicles with nonstandard axle combinations. These may include tracked vehicles and reconfigured trailers used to tow components into position. This type of vehicle would not generally be able to be used on sealed local roads
- Over-dimension vehicles transporting turbine components and oversize construction machinery. These vehicles would generally be wider and longer but weights of loads would not be excessive (generally up to 70 tonnes carried over 7 axles).
- Over-mass and over-dimensional vehicles transporting electrical transformers of up to 200 tonnes. These vehicles would possibly require the strengthening of bridges and drainage structures because of the close spacing of axles. Only a small number of these vehicles are anticipated during construction.

Expected Construction Access

The Hume Highway is the major inland highway that links Sydney and Melbourne and has sufficient capacity to handle the delivery of imported turbine components. The route north from Port Kembla through Wollongong and on to the Hume Highway is the preferred route for the proposal.

Two primary routes for accessing the Rye Park Wind Farm from the Hume Highway are being proposed. The majority of the site will be accessed from the Hume Highway at the western end of the Yass Valley Way, before continuing along the Yass Valley Way, Faulder Avenue, Cooks Hill Road and the Rye Park – Dalton Road. The primary route to access the southern end of the site will use the Jerrawa Road exit from the Hume Highway and continue along Coolalie Road and Bush's Road as seen in Figure 13-1.

A secondary access route to the southern end of the site is proposed from the Yass Valley Way exit as described above. However, the secondary route will continue past the Faulder Avenue turn and continue on the Yass Valley Way before turning into Pollux Street and Coolalie Road on the outskirts of Yass.

An alternative access route to the site for oversize vehicles is being considered to the west of the Yass Valley Way exit via the Lachlan Valley Way, around the outskirts of Boorowa before entering Rye Park from the Boorowa Road. This route includes several 90° corners that will be difficult for the delivery of the major turbine components and is therefore only considered an alternative option.

Figure 13-2 shows the proposed haulage routes from Port Kembla and the Port of Newcastle to the project site.

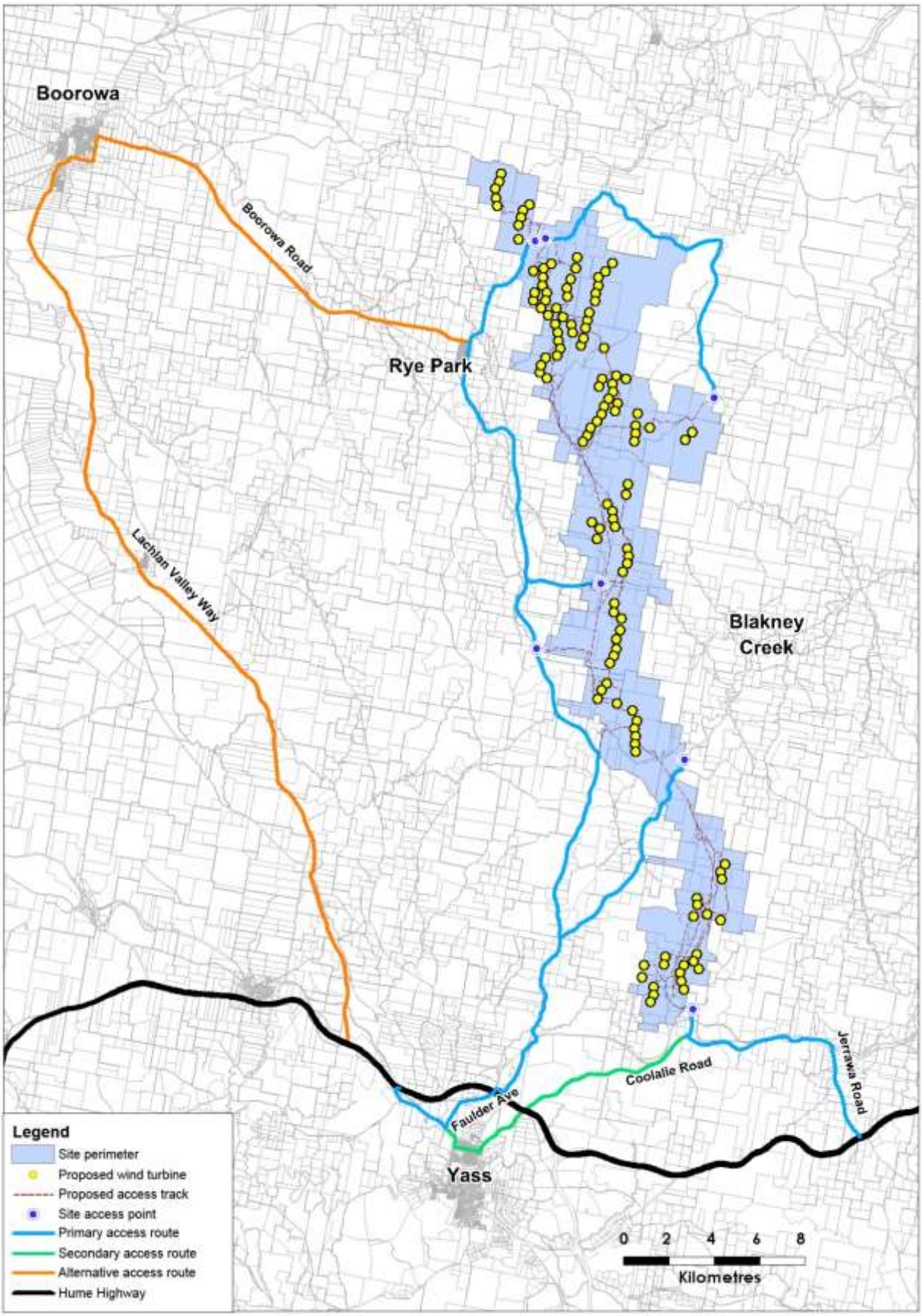


Figure 13-1 Main access from Hume Highway along Yass Valley Way, Faulder Avenue, Cooks Hill Road and Rye Park – Dalton Road



Figure 13-2 Proposed haulage access routes from the arrival port to the project site

13.2 Assessment

Construction and decommissioning phase

Table 13-1 Approximate dimensions and weights of the components of a typical wind turbine

Wind Turbine Component	*No. of parts per turbine*	*Total number of parts for 126 turbines*	*Approximate component weight (tonnes)*
Towers	3 - 5	378 - 630	Up to 60
Nacelle	1	126	Up to 80
Hub	1	126	Up to 23
Blades	3	378	Up to 12

Over-mass and over dimension vehicles

The larger vehicles would occupy most of the width of the roadway at many locations thereby requiring traffic control procedures to ensure safe passage for local road users. For nearby property owners, there is likely to be an increase in traffic noise and dust nuisance in addition to the need to control stock from straying on the roads which are not fenced. Dust generated on unsealed roads could impact visibility and result in the loss of pavement materials. Gravel road surfaces would deteriorate and potholes would form under the increased traffic loads, particularly during wet weather when water ponds or drains across a road. Structural damage may occur to some of the culverts, concrete causeway crossings, stock grids and traffic islands. The location of trees and other roadside objects have the potential to obstruct the passage of long wide loads and high loads. Lack of roadside delineation in some locations may impact traffic safety during periods of poor visibility. Some intersections have inadequate pavement width to safely accommodate the turning manoeuvres of the over-size vehicles.

It is considered that these impacts would be temporary, as the equipment haulage is not a continuous program. Most of the heavy haulage would be in the form of convoys and would be managed through a number of specific mitigation measures developed and implemented in conjunction with RMS and Boorowa, Upper Lachlan and Yass Councils. These measures usually include escort vehicles.

Decisions on the final routes for these vehicles would be the subject of negotiations between the haulage contractor and the road authorities.

Construction Traffic

Construction traffic will be generated by the delivery of equipment and materials to site including the construction work force travelling to and from the site on a daily basis.

The vehicles delivering the main crane, wind turbine components and transformer components will be oversize, over-mass or both. These vehicles will require special operating permits to allow them to travel on public roads and the appropriately licensed haulage contractor will complete a detailed assessment for approval by the Roads and Maritime Services (RMS, formally the Roads and Traffic Authority) and Councils prior to construction. As the surrounding local access roads are generally of a high quality, it is expected there will be no difficulty in obtaining the necessary approval.

Oversize vehicles are those over 19 m in length, 2.5 m in width and 4.3 m high and may require one or more escort vehicles to accompany them.

Over-mass vehicles are those with a gross mass in excess of 42.5 tonnes and will require a permit to use public roads.

On-site access tracks will generally be around 5-6 m wide, but will need to be wider at bends and intersections for turning. During construction access tracks in some areas may be up to 10 m wide for crane access, but 5-6 m during operations. The longest vehicles will be those delivering blades. Typically two blades are delivered in one load, and oversized vehicles used to deliver turbine blades can be up to 41m long.

There are no turning bays required on public roads, though turning bays may be required within the project site. Placement of turning bays, if needed, will likely be at the end of dead-end on site access roads, and will be organised in consultation with the relevant landowner.

Table 13-2 Estimate of peak daily traffic volume

Construction Activities (Many occur concurrently)	*Approximate Duration (Months)*	*Maximum number of trips per day*	*Comments*
Construction staff and management	24	60	Assumes 3 employees per vehicle
Site establishment	1	10	
Internal access track construction	10	22	
Foundation excavation and construction	12	102	Based on off-site concrete delivery
Dust suppression	16	12	
Substation construction and commissioning	4	26	Includes up to 4 over-mass vehicles
Cabling	10	6	
Turbine erection	12	58	Includes up to 50 over-dimensioned vehicles
Maximum Construction Duration	**24**		
	Total maximum trips per day	**296**	

Table 13-2 presents a prediction of the maximum daily traffic volumes, expressed as one way vehicle movements, of approximately 300 vehicles per day. In reality this overstates the likely trip numbers as these activities will be spread across the construction schedule and are unlikely to occur simultaneously. It also conservatively assumes that the concrete for the turbine foundations will be delivered to site rather than sourced from on-site batching plants.

Traffic impacts at specific location

Hume Highway

The route from Port Kembla to Yass via Wollongong provides a safe, dual carriage highway for the vast majority of the distance from port to destination. During the construction phase there would be an increase in traffic travelling along this route including standard road vehicles, B-Double trucks and over dimension vehicles transporting turbine equipment.

Impacts on access route roads

There is potential to impact Yass Valley Way, Faulder Avenue, Cooks Hill Road, Rye Park – Dalton Road, Pollux Street, Coolalie Road and Bush's Road. The routes through Yass identified in Figure 13-3 will experience an increase in traffic through the construction phase of the wind farm including standard road vehicles, B-Double trucks and over dimension vehicles transporting turbine equipment. The delivery of equipment along these roads would be done as per the TMP. This increase in traffic volume would require improvements to ensure the safety of road users particularly in relation to conflicts between vehicles and stock.

Isolated curves and crests on looser gravel surfaces could result in drivers losing control. Several drainage structures may need to be upgraded to ensure continued wet weather access.

Several mitigation measures have been developed to manage traffic impacts during the construction phase; key areas are highlighted in Section 13.3. These centre on the development of a TMP, consultation with roads authorities and affected members of the community, to finalise the routes and ensure that safety and protection of assets is managed effectively.

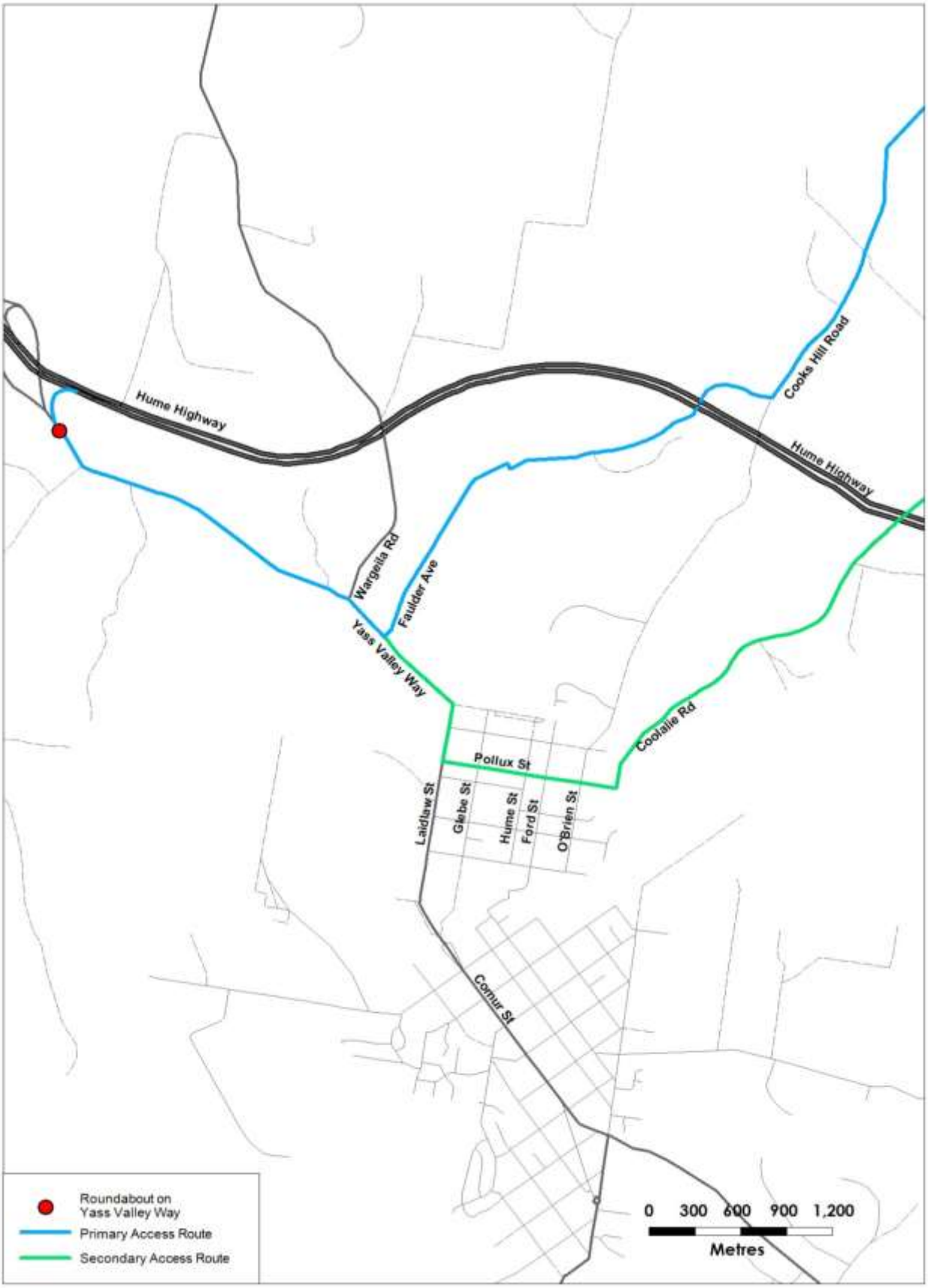


Figure 13-3 Access route through Yass for wind farm infrastructure

Operational phase

Once operational, the wind farm would be managed and maintained by several crews of technicians, likely to be based at Yass or Canberra. The proposed wind farm may generate interest as a visual feature in the locality however, it is considered that this would not significantly increase the number of tourists visiting Rye Park and therefore the increase in traffic volumes and subsequent impacts are likely to be low. No specific mitigation measures are considered warranted to manage operational traffic impacts.

On-site access roads would only require minimal operational maintenance as only light vehicles would require access during the operational phase. Significant maintenance of on-site tracks would only be required for major wind turbine maintenance or decommissioning.

13.3 Mitigation Measures

The following measures would be adopted to minimise the impacts from construction traffic:

- Development of a Traffic Management Plan that will identify detail actions such as scheduling of deliveries, managing timing of transport near major centres (Yass) and local towns (Rye Park) to avoid peak times (beginning / end of school), consultation activities during haulage activities, designing and implementing modifications to intersections and street furniture and managing the haulage process.
- Use of a licensed and experienced haulage contractor, to be responsible for obtaining all necessary permits and approvals from the RMS and Councils and for complying with conditions of consents.
- Escorts for oversize and over-mass vehicles will be provided in accordance with RMS requirements.
- The Traffic Management Plan will establish a procedure to monitor traffic impacts during construction such as noise, dust nuisance and travel timings so adjustments can be made to minimise impacts.
- Re-instating pre-existing conditions after temporary modifications, if required.
- Providing a 24hr telephone contact during construction to enable any issue or concern to be rapidly identified and addressed.
- Consult with the local Councils prior to construction and agree any road upgrade or rehabilitation responsibilities and requirements including potential contribution towards road maintenance funding.
- In consultation with local Councils and RMS the proponent will prepare road dilapidation reports prior to the commencement of construction and following completion of construction to determine any damage attributable to the project.

Should deterioration of roads occur during construction activities, an inspection and maintenance program would be established, if required by the Council.

14 Hazards and Risks

14.1 Aviation

14.1.1 Background

The proposed development of the Rye Park Wind Farm would involve the construction of wind turbines with a maximum height of up to 157 meters to the blade tip. Due to the height of the wind turbines, potential impacts to the safety of aviation activities have been assessed. This includes:

- identifying nearby aerodromes and landing strips;
- consultation with aviation authorities and associations; and
- assessing the risk to aerial agricultural activities.

14.1.2 Existing Environment

Aerodromes

The closest Civil Aviation Safety Authority (CASA) certified and registered aerodromes to the proposed wind farm site are Canberra and Goulburn airports, approximately 70 km to the south-southeast and 80 km to the east of the site respectively.

CASA uses a term called Obstacle Limitation Surfaces (OLS) to manage the area around an aerodrome. An OLS is a series of surfaces that define the limits to which objects may project into the airspace, and above which, become obstacles to aircraft operations and must be reported to CASA. An assessment of these aerodromes will not occur as the DGRs required an assessment of aerodromes within 30 km to the development. The location of these airports in relation to the project is presented in Figure 14-1.

Landing Strips

Eleven private landing strips (known as Aircraft Landing Areas or ALAs) have been identified on private properties within 5km of the project, which have historically been used for aerial agriculture. The majority of these landing strips are on properties associated with the project. ALAs are not registered or regulated by CASA. Locations of the landing strips are shown in Table 14-1 and Figure 14-2.

Table 14-1 Location of existing landing strips

Ref	Runway Orientation	Location		Distance from nearest wind turbine (metres)
		Easting	Northing	
1	NE-SW	678,539	6,150,198	4,190
2	E-W	681,384	6,147,889	3,170
3	NE-SW	688,203	6,148,492	4,550
4	NE-SW	688,733	6,160,911	4,660
5	NNE-SSW	686,548	6,162,351	4,060
6	NW-SE	678,807	6,166,860	2,470
7	NW-SE	680,385	6,172,950	810
8	NW-SE	677,118	6,175,747	2,360
9	NE-SW	685,087	6,176,086	570
10	NW-SE	685,418	6,178,714	3,260
11	NNW-SSE	685,140	6,181,224	3,910



Figure 14-1 Aerodromes within vicinity of the proposed wind farm

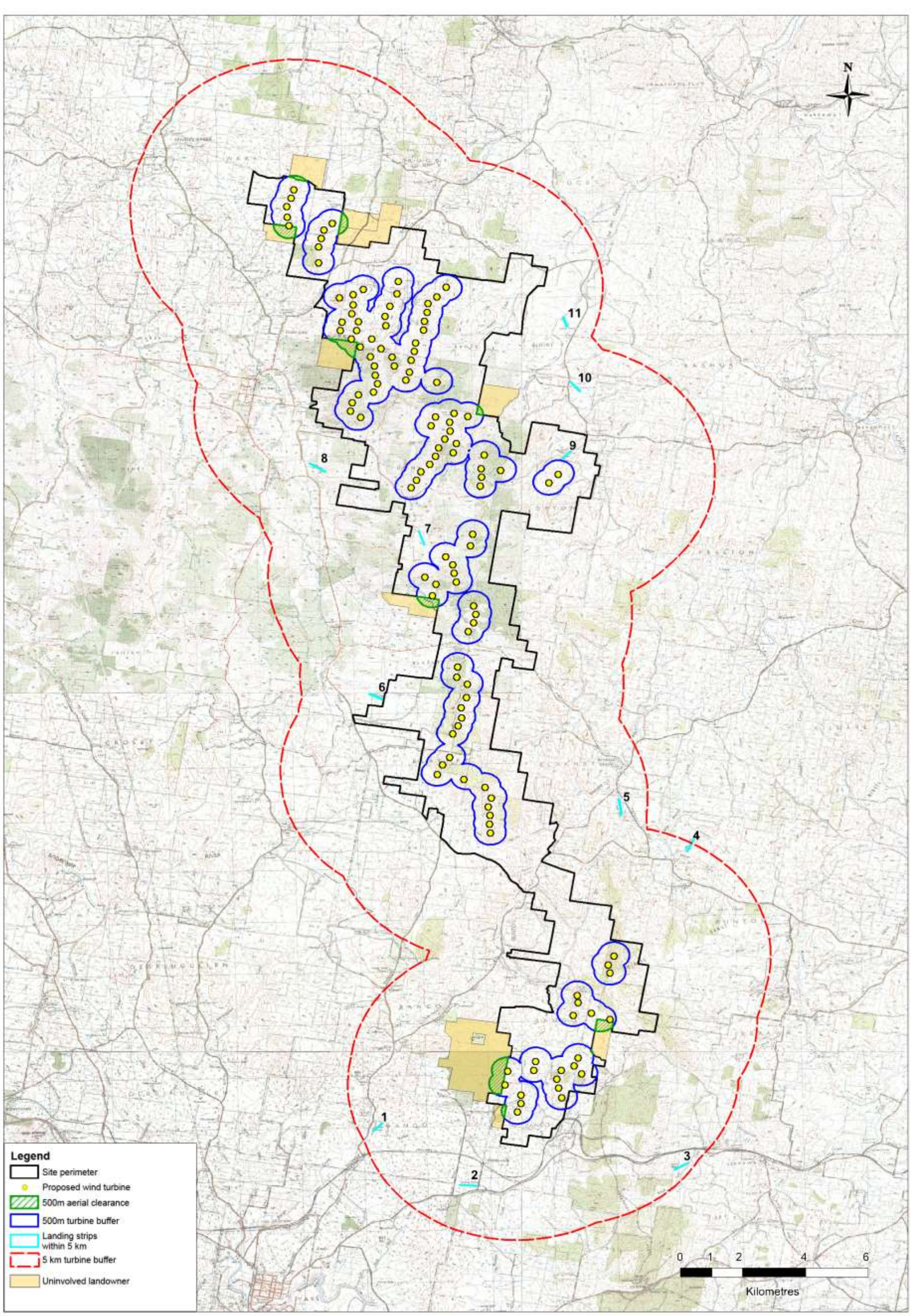


Figure 14-2 Landing strips within 5km of a turbine

14.1.3 Consultation

Epuron has consulted with the Yass Valley Council, Upper Lachlan Shire Council, Boorowa Council, CASA, Airservices Australia (ASA), Aerial Agricultural Association of Australia (AAAA) and the Department of Defence in relation to the project. This consultation included written correspondence and follow up discussions as necessary.

On the 2nd of November 2012 Epuron wrote to the Department of Defence in relation to the project. The Department of Defence is responsible for ensuring that new developments would not conflict with existing military aircraft operations, radio communications and the operation of navigational aids and radars. No concerns have thus far been raised by the Department of Defence in relation to the project.

On the 2nd of November 2012 Epuron wrote to CASA in relation to the project. CASA is an independent statutory authority whose primary function is to conduct the safety regulation of civil air operations in Australia. Due to the height of the proposed turbines (greater than 110m), notification to CASA is required in accordance with the Civil Aviation Safety Regulations 1998 (CASR) Part 139, Subpart 139E Obstacles and hazards. CASA previously recommended that obstacle lighting be provided as per section 5.5 of Advisory Circular 139-18(0) - Obstacle Marking and Lighting of Wind Farms, however this Advisory Circular was withdrawn in September 2008. The withdrawn Circular defined the interval between turbines and obstacle beacons should not exceed 900m. Since the withdrawal of the Advisory Circular in 2008 there have been no updated recommendations and as such there are currently no CASA guidelines to conform to in relation to obstacle marking of wind farms. CASA has indicated that they are reviewing their position and it appears that CASA may align their advice with international guidelines and not require obstacle lighting.

Epuron provided Airservices Australia (ASA) with details of the project on the 2nd of November 2012. ASA is responsible for air traffic management and has the expertise to assess the potential impacts of wind farm proposals on precision / non precision navigational aids, HF/VHF communications, radar and satellite links in the area. ASA is also able to provide advice on whether the project would impact Lowest Safe Altitudes (LSALTs). On the 21st of November 2012 ASA advised Epuron that they would be sending information including instructions for performing a detailed assessment. Epuron will continue to work with ASA to ensure the project will not adversely impact on existing services.

The AAAAs formal policy position on all wind farm developments and wind monitoring towers is to automatically oppose such developments, unless the developer is able to clearly demonstrate they have openly and honestly consulted local aerial operators, sought independent expert opinion, ensured no long or short term effect on safety standards and provided a legally binding agreement for compensation for loss of income (AAAA, 2011).

14.1.4 Assessment

Aerodromes

After consultation with CASA regarding regulated aerodromes, the proposed wind farm site is considered to be a sufficient distance away from these airfields (aerodromes) as all proposed turbine locations are outside of the maximum distance (15 km) of any existing OLS. Consequently it would not affect their operations and no further assessment is considered necessary in relation to these regulated aerodromes.

Landing Strips

Eleven landing strips have been identified within 5 kilometres of the proposed development, two of which are within 2 km. These strips are classed as “Aeroplane Landing Areas” by CASA in accordance with Civil Aviation Safety Regulations Part 139.

CASA guidelines for these landing strips are contained in their *Civil Aviation Advisory Publication 92-1 (1) - Guidelines for Aeroplane Landing Areas* (Madders and Whitfield, 2006). The publication contains physical characteristics that define the ‘surfaces’ which should be clear from obstacles around the runway approaches. These characteristics are shown in Figure 14-3 for day operations.

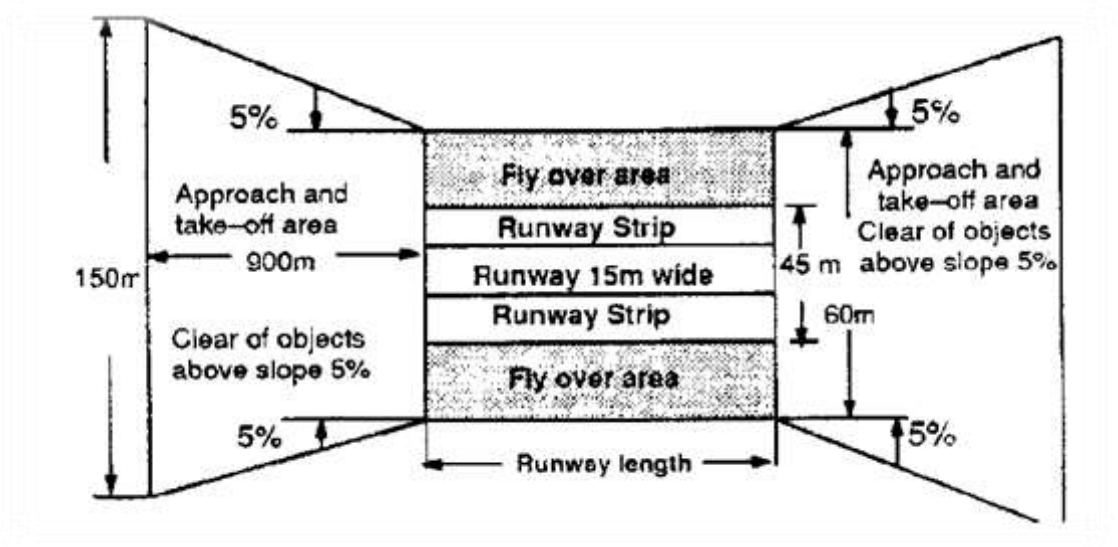


Figure 14-3 CASA's guideline for characteristics of an Aeroplane Landing Area (Madders and Whitfield, 2006)

For this assessment a worst case scenario basis had been chosen and all landing strips will be assessed as if they were for Single engine and Centre-Line Thrust Aeroplanes not exceeding 2000 kg maximum take-off weight (MTOW) for day time operations. By using this definition of aeroplane landing areas, it increases the clearance required between wind turbines and the approach and take-off areas and will ensure greater safety for both pilots and the wind farm.

A zone extending 900 metres from the approach and take off area is required to be free from obstacles at an angle of 5% extending out from the end of the runway.

The project does not encroach on any of the existing landing areas with the closest turbine being 570 m from landing strip No. 9. Figure 14-4 demonstrates that the clearances are in excess of the CASA guidelines for landing strip No. 9.

As these private airstrips rely on visual rather than instrument based landing techniques, and as the turbines are highly visible, it is unlikely that the proposed development would pose any additional hazard to users of these airstrips. It is expected that pilots will continue to use the local landing strips.

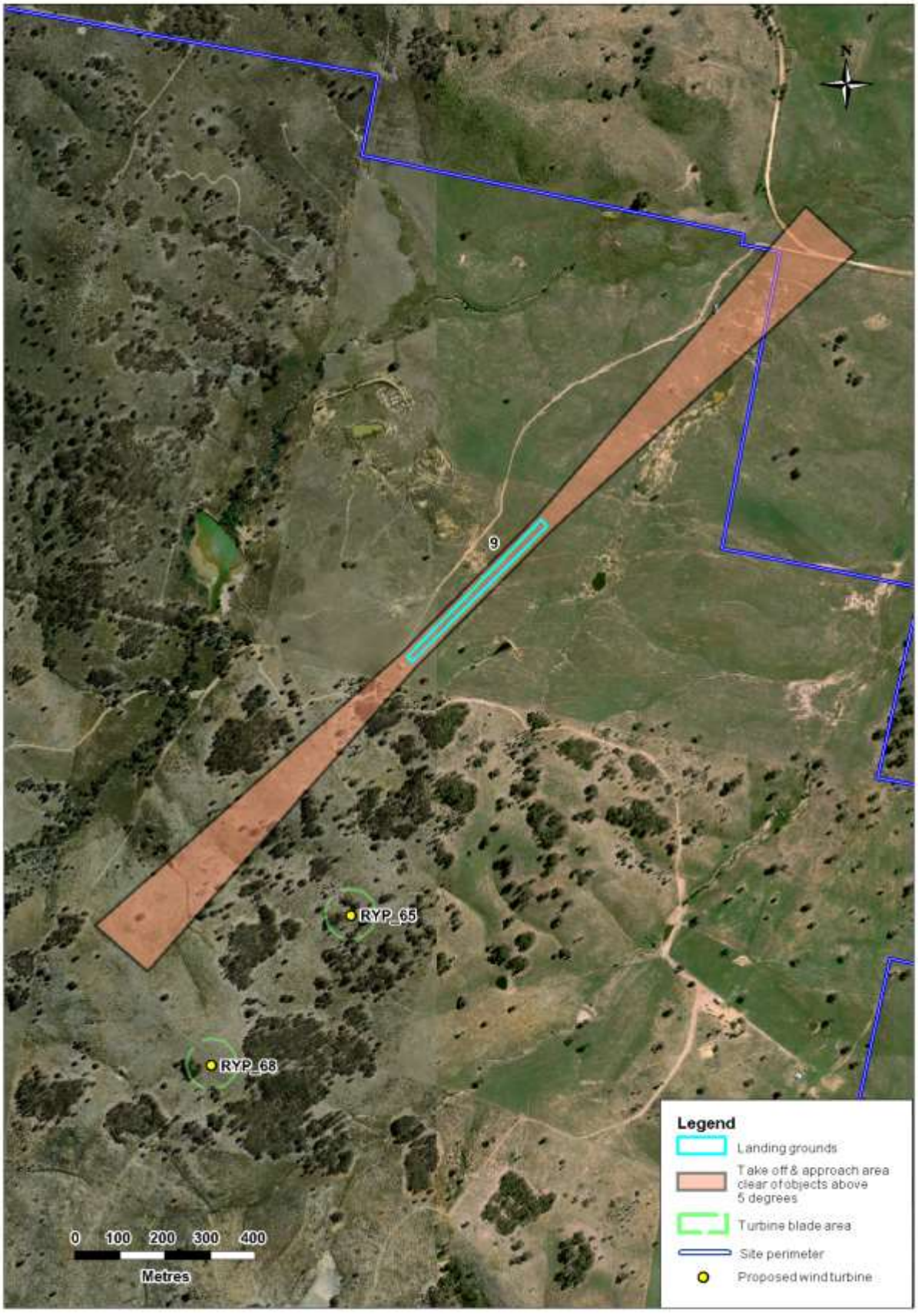


Figure 14-4 CASA guidelines for local landing strip No. 9

Aerial Agriculture

The Proponent acknowledges that the wind farm will likely impact aerial spraying in the area immediately adjacent to the turbine locations. Accordingly, should spaying or spreading of fertilisers be required in this vicinity, ground based methods will need to be considered.

A report conducted by the Ambidji Group Pty Ltd for the Berrybank Wind Farm concluded that a buffer zone of 500 m should be applied when planning aerial spreading in the close proximity to an installed wind farm (Smales, 2006). This would mean that more time would be required in the pre-planning process as the approach may need to be varied to avoid turbines. The report states:

> *"A standard agricultural aircraft loaded to maximum capacity takes approximately 500 metres to complete this turn. This would have an impact on the direction at which some of the spraying operations would need to be conducted. A distance of 500 metres from the nearest turbines would be required as a buffer zone for this operation."*

This report therefore assumes that aerial spreading would impact the area within 500m from a constructed turbine.

Figure 14-2 shows a 500 m buffer from the currently proposed turbines in relation to non-involved properties surrounding the site. The total affected area, as a result of this buffer zone, is confined to the ridge tops mostly and in some case covers areas that are heavily vegetated and would not be suitable for aerial agriculture.

Although the project will have some impact on the operations of aerial agriculture on these properties, alternate spreading methods are available.

Lighting

Due to the significant physical separation between the wind farm and the closest airports, the fact that the overall wind turbine height will be below the lowest safe altitude for aviation and consideration of general community views on turbine obstacle lighting at night being visually intrusive, it is not considered appropriate to install obstacle lighting on turbines at the Rye Park Wind Farm site. The use of private landing strips is restricted to daytime operation and hence there would be no reason to install obstacle lighting for private aviation purposes.

Accordingly, the Proponent would only install obstacle lighting if required to do so by CASA, and to the extent required by CASA.

It should also be noted that the night time lighting installed on the Cullerin Wind Farm has been decommissioned by Origin Energy following a risk based aviation assessment. A number of recent wind farm developments in New South Wales have been approved without requirement for night time lighting, including the Gullen Range and Glen Innes wind farms.

14.1.5 Mitigation Measures

- Liaise with all relevant authorities (CASA, Airservices, and Department of Defence) as well as the operators of local airports and airstrips, and local aerial agriculture contractors and the AAAA, and supply location and height details once the final details of the wind turbines have been determined and before construction commences.
- Comply with any requirements of CASA in relation to obstacle marking of wind turbines, and would not otherwise install obstacle beacons on any wind turbine.

14.2 Communications Impacts

14.2.1 Background

Wind turbines have the potential to interfere with television and radio broadcasting, mobile phone reception, microwave links and other radio links such as mobile and CB radio. There are three mechanisms by which wind turbines may cause interference: reflection, diffraction and near field effects.

Reflection or scattering occurs when a signal becomes obstructed between the transmitter and a receiver, this could be due to a tower or moving blade component as shown in Figure 14-5.

Diffraction occurs when a signal is both absorbed and reflected by an object in the signal path.

Near field effects are caused by electromagnetic fields. This is no longer an issue due to advances in wind turbine technology and compliance with Electromagnetic Emission Standards.

A communication impact assessment report was prepared by Epuron for the Project. The objectives of this investigation were to identify the potential for impacts from the proposed Rye Park Wind Farm on existing telecommunications services in the vicinity of the project, and to identify appropriate mitigation strategies for potential impacts. The full investigation including a glossary of acronyms used in the investigation, maps, footnotes and references is presented in Appendix F.

The following approach was adopted to identify the potential impact of the project on telecommunications:

- Identify holders of telecommunications licenses (under the Radiocommunications Act 1992) within a 25km radius of the project, as well as point-to-point links in the vicinity of the project, using information provided on the Australian Communications and Media Authority (ACMA) RADCOM database.
- Provide written notification of the project and seek comments from each license holder identified via the ACMA RADCOM database search.
- Record and review all responses received to identify any issues raised by license holders.
- Discuss issues raised with relevant license holders with the aim to resolve or identify mitigation options.
- Carry out an assessment of the “Fresnel zone” associated with each fixed point-to-point communications link in the vicinity of the project.
- Determine appropriate ‘exclusion zones’ for the proposed turbine layout based on these calculations and advice from license holders.
- Confirm that all turbines (including blades) are located outside the ‘exclusion zone’.
- Determine appropriate additional mitigation measures which may be required.

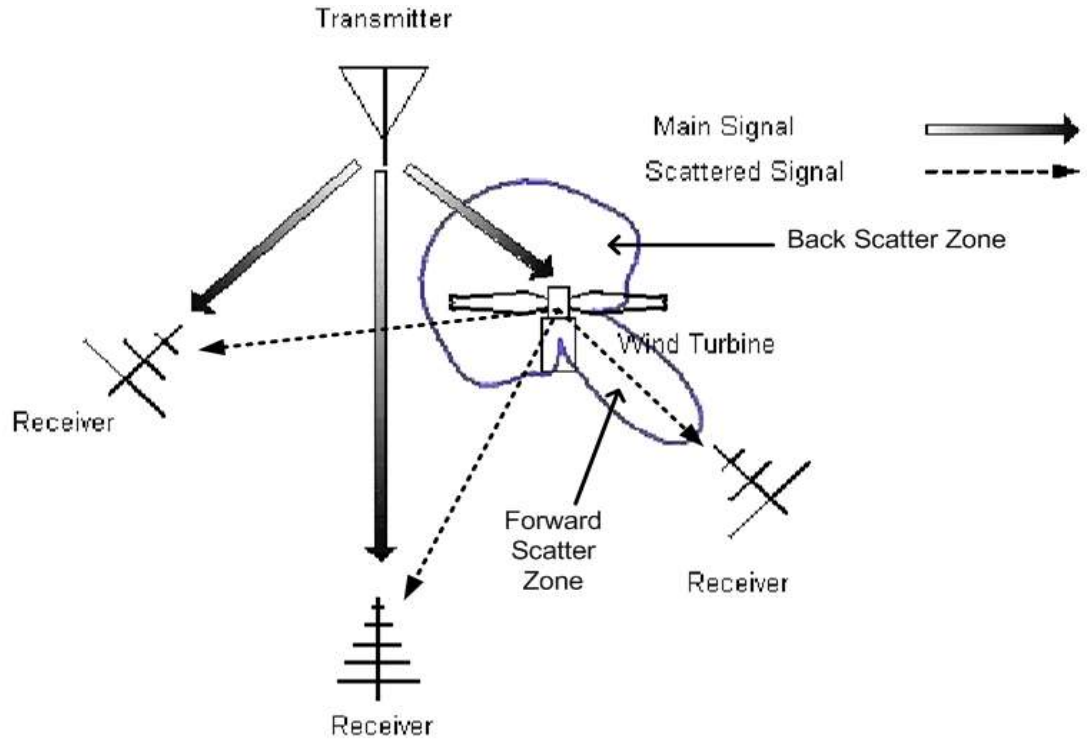


Figure 14-5 Scattering of a signal from a wind turbine

14.2.2 Existing Environment

The potential impacts of the proposed Rye Park Wind Farm on the four most commonly used telecommunications services have been investigated separately and are summarised below.

These services include:

- television broadcast services;
- radio broadcast services;
- mobile phone services; and
- radio communication services.

Television Broadcast

The ACMA RADCOM database lists the following broadcasters for television under postcode 2586, Rye Park, NSW.

- Southern New South Wales TV1: ABC, CBN, CTC, WIN and SBS

The closest transmitter of television programs is at Reservoir Hill, Young located about 60 kilometres North West of Rye Park.

Television Interference (TVI) is dependent on a range of factors including: existing environment factors (topography, direct signal strength, transmitter type, and receiver type) and wind farm design factors (turbine elevation, rotor size and orientation, speed of rotation, blade material and pitch). Due to the variability of local conditions and the characteristics of antennae used in particular installations, there is a degree of uncertainty regarding predicted levels of interference.

A Kordia report commissioned by the Long Gully Wind Farm in New Zealand stated that analogue television would be the most likely transmission service to experience interference from a wind farm development, although only within a limited distance. Very High Frequency (VHF) TV reception at dwellings within approximately 1 km of an installed wind turbines would have some probability of noticeable “ghosting” at times (Kordia, 2009).

However, as analogue television signals have been 'switched off' and replaced with digital signals in the Rye Park area in June 2012, this is no longer an issue as digital TV is not susceptible to visible "ghosting" degradation (Kordia, 2009).

Satellite based television or internet services may also be received at various locations throughout the area. These services are not subject to the same topographic screening that can affect the land based TV transmissions. Due to the distance of residences from the wind farm it is very unlikely that satellite based television services would be subject to interference due to the wind farm's operation as the wind turbine would have to be within the line of sight from the antenna to the satellite.

Radio Broadcast

The ACMA RADCOM database lists the following broadcasters for radio under postcode 2586, Rye Park, NSW.

- Young RA1: 2ABCCRN, 2LF, 2LFF, 2RVR

The level of radio broadcast interference experienced can be influenced by a variety of factors including abnormal weather conditions, multi-path distortion (reception of a signal directly from a transmitter and also a reflected signal from hills, structures etc.), overloading (when an FM receiver receives too strong a signal) and electrical interference.

Potential wind farm impacts on FM radio are highly unlikely and therefore the stations serving the area have not been listed.

License holders have been contacted regarding possible impacts to television or radio broadcasting services. The Proponent will work with organisations to resolve issues, should any be identified.

Mobile phone services

A mobile phone network consists of a system of adjoining zones called 'cells', which vary in size with a radius of 2 - 10 km. Each cell has its own base station that sends and receives radio signals throughout its specified zone. Mobile phone antennas need to be mounted clear of surrounding obstructions such as buildings to reduce 'dead spots' and allow the base station to effectively cover its intended cells.

Mobile phone coverage is available in much of the area around Rye Park but is patchy further away from Rye Park and the main highways and where topography limits coverage. Mobile phone coverage is particularly poor in rural locations not far from the Rye Park Wind Farm site.

Due to the separation distance between base antennas for providing mobile phone services and turbine structures due to the wind farm location, transmission of mobile phone signals is not expected to be affected by the wind farm.

Radio Communications

The ACMA issues radio communications licenses in accordance with Part 3.5 of the Commonwealth Radiocommunications Act 1992. The ACMA issues licenses to use specific segments of the radio broadcasting frequency spectrum for different purposes and maintains a register (the ACMA RADCOM Database) of all the licenses issued.

The register allows the ACMA to create a 'density' classification of areas across Australia as high, medium or low depending on the number of licenses in operation in a particular area. According to the ACMA RADCOM database, the area in the vicinity of the proposed wind farm is classified as a "Low Density Area".

License holders operate a range of radio communications services, including fixed link microwave communication and mobile communication systems within a 25km radius of the proposed wind farm. Multiple license holders use some sites, while sole users employ others. Radio communications site licence holders within a 25km radius are listed below.

Each license holder has been contacted and asked to provide independent comment on the wind farm development with respect to possible impacts to communication links. The Proponent will work with organisations to resolve issues, should any be identified.

Table 14-2 - Radio communication license holders within 25km of the Rye Park wind farm site

ACMA Licence Holder	ACMA Site ID No.
2KY Broadcasters Pty Ltd	151009
Airservices Australia	9530, 49366
Ambulance Service of NSW	9530, 9547, 204072
Australian Rail Track Corporation Limited	40012, 202399
Boorowa Council	9547
Chris Despotakis	139907
Concrite Pty Ltd	36172
Department of Finance and Services	55602, 9006930, 9013320
Dianne Maree Nacson	9504, 9530, 55601, 100903, 137000
Essential Energy	9530, 9547, 36146, 36149, 404038, 9000026
Fire and Rescue NSW	9529, 9547, 34798, 100903
NSW Police Force	9547, 55601, 55602
NSW Rural Fire Service	9547, 34887, 34888, 201543, 9013320
Optus Mobile Pty Limited	9525, 9546, 55601, 55602, 202115, 370254
RBA Holdings Pty Ltd	9504
Robinvale District Health Services	304511
Singtel Optus Pty Limited	9525, 9546, 55601, 55602, 370254
Soul Pattinson Telecommunications Pty Limited	55602, 100785, 204072
State Emergency Service (NSW)	9504, 9530, 201458, 9009594, 9009595
Stephen Cusack	138528
Telstra Corporation Limited	9531, 9546, 9547, 39130, 55601, 100722, 100785, 130627, 132565, 370254
Transgrid	204072, 9006930
Upper Lachlan Shire Council	9504
Vodafone Australia Pty Limited	9529, 55602, 370254, 9013911
Vodafone Hutchison Australia Pty Limited	9529, 370254
Wendy Blackmore	199282
Yass Community Radio Association Inc.	9529, 39129, 151009
Yass Valley Council	9529

14.2.3 Consultation

License holders identified via the ACMA RADCOM database within a 25 km radius of the wind farm were notified in writing of the project in relation to potential impacts and asked to provide comments and included a follow up telephone discussion where necessary.

Table 14-3 summarises the organisations that were consulted and their comments received or discussed.

Table 14-3 Consultation with license holders

Organisation	*Response*	*Comment*
2KY Broadcasters Pty Ltd	No Response	
Airservices Australia	No Response	
Ambulance Service of NSW	No Concern	
Australian Rail Track Corporation Limited	No Concern	Requested more information regarding rail crossings
Boorowa Council	No Response	
Chris Despotakis	Concerns Raised	Discussion with organisation ongoing
Concrite Pty Ltd	No Response	
Department of Defence	No Concern	
Department of Finance and Services	No Response	
Dianne Maree Nacson	No Response	
Essential Energy	No Response	
Fire and Rescue NSW	No Response	
NSW Police Force	No Concern	
NSW Rural Fire Service	No Response	
Optus Mobile Pty Limited	No Concern	
RBA Holdings Pty Ltd	No Response	
Robinvale District Health Services	No Response	
Singtel Optus Pty Limited	No Concern	
Soul Pattinson Telecommunications Pty Limited	No Response	
State Emergency Service (NSW)	No Response	
Stephen Cusack (Yass Taxis)	No Response	
Telstra Corporation Limited (Telstra Wireless Network Engineering 15)	No Concern	
Transgrid	No Response	
Upper Lachlan Shire Council	No Response	
Vodafone Australia Pty Limited	No Response	
Vodafone Hutchison Australia Pty Limited	No Response	
Wendy Blackmore	No Response	
Yass Community Radio Association Inc.	No Response	
Yass Valley Council	No Response	

14.2.4 Assessment

Television and radio broadcast services

In the event that Television Interference (TVI) is experienced by existing receivers in the vicinity of the wind farm, the source and nature of the interference would be investigated by the Proponent using a before and after approach as detailed in the mitigation measures.

Should investigations determine that the cause of the interference can be reasonably attributable to the wind farm; the Proponent would put in place mitigation measures at each of the affected receivers in consultation and agreement with the landowners.

Radio communications services

A fixed link radio transmission is a point to point transmission path typically between two elevated topographical features. Radio links could make use of a number of transmission frequencies including UHF, VHF or microwave. The transmission path may become compromised if a wind farm is located within the direct line of sight or what is known as the 'Fresnel Zone' around the line of sight between the sending and receiving antennae.

The potential impact zone will vary with the distance between the transmitter and receiver, frequency of transmission and the location of any particular point along its path. The maximum extent of the Fresnel zone occurs at the midpoint along the path of the microwave link as shown in Figure 14-6. Communications are only likely to be affected if a wind farm is in the line of sight between two sending and receiving antennae or within a zone of the line of sight of these antennae. In general, microwave links (which have very narrow Fresnel zones) are more liable to interference as a greater portion of the Fresnel zone can be impacted by the wind turbine.

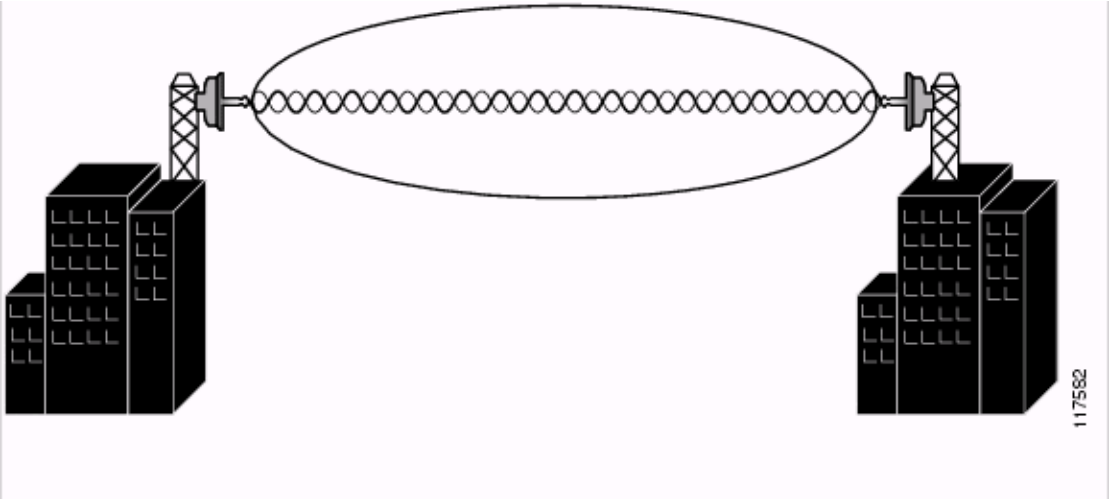


Figure 14-6 The Fresnel zone between a transmitter and a receiver

In order to ensure that obstruction to the signal transmission path does not occur; calculations of the 2nd Fresnel zone of the point to point communications links crossing the site were undertaken.

It is suggested that beyond the 2nd Fresnel zone, the power of a scattered signal from a structure such as a wind turbine would be small enough such that it would not result in significant interference at the receiver.[4].

Completion of this Fresnel analysis showed that a number of turbines were to be located within the 2nd Fresnel zone or close to the direct line of sight path of the point to point link crossing the site, and therefore these

4 D. F. Bacon, A Proposed Method for Establishing an Exclusion Zone around a Terrestrial Fixed Link outside of which a Wind Turbine will cause Negligible Degradation of the Radio Link, Radiocommunications Agency UK Report Ver 1.1, 28 Oct 2002

turbines were moved outside of these areas. This mitigated all impacts to six out of the seven radio communication links within the site perimeter.

The seventh radio communication link on site is a VHF link registered to the Department of Defence. Research of recent literature suggests that interference to VHF links (i.e. in the 30MHz - 300MHz frequency range) by wind turbines is not likely. The Department of Defence link crossing the site operates with a frequency of 30.7MHz and so falls within this range.

> *Auswind best practice guidelines states: "The communications systems most likely to be affected (by wind turbines) are those which operate at super high frequencies (particularly microwave systems operating at frequencies above 300MHz)"*
>
> *Garrad Hassan's "Assessment of Electromagnetic Issues for the proposed Berrybank Wind Farm", insists that only frequencies greater than UHF range (300MHZ - 3GHz) may potentially experience interference from wind turbines.*[5]

The same view was also taken by Energreen Wind Pty Ltd in their Black Springs Wind Farm EMI assessment dated 26-7-2006:

> *"UHF and VHF voice services have been found not to be affected by wind turbines unless the turbines are in the immediate vicinity of an antenna such that "near field" issues occur. The Blayney wind farm, south west of Sydney, NSW lies directly in the path of a VHF link and there has reportedly been no discernible interference as a result of the development."*[6]

The Department of Defence was contacted in regards to this communications link and the Rye Park Wind Farm and the correspondence is quoted below.

> *"Defence has assessed the proposal for any impacts to operations in the area. This includes safety of low flying military aircraft, as well as affects to Defence communications, and surveillance radars. Defence advises that the Rye Park wind farm* ***would not*** *adversely affect military aircraft operations or interfere with Defence communications and radar."*

Therefore, based on:

- The results of the above literature research,
- Relocation of turbine layout to avoid 2nd order Fresnel zones of UHF links,
- The frequency of the Department of Defence link being in the low VHF range (30MHz - 300MHz) and
- The fact that the wind farm is not in the vicinity of an antenna,

Interference to the existing point to point communication links from the Rye Park wind farm is not expected.

14.2.5 Mitigation Measures

As a result of the exclusion zones established in planning the wind farm, the possibility of impacts to existing point to point communication links is reduced. However, in the unlikely event that interference is observed, the proponent is confident that impacts will be able to be mitigated using the following techniques:

- Modifications to or relocation of the existing antennae
- Installation of a directional antennae to reroute the existing signal
- Installation of an amplifier to boost the signal and/or
- Utilisation of onsite optical cable to reroute the original signal.

5 http://www.unionfenosa.com.au/BB_Application_Report/BB_Appendix_9_Telecommunications_Assessment.pdf (page 3/23)

6 http://majorprojects.planning.nsw.gov.au/files/1887/Appendix%20G%20Electromagnetic%20interference%20study.pdf

The Proponent will ensure final design and construction of the project is carried out in consultation with the registered communication licensees (including emergency services) to ensure that risks to these services are minimised as far as reasonable and feasible. In the event that any disruptions to these services occur as a result of the project, the Proponent will undertake appropriate remedial measures in consultation with the relevant licensees to rectify the issue as soon as possible. Such measures may include modification to or relocation of the existing antennae or relocation of the services.

14.3 Electromagnetic Fields

14.3.1 Background

Electromagnetic fields (EMF) (having both electric and magnetic components) are generated by all electrical devices including household appliances (televisions, lights, electric blankets etc.), powerlines, substations and wind turbines. Generally, scientific evidence does not firmly establish that exposure to 50 Hz electric and magnetic fields from these sources are a hazard to human health. Current science would suggest that if any risk exists, it is small (ARPANSA, 2011a).

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) has produced fact sheets which state that studies to date have consistently shown that there is no evidence that exposure to low level electric fields (such as those found in the home or in most workplaces) are a health hazard. In the same text, it states the possibility remains that intense and prolonged exposure of magnetic fields may increase health risks (ARPANSA, 2011a).

In relation to EMF, the issues associated with wind farms are no different to the issues associated with the electricity industry in general and the use of industry best practice (and in particular the appropriate location of associated powerlines and related easements) should ensure EMF risk is adequately managed.

ARPANSA was formed in 1998 as a Federal Government agency charged with the responsibility of protecting the health and safety of people and the environment, from the harmful effects of ionising and non-ionising radiation. ARPANSA is currently developing guidelines on exposure limits to EMFs but in the meantime they still refer to the National Health and Medical Research Council Interim Guidelines (ARPANSA, 2011b).

The *National Health and Medical Research Council Interim Guidelines on Limits of Exposure to 50/60 Hz Electric and Magnetic Fields* recommend a limit for 24 hour exposure of 1000 mG for magnetic fields and 5 kV/m for continuous public exposure to electrical fields (NHMRC, 1989). These values are consistent with the 50 Hz values of the International Commission on Non-Ionizing Radiation Protection (ICNIRP, 1998). They note that research suggests that health effects are associated with prolonged exposure; measurements at one point in time do not accurately reflect prolonged exposure levels. As an update in 2009, the ICNIRP stated that based on the latest scientific literature, these recommended limits above remain in place.

Electric fields can be reduced both by shielding and with distance from operating electrical equipment. Magnetic fields are reduced more effectively with distance from the equipment.

Potential for EMF impacts occurs only during the operational phase of the wind farm when electrical infrastructure is capable of generating electromagnetic fields. The electromagnetic fields produced by the wind farm infrastructure would vary at different locations onsite, as discussed below. No impact mitigation is considered to be required for the construction and decommissioning phases.

14.3.2 Assessment

Powerlines

The maximum voltage of the underground and overhead powerline cables connecting turbines to the collection substations within the site would be either 22 kV or 33 kV. At the collection substations, the voltage would be stepped up to a maximum 330 kV, and transmitted along 330 kV overhead powerlines to a connection substation will be connected to a new adjacent TransGrid connection switchyard, also adjacent to the existing TransGrid transmission network, where it would connect into the existing Yass to Bannaby 330 kV powerline.

The magnetic fields associated with a powerline at any moment in time depend on a range of factors, including the amount of current flowing in the line and the distance of the measurement point from the conductors. The electric field strength created by powerlines is dependent upon the height of the wires above the ground and their geometric arrangement. Table 14-4 shows maximum electrical and magnetic field strengths for the various types of powerlines expected to be used in the project (National Grid, 2011):

Table 14-4 Maximum electrical and magnetic field strength of various powerlines

Voltage and Type	Maximum electrical field strength under powerline (or over cable) (kV/m)	Maximum magnetic field strength directly under line (over cable) (mG)
33 kV overhead powerline	0.897	257
33 kV underground cable	--	10
330 kV overhead powerline	3.6	304

Note that underground cables do not produce any external electric fields.

All these values are well within the limits of 5 kV/m and 1000 mG recommended for 24 hour exposure mentioned previously (NHMRC, 1989). These values are maximum values and those measured in the project are expected to be less. Furthermore, the strength of both electric and magnetic fields falls away rapidly with distance from the line (National Grid, 2011)

Any off-site electricity lines will be located and designed in accordance with Essential Energy's Easement Requirements (Essential Energy, 2012). This guideline provides requirements for how powerline easements are to be constructed, when they are required and how they are obtained in New South Wales. The electricity cables will be located away from residences, where practical, to minimise magnetic fields from any off-site powerlines.

Substations

Electricity substations are a source of electric fields, although those encountered at the boundary of substations are usually very weak due to effective screening. They are certainly no more than a few hundred volts per meter near the largest installations, well below the 5 kV/m limit.

Magnetic fields from substations occur at their maximum opposite feed pillars, transformers and switching units (Maslanyj, 1996). Fencing around the substations and the location of the substations and control buildings would ensure that the magnetic field exposure to receivers including the public, property owners and workers are well below the 1,000 mG levels determined to be the maximum to safeguard for public health.

Wind Turbines

The areas proposed for the installation of wind farm infrastructure with potential EMI would have limited public access. Access to these areas by the general public would be restricted, with periodic access by appropriately trained and qualified maintenance staff only. Property owners accessing the sites would have no reason to spend extended periods near the infrastructure, which is not located near frequent use areas such as sheds, yards and residences. Should property owners require access to control buildings or other wind farm infrastructure, they would be accompanied by an appropriately trained and qualified maintenance staff member.

A report investigated the expected magnetic field for proposed wind turbines for Windrush Energy in 2004 (Iravani et al., 2004). The study was based on research and measurements of an existing wind turbine. The measured flux density at the door of the existing turbine was 0.4 mG and the typical value around the wind turbine was 0.04 mG. The acceptable level as stated by the International Commission on Non-Ionizing Radiation Protection (at 60 Hz in this case) is 833 mG (ICNIRP, 1998). The results also concluded that no measurable magnetic field would be expected at a distance of eight metres from the 1,650 kW wind turbine, and hence the magnetic fields produced by generation of electricity from turbines would not pose a threat to public health.

14.3.3 Mitigation

Overhead powerlines and underground cables would generally be located as far as practical from residences and in accordance with the minimum distances set in Essential Energy's Procedural Guideline – Easement Requirements.

14.4 Shadow Flicker

14.4.1 Introduction

Due to their height, wind turbines can cast shadows on the areas around them. Coupled with this, the moving blades create moving shadows. When viewed from a stationary position, when the turbine is between the viewer and the sun, the moving shadows appear as a flicker giving rise to the phenomenon of 'shadow flicker'. This is similar to the strobe effect often experienced when driving through scattered trees on a rural highway.

For a particular position, shadow flicker will only occur during periods when the sun's rays pass directly through the swept area of the turbine blades to the viewpoint. The extent of the shadow flicker is dependent on the time of day, geographical location, meteorological conditions of the site and local vegetation.

There are a number of factors influencing the effect and duration of shadow flicker including:

- position of the sun in relation to the turbine;
- time of year (season) and time of day;
- turbine height and rotor diameter;
- viewer's distance from turbine;
- topography of the area;
- vegetation cover;
- weather patterns, number of cloudy days per year; and
- airborne particles, haze

The effect of 'chopping the light' attenuates with distance and is not considered by modellers of shadow flicker to be noticed beyond 500-1000 m from a turbine (Osten and Pahlke, 1998).

In NSW there are currently no guidelines on which to assess shadow flicker generated by wind turbines. The Victorian Planning Guidelines limit the duration of shadow flicker to a maximum of 30 hours per year (SEAV, 2003). The South Australian Planning Bulletin suggests that shadow flicker is insignificant once a separation of 500m between the turbine and house is exceeded.

14.4.2 Background

Shadow flicker is usually an amenity issue rather than a health risk. Given it is a daytime event; it does not interrupt sleep patterns. However, two issues have been raised as potential health concerns in relation to shadow flicker:

Flicker vertigo

Flicker vertigo is an imbalance in brain cell activity caused by exposure to low frequency flickering or flashing of a light or sunlight seen through a rotating propeller (Rash, 2004). It can result in nausea, dizziness, headache, panic, confusion and – in rare cases – loss of consciousness. Flicker vertigo is usually associated with a light flashing sequence, or flicker frequency, of between approximately 4 hertz (cycles per second) and 20 Hz (NASA, 2001; Rash, 2004).

Photosensitive Epilepsy

Flicker from turbines that interrupt or reflect sunlight at frequencies greater than 3 Hz poses a potential risk of inducing photosensitive seizures. At 3 hertz and below the cumulative risk of inducing a seizure should be 1.7 per 100,000 of the photosensitive population. The risk is maintained over considerable distances from the turbine. It is therefore important to keep rotation speeds to a minimum, and in the case of turbines with three blades ensure that the maximum speed of rotation does not exceed 60 rpm, which is well above the normal practice for wind farms. The layout of wind farms should ensure that shadows cast by one turbine upon another should not be readily visible to the general public or fall upon nearby homes (Harding et al., 2008).

In both cases, the cause of the health effect is a flashing of light with the flash frequency in the range of 3 – 30 hertz. Therefore, wind turbines would only provide a health risk of the shadow flicker created was within this range.

14.4.3 Assessment

A detailed analysis of the potential for shadow flicker and blade glint to affect dwellings has been carried out by Epuron. Modelling of the shadow flicker was conducted using specialist industry software, assessing the largest turbine (maximum tip height) proposed for the project to represent the worst case impact scenario. The maximum number of annual hours at each of the nearby houses where shadow flicker may be experienced was calculated using this model.

The number of annual hours of shadow flicker at a given location can be calculated using simple geometrical models incorporating data such as the sun path, the topographic variation and wind turbine details such as rotor diameter and hub height. In such models, the wind turbine rotor is modelled as a disc and assumed to be in the worst case (i.e. perpendicular) to sun-turbine vector. Furthermore, the sun is assumed to be a point light source.

Shadow flicker calculated in this manner overestimates the number of annual hours of shadow flicker experienced at a specified location due to several reasons.

- The occurrence of cloud cover has the potential to significantly reduce the number of hours of shadow flicker.
- The probability of wind turbines consistently yawing to the 'worst case' scenario where the wind turbine is facing into or away from the sun- wind turbine vector is less than 1 (i.e. less than 100% of the time).
- The amount of aerosols in the atmosphere has the ability to influence shadows cast due to the following reasons.
    - Firstly, the distance from a wind turbine that a shadow can be cast is dependent on the degree to which direct sunlight is diffused, which is in turn dependent on the amount of dispersants (humidity, smoke and other aerosols) in the path between the light source (sun) and the receiver [2].
    - Secondly, the quantity of aerosols in the air is known to vary with time and it has the potential to vary the air density, thereby affecting the refraction of light. This in turn affects the intensity of direct light to cause shadows.
- The modelling of the wind turbine blades as discs to determine shadow path overestimates the shadow flicker effect.
- The blades are of non-uniform width with the thickest viewable blade width (maximum chord) occurring closer to the hub and the thinnest being located at the tip of the blade. As outlined above, the direct sunlight is diffused resulting in a maximum distance from the wind turbine that a shadow can be cast. This maximum distance is dependent on the human threshold which variation in light intensity can be perceived [2]. When the blade tip causes shadow, the diffusion of direct sunlight means that the light variation threshold occurs closer to the wind turbine than when a shadow is caused by the maximum chord. That is, the maximum shadow length cast by the blade tip is less than by the maximum chord.
- Modelling the sun as a point light source rather than a disc has an effect similar to that described above.
    - Firstly, situations arise where the light rays from different portions of the sun disc superimpose around a shadow resulting in light intensity variations less than human perception.
    - Secondly, when the sun is positioned directly behind the wind turbine hub, there is no variation in light intensity at the receiver location and therefore no shadow flicker. However, when the sun is modelled as a point source, shadow flicker still arises.
- The presence of vegetation shields incidences of shadow flicker.

- Periods where the wind turbine is not in operation due to low winds, high winds or operational and maintenance reasons.

Taking the above issues into account, the modelling of shadow flicker has been conducted using simple geometric analyses. The wind turbine has been modelled assuming all wind turbines are disc objects positioned in the worst case with respect to shadow flicker. The sun has been assumed to be a point light source.

To carry out the shadow flicker assessment, the Victorian Planning Guidelines and the South Australian Planning Bulletin discussed earlier were used to determine the inputs to the model. They were:

- a maximum duration of shadow flicker at any residence of 30 hours per year; and
- a conservative assessment distance of 1 km (twice the distance suggested to be affected by shadow flicker).

Therefore, the modelling conducted here represents a very conservative scenario and is intended to overestimate the actual annual hours of shadow flicker experienced at a location.

14.4.4 Actual Conditions at Rye Park

When the actual conditions of the Liverpool Range site are taken into consideration, the number of hours of shadow flicker should be reduced. The major consideration in this respect is the weather patterns and particularly the number of cloudy days experienced that result in no shadow flicker.

Based on 35 years (1971 – 2010) of daily weather observations in Goulburn (Goulburn Tafe, Bureau of Meteorology), the nearest source of data, the average number of cloudy days experienced is 132.2 days/year. The average number of clear days experienced is 88.4/year. These are based on observations at 9am and 3pm each day.

Accordingly based on 132.2 days/year of cloud the number of shadow flicker hours should be reduced by 36.1%. Further reductions for vegetation screening should be considered and applied where appropriate on a case by case basis.

14.4.5 Results

The shadow flicker modelling has calculated the number of annual hours at each of the nearby houses and the results are presented in Table 14-5. The second column represents the theoretical maximum hours of shadow flicker, as discussed above. This approach is based upon the assumption that the wind turbine is yawed to the worst case position of facing into or away from the sun. Using onsite wind rose measurements, the probability of occurrence of various wind directions can be incorporated in the assessment to increase the accuracy. The results are shown in the third column. Additionally a reduction of the theoretical maximum number of hours can be assumed based on the long term observation of cloudy days shown in the fourth column.

Table 14-5 Result of shadow flicker assessment

Residence ID	Theoretical maximum shadow flicker (hrs/yr)	Reduced due to turbine orientation (hrs/yr)	Reduced due to cloud cover (hrs/yr)
R16	24	15	10
R14	1	0	0
R2	0	0	0
R13	0	0	0
R11	0	0	0
R32	62	51	33
R34	0	0	0
R41	0	0	0

Residence ID	Theoretical maximum shadow flicker (hrs/yr)	Reduced due to turbine orientation (hrs/yr)	Reduced due to cloud cover (hrs/yr)
R46	35	24	15
R30	49	35	23
R33	59	42	27
R35	0	0	0

The results show compliance with the Victorian Guidelines of 30 hrs/year at all nearby residences except one (R32). Dwelling R32 is not anticipated to receive the calculated level of shadow flicker due to screening. This is based on extensive vegetation on the south and south-eastern perimeter as seen in Figure 14-7. This vegetation is situated between the dwelling and 3 out of 5 turbines within 1 km of the dwelling, shown in in Figure 14-8.

In addition, the dwelling is used occasionally as a weekender a few times a year and the dwelling owner is a project stakeholder who understands the potential impacts of shadow flicker.

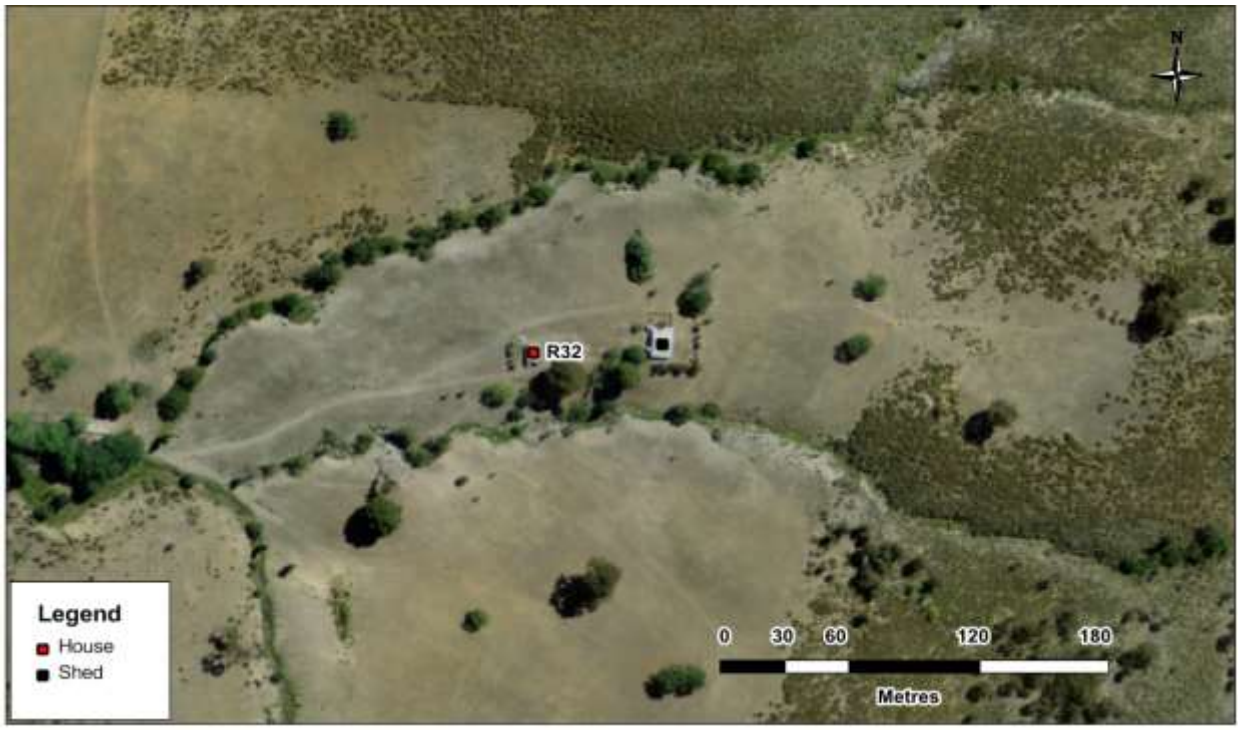


Figure 14-7 Aerial imagery of dwelling R32

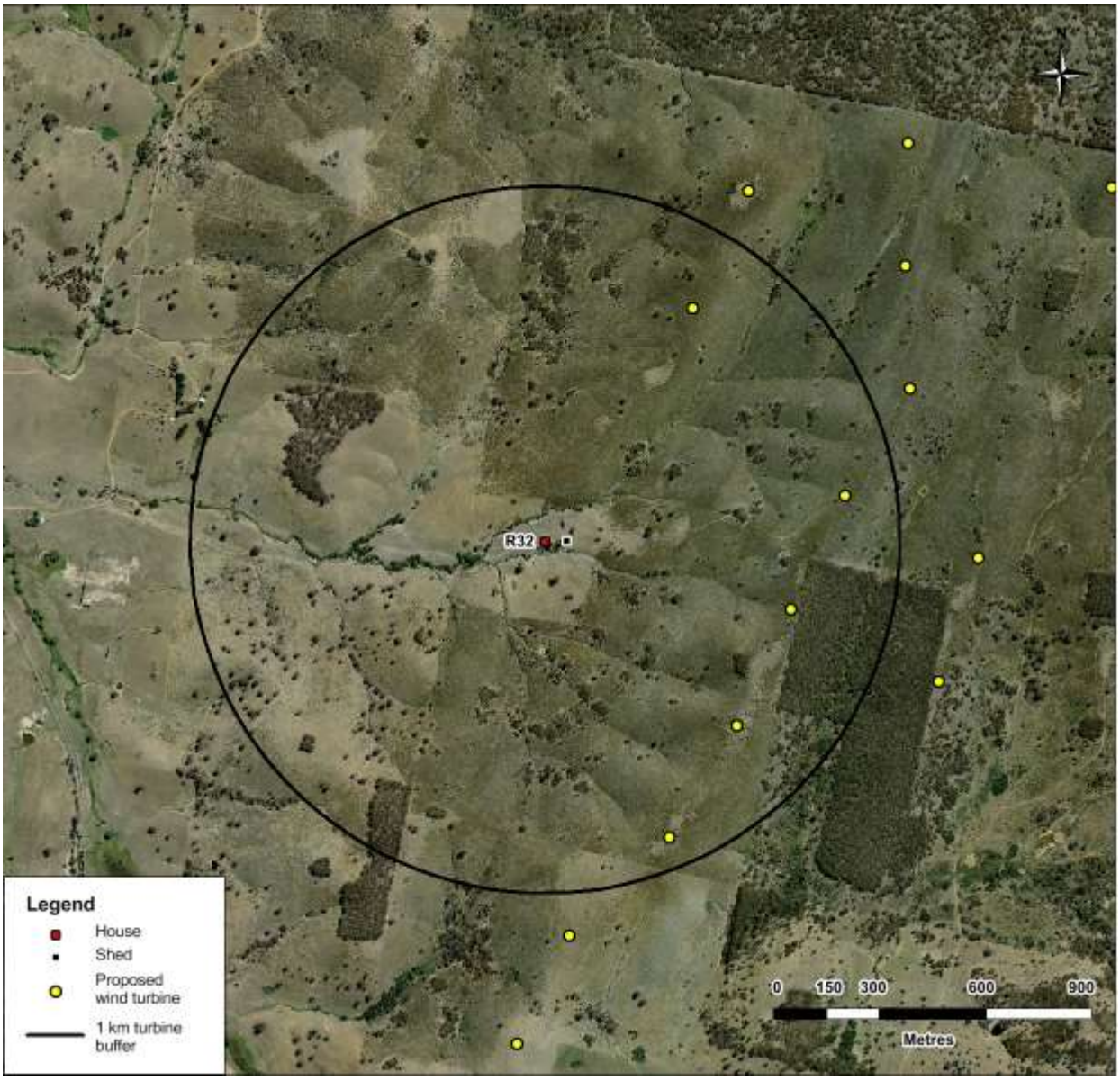


Figure 14-8 Proposed turbines relative to dwelling R32

14.4.6 Health effects from shadow flicker

Flicker frequency of rotating propellers, including wind farm rotors, is derived by multiplying the hub rotation frequency by the number of blades. Based on the rotation speed of the 3 bladed wind turbines proposed for the project, the maximum shadow flicker frequency would be 1 cycle per second (1 Hz), well outside the frequency range associated with flicker vertigo or photosensitive epilepsy.

The operational wind turbines are not anticipated to produce a flicker frequency high enough to pose a health risk. Comparable turbines have been rated 0.45 to 0.95 Hz, significantly below critical levels of 3-30 Hz for public health. The project is therefore unlikely to represent a health risk to local residents in relation to flicker vertigo or photosensitive epilepsy.

This sentiment is also reflected in a recent public statement by the National Health and Medical Research Council titled 'Wind Turbines and Health' which has stated that the evidence on shadow flicker does not support a health concern (NHMRC, 2010).

14.4.7 Blade Glint

Blade glint occurs when sunlight is reflected off turbine blades. The concern is that this may affect some motorists or cause annoyance at dwellings.

Turbine manufacturers have acknowledged the possibility of blade glint and use a low reflectivity gel finish to reduce any reflectivity. The turbines proposed for this project would be finished in a matte, non-reflective finish to ensure blade glint impacts do not occur.

14.4.8 Conclusion

The worst case predicted shadow flicker at each dwelling within 1km of the proposed wind turbines is shown in Table 14-5. Additionally an assessment has been made on the level of conservatism associated with the worst case results by reduction in shadow flicker due to turbine orientation based on wind direction occurrences measured on site and cloud cover. The adjusted results are shown in the table and indicate that only one location exceeds the accepted limit of 30 hours per year.

The dwelling where exceedance occurs is R32. Given the dwelling is surrounding by vegetation on the south and south-eastern sides and turbines causing shadow flicker are situated in this direction it can be expected that this will further reduce the shadow flicker. Additionally the owner is a project involved stakeholder and understands the associated impacts of shadow flicker.

14.4.8.1 Mitigation Measures

- If shadow flicker is found to be a nuisance at a particular residence at a known location a physical screen can be placed between the location and the wind turbines. Additional trees or other vegetation can be used to accomplish this.
- Appropriate mitigation measures will be negotiated and implemented, where necessary, including potential limiting hours of operation on selected turbines or pre-programming the control system of individual wind turbines to automatically shut down while these conditions are present.
- Shadow flicker effects on motorists would be monitored following commissioning and any remedial measures to address concerns would be developed in consultation with the RMS and the Department of Planning.

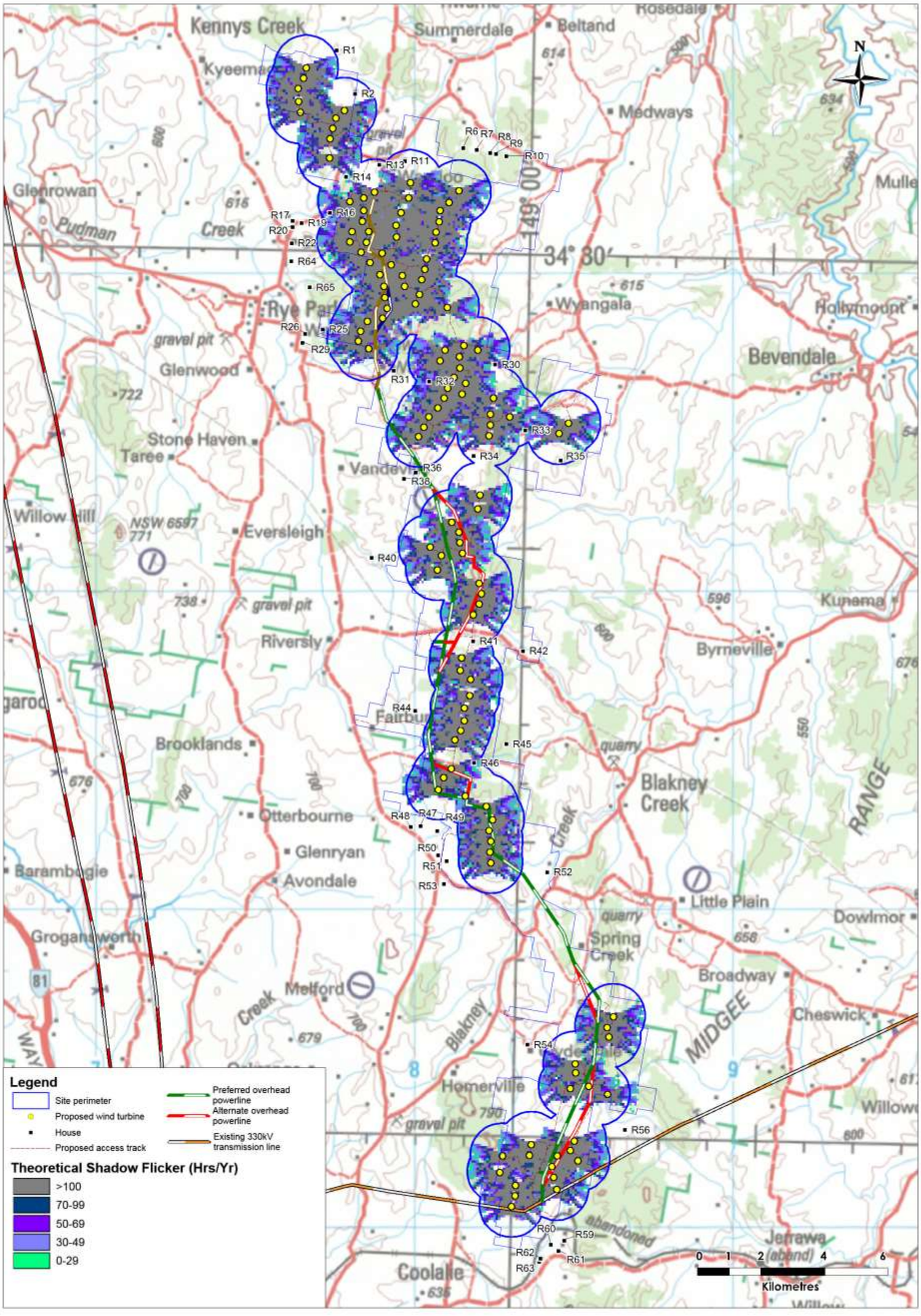


Figure 14-9 Areas potentially affected by shadow flicker

14.5 Fire and Bushfire Risks

14.5.1 Background

A bushfire management plan would be prepared prior to construction and included within the Construction and Operational Environmental Management Plans. Bushfire safety Issues that are associated with wind farms include:

- the potential for wind farm infrastructure to cause a fire that may or may not result in a bush fire;
- the potential for the wind farm to be affected by a passing bush fire and the impact the existence of turbines may have on fire management; and,
- the presence of additional ignition sources as a result of the construction, operation or decommissioning of the wind farm.

14.5.2 Existing environment

The development envelope for the project is predominately pasture with patches of remnant Box Gum Woodlands also present.

The bushfire danger period stated by the NSW Rural Fire Service (RFS) is generally between 1st October and 31st March, but can vary subject to local conditions. Summer conditions in these LGAs can be dry and hot with high wind speeds. Existing ignition sources include farm machinery and vehicles, hay storage, vehicles stopping in long grass on road verges, cigarette butts thrown from car windows and lightning strikes. The elevated position of the sites may increase the frequency of lightning strike. The steep topography and absence of built areas or natural fire breaks such as large water bodies may assist the rate of spread of wildfires. The RFS Fire Prone Land proximate to the Project site can be seen in Figure 14-10.

Factors mitigating fire risks within the site include the sparse and fragmented nature of woodland and forest remnants flanking the development envelope and the continued grazing regimes, which acts to reduce fuel loads. However grass fires can spread rapidly and threaten life and property.

The NSW Fire Brigade has the authority to attend, combat and render safe any land-based or inland waterway spillage of hazardous materials within the State. The NSW Fire Brigade defines hazardous materials as (F&R NSW, 2007):

> *"anything that, when produced, stored, moved, used or otherwise dealt with without adequate safeguards to prevent it from escaping, may cause injury or death or damage to life, property or the environment".*

The fuels and lubricants required to construct and operate the wind farm constitute hazardous materials under this definition, and any fire at the wind farm would come under the management of the NSW Fire Brigade supported by the RFS.

All NSW Fire Brigade fire stations are equipped with trained personnel and resources for dealing with hazmat incidents. The closest NSW fire brigades to the site are Boorowa Fire Station (20 km from the site) and Yass Fire Station (43km from centre of the site – 15 km from the southern boundary), in addition to a RFS brigade in Rye Park.

The Hazardous Materials Response Unit has a 24 hour phone contact (Tel: 02 9742 7155). Intermediate hazardous materials response is delivered by 20 strategically located units, each unit is equipped with detection equipment and has the capability to access chemical databases with information on chemical, biological, radiological and toxic industrial chemical substances.

14.5.3 Assessment

Construction Activities

Flammable materials and ignition sources brought onto the site, such as fuels, would increase the risk of fire during the construction period. Correct handling and storage procedures would mitigate against the risk of ignition. Appropriate fire fighting equipment would need to be held on site when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use.

The RFS would need to be consulted in regard to the adequacy of bushfire prevention procedures to be implemented on site during construction, operation and decommissioning. These procedures would in particular cover hot-work procedures and response measures to control any incident.

Operational Activities

Being electrical equipment and containing petrochemicals, there is potential for the wind turbines, substations, control buildings and powerlines to start or influence the spread of fire. For the wind turbines themselves, the risk of fire can be associated with malfunctioning turbine bearings, inadequate crankcase lubrication, electrical distribution facilities, electrical shorting or arcing occurring in transmission and cable damage during rotation (AusWEA, 2001).

The ready visibility of the turbines and local presence of RFS equipment and personnel would assist detection, response time and control. In addition, shut down mechanisms are installed in the wind turbines, and remote alarming and maintenance procedures would also be used to minimise risks.

Lightning conductors are installed in turbines to ground lightning strikes in order to minimise risk of damage to the turbines and risk of ignition of a wildfire. Relatively minor damage to turbines may occur from lightning strike. At the existing Crookwell I site, a direct strike resulted in damage to one of the turbine blades, which was repaired onsite. No wildfire resulted. The risk of turbine ignition is considered to be low, based on the low likelihood of electrical failure or over-heating and a range of factors mitigating the fire hazard.

Transmission and powerlines would be installed to connect the wind farm to the electricity grid. The powerlines are underground across most of the site and overhead to connect strings of turbines to the substation. The overhead lines have been routed to avoid trees and forest fragments where possible, reducing the need for clearing and eliminating ongoing fire risks from tree growth and in the event of a line breakage. Cable routes would be periodically inspected to monitor any regrowth.

The transformers located in the substation facilities would contain transformer oil for the purpose of cooling and insulation. These facilities would be bunded with a capacity exceeding the volume of the transformer oil to contain the oil in the event of a major leak or fire and would be regularly inspected and maintained to ensure leaks do not present a fire hazard, and to ensure the bunded area is clear (including removing any rainwater). Transformer oil would be changed regularly at appropriate intervals by qualified staff to minimise the potential for fire caused by contaminated oil. The oil would be removed from the site and disposed of appropriately.

The substations would be surrounded by a gravel and concrete area free of vegetation to prevent the spread of fire from the substation and reduce the impact of bushfire on the structure. The substation areas would also be surrounded by a security fence as a safety precaution to prevent trespassers and stock ingress. An asset protection zone would be maintained around the control room and substation buildings, compliant with the RFS Planning for Bushfire Protection guidelines. Workplace health and safety protocols would be developed to minimise the risk of fire for workers during construction and during maintenance in the control room and amenities.

Impacts on fire-fighting operations

Wind farms have been found to influence temperature and wind speed around turbines and have the potential to influence bushfire behaviour. A distance of up to 1.25km around each wind turbine is likely to experience warmer night temperatures and faster wind speeds on average, although this attenuates rapidly with distance from the turbine (SEDA, 2002). While the amount of increase is small (approximately 0.7^{o}C increase and approximately 0.6 metres/second increase at ground level; (Baidya Roy et al., 2004)) these factors may enhance bushfire conditions, slightly increasing the intensity or rate of spread of a bushfire at the site. This minor increase in fire intensity is not considered likely to noticeably affect the rate of spread or controllability of wildfires. In the event of a fire, the turbines would be shut down.

The turbines have the potential to present a hazard to fire fighting helicopters and planes, however, the access tracks installed to build and maintain the wind farm would increase the accessibility onsite and would therefore have a positive impact on the response time and ability to fight fires onsite or on neighbouring properties.

The RFS have participated in the environmental assessment process of several wind farms in NSW. Representatives of the RFS have stated that, due to the hazardous materials stored onsite (hydrocarbons within turbines and the substation), the local RFS would only ever act in a support capacity to the NSW Fire Brigade, in the event of an infrastructure related fire onsite. The RFS and NSW Fire Brigade would be consulted regarding safety, communication, site access and response protocols in the event of a fire originating in the wind farm infrastructure, and also in the event of an external wildfire threatening the wind farm. They have also stated that wind farm infrastructure is not different with regard to bush fire risk than similar large scale infrastructure developments.

While the risk of bushfires would be increased by the construction and operational activities of the wind farm, the cleared nature of the land and the improvements to site access would aid fire fighters on site.

14.5.4 Mitigation

- Ensure that all project components on the site are designed, constructed and operated to minimise ignition risks, provide for asset protection consistent with relevant RFS design guidelines (NSW RFS, 2006; NSW RFS, 2010) and provide for necessary emergency management including appropriate fire-fighting equipment and water supplies on site to respond to a bush fire.
- Regularly consult with the local RFS to ensure familiarity with the project, including the construction timetable and the final location of the entire infrastructure on the site. The Proponent will comply with any reasonable requests of the local RFS to reduce the risk of bushfire and to enable fast access in emergencies.
- Prepare a Bushfire Management Plan as part of the Construction Environmental Management plan. The RFS and NSW Fire Brigade would be consulted in regards to its adequacy to manage bushfire risks during construction, operation and decommissioning. As a minimum the plan would establish hot-work procedures, asset protection zones, safety, communication, site access and response protocols in the event of a fire originating in the wind farm infrastructure. All flammable materials and ignition sources brought onto the site, such as hydrocarbons, would be handled and stored as per manufacturer's instructions
- During the construction phase, appropriate fire fighting equipment would be held on site when the fire danger is very high to catastrophic, and training would be provided as necessary in its use. Fire extinguishers would be stored onsite in the control building and within any substations.
- Substations would be bunded with a capacity exceeding the volume of the transformer oil to contain the oil in the event of a major leak or fire. The facilities would be regularly inspected and maintained to ensure leaks do not present a fire hazard, and to ensure the bundled area is clear (including removing any rainwater).
- Shut down of turbine components would commence if the components reach critical temperatures or if directed by the RFS in the case of a nearby wildfire being declared (all hours contact points would be available to the RFS during the bushfire period. Remote alarming and maintenance procedures would also minimise the risk. Overhead transmission easements would be periodically inspected to monitor regrowth of encroaching vegetation.

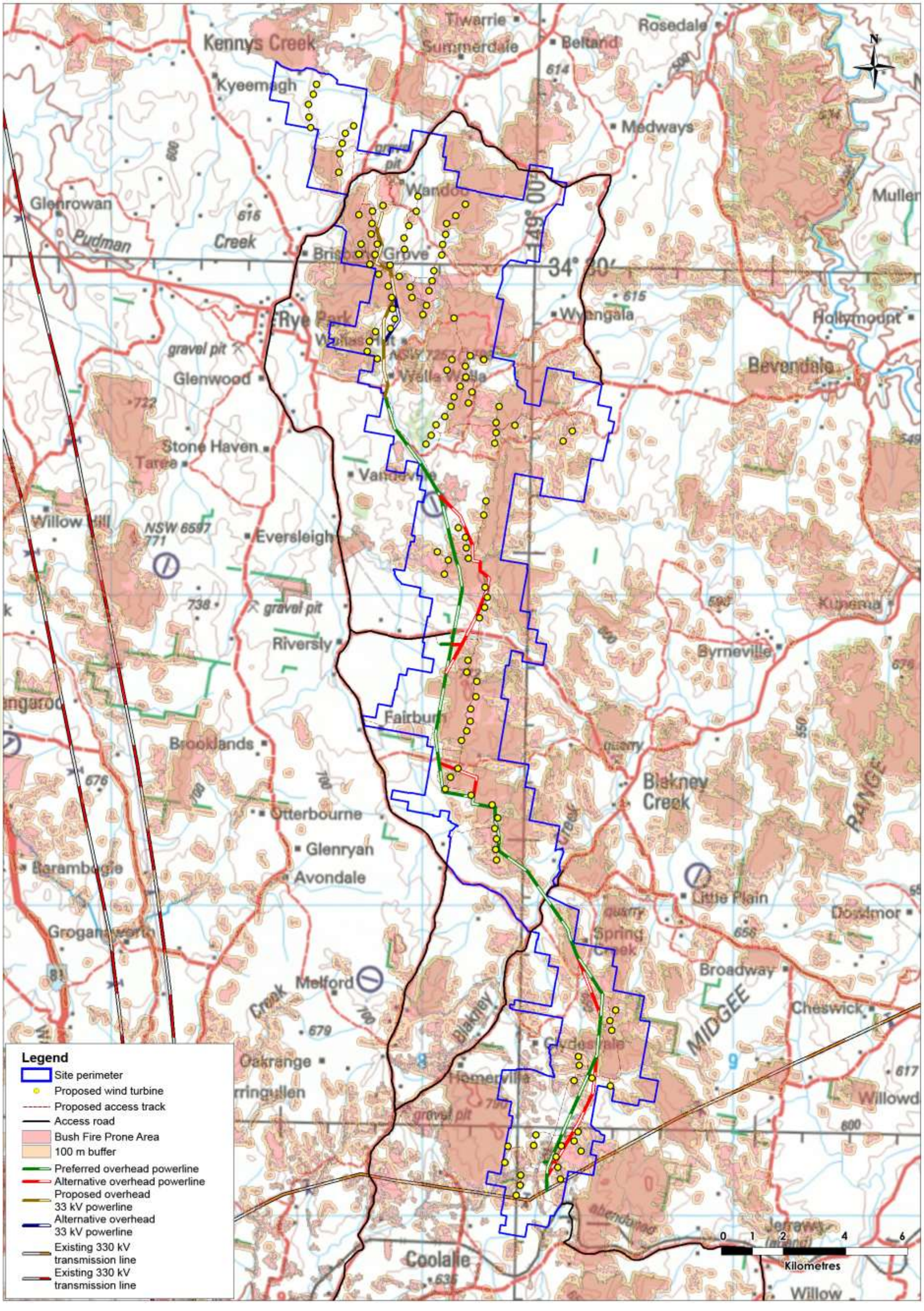


Figure 14-10 Bush fire prone areas near the Rye Park Wind Farm

14.6 Blade Throw

Blade throw refers to the event in which ice or a turbine blade itself becomes separated from the nacelle into the surrounding environment. On the occasions where part of the blade has become separated from the tower, the most common causes are lightning strikes, storms, material fatigue or poor operation and maintenance practices. Wind turbines manufacturers have been implementing new design features to reduce the risk of these events occurring even further. Some of these advances include increasing lightning protection along the blades to reduce the damage from strikes and developing greater control systems to monitor any decrease in structural integrity and implement an automatic shutdown. Furthermore, modern turbines have an automatic braking system when wind speeds exceed a set value. For the case of the Vestas V112 as proposed in this environmental assessment, the cut-out speed for high winds is 25 m/s (90 km/h).

Ice throw occurs when the surrounding environment drops below freezing temperature and ice develops on the turbine blade. The ice is then dislodged when the turbine blade begins to rotate or the surrounding temperature increases. Rye Park and the surrounding regions have been known to regularly have sub-zero nights throughout winter and therefore this must be considered as a low possibility for the winter months.

While there is a possibility of these events occurring, the likelihood of a landowner being near a turbine during storms or freezing conditions is considered low; however, land owners will be advised to avoid turbines during these conditions.

14.7 Health

Some areas of the community, particularly those proximate to proposed or operating wind farms, have raised concerns for the potential impacts of wind turbine noise on human health. These concerns appear to relate to emissions from either low frequency noise or infrasound which is the two areas generally raised regarding potential health impacts from wind farm noise. Both these potential noise related impacts are addressed in further detail in Section 10 of this EA.

Other areas of concerns for human health related impacts from wind farms include electromagnetic radiation, shadow flicker and blade glint produced by wind turbines. While a range of effects such as annoyance, anxiety, hearing loss, and interference with sleep, speech and learning have been reported anecdotally, there is no published scientific evidence to support adverse effects of wind turbines on human health. There have been a number of studies into the perceived health impacts to humans from wind farms over the last few years and an outline of the key points from some of these studies include:

Environmental Protection Authority of South Australia

In January 2013, the South Australian Environmental Protection Authority (EPA) released findings of a study into the level of infrasound within typical environments in South Australia, with a particular focus on comparing wind farm environments to urban and rural environments away from wind farms.

The study concluded that the level of infrasound at houses near the wind turbines assessed is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with the background level of infrasound in the environment.

National Health and Medical Research Council

In 2010, Australia's peak body for undertaking health and medical research, the National Health and Medical Research Council (NHMRC), undertook a study of available literature on the potential impacts of wind turbines on human health. The objective of the study was to ascertain if the following statement could be supported by the evidence: 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 study findings noted that: Based on current evidence, it can be concluded that wind turbines do not pose a threat to health if planning guidelines are followed, and concluded by stating that: The health effects of many forms of renewable energy generation, such as wind farms, have not been assessed to the same extent as those from traditional sources. However, renewable energy generation is associated with few adverse health effects compared with the well-documented health burdens of polluting forms of electricity generation. This review of

the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: 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 NHMRC public statement accompanying the study also concluded that: It is recommended that relevant authorities take a precautionary approach and continue to monitor research outcomes. Complying with standards relating to wind turbine design, manufacture, and site evaluation will minimise any potential impacts of wind turbines on surrounding areas.

World Health Organisation

The World Health Organisation (WHO) has developed guideline exposure values for various types of community noise emissions. These noise values are designed to avoid long term deterioration in physical or psychological functioning. The guideline of most relevance to the potential impacts of wind farm noise is that for sleep disturbance. The WHO considers that night-time noise levels at the outside façade of a dwelling should not exceed 45dBA with open windows. The noise assessment using different wind turbine models indicates that residences at the project would experience night time noise levels that are unlikely to exceed the WHO recommended levels.

NSW Parliament Inquiry

In 2009 the NSW Parliament conducted an inquiry into rural wind farms in 2009, which included consideration of the potential health impacts of wind farms. The inquiry report (New South Wales Parliament Legislative Council General Purpose Standing Committee No. 5, 2009) noted that "…the health effects associated with wind farm noise appear to be the most common concern…" and observed that "…it was clear that some people are significantly affected by their experience of wind farms, both existing and proposed". However, the inquiry report concluded that "…many purported impacts have created little more than unfounded fear in local communities, for example vibroacoustic disease, wind turbine safety, shadow flicker and 'Wind Turbine Syndrome'" and that "…the level of concern for many impacts is not supported by evidence" with "…such impacts being promoted to support arguments against wind power in general, rather than being used to highlight fundamental problems with wind farms." Notwithstanding that current research has been unable to establish a direct relationship between wind farm noise emissions and health, the NHMRC review (citing Chapman, 2010), note that:

> *"It has been suggested that if people are worried about their health they may become anxious, causing stress related illnesses. These are genuine health effects arising from their worry, which arises from the wind turbine, even though the turbine may not objectively be a risk to health."*

The Proponent will establish a complaints management system to be implemented prior to the construction phase and maintained throughout the operation phase of the development to register noise and other health complaints and concerns about the Proposal from the community.

15 Water Supply, Water Quality and Hydrology

15.1 Catchment Management Regions

The Rye Park Wind Farm is located across two Catchment Management Authority (CMA) regions. The majority of the wind farm is located within the Lachlan CMA region, with a small portion of the south-west corner of the project located in the Murrumbidgee CMA region. Figure 15-1 highlights the location of the wind farm in relation to the surrounding CMA regions.

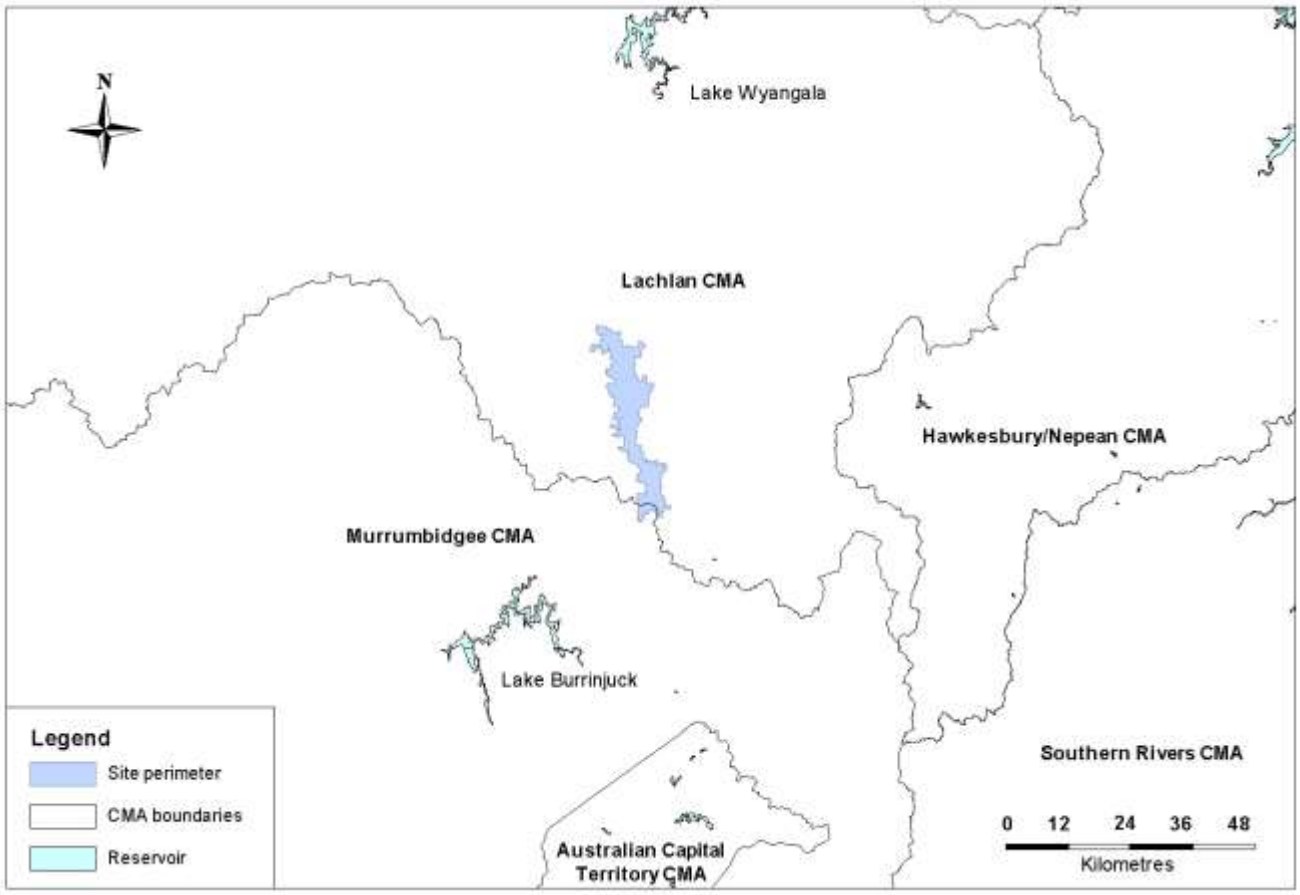


Figure 15-1 Surrounding Catchment Management Authority regions

15.1.1 Lachlan Catchment Management Authority

The Lachlan catchment covers an area of approximately 84,700 km^2 and has a population greater than 100,000 people and produces 14% of NSW agricultural production. The catchment encompasses 24 local government areas and is located in central western New South Wales, flanked by the Macquarie and Bogan catchments to the north and Darling to the west, Murrumbidgee to the south and the Sydney/Shoalhaven Basin to the east (LCMA, 2007).

The main dam regulating flows in the Lachlan River is Wyangala Dam, which has a capacity of 1,220,000 megalitres (ML) and is located at the junction of the Lachlan and Abercrombie Rivers. The Belubula River is regulated by Carcoar Dam, has a capacity 36,000 ML and is located about 10 km downstream of Blayney (LCMA, 2007).

15.1.2 Murrumbidgee Catchment Management Authority

The Murrumbidgee catchment has one of the most diverse climates in NSW, ranging from the alpine areas of Kosciuszko National Park and the Monaro plains, through to the rich grazing and grain belts of the South West Slopes and Plains and the shrublands and grasslands of the semi-arid western Riverina. It covers an area of 84 000 km^2, the Murrumbidgee catchment is home to more than 500,000 people. Canberra and Wagga are both situated within the catchment (MCMA, 2012).

The closest major catchment to the proposed wind farm is Lake Burrinjuck, 50 km to the south-west of the project boundary. It has a catchment area of 12,953 km^2, a storage capacity of 1,028,000 ML and supplies water for towns, river flows, stock and domestic requirements, irrigated agriculture, industry, flood mitigation and environmental flows (State Water, 2009).

15.2 Local Water Supplies

15.2.1 Regional Water Sources

The project is situated on the boarder of the Lachlan and Murrumbidgee Catchment areas, with the principle water courses being the Lachlan River 16 km to the east, Boorowa River 20 km to the west, the Yass River 10 km to the south and the Murrumbidgee River 50 km to the south-west.

Watercourses in the catchment area generally flow in a westerly direction until they form with the principle rivers in the catchment. In the western section of the catchments the Lachlan River and Murrumbidgee River combine and form part of the Murray Darling Basin.

The closest major reservoirs to the site are:

- Burrinjuck Dam — 50 km to the south-west
- Pejar Dam — 55 km to the east
- Lake Wyangala — 60 km to the north
- Cotter Dam — 60 km to the south

Yass Dam, on the Yass River, supplies water to the town of Yass and the villages of Bowning and Binalong. The Murrumbateman bore supplies the village of Murrumbateman. All other areas of the Yass Valley LGA rely on onsite water collection and storage. Residents in non-urban zones are required to have tanks for rainwater collection as a condition of development consent; this is also to assist bushfire-fighting services.

The town of Rye Park is dependent on sourcing its own water through the use of their own tanks, as there is no town water supply from Yass or Boorowa. Additional water is also pumped from Pudman Creek for use in the town under domestic water licences.

15.2.2 Site Surface Water

The use of aerial photographs, topographical and surface water overlays for any creeks, watercourses and wetland areas were utilised to identify any significant watercourses, standing water bodies, lakes and wetland areas within the study area. No significant water bodies or wetlands have been identified within or near the wind farm site. Some small stock dams are interspersed across the site area.

The watercourses on site have been assessed based on their stream order. The order of streams was determined based on the Strahler method of stream ordering classification. This method of stream ordering involves labelling all upper tributaries as first order streams, which when two first order streams converge they combine to form a second order stream. Consequently where two second order streams converge they form a third order stream. When a stream of lower order joins a stream of higher order the downstream section of the stream will retain the order of the higher order upstream section (Yang and Kwan, 2001).

The site contains a number of watercourses which are predominantly first order streams with some second order streams. The turbines are generally located on the higher ground and the access tracks and underground cabling generally follow the higher ground locations. The layout of the wind turbines, the access tracks and underground

cabling has been designed to avoid crossing known third order watercourses where possible on the site. However, there will be a requirement to upgrade an existing access track which crosses a third order stream (Blakney Creek) at the eastern boundary of the site, adjoining Blakney Creek North Road. This existing watercourse crossing will be upgraded and managed to be consistent with the 'Guidelines for Controlled Activities on Waterfront Land' as specified by the NSW Office of Water[7]. The NSW Office of Water has been consulted regarding the project. The watercourses through the site and the access track layout are illustrated in Figure 15-2.

The location of the substations and switchyard are also positioned away from any watercourses. Overhead powerlines are proposed to interconnect different segments of the project. The use of overhead powerlines will also be used to avoid the requirement to place underground cables through existing watercourses.

[7] Water NSW. Can be accessed via 'www.water.nsw.gov.auM/ater.Licensing/Approvals/Controlled-activities/default.aspx'

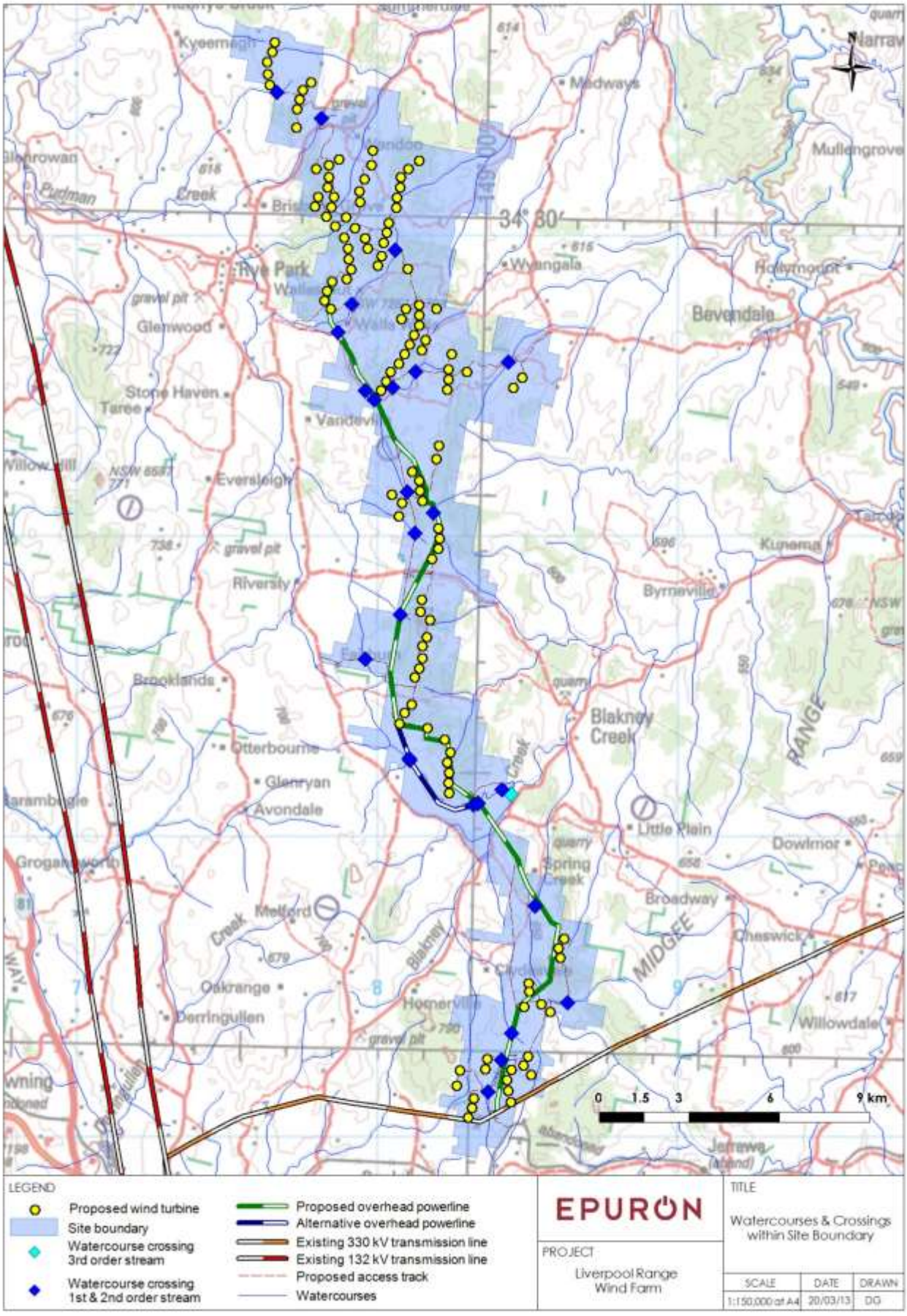


Figure 15-2 Watercourses and crossing locations within the site boundary



Figure 15-3 Blakney Creek watercourse crossing

15.2.3 Groundwater

The Rye Park Wind Farm falls within the Water Sharing Plan for the NSW Murray-Darling Basin Fractured Rock Groundwater Sources which includes rules for protecting the environment, extractions, managing licence holders' water accounts, and water trading in the plan area. The project boundary falls within the Yass Catchment Groundwater Source.

Groundwater flow in Yass Valley Local Government Area is from local groundwater flow systems, mostly within Palaeozoic rocks or Mesozoic intrusives and intermediate flow systems within Precambrian rocks in sedimentary aquifers and some fractured rock aquifers (OCE, 2004).

The total licensed groundwater entitlement for the Yass catchment is 3,181 ML per year, of which 94.7% of this is to be used for irrigation purposes and 5.3% for town water supply purposes (DPI, 2010).

No impact on current groundwater levels or groundwater users is expected from the project primarily due to significant elevation differences between existing groundwater and proposed turbines regardless of whether a gravity type or rock anchor type foundation is used. For the purposes of this groundwater assessment a worst case scenario has been adopted using only rock anchor type foundations to 20m deep. Suitable steps will be taken to ensure construction run-off and oil does not contaminate local groundwater, and local groundwater will not be used as a water supply source for the project. Water supply for project construction will be sourced from local water supply dams and transported to site.

An assessment of groundwater bores within 5 km of the project site indicates groundwater levels are generally located in lower lying country, not on the top of ridges where wind turbines are proposed. The only groundwater bore within the project site boundary is approximately 1.7km west of proposed turbine locations near dwelling R44 (Groundwater number GW058154). Figure 15-4 shows the location of this groundwater bore. This groundwater bore has an elevation of 650m above sea level, and the closest turbines have an elevation of 745m above sea level, an increase of nearly 100m. This groundwater bore is 36.5m deep, with water found at 16.7m deep (NSW Government, National Resource Atlas 2013). As a wind turbine rock anchor type foundation is approximately 20m deep, there is no expected impact on this groundwater bore as there is more than 100m elevation difference between the water level and the proposed turbine.

Figure 15-5 show existing groundwater bores within 5km of the Rye Park Wind Farm project. Of these 43 groundwater bores, the difference between the ground water level and the turbine elevation are all deeper than the 20 metres required for turbine rock anchor type foundations. The closest groundwater bore not within the site boundary is 1.45km from the nearest turbine.

Table 15-1 examines the elevation difference between all 43 groundwater bores within 5km of the Rye Park Wind Farm and the closest turbines, and shows that the Rye Park Wind Farm will not impact, displace or intercept local groundwater. The Rye Park Wind Farm therefore will not impact on existing licenced groundwater users or basic groundwater landholder rights.

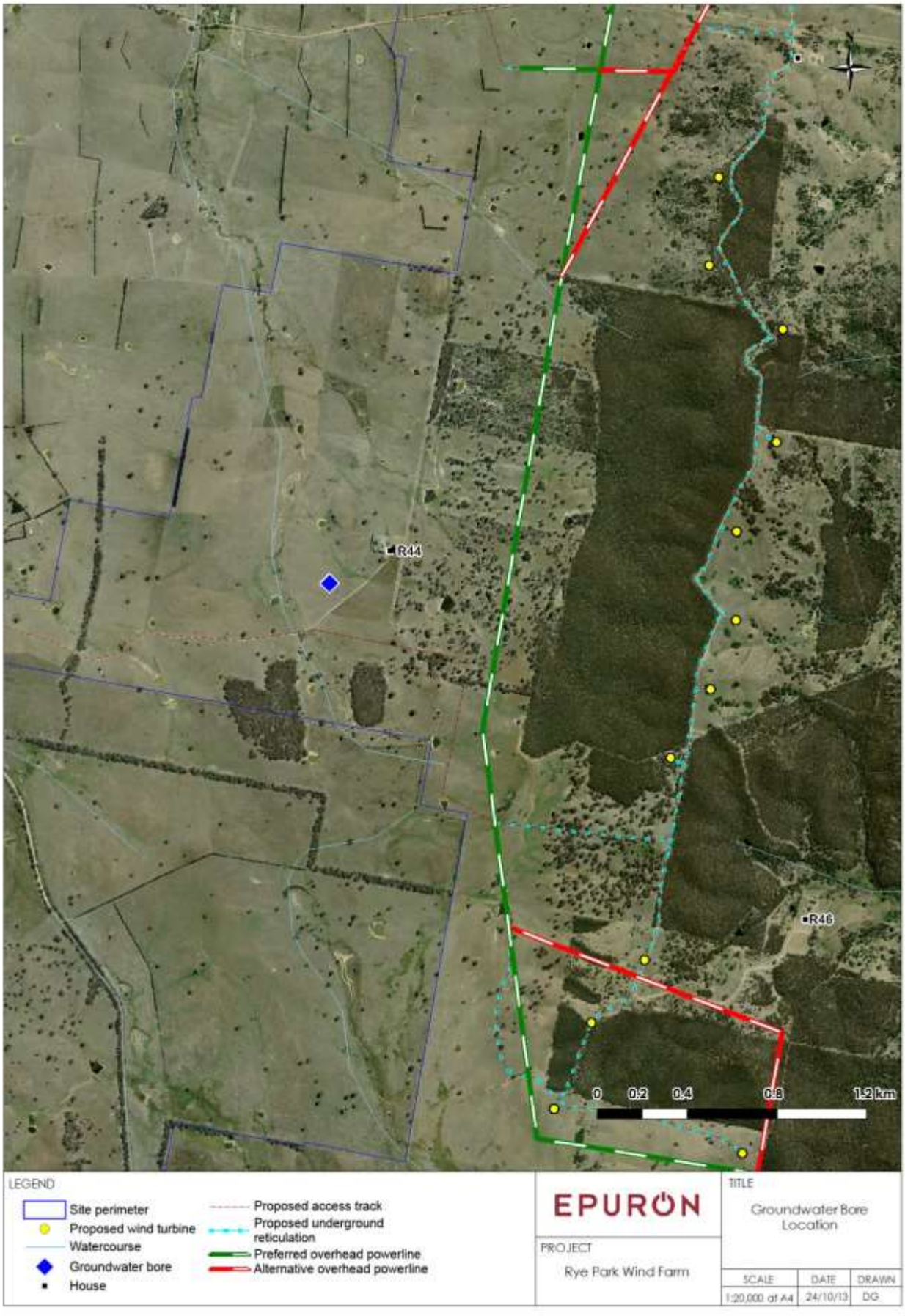


Figure 15-4 Only on-site groundwater bore location

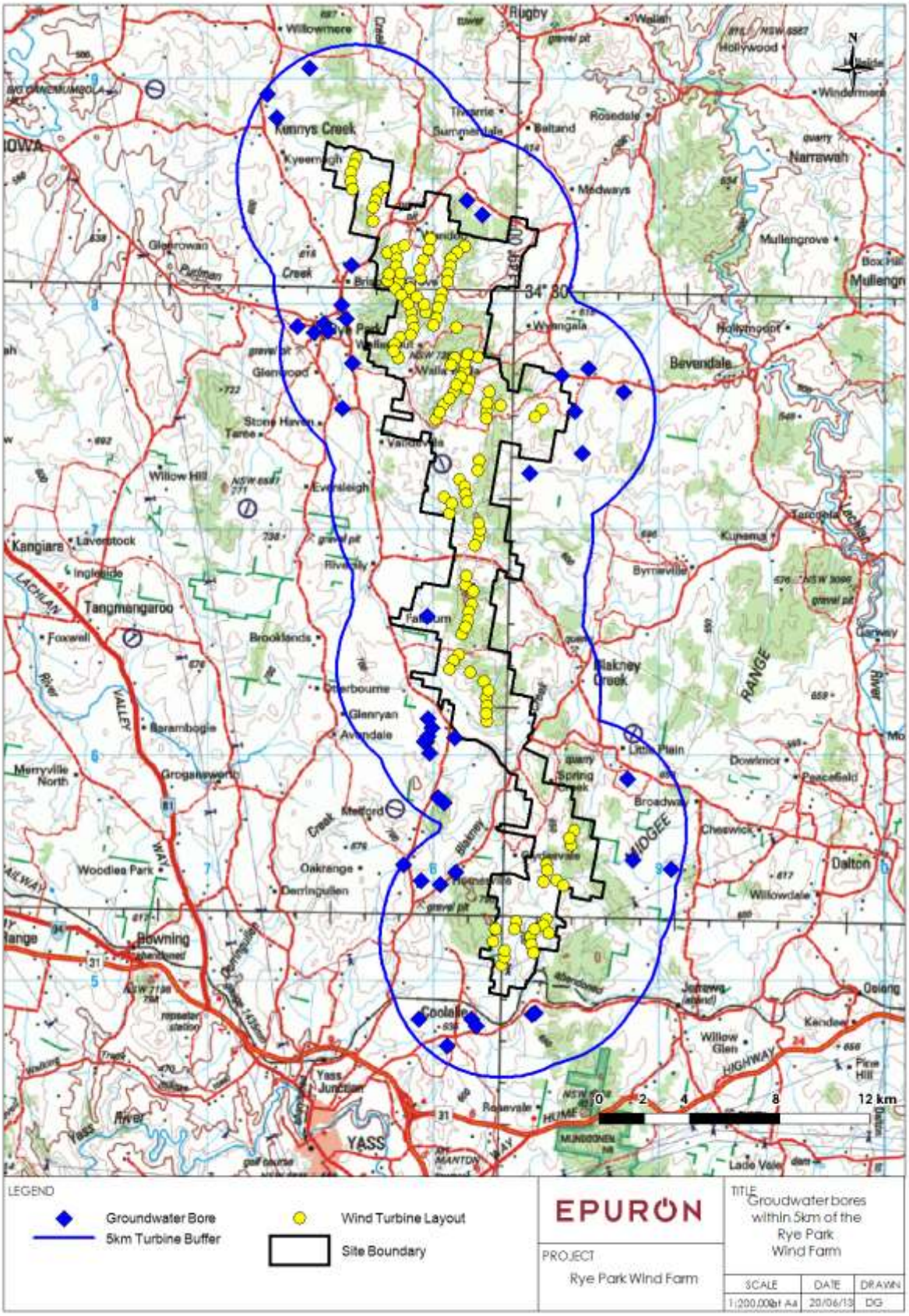


Figure 15-5 Groundwater bores within 5km of the Rye Park Wind Farm

Table 15-1 Groundwater bores within 5km of the Rye Park Wind Farm

Groundwater Bore Number	Completion Date	Final Depth (m)	Water Depth (m)	Ground Elevation of Bore (m)	Ground Elevation of Closest Turbine (m)	Elevation Difference between Water Level & Closest Turbine (20m required for rock anchor type foundation)
GW058154	1/03/1984	36.5	9.7	650	735	94.7
GW092072	23/05/1997	5.7		620	710	N/A
GW703659	5/10/2008	84	44	545	690	189
GW068680		24	3	545	675	133
GW009952	1/03/1952	38.4		560	715	N/A
GW020839	1/04/1952	43	43	615	725	153
GW700800	12/05/1999	61	37	660	725	102
GW092071	23/05/1997	10.1		565	660	N/A
GW092069	22/05/1997	6.2		570	660	N/A
GW092070	22/05/1997	4.2		595	660	N/A
GW702411	28/09/2005	54	49	595	740	194
GW019452	1/05/1955	32		650	740	N/A
GW061024	1/05/1985	18	15	650	750	115
GW414792	5/06/2011	125	27	670	725	82
GW414791	3/06/2011	60	27	675	725	77
GW703858	13/12/2009	60	24	620	695	99
GW070426	1/03/1993	33	27	600	710	137
GW014114	1/02/1959	40.8	12.2	615	710	107.2
GW014115	1/12/1957	41.1		620	710	N/A
GW036760	1/03/1988	102	20	680	695	35
GW040714	1/05/1988	1.2		650	695	N/A
GW036758	2/02/1988	60	41	650	695	86
GW040713	1/05/1988	2.5		645	695	N/A
GW040705	1/05/1988	8.2		635	695	N/A
GW040710	1/05/1988	2.3		635	705	N/A
GW020828	1/07/1953	31.7	7.9	545	665	127.9
GW704117	19/06/2008	66	60	595	715	180
GW020821	1/02/1954	36.6	25.9	600	710	135.9
GW020825	1/02/1954	32.9	13.7	590	710	133.7
GW402891	7/05/2004	60	22	600	710	132

Groundwater Bore Number	*Completion Date*	*Final Depth (m)*	*Water Depth (m)*	*Ground Elevation of Bore (m)*	*Ground Elevation of Closest Turbine (m)*	*Elevation Difference between Water Level & Closest Turbine (20m required for rock anchor type foundation)*
GW404633	11/04/2008	64	22	660	750	112
GW411128	1/01/1999	21		680	750	N/A
GW416102	1/01/2009	110		700	750	N/A
GW704407	27/04/2006	36	27	550	710	187
GW068957	29/10/1991	24	12	545	670	137
GW008870	1/06/1950	22.9	17.1	545	675	147.1
GW034819	1/08/1972	54.8		565	690	N/A
GW700041	3/12/1991	72	59.7	555	690	194.7
GW008902	1/11/1950	26.8	17.4	595	710	132.4
GW033080	1/03/1971	36.6	14.6	620	710	104.6
GW704316	21/06/2008	54		565	660	N/A
GW092067	22/05/1997	6.1		535	660	N/A
GW019370	1/04/1955	26.8	4.9	600	740	144.9

15.3 Construction and Operational Water Requirements

During the construction phase an estimated 8.0 ML of water will be required for general construction purposes including dust control. Locating concrete batching plants on site will require an additional 7.6 ML of water for foundations etc.

Water for the project will be sourced primarily from Yass Dam and stored in onsite tanks. The proponent has discussed the proposed arrangements with Yass Valley Council and has written to Council seeking to progress the necessary arrangements to formalise the use of water during construction.

Sourcing water from Burrinjuck Dam is an alternative to the proposed use of Yass Dam water and will be progressed with the NSW Government, as the water managers, if required.

Once the wind farm is completed and operational it will require only a very small volume of water (less than 1 ML during operations). This water will be obtained through the use of onsite storage tanks collecting water runoff from any of the permanent structures and offsite sources if necessary. Groundwater on the project site will not be used as a source for construction or operational water requirements.

15.4 Assessment

Potential Impacts to Drainage and Hydrology

The construction, operation, maintenance and decommissioning of the project has the potential to impact on the current drainage and hydrological characteristics of the site by:

- installing access roads, on site buildings and other associated infrastructure;
- modifying the landscape with minor-medium earthworks and vegetation clearing;
- altering or disturbing existing watercourses and significant drainage paths if the layout design is amended to include construction in water course areas;
- the pollution of waters by accidental and uncontrolled spills and excavation works;
- sedimentation and erosional transport of pollutants, soils etc. to water courses in the area; and
- unnecessarily traversing or bounding watercourses with access tracks and powerlines in instances where these actions could be avoided.

Any potential impacts are predicted to be most significant during the construction and decommissioning phases, where heavy machinery and vehicles and excavation works are required, large areas of soil and cleared vegetation are exposed, materials are stockpiled and mechanical and construction fluids are stored onsite.

The installation of infrastructure such as foundations, onsite buildings, access tracks, and impermeable hard surfaces can alter and modify the pre-existing flow paths and dynamics of surface and ground water flows as well as impact on the areas general water quality through pollution and sedimentation.

Machinery and on-site storage of fluids and chemicals are another potential source of water pollution and contamination.

The sites altitude is at some of the highest elevations of the Great Dividing Range and forms the divide for water flowing east to the coast and west to the Murray Darling Basin. As the turbines will be located on the highest elevation points within the site area, with the foundations of the turbines only a few metres in depth and all access roads constructed on the surface, it is considered that the development will not encounter or impact on any groundwater reserves. Table 15-1 lists the groundwater levels for all bores within 5km of the Rye Park Wind Farm and compares them to elevation of the closest turbines. The large differences between water level and turbine base elevation means the potential to intercept groundwater is considered minimal to nil.

15.5 Mitigation

The following mitigating measures for minimising disturbance and impacts of the sites drainage and hydrology have either been applied during the design phase or will be applied during construction:

- Minimise the amount and degree to which the general topography and landscape is modified and disturbed by infrastructure and associated works through the design phase.

- Where practical upgrade existing access roads as opposed to constructing new access tracks.
- Where practical, restrict access tracks to follow the site's ridge lines and natural contours while avoiding steep hill slopes and vegetated area.
- Prepare a Sediment/Erosion Control Plan to be incorporated into the CEMP. Soil and water management practices would be developed as set out in Soils and Construction Volume 1 (CSIRO, 2012).
- Infrastructure would not be sited within 40 metres of a major drainage line or water course, where practical.
- As soon as practical, stabilise exposed or clear areas to minimise erosion and sedimentation that can potential pollute and block watercourses in the area.
- Design concrete batch plants to ensure concrete wash would not be subjected to uncontrolled release. Bund areas of the batching plant to contain peak rainfall events and remediate after the completion of the construction phase. Waste sludge would be recovered from the settling pond and used in the production of road base manufactured onsite. The waste material would be taken from the batching plant to be blended in the road base elsewhere onsite.
- A Spill Response Plan would be prepared as part of the CEMP and OEMP.
- Stage excavation works to minimise the amount of exposed areas over time to allow for adequate rehabilitation and reduce the potential for erosion.
- Fuel and oils, materials and soil stockpiles must have designated areas away from any watercourses, with adequate sediment and contamination bunding controls installed to ensure or minimise the impacts of contamination of water sources in the area.
- Watercourse crossings would be designed to be consistent with the 'Guidelines for Controlled Activities on Waterfront Land' as specified by Water NSW[8]. This includes but is not limited to:
    - Identify the full width of the riparian corridor and its functions in the design and construction of crossings,
    - Minimise the design and construction footprint and extent of proposed disturbances within the watercourse and riparian corridor,
    - Maintain existing or natural hydraulic, hydrologic, geomorphic and ecological functions of the watercourse,
    - Protect against scour, and,
    - Where possible stabilise and rehabilitate all disturbed areas including topsoiling, revegetation, mulching, weed control and maintenance to adequately restore the integrity of the riparian corridor.

The site plan for the wind turbines and associated infrastructure has been designed with particular emphasis on protecting existing streams and ephemeral watercourses. The layout avoids crossing or interfering with watercourses by any infrastructure. This is to avoid and minimise any adverse impacts to the areas drainage and hydrological regime.

[8] Water NSW. Can be accessed via 'www.water.nsw.gov.auM/ater.Licensing/Approvals/Controlled-activities/default.aspx'

16 General Environmental Assessment

16.1 Soils and Landforms

The project boundary extends from the Rye Park-Dalton Road in the south to the Rye Park-Rugby Road in the north. The surrounding area of Boorowa Volcanics is characterised by undulating low hills and rocky rises on Silurian dacite, crystal tuff, andesite and minor sandstone. The general elevation is 550 to 650m, with peaks to 780m. The soil comprises red and yellow gradational earths, yellow structured loams and thin stony loams within rock outcrops (Mitchell, 2002).

16.1.1 Existing Environment

Geology

The highlands are part of the Lachlan fold belt that runs through the eastern States as a complex series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by numerous granite bodies and deformed by four episodes of folding, faulting and uplift. The general structural trend in this bioregion is north-south and the topography strongly reflects this. There are four centres of Tertiary basalt flows.

The oldest rocks are a small sliver of the Early Ordovician serpentinite running from Gundagai past Tumut into the lower Snowy Mountains. These unusual rocks were formed in deep marine conditions and were plastered against the edge of Australia when an area of sea floor and an island arc closed up. A similar sequence is found at Lucknow, about 9km south-east of Orange (OEH, 2011b).

The greatest proportion of the site geology is made up of Ordovician & Silurian sedimentary rocks in elevated locations, while Silurian volcanic rocks are found in smaller quantities in the low lying regions. These predominate geological features can be seen in Figure 16-1.

Soils

Soils vary across the bioregion in relation to altitude, temperature and rainfall: on the Palaeozoic slates, sandstones and volcanics, mottled red and yellow texture contrast soils, with red earths found; on the granites, shallow red earths occur on ridges, yellow texture contrast soils on all slopes and deep coarse sands in alluvium; on Tertiary basalts, shallow red-brown to black stony loams exist, with alluvial loams and black clays in swampy valley floors. Limited areas of shallow organic loams are present at high altitude on Canobolas. Some of the tertiary sands in the mid-Shoalhaven deep have been worked into low dunes under a past climate and now have deep siliceous sand or yellow earth profiles (OEH, 2011b).

Topography and Terrain

The South Eastern Highlands Bioregion covers the dissected ranges and plateaus of the Great Dividing Range that are topographically lower than the Australian Alps, which lie to the south-southwest. It extends to the Great Escarpment in the east and to the western slopes of the inland drainage basins.

The site varies from undulating hills with some areas of moderately steep slopes that extend down to small level valleys with numerous saddles and small knolls situated off the main ridgeline. As indicated in Figure 16-2, the site has higher elevations in the northern portion with spot heights in excess of 790 m and slightly decreases in elevation to the south.

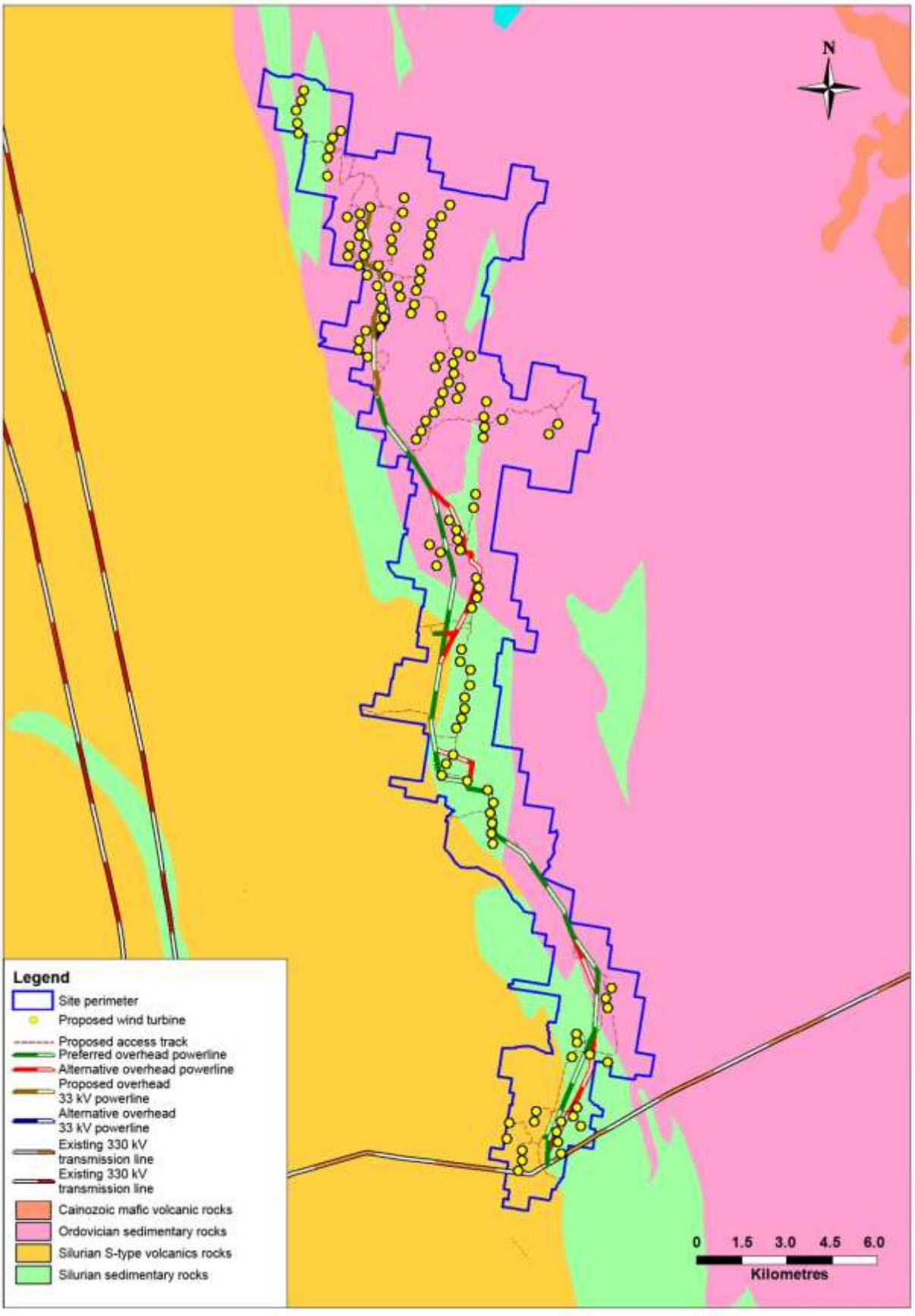


Figure 16-1 Geology of the local area

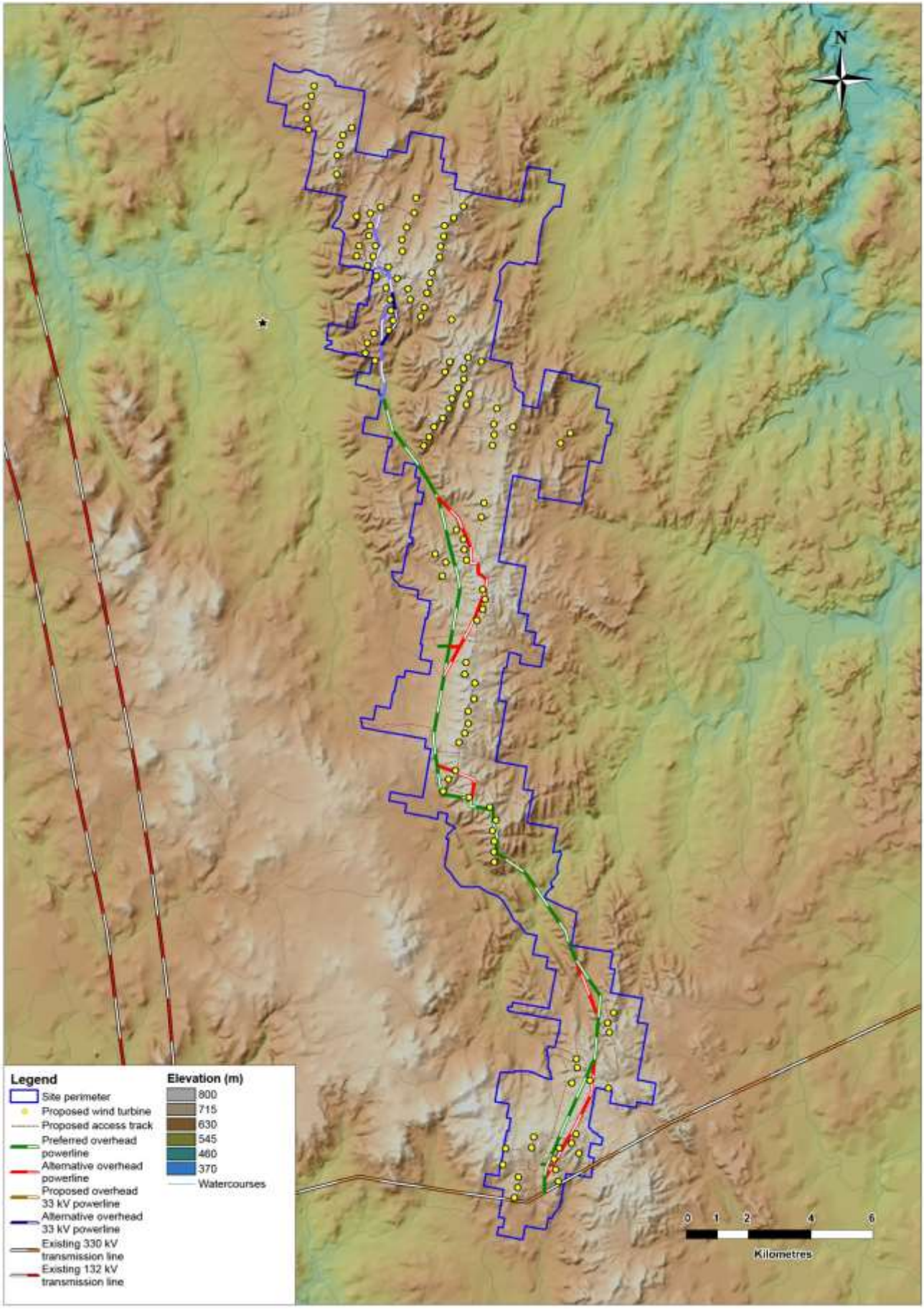


Figure 16-2 Digital Terrain Model of the Rye Park Wind Farm

16.1.2 Assessment

The construction, operation, maintenance and decommissioning of the wind farm has the potential to impact on the current soils and landform of the site. The construction phase and decommissioning phase will impact on the sites landform and soils through:

- vegetation clearing;
- excavation and heavy machinery works;
- grading/levelling;
- access road upgrades;
- possible trenching for powerlines;
- vehicle traffic and heavy machinery traffic;
- excavation for turbine foundation breakdown and site building removal;
- re-contouring the surface; and
- revegetation & rehabilitation works.

These works have the potential to alter and degrade the site's natural soils and landform through increasing the possibilities of:

- erosion and weathering processes;
- introducing and or spreading of weed species
- changing hydrology and drainage paths, which can potentially increase the area's chance of dry land salinity; and
- impact on the ground stability.

Areas at particular risk on the site are areas of steeper slopes and thinner soils. During the design phase, amendments to the infrastructure layout, and in particular access tracks, were made to reduce the overall environmental impact. This meant that access tracks predominantly followed the tops of ridgelines in order to prevent cutting into side slopes. For this reason the project is not expected to cause any significant environmental impacts on the site or its surrounding topography and terrain if standard procedures are undertaken to minimise excavation works and prevent erosion and sedimentation through adequate management and rehabilitation measures.

16.1.3 Mitigation

The extent of ground surface disturbance is expected to be relatively small compared to the total site area. The location of the turbines will be restricted to the ridgelines of the site, with ridges that are generally clear of vegetation. The ridgelines are predominantly on basalt rock just beneath the soil strata making the ridges less prone to erosion risks.

The ridgelines are covered with varying densities of vegetation with the majority of more densely vegetated areas located along the sides of the ridges into the valleys. These slopes are at particular risk of erosion and will therefore be avoided where practical. The surrounding slopes will be largely unaffected by the project, except in the case where powerlines will be routed through them.

Nevertheless, areas will need to be protected by the installation and maintenance of standard erosion and sediment control measures and by minimising the amount of site excavations, land clearing, immediate stabilizing of exposed areas and restricting traffic to access tracks as much as possible. These measures are taken to avoid exacerbating erosion and weathering processes, changing hydrology and drainage paths of the site and contributing to soil and landform degradation.

At the conclusion of the construction period the disturbed areas of the site would be rehabilitated to a level suitable for the ongoing agricultural use of the land. The topsoil removed for construction activities would be stockpiled and reused for the rehabilitation of the areas around the turbine foundations, lay down and hardstand areas and along the access tracks. The concrete batching plants and other areas disturbed by heavy machinery

would be rehabilitated. Pasture grass seed will be used to reinstate the vegetation cover for disturbed areas. The verges of the access tracks would be rehabilitated with topsoil and seed.

The rehabilitation process will be carried out progressively as each section of turbines is established. The rehabilitation of the site to the preconstruction level of vegetation groundcover would be dependent upon the time of year that the works are undertaken.

16.2 Climate and Air Quality

16.2.1 Existing Environment

Climate

The South Eastern Highlands bioregion is dominated by a temperate climate characterised by warm summers and no dry season. Significant areas in the north and south of the bioregion are at higher elevations in a montane climate zone, where summers are much milder.

The climatic characteristics outlined in this section should be regarded as indicative only, as no data has been obtained from the proposed site itself but from weather stations located varying distances from it and at different elevations. The statistics provided in this section are based on historical climate data. Future climate trends may differ over long periods due to the potential influences of climate change.

Table 16-1 South Eastern Highlands climate summary table (OEH, 2011b)

South Eastern Highlands Bioregion - climate variable information	
Mean annual temperature range	6 to 16°C
Minimum monthly temperature range	-3.8 to 4.7°C
Maximum monthly temperature range	18 to 31.3°C
Mean annual rainfall range	460-1883mm
Minimum average monthly rainfall	23-98mm
Maximum average monthly rainfall	55-220mm

Frost and ice are experienced in the colder months and would be taken into consideration when assessing the potential risks of the development.

Air Quality

The site is not located near any major industrial areas; the site is however located close to the Hume Highway which is assumed to receive medium traffic volumes in any period of time. Due to the consistent rainfall in the region and the site's geographical isolation from industry, the area has low levels of airborne particulate pollution. The general vegetation throughout the area will also assist in minimising airborne particles compared to drier, more barren parts of NSW.

16.2.2 Assessment

The project will have minimal impacts on the air quality of the local region and its surrounds due to the development being a low or zero emission form of electricity generation. Activities that are expected to impact on the air quality of the area are predominately associated with the construction, decommissioning and to a lesser extent the maintenance phases. They could include:

- low emissions associated with manufacturing of equipment and materials for the wind farm infrastructure at other locations;
- emissions from transport of equipment and materials to the site;
- operational vehicle emissions; and
- dust generation from excavation and vehicular movement works.

All of these impacts will be relatively minor and can be effectively managed through the implementation of the CEMP.

Wind farms have a positive contribution to reducing total greenhouse gas emissions by providing an alternate source of electricity that is not sourced from fossil fuels.

16.2.3 Mitigation

The CEMP would include measures to ensure that impacts from odour, dust and emissions generated during excavation, road works, and transport of machinery would be adequately controlled through standard industry practices.

The following measures are recommended to reduce the chance of dust and odour issues during the course of the construction, operation and decommissioning phases. These include:

- minimising the surface area that is disturbed at any one time;
- confine vehicle and machinery movement to access tracks or hard stand areas;
- the use of a water truck to minimise windblown dust;
- protect stockpiles from prevailing weather conditions; and
- in the event that remedial measures do not control dust adequately (i.e. prevailing strong winds), work may be suspended as a precautionary measure until conditions are suitable for recommencement.

16.3 Mineral and Petroleum Exploration

Geologically, the area proposed for the Rye Park Wind Farm lies in the Lachlan Fold Belt, an area consisting of a complex series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by numerous granite bodies and deformed by four episodes of folding, faulting and uplift. Historically, the area has produced significant amounts of many large base metal and gold deposits of economic importance.

There are currently five mineral exploration licenses within the wind farm boundary that have the potential to be impacted as highlighted in Table 16-2.

Table 16-2 Current exploration licences within the project boundary

Licence Number	Holder	Licence Type
EL 6269	Australian Oriental Minerals	Group 1
EL 6274	Tungsten NSW	Group 1
EL 6590	Tungsten NSW	Group 1
EL 7427	Oakland Resources	Group 1
EL 5928	Wallarah Minerals	Group 1

Exploration licenses entitle the holder to carry out exploration and prospecting for minerals within the specified area. As indicated in Figure 16-3, mineral exploration licence boundaries overlap a portion of the site perimeter. All of the previously mentioned licences are for Group 1 minerals (elemental minerals). Licences EL 6269, EL 6274 and EL 6590 all expired during July 2012; however, each of the respective holders has sought renewal of these licences.

Epuron has consulted with these licence holders and provided detailed maps showing the proposed location of wind farm infrastructure. No response has been received at the time of writing.

A review of the Department of Trade and Investment exploration title database showed that there are no current petroleum leases in the vicinity of the Rye Park Wind Farm proposal.

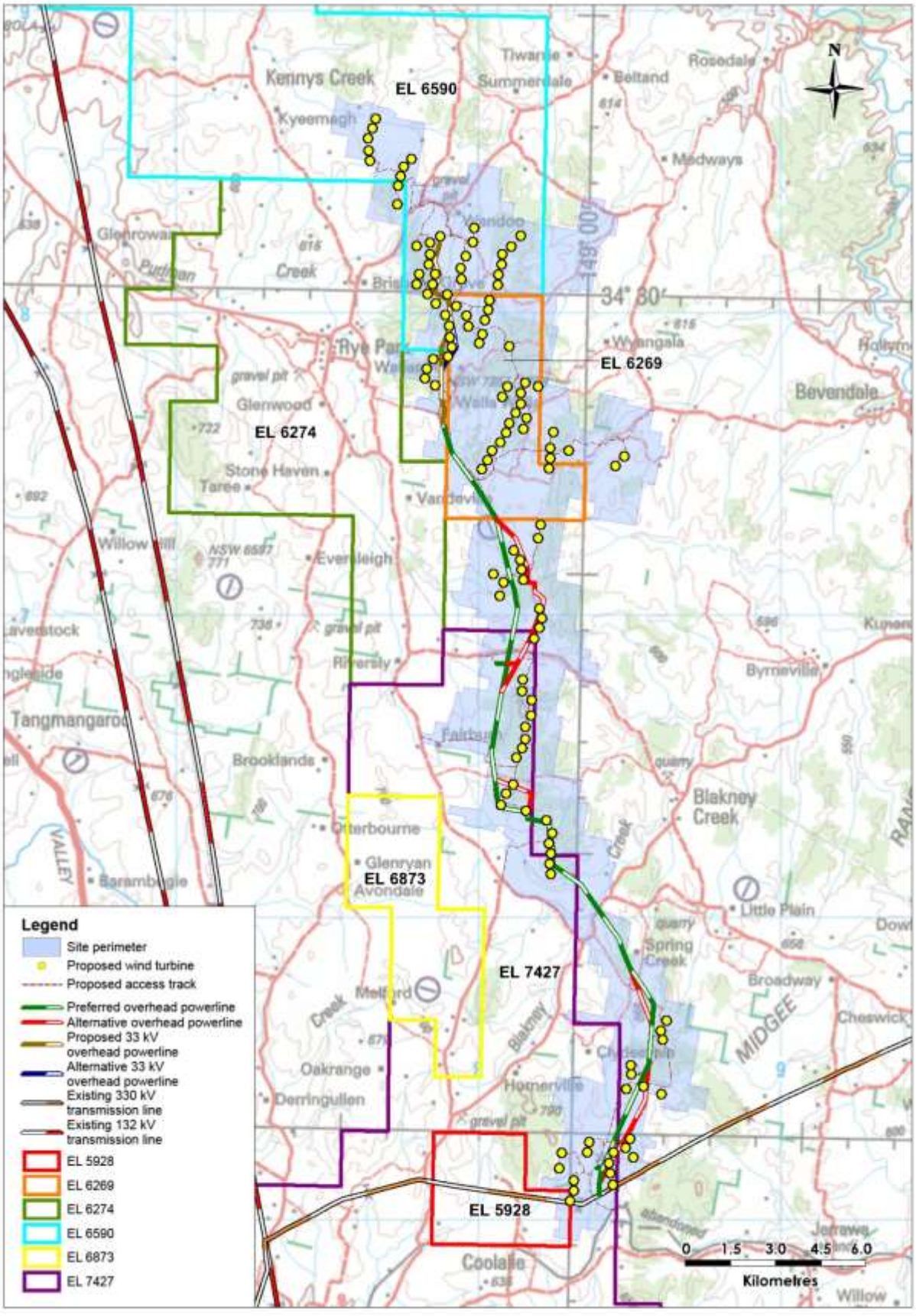


Figure 16-3 Current Mineral Exploration Licenses across the project site

16.3.1 Assessment

There is no reason why the exploration of minerals could not occur concurrently with the operation of wind turbines as the direct footprint of the wind farm infrastructure is only a few per cent of the site area. The project would not prevent access to the site area for ground based exploration of minerals except in the close vicinity of the infrastructure where there may be safety, structural, operational or engineering limitations.

The access tracks constructed for the proposed wind farm would facilitate easier access to a greater portion of the exploration license area. It is possible that the operational wind farm may impede the exploration of minerals within the licensed area close to the infrastructure such as turbines and substations. This may be due to restrictions of the manoeuvrability of exploration machinery, localised sensitivity of magnetic and gravity remote sensing methods and occupational health and safety considerations. In some instances mineral exploration can also be achieved aerially by low flying planes and ground penetrating radar. The operation of the wind farm may limit the use of these methods.

While only five Exploration Licenses occur within the development envelope at this time, if a mineral deposit were discovered then an application for a Mining Lease could be made. There is no certainty that the discovery would be made or a Mining Lease would be granted, or if granted, that mining would be commercially viable. It is likely that the wind farm could impede some mining options (e.g. open-cut) in its immediate vicinity, or that some mine equipment may need to be built in alternate locations. The relatively small land area impacted suggests that alternate mining methods are likely to be available which would prevent sterilisation of any mineral resource. The reversibility of the project suggests that this impact is justifiable. The possible temporary loss of these areas for mining would be offset by the utilisation of a renewable resource during the project's life.

16.3.2 Mitigation Measures

Final wind turbine locations and details of the access tracks and other wind farm infrastructure would be provided to the exploration licence holders prior to construction. Ongoing consultation would be maintained to ensure that the Proponent was aware of any planned exploration activities in the vicinity of the wind farm.

16.4 Economic

16.4.1 Existing environment

The project would be located within the Boorowa, Upper Lachlan and Yass Valley Local Government Areas (LGA). The key statistics pertaining to the LGAs are provided in Table 16-3 (ABS, 2011a; ABS, 2011b; ABS, 2011c).

Table 16-3 Key statistics for the three LGAs

People and Population (2010)	***Boorowa***	***Upper Lachlan***	***Yass Valley***
Area of the LGA (km^2)	2,579	7,128	3,998
Population number	2,478	7,559	15,190
% Growth since 2006	0.86% pa	0.71% pa	2.59% pa
Median age group	45 – 54 years	45 – 54 years	35 – 44 years
Income and Occupation of Local Population (2009)			
Average income	$31,248	$34,691	$46,010
Labourers	19.8%	15.4%	8.6%
Professionals	15.8%	15.1%	16.3%
Tradesperson and related workers	15.5%	13.2%	10.7%
Clerical and administrative workers	11.7%	15.4%	21.0%
Gross value of agricultural commodities (2006)			

People and Population (2010)	Boorowa	Upper Lachlan	Yass Valley
Value of crops	$9.1m	$9.5m	$11.4m
Value of livestock slaughtering	$12.9m	$39.1m	$21.3m
Value of livestock products	$15.4m	$30.4m	$22.3m

The major industries sectors within the region are agriculture, viticulture, tourism and retail (primarily Yass) which reflect the predominantly rural nature of the area. The area supports a wide range of beef cattle, sheep and lambs due to the large area of cleared agricultural land and rainfall levels. The three LGA are also dependent on the input of revenue from tourism. The region features a range of historic buildings, vineyards, national parks and a wide range of colonial heritage attractions.

16.4.2 Assessment

The project would provide temporary employment opportunities during construction and decommissioning. The increased demand for services in the local area, most likely during the construction phase, would also accompany the development, as contractors seek to accommodate and utilise other services in the local area. While it is hard to predict the exact amount of investment that will be injected into the local economy, there have been studies conducted to calculate the likely impacts based on the size of a proposed wind farm. The Clean Energy Council commissioned Sinclair Knight Merz (SKM) to prepare a report into the investment costs and benefits of wind farms in Australia. SKM released the report '*Wind Farm Investment, Employment and Carbon Abatement in Australia*' in June 2012 which presents an updated national and state-based snapshot of wind farm investment, jobs and carbon abatement. The study aimed to use financial and other data from a range of sources to provide a reasonable set of indicative figures to estimate the financial inputs and outputs for wind farms on a per MW basis (SKM, 2012).

Construction

SKM reviewed data based on the expenditure per MW of a number of wind farms that were recently developed or under construction. It found that this review closely reflected the expenditure data from Hallett 1, Waubra and Macarthur wind farms. These figures have been extrapolated for the Rye Park Wind Farm and the results can be seen in Table 16-4.

Table 16-4 Local, State and Australian construction expenditure for a 378 MW wind farm ($million)

Construction Expenditure	Local / Regional	State	Australia
Wind turbine generators	$73.7	$246.5	$366.3
Site administration and design	$9.2	$30.7	$45.7
Site construction works	$9.2	$30.7	$45.7
Site electrical works	$10.4	$34.2	$50.7
Labour	$11.5	$38.0	$56.4
Total construction	$114.0	$380.5	$565.2
Local operational expenses (annual)	$7.7	$11.9	$27.3

Using the estimations from this report, it is anticipated that $104 million could be spent within the region as a result of the construction phase of the wind farm.

There is an opportunity for local contracting and manufacturing services to be contacted during the site development. These may include concreting, earthworks, steel works and electrical cabling, as well as other service-related employment would follow, with the provision of food, fuel, accommodation and other services for the contractors. Based on the construction phase spanning 18-24 months, employment would likely increase by around 369 full time equivalent jobs across the local area. It is considered that construction, property and business services and retail trade would make up most of the employment growth. Precise economic benefits

would vary based on the final site design, turbine suppliers, timing of works and other details. Currently there are no facilities capable of making turbine components (nacelles and blades) in Australia. There may be potential for manufacturing towers in Australia.

There are a number of constraints related to the potential of the socioeconomic environment described. These include supply-side constraints, primarily the supply of labour. Furthermore, the capacity of local business to service new contracts, together with the quality of local housing, amenities and other physical and social infrastructure are also factors that may affect the ability to attract and retain workers. Using the SKM model it is estimated that over $1 million would be spent during the construction period by workers in the local community. Table 16-5 highlights these estimated annual values.

Table 16-5 Estimated local project expenditure within the region

Construction Annual Expenditure	*Local / Regional*
Accommodation	$329,806
Food	$494,692
Fuel	$197,891
Total	$1,022,354

The construction and decommissioning phases of the project would take place over a considerable time period (estimated to the 18-24 month for construction and approximately 12 month for decommissioning). There is potential to adversely impact the current grazing activities on the land parcels that would be developed and for the additional heavy vehicle traffic on public roads to interfere with other economic activities, for example, scenic drives, field days and other tourist related activities. It is anticipated that the grazing impacts would be confined to the involved land holders. Involved land owners would be compensated by the Proponent for allowing the infrastructure to be constructed on the individual properties. It is considered that this compensation would off-set the disruption of grazing.

Operation

Wind farms are an economically viable means to generate electricity. The project would be privately funded and there would be no ongoing financial expenses to the community or any government agency.

Turbine rental provides additional revenue for involved property owners while allowing conventional farming activities to continue as usual. This would create an increased value to these properties and contribute to additional investment in the local area.

Additional benefits include direct investment and job creation in the local area as a result of construction activities. These benefits have been outlined in more detail in Section 4 Strategic Justification. The operational phase of the project is anticipated to create up to 35 annual full time equivalent jobs in the local region for the life of the wind farm.

16.5 Resource Impacts

The project would require natural resources from the Rye Park area in order to construct the foundations, access tracks and required facilities. The following information outlines the resource requirements of the project.

16.5.1 Assessment

Resource requirements for the project would include:

- gravel and base course for access tracks, crane hardstand areas, and site buildings/infrastructure;
- concrete for turbine foundations and site building foundations; and
- water for dust control and concrete.

Rock Crusher

To best utilise any existing natural gravel resources resulting from the construction of the wind farm, a rock crusher would be used on site. Materials excavated during the construction of access tracks or cable trenching and wind turbine footings may, if suitable, be able to be reused as road base for the road surface upgrades. Rock crushing does not trigger Schedule 1 of the Protection of the Environment and Operations Act 1997 if less than 150 tonnes per day is crushed. The daily rock crushing capacity required will be confirmed following a pre-construction geotechnical assessment on the site to determine the extent of suitable construction materials available.

Concrete Batching Plant

It is proposed that two portable concrete batching plants be established on site at identified locations as the preference to sourcing pre-mix concrete supply offsite.

A typical concrete batch plant would involve a level area of approximately 100 x 100 m to locate the loading bays, hoppers, cement and admixture silos, concrete truck loading hardstand, water tank and stockpiles for aggregate and sands. The batching plant would include an in-ground water recycling / first flush pit to prevent dirty water escaping onto the surrounding area, and would be fully remediated after the construction phase.

The concrete batching plant would produce around 400m^3 of concrete per day when a turbine foundation is being poured. The maximum operational period would be the construction period of the wind farm.

Gravel and Road Base Requirements & Supply

Access tracks are generally 5-6 m wide (wider at bends) and approximately 300 – 500 mm in thickness to accommodate the movement of heavy delivery vehicles and cranes. In general all access tracks will be unsealed and constructed from local aggregate. Sealed access tracks will not be used unless safety, geotechnical or economic studies deem them necessary. The final access track design would take into account the traffic loadings and ground conditions relevant to the site and the works.

Sands and aggregate would be sourced from excavation of footings, where possible, or from existing sand and gravel pits within the local area. Clean sands and aggregates would be sourced to prevent transport of weeds to site.

The estimated volume of gravel/road base required for the access tracks and other works is listed in Table 16-6.

Table 16-6 Estimation of road base volumes

Description	*Dimensions*	*Quantity*	*Volume*
Access tracks	5-6 m wide x 400 mm	89,130m	178,260 m^3
Construction compounds	300 m x 300 m x 400 mm	2	72,000 m^3
Hardstand areas	25 m x 45 m x 400 mm	126	57,600 m^3
Total volume			306,960 m^3
Estimated Rock Extracted from Foundations	512 m^3	126	64,512 m^3

Turbine Foundation Concrete Requirements

The turbine foundations will be excavated, with formwork and reinforcement prepared before the concrete foundation is poured. Each turbine foundation will occupy an area of approximately 16 m x 16 m and 2 m deep. Smaller foundations will be used where the geotechnical conditions allow rock anchor style foundations.

Preliminary investigations reveal that all of the required concrete materials can be sourced locally within the Yass region. The estimated materials required for the manufacture of concrete are as follows:

Table 16-7 Concrete materials required

Component	Approximate composition by mass	Required for a single 350m^3 foundation	Required for 126 turbine foundations
Cement	13%	109 tonnes	13,980 tonnes
Sand	34%	286 tonnes	36,608 tonnes
Aggregate	46%	386 tonnes	49,408 tonnes
Water*	7%	59 kL	7,552 kL
TOTAL:	100%	840 tonnes	100,027

*Based on the assumption that water has the density of 1000 kg per m^3

Water Supply

The operational phase of the wind farm will require relatively small volumes of water which will be supplied primarily from rain water collected from facility roof drainage. Should additional water be required, it will be sourced from either Yass Valley or Boorowa Councils and delivered by truck to the site.

It is proposed that concrete for the turbine foundations be either provided from a portable source or purpose-built batching plants (with sufficient capacity to allow an entire foundation to be constructed in one pour). Accordingly, approximately 60kL of water will be needed for each foundation.

Water used in concrete needs to be relatively free of impurities which may adversely react with the cement. As such, water required by construction activities will need to be of a quality commensurate with potable water.

A water truck has a typical capacity of 16 kL. Thus to provide 60 kL to site will require 4 trucks.

It is anticipated that in total 7,552 kL of water would be required for the turbine foundations and 8,000 kL for dust suppression (assuming 2 water trucks per day for 250 days). That equates to a total of about 15,552 kL of water for the construction phase. If this water was entirely sourced from Yass or Boorowa, the number of truck movements required would be 972 in each direction.

The sourcing of treated water would also ensure that no water will be sourced from the local environment. The erosion and sediment control measures will mitigate the potential for the construction and operational aspects of the wind farm impacting on surface water and/or groundwater quality or quantity.

16.6 Property Values

There is a view within some parts of the community that wind farms can adversely affect surrounding property values. Other than wider market conditions, there are a number of contributory factors potentially influencing differences between perceived and actual property values surrounding wind farms. These include its agricultural productivity, personal perceptions, location, allowable land uses, proximity to town centres, lifestyle circumstances and amenity considerations.

In 2009, the NSW Valuer-General released the findings of a study into the potential impacts of wind farms on surrounding land values. The report, “Preliminary Assessment of the Impact of Wind Farms on Surrounding Land Values in Australia”, assessed eight wind farms located in NSW and Victoria and considered available market data mainly through the analysis of property sale transaction data. The findings of the study found that:

- Wind farms do not appear to have negatively affected surrounding property values in most cases. Forty (40) of the 45 sales investigated did not show any reductions in value. Five (5) properties were found to have lower than expected sale prices (based on a statistical analysis). While these small number of price reductions correlate with the construction of a wind farm further work is needed to confirm the extent to which these were due to the wind farm or if other factors may have been involved;
- Results also suggest that a property’s underlying land use may affect the property’s sensitivity to price impacts. No reductions in sale price were evident for rural properties or residential properties located in nearby townships with views of the wind farm;

- The results for rural residential properties (commonly known as 'lifestyle properties') were mixed and inconsistent; there were some possible reductions in sale prices identified in some locations alongside properties whose values appeared not to have been affected. Consequently, no firm conclusions can be drawn on lifestyle properties;
- Overall, the inconclusive nature of the results is consistent with other studies that have also considered the potential impact of wind farms on property values; and
- Further analysis (with additional data and expansion of the study area to other states) may yield more comprehensive results. Notwithstanding this, further studies are also likely to be limited by the availability of sales transaction data.

The Valuer Generals study also considered previous studies which have analysed property sales transaction data relating to other local and international wind farms. The studies vary in size and methodology. While some studies have found slight negative impacts, the larger more comprehensive studies have generally found no statistical evidence of reductions in value associated with the development of a wind farm.

In 2007, a NSW Land and Environment Court decision found that property value impacts are not relevant considerations in the assessment of wind farms (or any other development). In Taralga Landscape Guardians v. Minister for Planning and RES Southern Cross Pty Ltd, in considering a request for compensation of nearby landowners in relation to a potential reduction in property value, Chief Justice Preston found that:

- *If the concept of blight and compensation, as pressed by the Guardians, were to be applied to this private property (a proposition which I reject) than any otherwise compliant private project which had some impact in lowering the amenity of another property (although not so great to warrant refusal on general planning grounds when tested against the criteria in S79C of the Act) would be exposed to such a claim.*
- *Creating such a right for compensation would strike at the basis of the conventional framework of land use planning but would also be contrary to the relevant objective of the Act, in S5(a)(ii) for "the promotion and co-ordination of the orderly and economic use and development of land.*

Furthermore, a specific individual case for a property neighbouring a proposed wind farm in South Gippsland Shire has recently been put forward as supporting decreased property values. It appears however from public statements made by the Shire CEO that this individual case had specific circumstances around historic premium lifestyle land value compared to neighbouring properties and the agreed rate reduction was based on proximity of proposed temporary construction infrastructure (concrete batching plant), which may only attract a lower rate during the wind farm construction period only.

16.7 Cumulative Impacts

16.7.1 Existing Environment

The Yass region of the Southern Tablelands has been identified as a suitable location for the development of wind farms to generate renewable energy for the State of New South Wales. A number of companies are active in the region and have identified suitable sites for the development of wind farms. The State Government has also recognised this potential and has established six Renewable Energy Precincts, with the Yass region nominated in one of these precincts (Precinct 4: ACT/NSW Border West Precinct), as being an appropriate area for the development of wind farms.

In the context of this project, cumulative impacts can generally be defined as *"the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions".*

When a number of large infrastructure projects, such as wind farms, are proposed or constructed proximate to each other, there is a potential for the impacts of one project to combine with the impacts of another project to create greater collective impacts than one project on its own.

For the Rye Park wind farm an assessment of potential cumulative impacts contemplated development of the proposed Bango, Rugby, Yass Valley and Conroys Gap wind farms, and, potential cumulative impacts arising from

noise, visual, traffic, ecology and heritage effects were assessed against these proposed wind farms. A locality map of proposed wind farm projects in the Yass region is shown below;

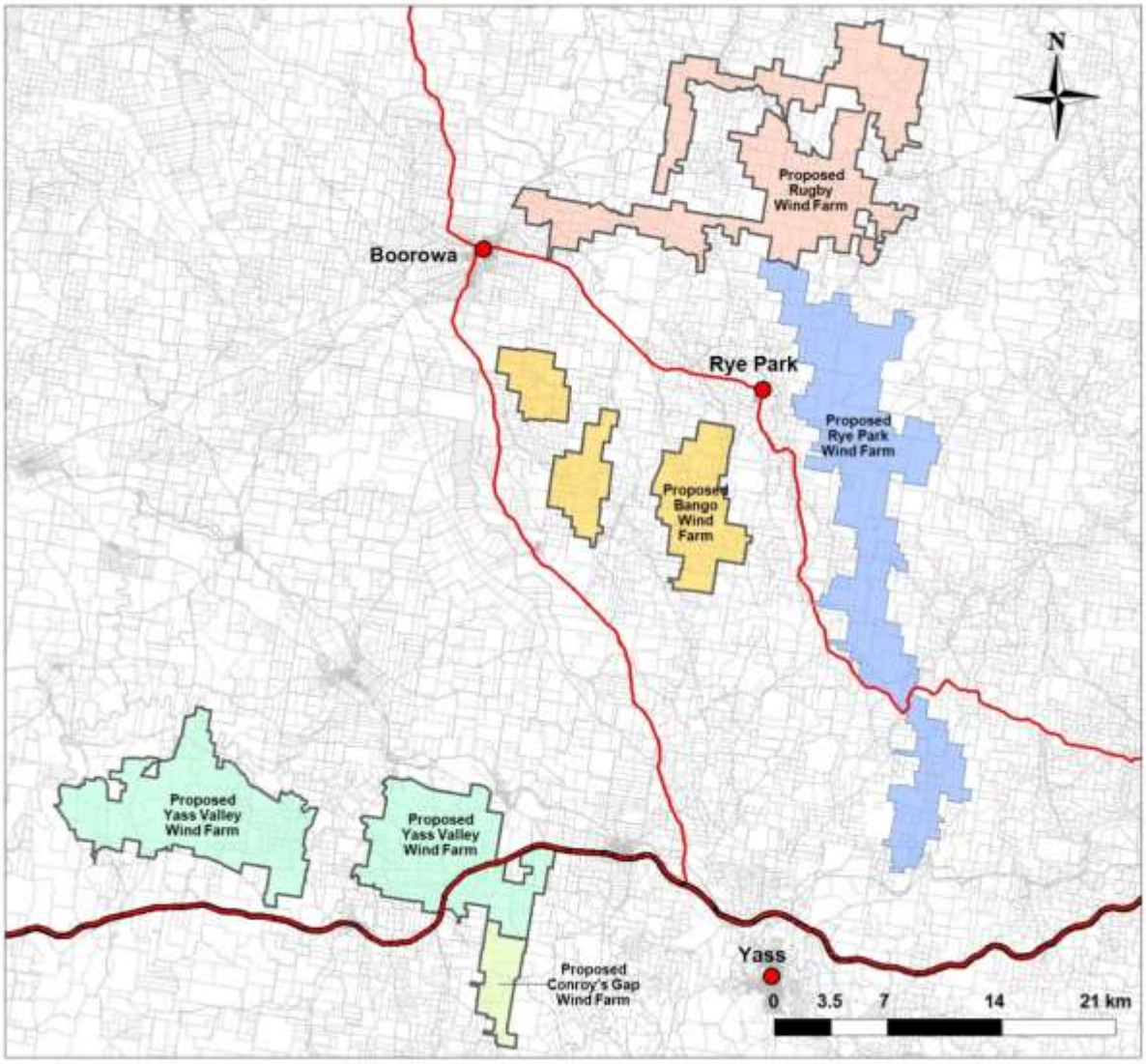


Figure 16-4 Proposed wind farms in the Yass region

16.7.2 Assessment

Impact Considerations

It is generally acknowledged by the wind industry and the various determining authorities that there are inherent difficulties associated with the assessment of cumulative impacts for wind farms. For the Rye Park wind farm it is difficult to undertake an accurate assessment of cumulative impacts as there is limited information available about other proposed wind farms nearby, let alone their expected final form and whether or not they will actually proceed to construction. It is not unusual for an approved wind farm to remain idle for several years before construction commences, if ever. A decision to not approve a particular wind farm based on perceived unacceptable cumulative impacts of it together with another nearby wind farm relies on the certainty that the adjoining wind farm would proceed to be constructed. Established planning practice does not allow for the development of a project, such as a wind farm, to be conditional on the abandonment of another project.

The potential for cumulative impacts to arise out of a number of nearby projects is dependent on the type of impact being assessed and the proximity of projects to each other relative to that impact. For example, shadow

flicker is a particularly localised impact, and for cumulative impacts to occur it would require that two wind farms are very closely situated, relative to an identified dwelling, with a specific aspect of the sun and turbines. Ecology impacts, however, are usually more regional in that a large number of wind farms in a given region may give rise to impacts such as threatened species that depend on the wider region for habitat. Similarly, visual impacts of a wind farm can extend many kilometres and, when viewed in conjunction with another wind farm nearby, can result in a cumulative impact.

As shown in Figure 16-4 there are five known wind farms, including Rye Park, proposed in the immediate Yass region. With the exception of Conroys Gap the proposed wind farms are at various stages of development and have not yet been approved. The Conroys Gap wind farm has been approved and is planning to proceed to construction in the near future. The Bango and Rugby wind farm proposals are situated relatively close to the Rye Park wind farm (within a few kilometres) while the Yass Valley and Conroys Gap wind farms are approximately 20 kilometres away and have limited potential to contribute cumulative impacts.

Noise

The SA EPA guidelines have been widely described as one of the most stringent assessment approaches in the World. The baseline criterion of 35dBA is at least 5dBA less than the New Zealand Standard used in Victoria and 10dBA less than the WHO recommendation for the prevention of sleep disturbance effects. Due to their stringency, the SA Guidelines explicitly account for the cumulative effect of other wind farms. This baseline criterion specified by the SA EPA guidelines accounts for cumulative impacts according to the following:

> *"This base noise level is typically 5dB(A) lower than the level considered to reflect the amenity of the receiving environment. Designing new developments at a lower level accounts for the cumulative effect of noise from other similar development and for the increased sensitivity of receiver to a new noise source."*

In addition the background noise monitoring carried out for the purpose of the assessment is not impacted by an existing wind farm and is thus in accordance with the SA EPA guidelines that state:

> *"Separate wind farm developments in close proximity to each other may impact on the same relevant receiver. Therefore, as for staged development, any additional wind farm that may impact on the same relevant receiver as an existing wind farm should meet the criteria using the background noise levels as they existed before the original wind farm site development. The noise generated by existing WTGs from another wind farm should not be considered as part of the background noise in determining criteria for subsequent development"*

Despite none of the wind farms having a confirmed layout, turbine selection or approval/construction go ahead a preliminary evaluation has been made on the cumulative impacts and compliance.

There are three wind farms currently in development in the vicinity of Rye Park Wind Farm: Rugby Wind Farm, Bango Wind Farm, and Yass Valley Wind Farm. There is one approved wind farm in the vicinity, Conroy's Gap Wind Farm. The cumulative impact of both Yass Valley Wind Farm and Conroy's Gap Wind Farm on noise levels will be negligible as they are over 20km from Rye Park Wind Farm.

Both Bango Wind Farm and Rugby Wind Farm are not yet approved and are currently in the development process. As such final turbine locations and turbine models have yet to be chosen and confirmed. The cumulative noise impact has been modelled using both wind farms based on available public data.

The impact of Bango Wind Farm on dwellings assessed in the NIA in Appendix B is likely negligible. The cumulative noise levels are likely to meet the compliance criteria at all dwellings assessed in the NIA in Appendix B.

The preliminary cumulative impact of Rugby Wind Farm on noise levels is predicted to only marginally increase the predicted noise levels at some receivers. The likely cumulative noise level at each dwelling still meets the relevant compliance criteria.

The small increase in noise levels due to cumulative impact from both Bango and Rugby is due to:

- the distance of the adjacent wind farms to Rye Park Wind Farm
- the dominant contribution of predicted noise levels is from Rye Park Wind Farm turbines itself.

A more detailed explanation is detailed below. It is important to emphasise that all modelling has been conducted based on a worst case model and is considered conservative (ISO9613-2).

A further factor to consider is the operational timing of the wind farms. If Rye Park Wind Farm begins construction or operates before other wind farms in the area then the predicted noise levels would not need to factor in cumulative impacts against the criteria. If other wind farms begin operation before Rye Park Wind Farm then cumulative impacts become a factor. In the case that all wind farms are operating the assessment shows that all relevant receivers in the NIA in Appendix B are predicted to be within the nominated WHO guideline noise limits. A revised NIA will be completed once the turbine layout and model are finalised. At this point the latest information about neighbouring wind farms will be addressed.

- Bango Wind Farm

Publicly available information for Bango Wind Farm shows that that the wind turbine area is at least 4 km's from any dwelling assessed in the NIA in Appendix B (Bango Wind Farm Newsletter #2 February 2012). At this distance the impact of the addition of one wind turbine at a sound power level of 106.5dBA would increase the noise level at a dwelling by a small amount in the order of 0.1dBA based on conservative modelling assumptions (ISO9613-2). In reality the potentially most impacted dwellings would be those that sit in between the two wind farms, however these dwelling would not receive the full predicted noise level from both wind farms at the same time as the wind cannot blow from two different directions (noting that the greatest noise impact on a dwelling is when the dwelling is downwind from a turbine – as assumed in ISO9613-2).

The small increases in noise levels are due to the noise impact being greatest from the closest noise sources, in this case Rye Park Wind Farm. The compliance margin or difference between predicted noise levels and compliance criteria is greater than 0.9dBA at all receivers except R32 and R38. To increase the predicted noise level at a receiver by 0.9dBA, 9 turbines located at 4km from the receptor would be required. This is unrealistic given the minimum spacing requirements of wind turbines of at least 250m and as such would not affect compliance at these receptors.

For the two receptors that have a compliance margin less than 0.9dBA, they both are at least 7km from the closest wind turbine area of Bango Wind Farm. In addition to this considerable distance over 25 turbines are closer to each receptor and dominate the noise level contribution. As such compliance remains unchanged at all receptors with cumulative impacts accounted for.

- Rugby Wind Farm

Publicly available information for Rugby Wind Farm shows that that the wind turbines are located directly north of Rye Park Wind Farm. Noise modelling of this layout (ref: WTG_Rev63) was carried out based on an indicative turbine, in this case a turbine with Sound Power Level of 106.5dBA and based on conservative modelling (ISO9613-2). The predictions show that the cumulative wind farm noise level increases by less than 0.9dBA at all assessed receptors except one, in most instances the predicted cumulative increase is negligible and less than 0.1dBA. As such the compliance criteria is met based on predicted cumulative noise levels.

We note that the receiver R1 is an uninvolved landowner with Rye Park Wind Farm, however, it is an involved landowner as part of Rugby Wind farm. Should Rugby Wind Farm proceed to be constructed first (or both wind farms are operating), receptor R1 will have a noise criteria of 45dBA according to the WHO guidelines. The cumulative noise modelling shows that compliance is predicted to be achieved. If Rye Park Wind Farm proceeds to be constructed first R1 will comply according to SA EPA guidelines as assessed in the NIA in Appendix B.

Visual

An assessment of cumulative visual impacts considers the potential impact of a proposal in the context of existing developments and future developments to ensure that any potential environmental impacts are not considered in isolation.

'Direct' cumulative visual impacts may occur where two or more winds farms have been constructed within the same locality and are simultaneously viewed from the same receptor location.

'Indirect' cumulative visual impacts may also arise as a result of multiple wind farms being observed from the same receptor location, but do not overlap or occur within a single field of view.

'Sequential' cumulative visual impacts may also arise as a result of multiple wind farms being observed at different locations during the course of a journey (e.g. from a vehicle travelling along a highway or from a network of local roads), which may form an impression of greater magnitude within the construct of short term memory.

Following consultation with a number of Local Government Authorities there are no known smaller wind farm developments that have been approved, or are currently being assessed by Boorowa Council, Upper Hunter Shire Council or Yass Valley Council.

Long distance views (around 30 km) can be obtained toward the operational Gunning and Cullerin wind farms from elevated areas of the landscape to the south east of the Rye Park project area. Although visible, these wind farm developments are unlikely to result in any significant additional level of 'direct' and 'indirect' cumulative impact for view locations within the Rye Park 10 km viewshed due to the distance effect on overall visibility between the wind farm developments.

The proposed Bango and Rugby wind farm developments are currently in the planning stage. The proposed location and number of turbines associated with each development was not publically known or made available during the preparation of this EA. The potential for cumulative impact will be dependent on a number of factors such as the separation distance between turbines and layout of turbines relative to the proposed Rye Park project.

Whilst some degree of intervisibility between all 3 projects is expected, the nature and extent of the undulating landform surrounding each of the project sites, would partially limit the overall potential for 'direct' and 'indirect' views for many of the residential dwellings located between them.

A sequential view would occur for motorists travelling along local roads although the journey between the wind farms would include a range of views extending toward and beyond turbines. The extent and overall visibility of turbines would be influenced by the direction of travel relative to the alignment of wind turbines as well as the relatively short travel time along the local road network alongside and between the wind farm turbines.

Although there are other wind farm developments proposed in the vicinity of the Rye Park wind farm it is not certain all projects will be constructed, if approved, due to competing access to the electricity network and economic market limitations.

Traffic

In the event that Rye Park wind farm and the proposed Bango and Rugby wind farms are constructed concurrently, rather than sequentially, there is potential for cumulative traffic impacts arising out of the construction phases of these three projects due to their proximity to each other. Although there is no available information about the proposed traffic plans for Bango and Rugby wind farms the potential cumulative impacts are considered minimal as the main access routes for these other projects appears likely to utilise Lachlan Valley Way while the main access route to Rye Park is the Rye Park Dalton Road.

The Yass Valley and Conroys Gap wind farms are approximately 20 kilometres further west along the Hume Highway and utilise completely different access routes and roads. It is not considered likely that these two projects would cause cumulative impacts with respect to the Rye Park wind farm, even if all three were constructed concurrently.

It is considered that the Hume Highway has sufficient capacity to cater for the concurrent construction of all five wind farms in the region without compromising the road network capacity.

Ecology

There are a number of developments including wind farms in the region and the proposal may contribute to cumulative impacts from vegetation clearing and operational or alienation effects. In terms of operational impact, there are three operating wind farms within approximately 50 km of the project area. These comprise a total of 54 wind turbines (Cullerin Range Wind Farm: 15, Gunning Wind Farm: 31, Crookwell Wind Farm: 8). Several other wind farms are proposed within approximately 60 km of the project area including Rugby Wind Farm, Bango Wind Farm, Conroys Gap Wind Farm, and Yass Valley Wind Farm). The cumulative operational impact of these wind farms is unknown. The difficultly in drawing conclusions about cumulative operational risk is highlighted in a report commissioned by the Commonwealth Department of Environment and Heritage (Biosis 2006), *Wind Farm*

Collision Risk for Birds: Cumulative Risks for Threatened and Migratory Species (species considered included Swift Parrot and Tasmanian Wedge-tailed Eagle).

Biological impacts of wind farms can be far-reaching, because of the mobility of migratory, nomadic and territorial fauna species such as bats and birds, with the biggest concern stemming from potential bird and bat collision with operating turbines (Parsons and Battley, 2013). The operational and proposed wind farm localities in the district may involve overlapping raptor territories and bird and bat migration routes. However, based on the available habitat which has primarily been cleared in the local area and elsewhere in the district (especially to the west), and the absence of major wetlands, with the closest being Lake Burrinjuck (approximately 47 km to the south-west), the project site is not likely to be located on a major migratory route for wetland birds, seasonally migrating birds or microchiropteran bats. Visits from migratory or nomadic species are expected to be infrequent and sporadic. Additionally, given the low rate of raptor blade strike recorded at other Australian wind farms, as well as the more recently documented avoidance of turbines by Wedge-tailed Eagles at three wind farm sites in northern Tasmania (Hull and Muir, 2013), mortalities are not expected to affect local or regional populations by outstripping the reproductive capacity of any species. The location of the proposed wind farm turbines on largely cleared ridge top sites already compromised from long-term grazing, coupled with avoidance of clearing good condition woodland, should restrict the potential to affect locally declining woodland or wetland species.

For these reasons, the proposal is not expected to significantly add to the collective impacts of wind farms in the region nor is it expected to significantly affect migratory species such that whole populations would be at risk. However, if the ongoing monitoring and assessment of the operational impacts of all wind farms operating in the region becomes publicly available, the data should be reviewed to ensure cumulative impacts remain within acceptable limits. An adaptive monitoring and management program would be implemented to ensure that any unforeseen impact on bird or bat species are detected and addressed in a timely manner.

Heritage

The principles of ecologically sustainable development and the matter of cumulative harm to heritage values have been considered for the Rye Park wind farm. The project area is in a vast rural region and hence existing and future heritage impacts are low, despite the construction of numerous wind farms in the region. The majority of cultural values, including archaeological, which attach to the landform and the broader landscape remain intact across the region.

16.7.3 Mitigation

The following measures have been incorporated into the design of the wind farm or would be adopted to minimise potential cumulative impacts prior to construction:

- Establish and maintain communication with nearby wind farm developers so that details of other projects can be considered when available.
- Investigate CCC collaboration with matters such as traffic and transport plans for nearby projects.

17 Draft Statement of Commitments

Under transitional Part 3A projects, Proponents are required to provide a Statement of Commitments on how they propose to implement measures for environmental mitigation, management and monitoring for the project.

Avoidance and mitigation measures have been developed for the design, construction, operation and decommissioning phases of the project within this EA.

The commitments in this section have been developed into a comprehensive set of environmental impact avoidance and mitigation measures which incorporate:

- specific recommendations contained in the specialist reports; and
- additional measures identified during the preparation of this Environmental Assessment (in consultation with the community and government agencies).

In general, these issues will be incorporated and addressed in the proposed CEMP and OEMP.

To avoid duplication in this section, mitigation measures are located under the most appropriate heading only and are not repeated in subsequent sections.

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
1	General	Revisions to approved development	No material increase in impact	Ensure that any minor changes, including micro-siting up to 100 m in any direction, to the proposed development do not create any material increase in overall environmental impact. In the event of any significant or material changes to the wind turbine layout, an updated noise assessment and visual impact assessment will be submitted as required prior to construction.	Design	DP&I
2	General	Loss or modification of habitat	Mitigate impact	Implement a Construction Environmental Management Plan (CEMP) and an Operational Environmental Management Plan (OEMP) in accordance with the Best Practice Guidelines for Wind Energy Projects (Auswind, 2006).	Construction	CEMP OEMP
3	Visual	Deterioration of visual amenity	Mitigate impact	The Proponent will respond to written requests from owners of residential dwellings or businesses located within 2 km of a visible wind turbine(s) to undertake reasonable landscape treatments to visually minimise views toward the wind turbine(s). A site visit would determine the extent and type of mitigation required. If vegetative screening is required, species selection would be determined in consultation with owners using specialist advice. An offer for reasonable landscape treatment would remain in place for a period of 6 months from commencement of the wind farm operation, to allow owners time to either adjust or to decide that landscape filtering or screening is warranted. Agreed landscape treatments would be completed within 1 year of an agreement for landscape treatments being reached.	Post Construction	CEMP OEMP
4	Visual	Deterioration of visual amenity	Mitigate impact	Prior to the commencement of construction the Proponent will consult with those residents, business owners or public authorities whose dwelling, business or public area, may be subject to moderate or high visual impact as defined in the approved Rye Park Wind Farm Landscape and Visual Impact Assessment.	Pre-construction	CEMP
5	Visual	Deterioration of visual amenity	Avoid impacts	Avoid use of advertising, signs or logos mounted on turbine structures, except those required for safety purposes.	Design	CEMP
6	Visual	Deterioration of visual amenity	Mitigate impact	Minimise activities that may require night time lighting, and if necessary or as required by an authority use low intensity lighting designed to be mounted with the light projecting inwards to the site to minimise glare at night.	Construction & Operation	CEMP OEMP
7	Visual	Deterioration of visual amenity	Mitigate impact	As far as feasible and reasonable, the Proponent will design and construct substations and associated facilities to minimise visual intrusion to the closest sensitive receivers.	Design	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
8	Noise	Construction noise	Minimise Impact	In general, construction activities associated with the project that would generate audible noise in excess of the requirements of the Interim Construction Noise Guidelines at any residence would be undertaken during the daylights hours of: Monday – Friday: 7am – 6pm Saturday: 8am – 1pm Sunday and public holidays: Not currently proposed Construction activities will comply with the Interim Construction Noise Guidelines (DECCW, 2009). These working hours have been proposed to allow reasonable efficiencies of effort to achieve maximum productivity and to minimise the overall construction duration but should not be restricted to daylight hours. Variations to these hours may be required subject to weather, safety and seasonal impacts. Any construction activities outside of the standard construction hours will only be undertaken in the following circumstances; a) Construction activities that generate noise that is: a. no more than 5dB(A) above rating background level at any residence in accordance with the ICNG (Table 2 of the ICNG); and b. no more than the noise management levels specified in Table 3 of the ICNG at other sensitive receivers; or b) for the delivery of material required outside those hours by the NSW police Force or other authorities for safety reasons (section 10.11.2); or c) where it is required in an emergency to avoid the loss of life, property and/or to prevent environmental harm; d) works as approved through the out-of-hours work protocol outlined in the Construction Noise and Vibration Management Plan as part of the Construction Environmental Management Plan.	Construction	CEMP
9	Noise	Construction	Minimise	Apply all feasible and reasonable work practices regarding construction machinery	Construction	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
		noise	Impact	including the use of temporary acoustic barriers, the use of silencers, improved vehicle noise control and the use of 'quiet work practices' (such as reducing or relocating idling machinery).		
10	Noise	Construction noise	Mitigate Impact	Implement a community consultation process to ensure adequate community awareness and notice of expected construction noise.	Construction	CEMP
11	Noise	Construction noise	Minimise Impact	Locate fixed noise sources such as crushing plant at the maximum practical distance to the nearest dwellings and where possible use existing landforms to block line of sight between equipment and the dwelling.	Construction	CEMP
12	Noise	Operational noise	Compliance	Ensure final turbine selection and layout complies with the SA EPA Noise Guidelines of 35 dB(A) or background plus 5 dB(A) (whichever is higher) for all non-involved residential receivers, other than those which have entered into a noise agreement with the Proponent in accordance with the SA EPA Noise Guidelines.	Detailed design	OEMP
13	Noise	Operational noise	Compliance	Ensure final turbine selection and layout complies with the World Health Organisation Guidelines for Community Noise requiring 45 dB(A) or background plus 5 dB(A) (whichever is higher) for all involved residential receivers and all non-involved residential receivers who have entered into a noise agreement with the Proponent in accordance with the SA EPA Noise Guidelines.	Detailed design	OEMP
14	Noise	Operational noise	Compliance	Prior to construction, prepare and submit to the DP&I a noise report providing final noise predictions based on any updated background data measured, the final turbine model and turbine layout selected, to demonstrate compliance with the relevant guidelines for all residences.	Detailed design	OEMP
15	Noise	Operational noise	Mitigate impact	If operational monitoring identifies an exceedance through a complaint hotline or other means that is investigated, consideration would be given to providing mechanical ventilation or other mitigation (to remove the requirement for open windows), building acoustic treatments (improving glazing) or using turbine control features (including the consideration of turning turbines off) to manage excessive noise under particular conditions.	Operation	OEMP
16	Noise	Operational noise	Compliance	Develop and implement an operational noise compliance testing program. The compliance program will commence 3 months before construction commencement and continue on a permanent basis for 2 years post commissioning. Permanent noise loggers will be installed at selected receivers for the duration of the compliance program, with noise data regularly downloaded and any potential exceedances noted for detailed analysis. The selected house locations will comprise	Operation	OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				of all houses within 2km of a turbine and selected representative houses within 2-5km.		
17	Ecology	Additional targeted surveys	Swift Parrot	For this species a specific risk window exists during migration (winter). Prior to approval an additional survey will be conducted between March and July to supplement the existing survey effort and further investigate the potential for impact on this species. The results of the further survey will either confirm the assumptions made by this assessment or be used to define additional measures to manage impact (including turbine removal, adjustments to timing of construction or other specific mitigation measures).	Design	CEMP
18	Ecology	Additional targeted surveys	Hollow-bearing trees	A hollow-bearing tree inventory would be compiled to map and document the characteristics of all hollow-bearing trees suitable for large forest owls, Squirrel Glider, Gang Gang Cockatoo, Glossy-black Cockatoo within 100m of a turbine, where they occur in mapped high habitat conservation value areas. Details including number, size of hollows, and habitat value would be recorded. Consideration would be given to micro-sting turbines more than 100m from these trees. Where turbines remain within 100m of hollow bearing trees, targeted surveys for the above species would be undertaken. Management prescriptions to manage impacts (including turbine removal or other specific mitigation measures) would be developed and included in the project description.	Design	CEMP
19	Ecology	Additional targeted surveys	Woodland birds	Additional bird surveys would be undertaken in moderate and high habitat conservation value in conjunction with hollow-bearing tree surveys. Consideration would be given to micro-siting turbines, based on these results, if required.	Design	CEMP
20	Ecology	Additional targeted surveys	Pink-tailed Worm-lizard and Striped Legless Lizard	Where infrastructure is proposed in good condition Box-Gum Woodland (CEEC), a tile survey for these species would be undertaken to verify whether the species occur. Turbines and infrastructure would be micro-sited to avoid impacts to areas of confirmed habitat for these species.	Design	CEMP
21	Ecology	Additional targeted surveys	Koala	A pre-clearance survey (scat surveys) for the Koala in good condition Box-Gum Woodland and good condition Inland Scribbly Gum Forest would be undertaken. If Koalas, or their scats are detected turbines and infrastructure would be micro-sited to avoid primary habitat. Prescriptions would be developed to minimise impacts during construction, if required.	Design	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
22	Ecology	Measures to minimise impact	Fauna habitat and EEC	The impacts of track and power-line construction would be minimised in areas of high conservation value fauna habitat and vegetation (EEC) by minimising track width to the minimum required for safe access and installing the 33kV powerline as underground rather than overhead line, co-aligned within the road verge.	Design	CEMP
23	Ecology	Measures to minimise impact	Birds and bats	Turbine and infrastructure design would minimise potential for operational impacts on bird and bats. Any lights required to be fitted to the towers would be red flashing lights to reduce attractiveness to insects (prey for bats) and possibly night-flying birds. Guy lines would not be fitted to turbine towers. Guy lines used on wind monitoring masts would be made bird-safe using flags or marker balls.	Design	CEMP
24	Ecology	Additional targeted surveys	EEC	Microsite with input from an ecologist; the proposed track in the area of good condition EEC and CEEC between turbines 114 and 120 and the ETL within good condition EEC and CEEC south of RYP_110.	Construction	CEMP
25	Ecology	Additional targeted surveys	Yass Daisy and Hoary Sunray	Potential habitat for these species occurs in the good condition Box-Gum Woodland EEC and CEEC south of RYP_110. No clearing works to be undertaken in these patches unless targeted flora surveys have been undertaken (October to November). If found to be present at the site, infrastructure would be micro-sited to avoid impacting populations of these species.	Construction	CEMP
26	Ecology	Additional targeted surveys	Golden Sun Moth	A final inspection would be carried out after location of tracks and ETLs are finalised to determine whether Golden Sun Moth habitat will be impacted. If potential habitat is confirmed, targeted surveys will be undertaken for the Golden Sun Moth to identify: a) whether the species occurs on site; and b) high-use activity areas. If habitat is confirmed through the above survey, a Golden Sun Moth survey will be undertaken in the preceding emergence and breeding period of the species, which is mid-October to mid-January. Surveys will be undertaken in accordance with *Significant Impact Guidelines for the critically endangered Golden Sun Moth (Synemon plana)* (DEWHA 2009a). It is noted that it may be difficult to rule out presence of the species on the basis of surveys, due to the cryptic nature of the moth. Exclusion zones will be delineated in areas the species is found or in areas that indicate a high likelihood that it can occur (i.e. if surveys do not result in detection, but habitat is considered appropriate and highly likely to support the species). Infrastructure and vehicle access would be excluded in these zones such that a significant impact to this species would be avoided. Infrastructure near the exclusion zones would be micro-sited to avoid a significant impact to this species. If	Construction	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				habitat and species is confirmed through the above surveys, undertake construction works well outside of the flying and breeding period (i.e. works would be undertaken between 1 March and 30 September).		
27	Ecology	Environmental management framework	Flora and fauna management	The area to be disturbed by the development will be minimised by, clearly demarcating works areas and restricting impacts to these areas. This includes vehicle and equipment parking and access routes. Trees and features to be retained will be communicated to staff via inductions and other methods. Co-locating underground and overhead 330kV powerlines with the track network to minimise additional impact area, where practical and possible in areas of high conservation value (EEC and CEEC areas only) and the construction compound would be established in a disturbed area. Disturbed areas would be used preferentially for vehicle and machinery access, materials laydown, stockpiling of cleared vegetation and the deposition and retrieval of spoil wherever practicable.	Construction	CEMP
28	Ecology	Environmental management framework	Weed management	The impact footprint would be inspected for noxious weeds prior to the commencement of works. Noxious weeds in the vicinity of the works site would be treated prior to commencement of works, subject to seasonal factors. Noxious weeds within the works areas would be controlled according to control plans and measures recommended by the Boorowa Shire Council prior to works being undertaken. All herbicide treatment in environmentally sensitive areas (e.g. Box-Gum Woodland EEC) would be undertaken with care to minimise impact on native species. No herbicide treatment would be undertaken in CEEC during the flying period of Golden Sun Moth (i.e. undertake chemical weed control between 1 March and 30 September). Machinery and vehicles used in construction works would be thoroughly cleaned of soil and vegetation matter, as necessary and subject to weather conditions, before and after site access to reduce the introduction and spread of weeds and pathogens. Weed monitoring would be carried out at all sites after the completion of construction works and ongoing weed control would occur where noxious or invasive species are recorded. In particular, monitoring would be undertaken during the late spring/early summer season following works, and remedial action taken as required. Good quality Box-Gum Woodland (CEEC and potential Golden Sun Moth habitat):	Construction	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				prior to construction, the area of Box-Gum Woodland within the impact footprint (in the ETL) would be clearly marked out, including with signage "environmentally sensitive area". A clean-down area would be set up at both (north and south) entry/exit points into the CEEC area, and a protocol developed for all vehicles and machinery to be cleaned down as necessary prior to entering the CEEC. This will reduce the risk of weed spread into high conservation value areas within the site.		
29	Ecology	Environmental management framework	Pollution prevention	Where cement is included in the cable trench backfill, at least 20 cm of cement free topsoil will be replaced as the top layer in the back fill. To protect aquatic habitats, an erosion and sediment control plan would be used to ensure appropriate controls are in place prior to commencement of works and are maintained throughout the works period.	Construction	CEMP
30	Ecology	Environmental management framework	Riparian or inundated area management	Creek crossing to be designed in accordance with: NSW Fisheries Policy and Guidelines for Fish Friendly Waterway Crossings (2003). Creek works not to be undertaken when heavy rain is forecast and would be avoided when there is flow. Implement sedimentation and erosion controls in accordance with best practice guidelines. Minimising the construction footprint in riparian or periodically inundated areas and implementing sediment and erosion controls will safeguard Sloane's Froglet habitat.	Construction	CEMP
31	Ecology	Environmental management framework	Site stabilisation, rehabilitation and revegetation	In areas dominated by exotic groundcover species, exposed soils would be lightly mulched with chipped vegetation or sterile hay, and sown with an appropriate cover crop in consultation with the land owners, to stabilise the soils. In areas dominated by native grasses, exposed soils would be lightly mulched with chipped native vegetation or sterile hay, and sown with local provenance local grasses. Fertiliser would not be used to promote revegetation in native grass dominated areas of the site, to reduce weed pressures.	Construction	CEMP
32	Ecology	Environmental management framework	Box-Gum Woodland	In areas of EEC and CEEC, the works area would be clearly demarcated and disturbance strictly confined. Contractors and staff would be made aware of the significance and sensitivity of adjacent areas.	Construction	CEMP
33	Ecology	Environmental management framework	Superb Parrot	A 100m buffer (exclusion zone) would be applied to all known nest sites.	Construction	CEMP
34	Ecology	Environmental	Hollow-	Where hollow-bearing trees are to be cleared, a standard pre-clearance survey,	Construction	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
		management framework	bearing tree removal	such as that described in *Biodiversity Guidelines* (**ngh**environmental / RTA 2011), would be undertaken. Hollow-bearing trees would be felled with the assistance of an ecologist or wildlife handler, to minimise risk of injury to resident fauna. Hollows considered to have potential for Superb Parrot would not be felled during the breeding season between 1 August and 31 December.		
35	Ecology	Measures to minimise impacts	Birds and bats	An adaptive Bird and Bat Management Plan would be prepared to manage blade-strike risk to birds and bats. The primary aim of the program would be to ensure that unacceptable impact to threatened species is avoided. The plan would be developed with input from OEH and other experts as required, and would be implemented by an appropriate (ecological) expert. Survey design and analysis of results would incorporate a role for a statistician to ensure the data can provide meaningful results. The plan would monitor, report on and manage collision impacts during the operational phase.	Operation	OEMP
36	Ecology	Measures to minimise impacts	Flora and fauna management	Vegetation would be allowed to regrow under the ETL to the maximum allowable height for power lines to maintain fauna habitat connectivity.	Operation	OEMP
37	Ecology	Measures to minimise impacts	Flora and fauna management	A flora and fauna management plan would be developed prior to decommissioning to manage decommissioning impacts on biodiversity values. Biodiversity investigations would be required prior to decommissioning, to update the knowledge of site attributes and evaluate specific impact types (given the life span of the proposal is in the order of 30 years) and to minimise biodiversity impacts related to the removal of infrastructure. New measures to avoid and mitigate impacts may be required depending on: 1) the results of the investigation; and 2) outcomes of the monitoring programs implemented during the operational phase of the proposal. Any implementation of a rehabilitation plan would consider the above plans and the environment at the time of decommissioning.	Decommissioning	OEMP
38	Ecology	Measures to offset impacts	Hollow-bearing trees	A hollow-bearing tree inventory would be compiled to map and document the characteristics of all hollow-bearing trees required to be removed. Hollow-bearing trees would be offset at a ratio of one for one, or better, to maintain or improve the availability of the resource in the locality. Ecological advice would be sought if artificial hollows are to be installed.	Offsetting	CEMP / OEMP
39	Ecology	Measures to offset impacts	Native vegetation	An Offset Plan would be developed with input from OEH and the CMA and finalised prior to any construction impacts. The objective of offsetting is to ensure that an overall 'maintain or improve' outcome is met for the project; where impacts cannot	Offsetting	CEMP / OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				be avoided, or sufficiently minimised, the residual impact will be offset in perpetuity. The biodiversity offset principles developed by the former DECCW (now OEH) would guide the selection and management of the offset site. The plan would demonstrate the following can be achieved: • For common vegetation types a ratio of approximately 1:2 (cleared: offset) is proposed. Where vegetation is listed as an endangered community, such as the Box-Gum Woodland EEC, a ratio of 1:5 to 1:10 (cleared:offset) is proposed, depending on the quality of habitat. • Hollows removed would be offset at a ratio of 1:1 (offset site vegetation must contain the same number of hollows, or more). • The offset site would be protected in perpetuity and appropriate management actions attached to the land title. For example, fencing and signage maintained, minimum biomass to be retained (through controlled grazing if appropriate), regular weed control.		
40	Heritage	Disturb identified area	Avoid Impact	Identify and protect the three milky quartz outcrops (Potential Aboriginal Heritage) that need to be avoided during construction. The strategy to achieve this would be set out in a Cultural Heritage Management Plan.	Detailed design & construction	CEMP
41	Heritage	Disturb identified area	Avoid Impact	Identify and protect the three European heritage sites that need to avoided during construction	Detailed design & construction	CEMP
42	Heritage	Inadvertent disturbance of Aboriginal heritage sites or objects	Impact mitigation strategies implemented prior to impacts	Additional archaeological assessment to be conducted in any areas which are proposed for impacts in the event of any significant or material changes to the wind turbine layout and for any areas that have not been surveyed during the current assessment.	Detailed design & construction	CEMP
43	Heritage	Inadvertent disturbance of Aboriginal heritage sites or objects	Impact mitigation strategies implemented prior to impacts	An updated archaeological assessment to be conducted for any plans that are required to be prepared as part of the CEMP – such as sediment and erosional control plan and a traffic management plan.	Detailed design & construction	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
44	Heritage	Management of impact mitigation strategies	Impact mitigation strategies implemented prior to impacts	In consultation with the project archaeologist, develop a Cultural Heritage Management Plan. The development of an appropriate Cultural Heritage Management Plan should be undertaken in consultation with the registered Aboriginal parties and the NSW Office of Environment and Heritage.	Detailed design & construction	CEMP
45	Heritage	Management of impact mitigation strategies	Impact mitigation strategies implemented prior to impacts	Any proposed micro-siting of infrastructure to consider minimisation of impacts to Aboriginal cultural heritage values.	Detailed design & construction	CEMP
46	Heritage	Management of impact	To update AHIMS database on status of sites	Completion of OEH Aboriginal Site Impact Recording Forms and submission to OEH.	Construction	CEMP
47	Aircraft Hazards	Potential hazard	Minimise Impact	Liaise with all relevant authorities (CASA, Airservices, and Department of Defence) and supply location and height details once the final locations of the wind turbines have been determined and before construction commences.	Detailed design	CEMP
48	Aircraft Hazards	Potential hazard	Minimise Impact	Consult with the landowners and appropriate licensed contractors to discuss alternate measures for aerial spreading in areas affected by the turbines	Operation	OEMP
49	Communication	Deterioration of signal strength	Avoid impact	Locate wind turbines to avoid existing microwave link paths that cross each precinct, or liaise with the owners of such links to relocate services to avoid potential impacts from turbines.	Detailed Design	CEMP
50	Communication	Deterioration of signal strength	Avoid impact	Ensure adequate television reception is maintained for neighbouring residences as follows: • Undertake a monitoring program of houses within 5km of the wind farm site to determine any loss in television signal strength if requested by the owners. • In the event that after construction television interference (TVI) is experienced by existing receivers within 5km of the site, investigate the source and nature of the interference.	Operation	OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				• Where investigations determine that the interference is cause by the wind farm, establish appropriate mitigation measures at each of the affected receivers in consultation and agreement with the landowners. Specific mitigation measures may include: • Modification to, or replacement of receiving antenna • Provision of a land line between the effected receiver and an antenna located in an area of favourable reception • Improvement of the existing antenna system • Installation of a digital set top box or In the event that interference cannot be overcome by other means, negotiating an arrangement for the installation and maintenance of a satellite receiving antenna at the Proponents cost.		
51	EMF	Radiation exposure from EMFs	Avoid Impact	Powerlines would be located in accordance with the minimum distances set in Country Energy's Procedural Guideline – Easement Requirements.	Detailed Design	CEMP
52	Shadow flicker	Safety & nuisance	Compliance	Appropriate mitigation measures will be negotiated and implemented, where necessary, including potential limiting hours of operation on selected turbines or pre-programming the control system of individual wind turbines to automatically shut down while these conditions are present.	Operation	OEMP
53	Shadow flicker	Safety & nuisance	Compliance	Shadow flicker effects on motorists would be monitored following commissioning and any remedial measures, if required, to address concerns would be developed in consultation with the RMS.	Operation	OEMP
54	Traffic	Safety and asset protection	Minimise Impact	The Proponent would develop and implement a Traffic Management Plan (TMP) in consultation with RMS and Councils to facilitate appropriate management of potential traffic impacts. The TMP would include provisions for: • Scheduling of deliveries and managing timing of transport • Limiting the number of trips per day • Undertaking community consultation before and during all haulage activities • Designing and implementing temporary modifications to intersections, roadside furniture, stock grids and gates	Construction	CEMP OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				• Managing the haulage process, including the erection of warning and/or advisory speed signage prior to isolated curves, crests, narrow bridges and change of road conditions • Designation of a speed limit would be placed on all of the roads that would be used primarily by construction traffic • Preparation of a Transport Code of Conduct to be made available to all contractors and staff • Identification of a procedure to monitor the traffic impacts during construction and work methods modified (where required) to reduce the impacts • Provide a contact phone number to enable any issues or concerns to be rapidly identified and addressed through appropriate procedures • Reinstatement of pre-existing conditions after temporary modifications to the roads and pavement along the route.		
55	Traffic	Safety and Asset protection	Minimise Impact	Engage a licensed haulage contractor with experience in transporting similar loads, responsible for obtaining all required approvals and permits from the RMS and Councils and for complying with conditions specified in those approvals. This would include the use of escorts for oversize and over-mass vehicles in accordance with RMS requirements	Construction	CEMP
56	Traffic	Safety and Asset protection	Minimise Impact	Prepare road dilapidation reports covering pavement and drainage structures in consultation with RMS and Councils for the routes prior to the commencement of construction and after construction is complete. Repair any damage resulting from the construction traffic (except that resulting from normal wear and tear) as required during and after completion of construction at the Proponent's cost or, alternately, negotiate an alternative for road damage with the relevant roads authority.	Construction	CEMP
57	Traffic	Road maintenance	Minimise Impact	Establish maintenance procedures covering pavement and drainage structures in consultation with RMS and Councils for the routes prior to the commencement of construction and which will be implemented during construction. The maintenance procedures would include provisions for: • Security for surety of funds to carry out the necessary maintenance works if required.	Construction	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				• Quarterly review to assess serviceability of the road routes and if unserviceable to make maintenance improvements to restore. • Complaint management from community to be reviewed weekly. • Quick response method established for safety concerns raised.		
58	Traffic	Potential disruption to other road users	Mitigate Impact	Provide a 24hr telephone contact during construction to enable any issue or concern to be rapidly identified and addressed.	Construction	CEMP
59	Bushfire	Bushfire risk	Minimise Impact	Prepare a Bushfire Management Plan as part of the Construction Environmental Management Plan. The Rural Fire Service and NSW Fire Brigade would be consulted in regard to its adequacy to manage bushfire risks during construction, operation and decommissioning. The plan would as a minimum include: • Flammable materials and ignition sources brought onto the site, such as hydrocarbons, would be handled and stored as per manufacturer's instructions. • During the construction phase, appropriate fire fighting equipment would be held onsite when the fire danger is very high to extreme, and a minimum of one person on site would be trained in its use. The equipment and level of training would be determined in consultation with the local RFS. • Substations would be bunded with a capacity exceeding the volume of the transformer oil to contain the oil in the event of a major leak or fire. The facilities would be regularly inspected and maintained to ensure leaks do not present a fire hazard, and to ensure the bunded area is clear (including removing any rainwater). • Workplace health and safety protocols would be developed to minimise the risk of fire for workers during construction and operation. • Fire extinguishers would be stored onsite in the control building and within the substation building. • Shut down of turbines would commence if components reach critical temperatures or if directed by the RFS in the case of a nearby wildfire being declared (an all-hours contact point would be available to the RFS during the bushfire period). Remote alarming and maintenance procedures would also be used to minimise risks.	Construction Operation Decommissioning	CEMP OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				• Overhead transmission easements would be periodically inspected to monitor regrowth of encroaching vegetation.		
60	Hydrology	Deterioration of water quality (Surface Water)	Minimise Impact	Ensure infrastructure, including turbines, tracks, substations, control buildings, stockpiles, and site compounds and turnaround areas, is not sited within 40 metres of a major drainage line or water course, where practical.	Detailed design	CEMP
61	Hydrology	Deterioration of water quality (Surface Water)	Avoid Impact	Prepare a Sediment & Erosion Control Plan as part of the Construction Environmental Management Plan. Soil and water management practices would be developed as set out in Soils and Construction Vol. 1 (Landcom 2004)	Construction	CEMP
62	Hydrology	Deterioration of water quality (Surface Water)	Minimise Impact	Ensure all vehicles onsite follow established trails where these exist or are practical and minimise onsite movements.	Construction Operation	CEMP OEMP
63	Hydrology	Deterioration of water quality (Surface and Ground Water)	Minimise Impact	Design concrete batch plants to ensure concrete wash would not be subjected to uncontrolled release. Bunded areas of the batching plant to contain peak rainfall events and remediate after the completion of the construction phase. Waste sludge would be recovered from the settling pond and used in the production of road base manufactured onsite. The waste material would be taken from the batching plant to be blended in the road base elsewhere onsite.	Construction	CEMP
64	Hydrology	Deterioration of water quality (Surface and Ground Water)	Minimise Impact	As soon as practical, stabilise exposed or clear areas to minimise erosion and sedimentation that can potentially pollute and dam watercourses in the area.	Construction	CEMP
65	Hydrology	Deterioration of water quality (Surface and Ground Water)	Minimise Impact	A Spill Response Plan would be prepared as part of the CEMP and OEMP.	Construction Operation Decommissioning	CEMP OEMP
66	Soils and Landforms	Erosion of disturbed land	Mitigate Impact	At the conclusion of the construction period, where practical, the disturbed areas of the site would be rehabilitated to a level suitable for the ongoing agricultural use of the land. The topsoil removed for construction activities would be stockpiled and reused for the rehabilitation of the areas around the turbine foundations, lay down and hardstand areas and along the access tracks.	Construction	CEMP
67	Soils and landforms	Contamination	Minimise Impact	Consult with involved property owners in relation to areas of land potentially contaminated by past land use and manage impacts in these areas to avoid	Detailed design	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				affecting any areas of contamination.		
68	Soils and landforms	Soil quality	Minimise impact	The Proponent would prepare a protocol in the instance that suspected contamination is unexpectedly found. Should contamination or potential contamination be disturbed during excavation works, the area would be assessed by appropriately qualified consultants and OEH would be notified if warranted.	Construction	CEMP
69	Soils and landforms	Soil loss or stability of landform loss	Minimise Impact	Concrete wash would be deposited in an excavated area, below the level of the topsoil, or in an approved landfill site. Where possible, waste water and solids would be reused onsite.	Construction	CEMP
70	Soils and landforms	Soil loss or stability of landform loss	Minimise Impact	Access routes and tracks would be confined to already disturbed areas, where practical. All contractors would be advised to keep to established tracks.	Construction	CEMP
71	Mineral Exploration	Conflict with mineral exploration	Avoid Impact	Liaise with the current mineral license holder providing a final turbine and infrastructure layout, prior to the construction phase.	Pre-construction	CEMP
72	Economic	Effect on local community	Maximise positive impact	Liaise with local industry representatives to maximise the use of local contractors and manufacturing facilities in the construction and decommissioning phases of the project.	Construction	CEMP
73	Economic	Effect on local community	Maximise positive impact	Liaise with the local visitor information centres to ensure that construction and decommissioning timing and haulage routes are known well in advance of works and to the extent practical coordinated with local events.	Construction	CEMP
74	Economic	Effect on local community	Maximise positive impact	Make available employment opportunities and training for the ongoing operation of the wind farm to local residents where reasonable.	Operation	OEMP
75	Economic	Community Fund	Continue consultation to maximise benefit	The proponent will continue consultation on a possible format for a community enhancement program • At least 6 months prior to the commencement of operations (final turbine commissioned), call a meeting of the Community Consultation Committee and consult with Council(s) with respect to establishment of the community fund; • Prior to the commencement of operation of the project, establish that community fund as required and publically announce the administration	Operation	OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
				processes and current funding commitments of the fund; and, • Regularly make publicly available the details of the fund including its administration processes, funds made available, funding commitments and outcomes.		
76	Agriculture	Impact on current land use	Minimise Impact	Stock would be restricted from works areas where there is a risk stock injury or where disturbed areas are being stabilised.	Construction	CEMP
77	Agriculture	Impact on current land use	Minimise impact	Develop, implement and monitor the effects of a Site Restoration Plan. The plan would aim to stabilise disturbed areas as rapidly as possible. The Plan would consider: • Appropriate stabilisation techniques across the precincts • Suitable species for re-seeding (native species would be given preference due to their superior persistence and for conservation purposes) • Monitoring for weed and erosion issues.	Construction Decommissioning	CEMP
78	Agriculture	Impact on current land use	Minimise impact	Ensure that the switchyard and substation is appropriately fenced to eliminate stock ingress.	Operation	OEMP
79	Agriculture	Impacts on current activities	Minimise impact	If aerial agriculture activities are demonstrated to be materially disruptive on any property immediately adjacent to the site, due to the operation of turbines, the Proponent would consult with the affected landowner and implement appropriate mitigation measures where necessary taking into consideration the history of aerial agriculture activities. This could include funding the cost difference between the current aerial agricultural activities and a reasonable alternative method.	Operation	OEMP
80	Health and Safety	Safety of persons or stock	Minimise Impact	A detailed Health and Safety Plan would be prepared, as a sub plan of the Construction Environmental Management Plan, identifying hazards associated with construction works, the risks of the identified hazards occurring and appropriate safeguards would be prepared prior to the commencement of construction works. The Plan would include, but not be limited to: • Inductions for all contractors requiring site access. • Ensure all staff are appropriately qualified and trained for the roles they are undertaking.	Construction	CEMP
81	Health and	Safety of persons	Minimise	Appropriate safety measures will be implemented in accordance with good industry	Construction and	CEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
	Safety	or stock	Impact	practice and relevant legislation to ensure risk to general public mitigated, including clear marking of hazards and restricting access to public where required	Decommissioning	
82	Climate	Air quality	Minimise Impact	Dust levels at stockpile sites would be visually monitored. Dust suppression would be implemented if required. Stockpiles would be protected from prevailing weather conditions. An Air Quality Plan will be included in the final Construction Environmental Management Plan.	Construction	CEMP
83	Climate	Air Quality	Minimise Impact	Should a complaint relating to dust by a resident be received, monitoring at the boundary of the construction site would be undertaken using dust gauges. The Proponent would assess the dust gauges and undertake additional mitigation measures, where required.	Construction	CEMP
84	Resources	Waste generation	Minimise waste and maximise recycling of materials	The Proponent would prepare a Waste Management Plan to be included within the Construction Environmental Management Plan. It would include but not be limited to the following: • The scope for reuse and recycling would be evaluated • Provision for recycling would be made onsite • Wastes would be disposed of at appropriate facilities • Toilet facilities would be provided for onsite workers and sullage from contractor's pump out toilet facilities would be disposed at the local sewage treatment plants or other suitable facility agreed to by Council • Excavated material would be used in road base construction and as aggregate for footings where possible. Surplus material would be disposed of in appropriate locations on site (on agreement with the landowner), finished with topsoil, and revegetated	Construction Operation	CEMP OEMP
85	Environmental Management	Quality Assurance	Compliance	Appoint a representative as a key contact for all environmental management issues.	Construction Operation	CEMP OEMP
86	Environmental Management	Quality Assurance	Compliance	Site induction for all workers and visitors to include maps of all sensitive areas and availability of CEMP and OEMP on site.	Construction Operation	CEMP OEMP
87	Environmental Management	Quality Assurance	Operational monitoring and Compliance	Will implement compliance and monitoring programme against permit conditions.	Operation	OEMP

SoC	Issue	Impact	Objective	Mitigation tasks	Project phase	Auditing
88	Community Consultation	Project Information	Inform Community	Appoint a community liaison office to be available for consultation by the community and to provide information to the community about the status of the project.	Construction Operation	CEMP OEMP
89	Community Consultation	Project Information	Community liaison	Continue with the Community Consultation Committee as required during various stages of the project life cycle.	Construction Operation	CEMP OEMP

18 Conclusion

This Environmental Assessment has investigated and assessed the likely impacts that would result from the construction and operation of the proposed Rye Park Wind Farm, a project capable of generating around 378 MW of renewable energy.

The project has incorporated community feedback from consultation efforts and the environmental constraints identified during the assessment process and demonstrated how the feedback and constraints were applied to the design of the wind farm to arrive at the most appropriate site layout. It has also outlined the measures that will be taken to avoid and if necessary address the environmental risks and issues that have been identified for the construction, operation and decommissioning stages. These measures are supported by a statement of commitments.

The Proponent has prepared detailed studies by independent consultants on the key issues of:

- Landscape and Visual Impact Assessment;
- Operational and Construction Noise;
- Biodiversity (Flora and Fauna); and
- Indigenous Heritage (Archaeology).

Additional studies were conducted in relation to communications, traffic and transport, aviation, existing landscape and community issues such as economic, health and safety and community benefits.

A strategic justification for the project outlined the following benefits at the local, regional and global scales:

- In full operation, it would generate more than 1,192,000 MWh of electricity per year - sufficient for the average consumption of around 149,000 homes.
- It would improve the security of electricity supply through diversification of generation locations.
- It would reduce greenhouse gas emissions by approximately 1,153,000 tonnes of carbon dioxide equivalent (CO_2e) per annum.
- It would contribute to the State and Federal Governments' target of providing 20% of consumed energy from renewable sources by 2020.
- It would inject funds of up to $565 million into the economy.
- It would create local employment opportunities of up to 363 jobs during construction and up to 34 permanent jobs during the operational lifetime of the project.

The conclusion of the individual key issue assessments is that the proposed Rye Park Wind Farm can be constructed with minimal impact to the existing environment.

The success of the project in meeting the environmental requirements of "maintain or improve" relies on the effective implementation of both the Construction and Operational Environmental Management Plans. The Proponent is committed to ensuring the measures developed in these plans are best practice to ensure the best possible outcome for the Rye Park Wind Farm as well as the local and wider communities.

19 Glossary and Acronyms

Abbreviation	*Description*
AA	Airservices Australia
ABARE	Australia Bureau of Resource Economics
ABS	Australian Bureau of Statistics
ACMA	Australian Communications and Media Authority
AEMO	Australian Energy Market Operator
ALA	Aircraft Landing Area
An	Annum
APZ	Asset Protection Zone (for bushfire compliance)
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ARTC	Australian Rail Track Corporation
AusWEA	Australian Wind Energy Association (previously Auswind)
BA	Biodiversity Assessment
CANRI	Community Access to Natural Resource Information
CAP	Catchment Action Plan
CASA	Civil Aviation Safety Authority
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CMA	Catchment Management Authority
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
dB(A)	Decibels (A weighted)
DCP	Development Control Plan
DEC	NSW Department of Environment and Conservation (now OEH)
DECC	NSW Department of Environment and Climate Change (now OEH)
DECCCW	NSW Department of Environment, Climate Change and Water (now OEH)
DEH	Commonwealth Department of Environment and Heritage, now the Department for Environment and Water Resources
DEUS	NSW Department of Energy Utilities and Sustainability (now OEH)
DEWR	Commonwealth Department for Environment and Water Resources, formerly the Department of Environment and Heritage
DGRs	NSW Department of Planning and Infrastructure's Director General's Requirements.
DP&I	NSW Department of Planning and Infrastructure
DPI	Department of Primary Industries
EA	This Environmental Assessment report

Abbreviation	*Description*
EEC	Endangered Ecological Community
EMF	Electromagnetic fields
EMP	Environmental Management Plan
EP&A Act	NSW Environmental Planning and Assessment Act 1979
EPA	Environmental Protection Agency
EPBC Act	Federal Environmental Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
FM Act	Fisheries Management Act
GBDLA	Green Bean Design Landscape Architects
GHG	Greenhouse Gas
GWh	gigawatt-hour
ha	hectare (unit of area 100m x 100m)
HBT	Hollow-bearing tree
HF	High Frequency
ICN Guideline	DECC Interim Construction Noise Guideline 2009
IPCC	Intergovernmental Panel on Climate Change
kg	kilogram
kL	Kilolitres
km	kilometre
kV	kilovolt
LAeq	Equivalent Sound Power (A weighted)
LALC	Local Aboriginal Land Council
LCA	Landscape Character Area
LEP	Local Environmental Plan
LGA	Local Government Area
LSALT	Lowest Safe Altitudes
LVIA	Landscape and Visual Impact Assessment
m	meter
m/s	meters per second
mG	milligauss
ML	Megalitres
MRET	Mandatory Renewable Energy Target
MTOW	Maximum Take-off Weight
MW	megawatt
MWh	megawatt-hour
NEM	National Electricity Market
NES	National Environmental Significance

Abbreviation	*Description*
NPI	National Pollutant Inventory
NRET	NSW Renewable Energy Target
OEH	Office of Environment and Heritage
OEM	Original Equipment Manufacturer
OEMP	Operational Environmental Management Plan
OLS	Obstacle Limitation Surface
PEA	Preliminary Environmental Assessment
POEO Act	Protection of the Environment Operations Act 1997
Proponent	Epuron Pty Ltd
REP	Regional Environmental Plan
RET	Renewable Energy Target
RFS	Rural Fire Service
RMS	Roads and Maritime Service
SA EPA Guidelines	South Australian Environment Protection Authority Environmental Noise Guidelines: Wind Farms (2003)
SIS	Species Impact Statement
SEPP	State Environmental Planning Policy
SKM	Sinclair Knight Merz
SoC	Statement of Commitments
tCO2e	Tonne of carbon dioxide equivalent
TMP	Traffic Management Plan
TSC Act	Threatened Species Conservation Act 1995
TVI	Television Interference
V	volt
VHF	Very High Frequency
W	watt
WHO	World Health Organisation
WTG	Wind Turbine Generator

20 Preparation of Environmental Assessment

This Environmental Assessment was prepared by Epuron and the content is not false or misleading. Specific sections were drawn from specialist consultants' reports as detailed in Table 20-1 below.

Table 20-1 Preparation of the Environmental Assessment

Section	*Description*	*Author*
9	Visual Assessment	Andrew Homewood Green Bean Design Landscape Architects
10	Operational and Construction Noise	Gustaf Reutersward SLR Consulting Pty Ltd
11	Ecology	Nick Graham-Higgs NGH Environmental Pty Ltd
12	Aboriginal and European Heritage	Julie Dibden NSW Archaeology Pty Ltd

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Attachment 1 – Involved Landowner Parcels

Lot/DP
1/211320
1/222985
1/575206
1/601586
1/705655
1/746015
1/1180139
2/222985
2/232571
2/601586
2/705655
2/1066057
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3/1066057
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18/754136
22/754102
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48/754136

Lot/DP
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341/754106

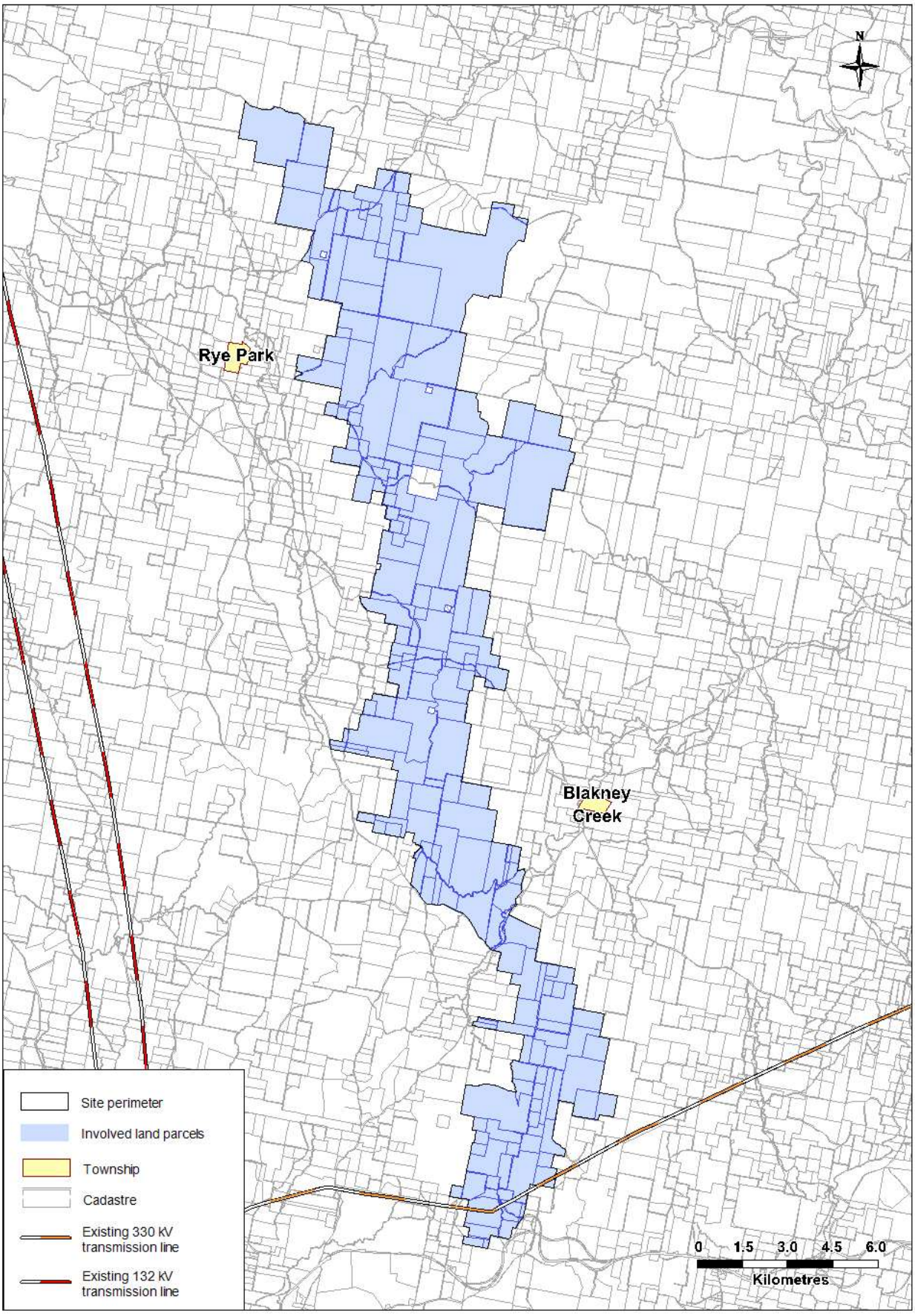
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353/754106
357/754106

Lot/DP
360/754106
361/754106
364/754106

Lot/DP
368/754106
A/417584
A/439287

Lot/DP
B/417584
B/439287
D/440134

Lot/DP
E/418849
F/418849
N/439287


N
Rye Park
Blakney Creek
Site perimeter
Involved land parcels
Township
Cadastre
Existing 330 kV transmission line
Existing 132 kV transmission line
0 1.5 3.0 4.5 6.0
Kilometres

Attachment 2 – Residence Coordinates

Residence ID	Easting	Northing
R1	677,514	6,187,097
R2	678,095	6,185,733
R6	681,484	6,184,020
R7	681,917	6,183,967
R8	682,339	6,183,864
R9	682,517	6,183,837
R10	682,842	6,183,767
R11	679,650	6,183,618
R13	678,848	6,183,498
R14	677,807	6,183,115
R16	677,297	6,181,991
R17	676,127	6,181,740
R19	676,412	6,181,665
R20	676,130	6,181,544
R22	676,095	6,181,037
R25	677,075	6,178,323
R29	676,434	6,177,903
R30	682,495	6,177,218
R31	679,304	6,177,019
R32	680,416	6,176,683
R33	683,440	6,175,148
R34	681,817	6,174,338
R35	684,554	6,174,195
R26	676,523	6,178,178

Residence ID	Easting	Northing
R36	679,988	6,173,811
R38	679,623	6,173,620
R40	678,605	6,171,136
R41	681,802	6,168,516
R42	683,370	6,168,206
R44	679,986	6,166,322
R45	682,847	6,165,279
R46	681,835	6,164,679
R47	680,155	6,162,689
R48	679,834	6,162,662
R49	680,667	6,162,540
R50	680,701	6,161,784
R51	680,970	6,161,588
R52	684,135	6,161,246
R53	680,877	6,160,875
R54	683,514	6,155,819
R56	686,567	6,153,140
R59	684,670	6,149,654
R60	684,244	6,149,529
R61	684,489	6,149,335
R63	683,875	6,148,991
R62	683,916	6,149,096
R64	676,089	6,180,459
R65	676,668	6,179,644

Attachment 3 – Turbine Coordinates

All turbine coordinates are in MGA Zone 55 (GDA94)

Turbine ID	Easting	Northing	Height (m) (AHD)
RYP_1	676,564	6,186,549	711
RYP_2	676,472	6,186,222	707
RYP_3	676,314	6,185,896	700
RYP_4	676,330	6,185,493	680
RYP_5	677,768	6,185,211	715
RYP_6	676,382	6,185,154	663
RYP_7	677,495	6,184,969	725
RYP_9	677,401	6,184,643	712
RYP_11	677,311	6,184,316	735
RYP_12	677,296	6,183,710	722
RYP_15	679,837	6,182,935	680
RYP_16	677,936	6,182,341	713
RYP_17	681,368	6,182,677	725
RYP_18	678,374	6,182,450	705
RYP_19	679,787	6,182,460	675
RYP_20	681,054	6,182,311	743
RYP_21	678,367	6,182,056	695
RYP_22	679,549	6,181,988	690
RYP_23	680,763	6,182,056	730
RYP_24	678,328	6,181,719	702
RYP_25	679,390	6,181,590	705
RYP_26	678,533	6,181,400	707
RYP_27	679,405	6,181,226	710
RYP_28	678,462	6,181,063	738
RYP_29	678,286	6,180,743	742
RYP_30	678,947	6,180,723	740
RYP_31	680,348	6,180,539	750
RYP_32	678,568	6,180,422	740
RYP_33	680,289	6,180,212	745
RYP_34	678,881	6,180,044	725
RYP_35	679,583	6,180,016	739
RYP_36	680,191	6,179,884	732
RYP_37	679,001	6,179,677	710
RYP_38	679,651	6,179,673	740
RYP_39	680,117	6,179,419	713
RYP_40	679,031	6,179,317	710

Turbine ID	Easting	Northing	Height (m) (AHD)
RYP_41	679,998	6,179,121	707
RYP_42	680,995	6,179,014	700
RYP_43	679,099	6,178,990	695
RYP_44	678,960	6,178,675	685
RYP_45	678,480	6,178,580	668
RYP_46	678,271	6,178,267	672
RYP_47	678,208	6,177,947	690
RYP_48	681,519	6,177,806	759
RYP_49	681,955	6,177,677	720
RYP_50	681,373	6,177,455	771
RYP_51	681,386	6,177,112	740
RYP_52	681,577	6,176,633	725
RYP_53	681,202	6,176,809	740
RYP_56	681,467	6,176,284	717
RYP_57	681,003	6,176,478	720
RYP_58	682,453	6,176,166	720
RYP_61	680,897	6,176,158	745
RYP_62	680,706	6,175,844	745
RYP_63	682,350	6,175,648	715
RYP_64	682,965	6,175,563	725
RYP_65	684,812	6,175,373	660
RYP_66	682,356	6,175,315	705
RYP_67	680,268	6,175,239	695
RYP_68	684,506	6,175,044	668
RYP_69	682,310	6,174,976	716
RYP_70	680,093	6,174,954	662
RYP_71	682,030	6,173,110	712
RYP_72	681,954	6,172,668	706
RYP_73	681,140	6,172,249	710
RYP_74	681,365	6,171,943	720
RYP_75	681,396	6,171,612	730
RYP_76	680,459	6,171,477	713
RYP_77	681,472	6,171,274	735
RYP_78	680,811	6,171,208	705
RYP_79	680,690	6,170,761	700
RYP_80	681,995	6,170,333	756

Turbine ID	Easting	Northing	Height (m) (AHD)
RYP_81	682,067	6,170,012	740
RYP_82	681,994	6,169,687	744
RYP_83	681,814	6,169,343	730
RYP_84	681,410	6,167,593	760
RYP_85	681,737	6,167,307	745
RYP_86	681,708	6,166,805	750
RYP_87	681,530	6,166,407	732
RYP_88	681,527	6,166,012	731
RYP_89	681,413	6,165,704	745
RYP_90	681,236	6,165,399	735
RYP_92	681,120	6,164,499	730
RYP_93	680,884	6,164,219	735
RYP_94	680,719	6,163,835	705
RYP_95	681,554	6,163,638	745
RYP_96	682,225	6,163,319	740
RYP_97	682,415	6,162,895	710
RYP_98	682,312	6,162,559	725
RYP_99	682,367	6,162,222	715
RYP_100	682,341	6,161,882	704
RYP_101	682,364	6,161,545	695
RYP_102	686,212	6,156,702	739
RYP_103	686,019	6,156,364	745
RYP_104	686,076	6,156,057	740
RYP_106	685,011	6,155,209	722
RYP_107	685,039	6,154,927	730
RYP_109	685,446	6,154,514	730
RYP_110	684,866	6,154,437	720
RYP_119	683,638	6,152,682	745

Turbine ID	Easting	Northing	Height (m) (AHD)
RYP_120	684,989	6,152,786	745
RYP_121	684,859	6,152,485	740
RYP_122	683,572	6,152,342	730
RYP_123	682,735	6,152,317	749
RYP_124	685,097	6,152,167	725
RYP_125	684,291	6,151,984	730
RYP_126	682,641	6,151,797	746
RYP_127	684,340	6,151,640	720
RYP_128	683,144	6,151,393	701
RYP_129	684,435	6,151,261	723
RYP_130	683,128	6,151,059	695
RYP_131	683,010	6,150,732	707
RYP_132	678,712	6,182,642	690
RYP_133	678,009	6,181,394	700
RYP_134	677,936	6,181,067	710
RYP_135	679,234	6,180,352	740
RYP_136	680,737	6,181,711	730
RYP_137	680,639	6,181,386	725
RYP_138	680,610	6,181,042	730
RYP_139	680,929	6,177,667	770
RYP_140	680,772	6,177,337	723
RYP_141	680,422	6,175,567	710
RYP_142	684,451	6,152,329	730
RYP_143	681,450	6,167,984	755
RYP_144	678,532	6,177,708	672
RYP_145	686,041	6,154,260	715

Attachment 4 – Letter Confirming Part 3A Position

NSW GOVERNMENT | Planning

Contact: Neville Osborne
Phone: 02-9228-6337
Fax: (02) 9228 6355
Email: Neville.Osborne@planning.nsw.gov.au

Our ref.: 10/23654

Mr Andrew Durran
Executive Director
Epuron Pty Ltd
Level 11
75 Miller Street
NORTH SYDNEY NSW 2060

Dear Mr Durran

Subject: Rye Park Wind Farm (MP10_0223)

I refer to your correspondence dated 23rd November, 2010, and additional information dated 6th December, 2010, seeking confirmation that the above proposal is a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* (the Act) applies.

On 8th December, 2010, the Director, Infrastructure Projects branch of the Department, as delegate for the Minister, formed the opinion under clause 6 of the *State Environmental Planning Policy (Major Development) 2005* (the Major Development SEPP) that the above proposal is development of a kind that is described in Schedule 1 of the Major Development SEPP.

The project is therefore subject to determination by the Minister for Planning under Part 3A of the Act.

Section 75E of the Act requires you to lodge an application for your project with the Director-General. The application must include a completed application form (available at http://www.planning.nsw.gov.au/assessingdev/pdf/part3a_applicationform.pdf) and a Preliminary Environmental Assessment. Please include both hard and electronic copies of each of these documents.

You are also advised that your project meets the definition of 'critical infrastructure' under Section 75C of the Act, by virtue of the Minister's declaration of 11th November, 2009 in relation to renewable energy projects. Consequently, under Clause 8F(1)(b) of the *Environmental Planning and Assessment Regulation 2000* (the Regulation), landowner's consent is not required for the purpose of this project application, subject to the notification requirements specified in Clause 8F(3) of the Regulation being carried out by the Proponent.

Please note that it is the Proponent's responsibility to meet the landowner notification requirements of Clause 8F(3)(c) of the Regulation within 14 days of the lodgement of the project application. It is noted that the project may also involve linear infrastructure (grid connection) and, if so, you will need to comply with the public notification requirements of Clause 8F(3)(a) of the Regulation prior to the commencement of the exhibition period for the

project. If these notifications are not carried out, the Proponent will be required to obtain landowners consent for the purposes of the application from all landowners traversed by the project prior to the determination of the project.

The Major Project Application Number for this project is MP10_0223. Please use this number in all correspondence with the Department. Your contact officer for this proposal, Neville Osborne, can be contacted on 02-9228-6337 or via email at Neville.Osborne@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely,

10/12/10

Daniel Keary
Director
Infrastructure Projects

Record of Minister's opinion for the purposes of Clause 6(1) of State Environmental Planning Policy (Major Development) 2005

As delegate of the Minister for Planning under delegation executed on 25 January 2010, I have formed the opinion that the development described in the Schedule below is development of a kind that is described in Schedule 1 of the *State Environmental Planning Policy (Major Development) 2005* – namely clause 24, development for the purpose of a wind electricity generation facility that has a capital investment value of more than $30 million – and is thus declared to be a project to which Part 3A of the *Environmental Planning and Assessment Act 1979* applies for the purpose of section 75B of that Act.

Schedule

A proposal for the Rye Park Wind Farm, a wind electricity generating facility and associated infrastructure located approximately 15-40 kilometres north of Yass, within the Boorowa, Upper Lachlan and Yass local government areas, comprising approximately 70-100 turbines, as generally described in a letter dated 23rd November, 2010 from Epuron Pty Ltd to the Department of Planning.

8/12/10

Daniel Keary
Director, Infrastructure Projects

Date:

Attachment 5 – Director General's Requirements and Supplementary Director General's Requirements

Director-General's Requirements

Section 75F of the *Environmental Planning and Assessment Act 1979*

Project	Construction and operation of a new wind farm and associated infrastructure near the township of Rye Park on the edge of the Southern Tablelands and the South West Slopes of New South Wales. The project is proposed to comprise approximately 80-110 wind turbines.
Site	Approximately 3-4 kilometres west of Rye Park and approximately 250 kilometres south west of Sydney in the Boorowa Shire, Yass Valley Shire and the Upper Lachlan Shire Local Government Areas.
Proponent	Epuron Pty Ltd
Date of Issue	14th February, 2011
Date of Expiration	14th February, 2013
General Requirements	The Environmental Assessment (EA) must include: • an **executive summary**; • a **detailed description** of the project (both the wind farm and associated infrastructure) including: → construction, operation and decommissioning details; → the location and dimensions of all project components including the wind turbines (including map coordinates and AHD heights), underground/ overhead cabling between turbines, electrical substation and transmission line linking the wind farm to the grid, temporary concrete batching plant(s), construction compounds, access roads/road upgrades (including internal access tracks) and obstacle lighting; → a timeline identifying the proposed construction and operation of the project components including staging, their envisaged lifespan and arrangements for decommissioning; → supporting maps/plans clearly identifying existing environmental features (e.g. watercourses, vegetation), infrastructure and landuse (including nearby residences and approved residential developments or subdivisions, if any) and the location/ siting of the project including associated infrastructure in the context of this existing environment; and → resourcing requirements (including, but not limited to, water supply and gravel). • consideration of any **relevant statutory provisions** including the consistency of the project with the objects of the *Environmental Planning and Assessment Act 1979* (i.e. Clause 5 of the Act) and any relevant development control plans; • an **assessment of the key issues** outlined below, during construction, operation and decommissioning (as relevant). The Environmental Assessment must assess the worst case as well as representative impact for all key issues; • a **draft Statement of Commitments** detailing measures for environmental mitigation, management and monitoring for the project; • a **conclusion justifying the project** taking into consideration the environmental, social and economic impacts of the project; the suitability of the site; and the public interest; and • **certification by the author** of the EA that the information contained in the Assessment is neither false nor misleading.
Key Assessment Requirements	The EA must include assessment of the following key issues for both the wind farm and transmission line: • **Strategic Justification** - the EA must: → include a strategic assessment of the need, scale, scope and location for the project in relation to predicted electricity demand, predicted transmission constraints and the strategic direction of the region and the State in relation to electricity supply, demand and electricity generation technologies, and its role within the Commonwealth's Renewable Energy Target Scheme. The EA must

clearly demonstrate that the existing transmission infrastructure has sufficient capacity to accommodate the project;

→ include a clear demonstration of quantified and substantiated greenhouse gas benefits, taking into consideration sources of electricity that could realistically be replaced and the extent of their replacement, with reference to the Department of Environment, Climate Change and Water *NSW wind farm greenhouse gas savings tool* (http://www.environment.nsw.gov.au/climatechange/greenhousegassavingstool.htm):

→ include an analysis of the suitability of the project with respect to potential land use conflicts with existing and future surrounding land uses (including rural residential development, building entitlements and subdivision potential, land of significant scenic or visual value, land of high agricultural value, mineral reserves, forestry, conservation areas and Crown land), taking into account local and strategic landuse objectives and the potential for social and economic impacts on the local community. The analysis of site suitability shall consider the Environmentally Sensitive Area Mapping held by Boorowa Shire, Yass Valley Shire and the Upper Lachlan Shire Councils; and

→ describe the alternatives considered (location and/or design) for all project components, and provide justification for the preferred project demonstrating its benefits on a local and strategic scale and how it achieves stated objectives and any measures to offset residual impacts (for example community enhancement programmes).

- **Visual Impacts** - the EA must:
  - → provide a comprehensive assessment of the landscape character and values and any scenic or significant vistas of the area potentially affected by the project, including an assessment of the significance of landscape values and character in a local and regional context. This should describe community and stakeholder values of the local and regional visual amenity and quality, and perceptions of the project based on surveys and consultation;
  - → assess the impact of shadow "flicker", blade "glint" and night lighting from the wind farm;
  - → identify the zone of visual influence of the wind farm including consideration to night lighting (no less than 10 kilometres) and assess the visual impact of all project components on this landscape;
  - → include an assessment of any cumulative visual impacts from transmission line infrastructure;
  - → include photomontages of the project taken from potentially affected residences (including approved but not yet developed dwellings or subdivisions with residential rights), settlements and significant public view points, and provide a clear description of proposed visual amenity mitigation and management measures for both the wind farm and the transmission line. The photomontages must include representative views of turbine night lighting if proposed; and
  - → provide an assessment of the feasibility, effectiveness and reliability of proposed mitigation measures and any residual impacts after these measures have been implemented.

- **Noise Impacts** - the EA must:
  - → include a comprehensive noise assessment of all phases and components of the project including: turbine operation, the operation of the electrical substation, corona and / or aeolian noise from the transmission line, construction noise (focusing on high noise-generating construction scenarios and works outside of standard construction hours), traffic noise during construction and operation, and vibration generating activities (including blasting) during construction and/ or operation. The assessment must identify noise/ vibration sensitive locations (including approved but not yet developed dwellings), baseline conditions based on monitoring results, the levels and character of noise (e.g. tonality, impulsiveness, low frequency etc) generated by noise sources, noise/ vibration criteria, modelling assumptions and worst

	case and representative noise/ vibration impacts; → in relation to wind turbine operation, determine the noise impacts under operating meteorological conditions (i.e. wind speeds from cut in to rated power), including impacts under meteorological conditions that exacerbate impacts (including varying atmospheric stability classes and the van den Berg effect for wind turbines). The probability of such occurrences must be quantified; → include monitoring to ensure that there is adequate wind speed/profile data and ambient background noise data that is representative for all sensitive receptors; → provide justification for the nominated average background noise level used in the assessment process, considering any significant difference between daytime and night time background noise levels at background noise levels higher than 30 dB(A); → identify any risks with respect to tonal, low frequency or infra-noise; → clearly outline the noise mitigation, monitoring and management measures that would be applied to the project. This must include an assessment of the feasibility, effectiveness and reliability of proposed measures and any residual impacts after these measures have been incorporated; → if any noise agreements with residents are proposed for areas where noise criteria cannot be met, provide sufficient information to enable a clear understanding of what has been agreed and what criteria have been used to frame any such agreements; and → include a contingency strategy that provides for additional noise attenuation should higher noise levels than those predicted result following commissioning and/or noise agreements with landowners not eventuate. The assessment must be undertaken consistent with the following guidelines: → Wind Turbines - the South Australian Environment Protection Authority's *Wind Farms - Environmental Noise Guidelines* (2003); → Substation – *NSW Industrial Noise Policy* (EPA, 2000); → Site Establishment and Construction – *Interim Construction Noise Guidelines* (DECC, 2009); → Traffic Noise – *Environmental Criteria for Road Traffic Noise* (NSW EPA, 1999); and → Vibration – *Assessing Vibration: A Technical Guideline* (DECC, 2006). • **Ecological Impacts** – the EA must include an ecological assessment considering terrestrial and aquatic ecosystems (as relevant), including groundwater dependent ecosystems, consistent with *Guidelines for Threatened Species Assessment* (DEC, 2005); The EA must: → identify threatened species, populations and communities listed under both State and Commonwealth legislation that have the potential to occur on site. In particular, the following must be addressed: box woodland, table basalt forest and natural temperature grassland communities, and crimson spider orchid, silky swainson-pea, Yass daisy, hoary sunray, small woodland birds, superb, turquoise & swift parrots, barking owl & powerful owl, raptors, squirrel glider, koala, spotted tailed quoll, bats and golden sun moth; → map existing vegetation by vegetation/ community type and include details on existing site conditions, including whether the vegetation comprises a highly modified or over-cleared landscape and the types and quality of habitat resources available. Vegetation mapping should consider any Environmentally Sensitive Area Mapping held by Boorowa Shire Council, Yass Valley Shire and the Upper Lachlan Shire Council; → provide details of the survey methodology employed including survey effort and representativeness for each species targeted and clear justification for species that were discounted from requiring field surveys or further assessment; → demonstrate a design philosophy of impact avoidance on ecological values, and in particular, ecological values of high significance;

	→ provide a worst case estimate of vegetation to be cleared (in hectares), including quantifying impacts (in hectares) by vegetation type and threatened species habitat (as relevant); → assess the significance of impacts to native vegetation, listed threatened species, populations and communities and their habitats with consideration to local and region-based ecological implications, including habitat connectivity and distribution of species. The assessment must consider impacts to in-stream and riparian ecology from works close to waterways and/ or waterway crossings. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips (barotrauma), and alteration to movement patterns resulting from the turbines must be assessed, including demonstration of how the project has been sited to avoid and/ or minimise such impacts; → include details of how flora and fauna impacts would be managed during construction and operation including adaptive management, rehabilitation/ regeneration measures and maintenance protocols; → demonstrate how the project (with the incorporation of all proposed measures to avoid, mitigate and/ or offset impacts) achieves a biodiversity outcome consistent with "maintain or improve" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project and to secure these measures in perpetuity; and → address the risk of weed spread and identify mitigation measures. • **Heritage** - the EA must include an assessment of the potential impact of the project components on Aboriginal heritage values (archaeological and cultural). The EA must demonstrate effective consultation with Aboriginal stakeholders during the assessment and in developing mitigation options (including the final recommended measures) consistent with *Guidelines for Aboriginal Cultural Impact Assessment and Community Consultation* (DEC, July 2005). The EA must also consider impacts to historic (European) heritage values, as relevant. • **Traffic and Transport** – the EA must assess the construction and operational traffic impacts of the project including: → details of traffic volumes (both light and heavy vehicles) and transport routes during construction and operation; → assess the potential traffic impacts of the project on road network function (including intersection level of service) and safety; → assess the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-dimensional traffic) during construction and operation, including full details of any required upgrades to roads, bridges, site access provisions (for safe access to the public road network) or other road features; → details of measures to mitigate and/or manage potential impacts, including construction traffic control, road dilapidation surveys and measures to control soil erosion and dust generated by traffic volumes; → details of access roads within the site including how these would connect to the existing public road network (i.e. site access) and ongoing operational maintenance requirements for on-site roads; and → consideration of relevant Council traffic/road policies. • **Hazard/Risks**– the EA must include an assessment of the potential impacts on aviation safety, including the need for aviation hazard lighting, considering nearby aerodromes and aircraft landing areas, defined air traffic routes, aircraft operating heights, approach/departure procedures, radar interference, communication systems, and navigation aids. Aerodromes within 30km of the turbines should be identified and impacts on obstacle limitation surfaces addressed. Attention is drawn to Airservices Australia's specific requirements (attached). In addition, the EA must assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line. Possible effects on telecommunications systems must be

	identified. Potential hazards and risks associated with electric and magnetic fields and bushfires/use of bushfire prone land must also be assessed. • **Water Supply, Water Quality and Hydrology** – The EA must identify water demands, and determine whether an adequate and secure water supply is available for the project, including the statutory (licensing) context of the water supply sources, and assess potential environmental impacts associated with use of identified sources including impacts on groundwater and implications for existing licensed users/basic landholder rights. The potential to intercept groundwater should be assessed. Where the project involves crossing or works close to waterways, the EA must identify likely impacts to the waterways and measures to minimise hydrological, water quality, aquatic and riparian impacts. The EA must identify how works within steep gradient land or highly erosive soil types will be managed during construction and operation. • **General Environmental Risk Analysis** – notwithstanding the above key assessment requirements, the EA must include an environmental risk analysis to identify potential environmental impacts associated with the project, proposed mitigation measures and potentially significant residual environmental impacts after the application of proposed mitigation measures. Where additional key environmental impacts are identified through this environmental risk analysis, an appropriately detailed impact assessment of the additional key environmental impact(s) must be included in the EA.
Consultation Requirements	The Proponent must undertake a consultation programme as part of the environmental assessment process, including consultation with, but not necessarily limited to, the following parties: • Boorowa Shire Council; • Yass Valley Shire; • Upper Lachlan Shire Council; • Department of Environment, Climate Change and Water; • NSW Office of Water; • Industry and Investment NSW; • NSW Roads and Traffic Authority; • NSW Rural Fire Service; • Land and Property Management Authority; • Lachlan Catchment Management Authority; • Commonwealth Department of Defence; • Civil Aviation Safety Authority; • Airservices Australia; • Aerial Agricultural Society of Australia; • relevant service providers; • relevant minerals stakeholders (including exploration and mining title holders); and • the local community and landowners (including "associated" and "non-associated" properties). The consultation process shall include measures for disseminating information to increase awareness of the project as well as methods for actively engaging stakeholders on issues that would be of interest/concern to them. The EA must: → demonstrate effective consultation with stakeholders, and that the level of consultation with each stakeholder is commensurate with their degree of interest/concern or likely impact; → clearly describe the consultation process undertaken for each stakeholder/group including details of the dates of consultation and copies of any information disseminated as part of the consultation process (subject to confidentiality); and → describe the issues raised during consultation and how and where these have been addressed in the EA.

Relevant Guidelines - For Reference

General

Wind Energy Facilities draft Environmental Impact Assessment Guidelines (Planning NSW, June 2002)

Draft EIS Guideline "Network Electricity Systems and Related Facilities" (Planning NSW, February, 2002)

Best Practice Guidelines for Implementation of Wind Energy Projects in Australia (Auswind, 2006)

Visual

Wind Farms and Landscape Values: National Assessment Framework (Australian Wind Energy Association and Australian Council of National Trust, June 2007).

Ecology

Cumulative Risk for Threatened and Migratory Species (Commonwealth Department of Environment and Heritage, March 2006).

Wind Farms and Birds: Interim Standards for Risk Assessment, (Auswind, July 2005).

Assessing the Impacts on Birds – Protocols and Data Set Standards (Australian Wind Energy Association).

Threatened Biodiversity Survey and Assessment – Guidelines for Developments and Activities (Working Document) (DEC, 2004).

Aviation Hazard

Advisory Circular 139-18(0) Obstacle Marking and Lighting of Wind Farms (Civil Aviation Safety Authority, July 2007). Note: this advisory is currently withdrawn however a replacement has to date not been issued.

Windfarm Policy (Aerial Agricultural Association of Australia, December 2009)

Powerlines Policy (Aerial Agricultural Association of Australia, December 2009)

Information Sheet – Airport Related Development (AirServices Australia)

Water Quality

National Water Quality Management Strategy: Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000).

The NSW State Groundwater Quality Protection Policy (DLWC, 1998).

The NSW State Groundwater Dependent Ecosystems Policy (DLWC, 2002).

Department of Water and Energy's Guidelines for Controlled Activities (February 2008):

- → Watercourse Crossings;
- → Instream Works;
- → Laying Pipes and Cables in Watercourses;
- → Outlet Structures; and
- → Riparian Corridors.

Managing Urban Stormwater: Soils and Construction, Volume 1, 4th edition (Landcom, 2004).

Managing Urban Stormwater: Soils and Construction, Volume 2C Unsealed roads (DECC).

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Office of the Director General

Contact: Neville Osborne
Phone: (02) 9228 6337
Fax: (02) 9228 6355
Email: neville.osborne@planning.nsw.gov.au

Our ref.: MP 10_0223

Andrew Durran
Executive Director
Epuron Pty Ltd
Level 11
75 Miller Street
NORTH SYDNEY NSW 2060

Dear Mr Durran

Subject: Supplementary Director-General's Requirements for Rye Park Wind Farm MP 10_0223

I refer to the Director-General's requirements which were issued for the above project on 14th February, 2011.

These requirements specify that the community must be consulted during the preparation of the Environmental Assessment and relevant issues must be addressed in the document.

It is clear from submissions being received by the Department that many members of the community are not satisfied with the level and nature of consultation being undertaken by proponents during the preparation of wind farm environmental assessment documents.

I wish to emphasise the importance of effective and genuine community consultation and the need for proposals to proactively respond to the community's concerns.

Accordingly, under section 75F(3) of the *Environmental Planning and Assessment Act*, I am issuing supplementary requirements which must be addressed in the preparation of your Environmental Assessment. These requirements are:

1. a comprehensive, detailed and genuine community consultation and engagement process must be undertaken. This process must ensure that the community is both informed of the proposal and is actively engaged in issues of concern to them, and is given ample opportunity to provide its views on the proposal. Sufficient information must be provided to the community so that it has a good understanding of what is being proposed and of the impacts. There should be a particular focus on those non wind farm associated community members who live in proximity to the site;

2. the Environmental Assessment must clearly document and provide details and evidence of the consultation process and who was consulted with;

3. all issues raised during the consultation process must be clearly identified and tabulated in the Environmental Assessment; and

4. the Environmental Assessment must state how the identified issues have been addressed, and how they have informed the proposal as presented in the

Environmental Assessment. In particular, the Environmental Assessment must state how the community's issues have been responded to.

I wish to emphasise that the Department will review compliance with these, and other, requirements during its adequacy review of the Environmental Assessment. If it does not adequately respond to these requirements it will not be accepted as adequate for public exhibition.

Your contact officer for this proposal, Neville Osborne, can be contacted on 9228 6337 or via email at neville.osborne@planning.nsw.gov.au. Please mark all correspondence regarding the proposal to the attention of the contact officer.

Yours sincerely,

SHaddad

Sam Haddad
Director-General

16/8/2011

Attachment 6 – Project Consultation Plan

Rye Park *Wind Farm*

PROJECT CONSULTATION PLAN | JANUARY 2013



EPURON

Rye Park *Wind Farm*

PROJECT CONSULTATION PLAN | MARCH 2012

Prepared By:

Epuron Pty Ltd
Level 11, 75 Miller Street
North Sydney NSW 2060
AUSTRALIA

www.epuron.com.au

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Forward

Epuron is serious about developing high quality wind farms and solar energy projects which maximise the benefits available from these projects, while ensuring their commercial viability.

The benefits of renewable energy projects are clear:

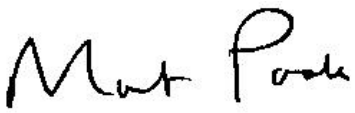
- *Environmental benefits including greenhouse gas reduction*
- *Clean delivery of electricity without pollution or water usage*
- *Regional economic benefits including jobs and regional investment*
- *Social benefits including local infrastructure improvements and community benefits*

Epuron is striving to ensure that the Rye Park Wind Farm is developed and built in a manner which recognises the importance of an ongoing, long term relationship with the local community.

This consultation plan outlines the basis on which Epuron has and will continue to engage with the Rye Park community, including the consultation purpose, approach, tools, and opportunities for input.

We look forward to engaging with you in relation to the Rye Park Wind Farm.

Sincerely,



Martin Poole
Executive Director



Andrew Durran
Executive Director

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FORWARD I

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1 Plan Overview

1.1 Introduction

This Project Consultation Plan has been prepared to guide stakeholder engagement activity for the proposed Rye Park Wind Farm during the development phase (up to project approval). This plan reflects the corporate requirements set out in Epuron's Community Consultation Framework and the Director Generals Requirements issued for the project by the NSW Department of Planning.

This Project Consultation Plan is dynamic and will be periodically updated as required during the course of the development phase and community engagement activity.

1.2 The Project

The proposed Rye Park Wind Farm is to be located to the north of Yass and east of Boorowa, NSW, on the edge of the Southern Tablelands and the South West Slopes in the vicinity of the rural township of Rye Park. It is approximately 250km south west of Sydney and is located on freehold and leasehold land within and adjacent to agricultural areas, predominantly used for grazing sheep and cattle.

The proposed site is located across three Local Government Areas (LGAs); Boorowa Shire Council, Yass Valley Shire Council and the Upper Lachlan Shire Council.

Townships in the vicinity of the project are:

Locality / Township / Population Centre	Proximity	Population (approx.)	Local Government Area (LGA)
Rye Park	Approximately 3km west from the nearest wind turbine	368 people	Boorowa Shire Council
Blakney Creek	Approximately 4km east from the nearest wind turbine	25 people	Upper Lachlan Shire Council
Dalton	Approximately 13km east from the nearest wind turbine	100 people	Upper Lachlan Shire Council
Boorowa	Approximately 17km north west from the nearest wind turbine	1342 people	Boorowa Shire Council
Yass	Approximately 12km south from the nearest wind turbine	5334 people	Yass Valley Shire Council

The project site is in the region of other proposed wind farms including the Rugby wind farm to the north (currently under development by Windlab) and the Bango wind farm to the west (currently under development by Wind Prospect).

1.3 Community Consultation Framework

This Project Consultation Plan is developed on the basis of Epuron's Consultation Framework, and has been developed to reflect the needs and characteristics of the Rye Park Wind Farm and its specific stakeholders. Accordingly, this Project Consultation Plan should be read with reference to Epuron's Consultation Framework.

Epuron has developed its Community Consultation Framework to outline the objectives and mechanisms it will use in engaging with key stakeholders and the local community in relation to its projects.

In preparing its Community Consultation Framework, Epuron has taken into consideration the draft NSW Planning Guidelines for Wind Farms dated December 2011. While these draft guidelines are not yet in force, they provide a useful reference source in preparing Epuron's consultation plans.

1.4 Project Consultation Objectives

Epuron's Consultation Framework outlines the following project consultation objectives:

- To minimise undue community concern in relation to each proposal, particularly at an early stage where little information on a project is known;
- To ensure the community and other stakeholders are fully informed and aware of the proposal, it's likely impacts, and its likely benefits;
- To ensure that Epuron fully understands the local context for the proposal, including any local impacts that the proposal may have or opportunities that it could provide;
- To incorporate the suggestions and feedback into the design of the wind farm where possible;
- To explain where and how this feedback can be and has been incorporated; and,
- In that context, to provide multiple opportunities for dialogue in various forms to allow the community to receive information and provide feedback about the proposal.

In addition to these general objectives, in relation to the Rye Park Wind Farm Epuron's consultation process will also investigate how best to maximise the local and regional benefit of the development. Specifically, Epuron is looking for feedback as to how a Community Fund might be established for the project, and what kind of community support is required in the vicinity of the project.

1.5 Scope of this Consultation Plan

Epuron's Consultation Framework identifies the following development phases for the project during its lifecycle:

- Phase 1 – Project Awareness
- Phase 2 – Project Investigations
- Phase 3 – Project Development & Approvals
- Phase 4 – Post Development Approval and Pre Construction
- Phase 5 – Construction & Commissioning
- Phase 6 – Operations & Decommissioning

This plan outlines those consultation activities proposed during the pre-approval development phases of the project which are phases 1 through 3 as described above.

A further consultation plan will be developed as the project enters Phase 4 of its development.

2 Key Stakeholders

2.1 Overview

This section of the Project Consultation Plan identifies the key stakeholders with whom Epuron will engage through the development of the proposal. Given the early stage of development of the proposal, this list is unlikely to be exhaustive at this stage. Additional stakeholders are likely to be identified and added to the plan through the Project Investigation and Project Development & Approvals phases of the development.

2.2 Residents and Landowners

A number of existing dwellings are situated around the site or local area. The location and (in many cases) ownership of these dwellings have generally been identified through reviews of cadastral data, topographic mapping, aerial imagery, local information sources, internet research and visiting properties.

Ownership of all land within 2km of a proposed wind turbine has been confirmed through property searches on the NSW government registers.

Epuron distinguishes landowners into the following groups based on whether or not they are involved with the project, and how distant from the project their residence or dwelling is located:

- Involved landowners
- Adjacent neighbours (within 2km from wind turbine)
- Nearby neighbours (2 – 5km from wind turbine)
- Distant neighbours (5 – 15km from wind turbine)
- General public (>15km from wind turbine)

2.3 Community and Community Groups

The following local community groups have been identified as potentially representing key stakeholders. Additional stakeholder groups are likely to be identified through the ongoing consultation process.

Name	Website / Contact
Boorowa Community Landcare Group	6385 1018
Boorowa Country Women's Association	6385 3723
Boorowa District Landscape Guardians	http://www.bdlg.org/ or 6385 3217
Rural Fire Service (Upper Lachlan)	6851 1541 or 1800 679 737
Yass Chamber of Commerce	6226 1525
Boorowa Rotary Club	6385 3594

2.4 Local Media

The following local media outlets have been identified as providing an important communication channel to key stakeholders, primarily due to their ability to disseminate information in the vicinity of the project.

Name	Website / Contact
Yass Tribune	yasstribune.com.au or 6226 1622
Boorowa News	boorowanewsonline.com.au or 6385 3020
Yass FM Radio	6226 4299

2.5 Local Government

Key officers and staff of the Local Government Authorities have been identified as follows.

Position	Yass Valley Council	Boorowa Shire Council	Upper Lachlan Shire Council
Mayor	Rowena Abbey	Wendy Tuckerman	John Shaw
Councillors	Geoff Frost Cecil Burgess Greg Butler Ann Daniel Jasmin Jones Michael McManus David Needham Garry Ware	Robert Gledhill Christopher Corcoran David Evans Angus Clements Tim McGrath John Ryan Andrew Southwell Peter Sykes	Paul Culhane Malcolm Barlow Brian McCormack James Wheelwright John Searl Scott Craig Darren O'Brien Jo Marshall
General Manager	David Rowe	Therese Manns	John Bell
Executive staff	Julie Buckley Paul De Szell Simon Cassidy	A McMahon K Monaghan	Phillip Newham Tina Dodson Andrew Croke

2.6 State and Federal Members and Ministers

Key elected State and Federal representatives have been identified as follows.

Jurisdiction	Position	Member / Minister (Party)
State	Member for Burrinjuck	The Hon. Katrina Hodgkinson MP Minister for Primary Industries Minister for Small Business
State	Minister for Resources and Energy	The Hon. Chris Hartcher MP
State	Minister for Planning and Infrastructure	The Hon. Brad Hazzard MP
State	Minister for the Environment	The Hon. Robyn Parker MP
Federal	Member for Hume	Mr Alby Schultz MP
Federal	Minister for Climate Change and Energy Efficiency	The Hon. Greg Combet AM MP
Federal	Minister for Sustainability, Environment, Water, Population and Communities	The Hon. Tony Burke MP

2.7 State and Federal Government Agencies

Relevant State and Federal agencies have been identified as follows.

Jurisdiction	Agency	Responsibility
State	Office of Environment and Heritage	Aboriginal cultural and European heritage Threatened species Biodiversity offsets Renewable Energy Precincts
State	Department of Planning and Infrastructure	Administration of approvals under Environmental, Planning and Assessment Act
State	Planning Assessment Commission	Determination of Planning Consent
State	Department of Primary Industries	Crown land and agricultural issues
State	Rural Fire Service	Bushfire safety
State	Relevant Council	Public Roads
State	Transgrid	Transmission connections
Federal	Department of Sustainability, Environment, Water, Population and Communities	Administration of the Environmental Protection and Biodiversity Conservation Act (EPBC)
Federal	Airservices Australia	Canberra – 02 6268 4111 or 1800 026 147
Federal	Civil Aviation Safety Authority (CASA)	Canberra – 02 6217 1449 or 131 757
Federal	RAAF	Canberra – 1300 333 362

2.8 Additional Stakeholders

The following additional stakeholders have been identified as key stakeholders of the project.

Name	Website / Contact
Aerial Agricultural Association of Australia (AAAA)	Canberra - 02 6241 2100
Telecommunications Operators	Multiple carriers

3 Schedule of Consultation Activities

3.1 Overview

This section of the Project Consultation Plan identifies the key stakeholders with whom Epuron will engage including anticipated timing.

Proposed Consultation Activity	Timing	Consultation Objectives	Key Stakeholders
Phase 1 – Project Awareness			
Community Information Workshop	November 2008	▪ Introduce Epuron and the proposed wind farm project ▪ Provide accurate information about wind farms ▪ Seek feedback as to key issues from the community ▪ Build trust with the local community	▪ Involved Landowners ▪ Invited community stakeholders
Project Newsletters	6 monthly / as required	▪ Introduce Epuron and proposed project to the local community and key stakeholders ▪ Provide clear and accurate background information in relation to Epuron and wind farms ▪ Open communications and build trust within the local community ▪ Provide accurate information and seek feedback	▪ Involved landowners ▪ Uninvolved stakeholders on mailing list ▪ General public via local information centres
Epuron Website	Ongoing	▪ Provide information about Epuron to public over the internet ▪ Seek feedback and enquiries	▪ All stakeholders ▪ General public
Phase 2 – Project Investigations			
Project Newsletters	6 monthly / as required	▪ Update on development progress and timing ▪ Provide preliminary details on the wind farm proposal ▪ Outline benefits of wind farms to local communities ▪ Provide accurate information and seek feedback	▪ Involved landowners ▪ Uninvolved stakeholders on mailing list ▪ General public via local information centres
Epuron / Website	Ongoing	▪ Provide information about Epuron to public over the internet ▪ Seek feedback and enquiries	▪ All stakeholders ▪ General public
Phase 3 – Project Development & Approvals			
Project Newsletters	quarterly / as required	▪ Update on development status ▪ Explain program of Development Approval process and expert studies to	▪ Involved landowners ▪ Uninvolved stakeholders on mailing list ▪ General public via local information

Proposed Consultation Activity	Timing	Consultation Objectives	Key Stakeholders
		be undertaken ▪ Outline community consultation program and key areas of interest ▪ Provide accurate information and seek feedback	centres ▪ Government agencies
Consult with neighbours where dwelling within 2km of proposed wind turbines (via face-to-face meetings and phone calls)	January / February 2012 ongoing	▪ To open communications with near neighbours to the proposed development (dwellings within 2km of proposed wind turbine) ▪ To explain potential impacts and benefits of the proposed wind farm ▪ Discuss and arrange further assessment (if required) ▪ Provide accurate information and seek feedback	▪ Uninvolved neighbours
Newsletter 4	March / April 2012 Initial site concept design and layout available for comment	▪ Update on development status ▪ Release of preliminary layout ▪ Details on key areas of concern and interest from community consultation program ▪ Display current project information and preliminary layout for discussion and feedback purposes ▪ Meet and discuss areas of interest with stakeholders ▪ Provide accurate information and seek feedback	▪ Involved landowners ▪ Uninvolved neighbours ▪ Community stakeholders ▪ General invitation to interested parties
Establish Community Consultation Committee	April / May 2012 Call for CCC member nominations and establish on commencement of Phase 3 and meetings to be held quarterly or as required	▪ To enable Epuron to formally provide the local community with information about the proposal. ▪ To enable the community to express and Epuron to understand any concerns in relation to potential impacts of the proposal. ▪ To enable Epuron to consider whether and how to incorporate any suggestions and feedback into the design of the proposal. ▪ To demonstrate how the feedback has been considered in the design process and where applicable show how the feedback has resulted in amendments to the design of the wind farm; and, ▪ To formally recommend to Epuron options that it may consider to provide additional community benefits resulting from the proposal.	▪ Independent Chairman ▪ Local Councils ▪ Involved landowners ▪ Uninvolved landowners ▪ Community groups ▪ Proponent

Proposed Consultation Activity	Timing	Consultation Objectives	Key Stakeholders
Community Consultation Committee meeting 1	May / June 2012	▪ Update current project information and preliminary layout for discussion and feedback purposes ▪ Discuss areas of interest and concern from CCC members ▪ Seek feedback and incorporation of ideas into proposal where possible ▪ Updated information available for wider circulation	▪ Independent Chairman ▪ Local Councils ▪ Involved landowners ▪ Uninvolved landowners ▪ Community groups ▪ Proponent
Newsletter 5 and Community Open House 1	June / July 2012	▪ Update on development status ▪ Outline preliminary results from expert studies where completed ▪ Update on changes to layout incorporating feedback ▪ Provide accurate information and seek feedback	▪ Involved landowners ▪ Uninvolved neighbours ▪ Community stakeholders ▪ General invitation to interested parties
Newsletter 6 and Community Open House 2	September / October 2012	▪ Update on development status and issues ▪ Outline results from expert studies where completed ▪ Update on changes to layout incorporating feedback ▪ Provide accurate information and seek feedback	▪ Involved landowners ▪ Uninvolved neighbours ▪ Community stakeholders ▪ General invitation to interested parties
Community Consultation Committee meeting 2	September / October 2012	▪ Update on development status and activity ▪ Update on layout and consultation feedback mechanism ▪ Outline results from expert studies ▪ Seek feedback and incorporation into proposal where possible	▪ Independent Chairman ▪ Local Councils ▪ Involved landowners ▪ Uninvolved landowners ▪ Community groups ▪ Proponent
Pre DA submission follow up phone calls and meetings	September / October 2012	▪ To keep the community informed ▪ To describe how community feedback has been implemented in the design of the project where possible ▪ To continue engagement with the community in one-on-one discussions about the project ▪ To inform the community about the progress of the project and display any results, photographs and assessment reports available for public review ▪ To receive feedback on the design and environmental assessment approach for the project ▪ To incorporate suggestions where practical into the design of the Wind Farm	▪ Involved landowners ▪ Uninvolved neighbours ▪ Community stakeholders

Proposed Consultation Activity	Timing	Consultation Objectives	Key Stakeholders
Pre DA submission follow up, phone calls and meetings	October / November 2012	▪ To inform the community that the Environmental Assessment is being finalised ready for submission ▪ To address any remaining concerns raised during the process	▪ Involved landowners ▪ Uninvolved neighbours ▪ Community stakeholders
Pre DA submission - Media	November / December 2012	▪ To inform the community that the Environmental Assessment has been submitted and provide an estimate as to when public viewing may occur.	▪ Public
Pre-DA submission - Media	December 2012	▪ To inform the community that the Environmental Assessment will be available for review and to invite submissions on the proposal.	▪ Public

4 Glossary and acronyms

DA	Development Application
DCP	Development Control Plan
DECCW	NSW Department of Environment, Climate Change and Water
DGRs	NSW Department of Planning's Director General's Requirements. The Environmental Assessment report must address issues as directed in the DGRs.
DoP	NSW Department of Planning
EA	Environmental Assessment report, format dictated by the DGRs
EMF	Electromagnetic fields
GWh	gigawatt-hour, equal to 1,000,000 kWh
kV	kilovolt
LEP	Local Environmental Plan
MW	megawatt, equal to 1,000,000 watts
MWh	megawatt-hour, equal to 1,000 kWh
PFM	Planning Focus Meeting
SEPP	State Environmental Planning Policy

5 Contact Epuron

Consultation is a two-way street

One of the most important elements of consultation to Epuron is to receive feedback, information and advice from key stakeholders in the development of the proposal.

We're listening…..

Project Feedback

In addition to the other mechanisms outlined in this document, Epuron has also established a Feedback survey on the Rye Park Wind Farm website. Feel free to use this form to respond to us, or contact us directly.

Contact Details

Please use the following details to contact Epuron in relation to this project, or to provide feedback in relation to this Project Consultation Plan.

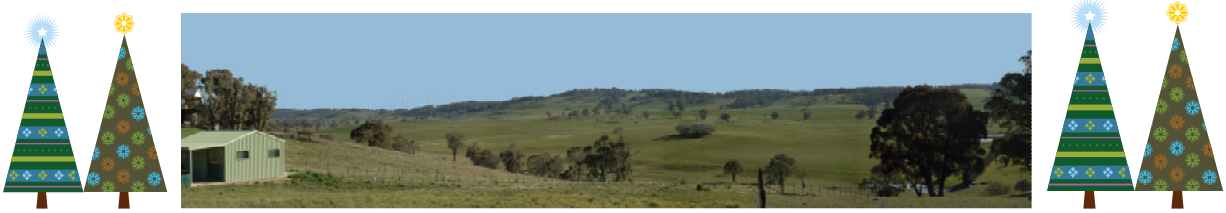
Epuron corporate website:	www.epuron.com.au
Rye Park project website:	www.ryeparkwindfarm.com.au
Mailing address:	Rye Park Wind Farm Level 11, 75 Miller Street North Sydney…NSW…2060
Phone:	02 8456 7400
Fax:	02 9922 6645
Email:	RyePark@epuron.com.au
Project Manager:	Brian Hall b.hall@epuron.com.au



EPURON Pty Ltd
Level 11, 75 Miller Street
North Sydney NSW 2060

Website: www.epuron.com.au

Attachment 7 – Consultation Material



RYE PARK WIND FARM

Project Update - December 2009

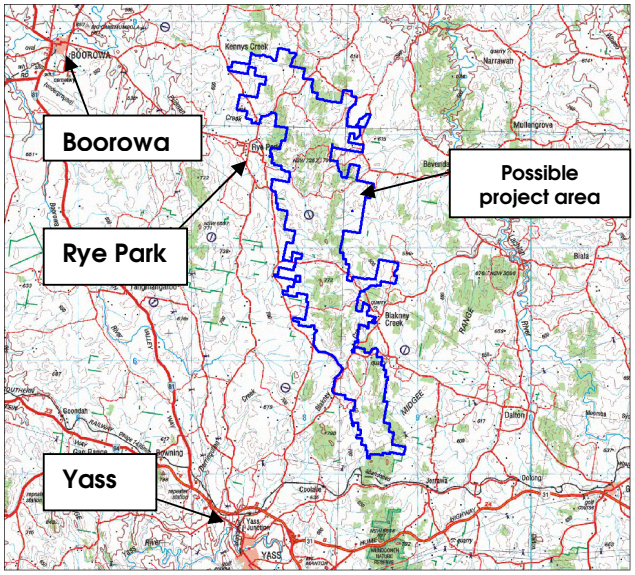
INTRODUCTION

Epuron wishes all a Merry Christmas and a Safe & Prosperous New Year.

WELCOME to the Rye Park Wind Farm Project Update. This Wind Farm Project is a new development project being considered by Epuron. The proposed wind farm is at the early stages of planning and geographical perimeters are still being considered.

PROJECT AREA

The Rye Park area is located in the region around Yass and Goulburn in South Eastern NSW.



Rye Park Proposed Project Area

WHO IS EPURON?

Epuron is a leading wind energy developer in NSW having achieved planning approval for more than 1500MW of approved wind energy across 5 projects since 2005. Epuron is working on several projects, at various stages of development, totalling in excess of 2000MW, including the large scale Silverton project in western NSW. Epuron projects which have already received planning approval represent over 70% of approved wind power capacity in NSW. With a team of 17 operating from its North Sydney base, Epuron is currently in an exciting phase of growth and development.

SITE SELECTION

Why is this a good area for wind energy?

The area has a number of favourable conditions for the development of a wind farm, including;

- Relatively high wind speeds
- Cleared agricultural land
- Relatively few dwellings
- Access to transmission
- Community support



Epuron would like to thank the many local landholders who have provided & continue to provide their support and commitment to this exciting project.

WIND STRENGTH

Monitoring of the wind at the site has been occurring now for some time, with Epuron installing monitoring masts and anemometers to better understand the potential wind energy resource. The Rye Park site has 3 mast installed with the first mast installed almost exactly one year ago. This is a milestone for wind data collection as we like to have one year of data to help with the wind modelling.



Wind Monitoring Mast (Solar Powered)

Wind data collected from these masts and sent over the mobile phone network to Epuron's North Sydney office, is used to determine the extent of the energy available from the wind for generation of electricity. Ongoing wind monitoring and time-series data collected from the masts is continuing to be processed and used to calculate the wind characteristics. From this are determined the site's mean wind speeds and direction which in turn will help choose and position the optimal turbine layout.

SOLAR ENERGY

In other exciting news, Epuron is increasing its explorations of utility-scale solar energy options. The solar team is working on opportunities in NSW & elsewhere in Australia. This is a new and exciting path for Epuron and we are currently investigating potential sites for Photovoltaic (PV) and Concentrated Solar Power (CSP) development.



INDUSTRY NEWS

Renewable Energy Target (RET)

In August of this year legislation to expand the Renewable Energy Target was passed by Federal Parliament. This means that 20% of Australia's electricity will come from renewable sources by 2020. This will enable wind farms around Australia to competitively price their electricity in order to complete development activities and commence construction.

Inquiry into Rural Wind Farms

The Parliament of NSW recently held an Inquiry into the social, environmental and economic costs of rural wind farms. The public were invited to participate and 109 public submissions were received by the Standing Committee. The first of three public hearings was held on 11 September in Sydney at which Epuron Executive Directors Martin Poole and Andrew Durran addressed the Committee. A full transcript can be found on the NSW Parliament site www.parliament.nsw.gov.au

Epuron wishes you and your family
a very Merry Christmas
and a Happy New Year!!!

CONTACT US

Contact: **Laura Dunphy** Project Manager
Phone: 0420 445 058
Email: L.Dunphy@epuron.com.au

Richard Finlay-Jones
Mobile: 0414 555 864



Computer Simulation - Silverton Project



RYE PARK WIND FARM

Project Update - June 2010

INTRODUCTION

WELCOME to the Rye Park Wind Farm Project Update. This newsletter is designed to provide a summary of the activities underway to further plan and develop this very exciting project.

In this newsletter we provide an update on the analysis of the wind resource, the progress with the grid connection, some feed-back from the ecology studies and an update on renewable energy policy.

PROJECT AREA

The Rye Park project area is located across the Boorowa LGA, Upper Lachlan Shire LGA and the Yass Valley LGA, near the township of Rye Park and north east of Yass.

The site comprises a long ridgeline running north-south, where it is expected the turbines could be located. This ridge is at right angles to the prevailing wind directions, which are predominantly the east and west (see Wind Frequency Rose below).

Approximately 40 local landowners have agreed to explore the feasibility of the proposal. This site is fairly large and could potentially accommodate over 100 wind turbines.



KEY FACTS

Why is this an excellent project?

- Good wind speeds – quantified resource
- Generally cleared agricultural land
- Access to the high capacity transmission network
- Close to an area with high electrical demand / load (Sydney Basin)
- Relatively large site – good fit with renewable energy policy
- Close to centres with industry capability
- Positive landowner and community support

This project will be a state significant renewable energy facility and investment.

WIND MONITORING

Epuron has operated three wind monitoring masts on site for over a year and across all seasons. The masts make a continuous record of wind speed and direction, and temperature and pressure of the air. This data is transmitted each night back to our North Sydney office. The on-site data has been correlated to Epuron's many long term data sets in the Yass area to establish long term predicted wind speed and direction. This information has been used to develop optimised wind turbine layouts that will maximise the energy generation from the project.

This weather data is extremely important to our understanding of the wind profile and the feasibility of a wind farm project. The good news is that the wind analysis confirms that the wind speeds at the site are good and the wind resource meets the thresholds required for progressing the development of the project.

Epuron will now refine the location of wind monitoring masts based on this information. Some of the masts may be relocated where they have fulfilled their purpose, rest assured that removal of a mast from any one area does not mean any loss of interest in developing wind in that area! We will keep you posted and work with you if any of this involves your property.

PROJECT PLANNING

Over the last few months our team of wind specialists and engineers have been refining the layout to optimise the energy yield and design a constructible site.

In addition to collecting wind data we have started to prepare for the process of gaining planning approval for the project. Epuron has already successfully carried out this process several times in NSW over the last 7 years, gaining approval for over 700 wind turbines.

In developing the most appropriate project design, it is important to take into consideration: terrain, accessibility, the electrical layout and design, ensuring amenity impacts (such as visual and noise impacts) are minimised, and ensuring biodiversity impacts (especially endangered ecological communities) are also minimised.

GRID CONNECTION

Epuron has completed its assessment of the most suitable grid connection options. This has been in conjunction with working through the physical layout of the site, as it all needs to work together. A technical feasibility study undertaken by Epuron's electrical engineering consultants has analysed the merits of each option.

Epuron is now progressing two connection options, one into the 132kV transmission line west of the site and another connection into the 330kV transmission line south of the site. Both options present excellent technical solutions to export the potential generation from the site with minimal electrical losses.

Epuron has now begun discussing the route options with potentially affected landowners. This landowner consultation is an important part of the process to understand specific issues and concerns and to finalising the power line route.

Our objective is to develop the very best project that we can considering all of the technical, environmental and social issues.



ECOLOGICAL STUDIES

Our environmental consultant has already completed a preliminary assessment and undertaken mapping of biodiversity in the project area to assist with our overall development plan.

In general the feedback has confirmed it is a good site from an ecological perspective. While there are some sensitive areas we will need to manage, there is adequate space to locate infrastructure including turbines, access roads and transmission lines.

The studies identified some native vegetation communities, such as Yellow Box or White Box Woodland, that require careful management. Epuron has successfully managed similar issues on previous projects in NSW.

The next step is to get our consultants back on the site to complete their assessment of the specific areas where we would be looking at installing turbines, electrical connections and access tracks. The critical time for the flora and fauna studies is spring, so we are working towards kicking off this assessment to be completed this spring.

INDUSTRY NEWS

Renewable Energy Target (RET)

In August 2009 legislation to expand the Renewable Energy Target was passed by Federal Parliament. This means that 20% of Australia's electricity will come from renewable sources by 2020 enabling wind farms around Australia to sell clean electricity into the electricity market.

In February 2010, the Hon. Penny Wong announced further amendments to the RET legislation that provides separate targets for small/domestic renewable energy and large scale projects such as our wind farms. This is another very positive step for the establishment of new large clean energy projects, and we expect this legislation to be passed in June 2010.

If you follow current affairs you will have seen that the Government has delayed the introduction of an Emissions Trading Scheme (ETS). While this is disappointing from an environmental and climate change policy perspective, the development and delivery of the Rye Park Wind Farm is primarily driven by the RET.

NEXT STEPS

The current key activities underway include:

- Refining the wind monitoring program and relocating monitoring towers to suit;
- Finalising biodiversity surveys in Spring;
- Negotiating transmission line access corridors with affected landowners;
- Finalising site layouts taking into account these inputs as well as amenity impacts
- Engaging specialist consultants to commence studies for the Environmental Assessment

Over the coming months Epuron will lodge a project application for the project prior to completing the full environmental assessment on the site. We will update you again in due course.

Epuron would like to thank the many local landholders who have provided, and continue to provide their support and commitment to this exciting project.

CONTACT US

Laura Dunphy - Project Manager
Phone: 02 8456 7400
Email: L.Dunphy@epuron.com.au



EPURON

Rye Park Wind Farm

Project Update No 3 | December 2011

Merry Christmas from the Epuron Team

As we draw to the end of a busy year for the Rye Park Wind Farm project, the Epuron team would like to wish you and your family a very merry Christmas. There is already much work planned for next year including continuation of the consultation program that will feed into finalisation of the projects Environmental Assessment. Thank you for your continued support of this exciting project and your positive feedback.

Project Update

Since our previous update Epuron has received notification of the Director-General's Requirements (DGRs) for the project from the NSW Department of Planning in February 2011. The issuing of the DGRs is in response to our submission of the project's Development Application and Preliminary Environmental Assessment earlier in the year. The DGRs set out the Departments key assessment criteria for the proposed wind farm and will contribute to the preparation of the project's Environmental Assessment. There are a number of detailed studies required by the DGRs to assess potential impacts of the project including noise, visual, traffic, ecological, heritage and a range of planning and statutory matters.

Our biodiversity consultants have just completed a spring-summer field survey across the development envelope for the project site in line with the DGRs. The biodiversity survey was comprehensive and included the assessment and mapping of flora and fauna communities. The survey results will inform the design of the wind farm layout and will contribute to the preparation of the Environmental Assessment expected to be exhibited next year.

Following assessment of the various grid connection options available to the Project we have identified the existing 330kV Transgrid powerline running across the southern section of the site as the preferred connection location. Investigations and discussions will continue with all powerline stakeholders to finalise suitable easement and substation positions.

We have also recently established "Rye Park Wind Farm Pty Ltd" as the company to carry out the development of the Project. The newly created company is a wholly owned subsidiary of Epuron and will hold the various assets required for development of the Project.

New Website

We are pleased to advise that a new project website will soon be available to view information about the project. You are also invited to submit any feedback you may have via the new website. The new website is due to be launched shortly so keep an eye out for it. Details of the project will be available at www.ryeparkwindfarm.com.au



Project Manager



Epuron is pleased to announce the recent appointment of Senior Project Manager Brian Hall as Project Manager for the Rye Park Wind Farm. Brian brings a wealth of experience to the Epuron Team, having more than 20 years experience in the Australian and international energy industries.

Prior to joining Epuron in 2011, Brian held a number of senior roles in the renewable energy sector including head of Business Development in Australia with Meridian Energy and Director of Allco Wind Energy's global business. Brian was directly responsible for managing the development phase of the 420MW Macarthur Wind Farm in Victoria (largest in southern hemisphere at the time) that was committed to construction in 2010 under a Joint Venture with Meridian and AGL.

Please feel free to contact Brian if you have any queries regarding the Wind Farm.

Please send us your feedback

Write to us:
Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney NSW 2060

Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

Phone us:
02 8456 7400

Consultation Plan

Epuron is a leading developer of wind farms in NSW and has a proven track record with four previous wind farm project applications already successfully approved. To date Epuron has achieved approval of the largest wind farm, the largest number of wind farms, and the largest number of wind turbines in NSW, making it one of the most experienced wind developers in Australia. As such Epuron considers community consultation and engagement with key stakeholders a vital part of the approval process and an important first step towards becoming a long term member of the community.

Recently Epuron has updated its corporate Consultation Framework for the development of wind farms. A project specific Consultation Plan has commenced for the Rye Park Wind Farm and incorporates the following high level objectives:

- Ensure the community is fully informed about the proposal, its likely impacts and benefits;
- Provide the community with sufficient notice and opportunity regarding upcoming events such as Open House days and exhibition periods;
- Provide multiple opportunities for dialogue and provision of feedback;
- Incorporation of feedback into the design where possible and demonstration where this has been achieved;
- Building positive trust based relationships with community and key stakeholders;
- Establish a Community Consultation Committee to actively engage with and provide a forum for wider community groups and Council to have their say.

The NSW Wind Farm Planning Guidelines are expected to be issued soon, and our Consultation Plan will be further refined and updated to reflect any additional requirements where required following its release.





Figures 1 & 2. Typical outlook over wind farm environmental survey areas

New "Sodar" Technology for Wind Measurement

To confirm the viability of wind projects in NSW, Epuron has established an extensive network of wind monitoring masts. Data from this network plus the onsite masts confirms that wind speeds are good at Rye Park wind farm and more than sufficient for a viable wind farm. As the Rye Park wind farm site is large and to get a better understanding of the wind speed variations in the area, Epuron is planning to utilise its new "Sodar" technology. Sodar stands for "Sound Detection and Ranging" and is a small ground-mounted unit that can capture all the information available from a conventional wind monitoring mast. The Sodar we are using is designed and made in Australia for Australian conditions.



Figure 3. Epuron's new Sodar technology

EPURON

Rye Park Wind Farm

Project Update No 4 | March - April 2012

Latest News

This newsletter marks the release of the project's revised wind farm layout shown over page. In designing the revised layout, the project development team met with adjacent and neighbouring landowners and residents to the wind farm to obtain and consider their feedback. Epuron's biodiversity experts have incorporated the revised layout in their second seasonal field survey which will form part of the Environmental Assessment report - expected to be exhibited later this year.

A preferred substation connection site has been identified at the existing 330kV Transgrid power line that crosses the southern end of the site.

Community Consultation Committee

While the project consultation process has been underway for some time, Epuron is now seeking to establish the Community Consultation Committee (CCC) in preparation for a first meeting in the coming months.

The purpose and objectives of the CCC are:

- To enable Epuron to formally provide the local community with information about the proposal;
- To enable the community to express and for Epuron to understand any concerns regarding the potential impacts of the proposal;
- To enable Epuron to consider whether and how to incorporate any suggestions and feedback into the design of the proposal;
- To demonstrate how and where feedback has been incorporated and resulted in amendments to the proposal; and,
- To formally advise potential community benefits that can be integrated into the proposal.

Membership of the CCC is targeted to include the following;

- An independent chairperson;
- A representative of the involved wind farm landowners;
- A representative of the non involved neighbouring landowners;
- Representation from key local stakeholder groups or associations;
- A representative from each of the local councils (Yass, Boorowa and Upper Lachlan); and
- Representatives from Epuron including the Project Manager.

If you are interested in joining the CCC, please complete the Nomination Form enclosed and return to us.

For further information on Epuron's Consultation Framework, please refer to our website at http://www.epuron.com.au/downloads/



High Quality Wind Resource on Site

The Rye Park site is located in a good wind resource area and the regular collection of wind data continues. The three wind monitoring masts installed in 2008 show that favourable wind speeds exist on the site.



The wind monitoring masts and instruments are regularly checked and maintained by our in-house team of experts. Plans are underway to expand the wind monitoring program with additional equipment to be installed in the coming months.

Public Open Day Coming Soon

We are currently preparing to hold a community Open Day. We will be displaying the revised layout and other information about the wind farm. We will advise the date and location in due course and look forward to seeing you there. Your views and feedback are important to us.

Please send us your feedback

Write to us:
Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney NSW 2060

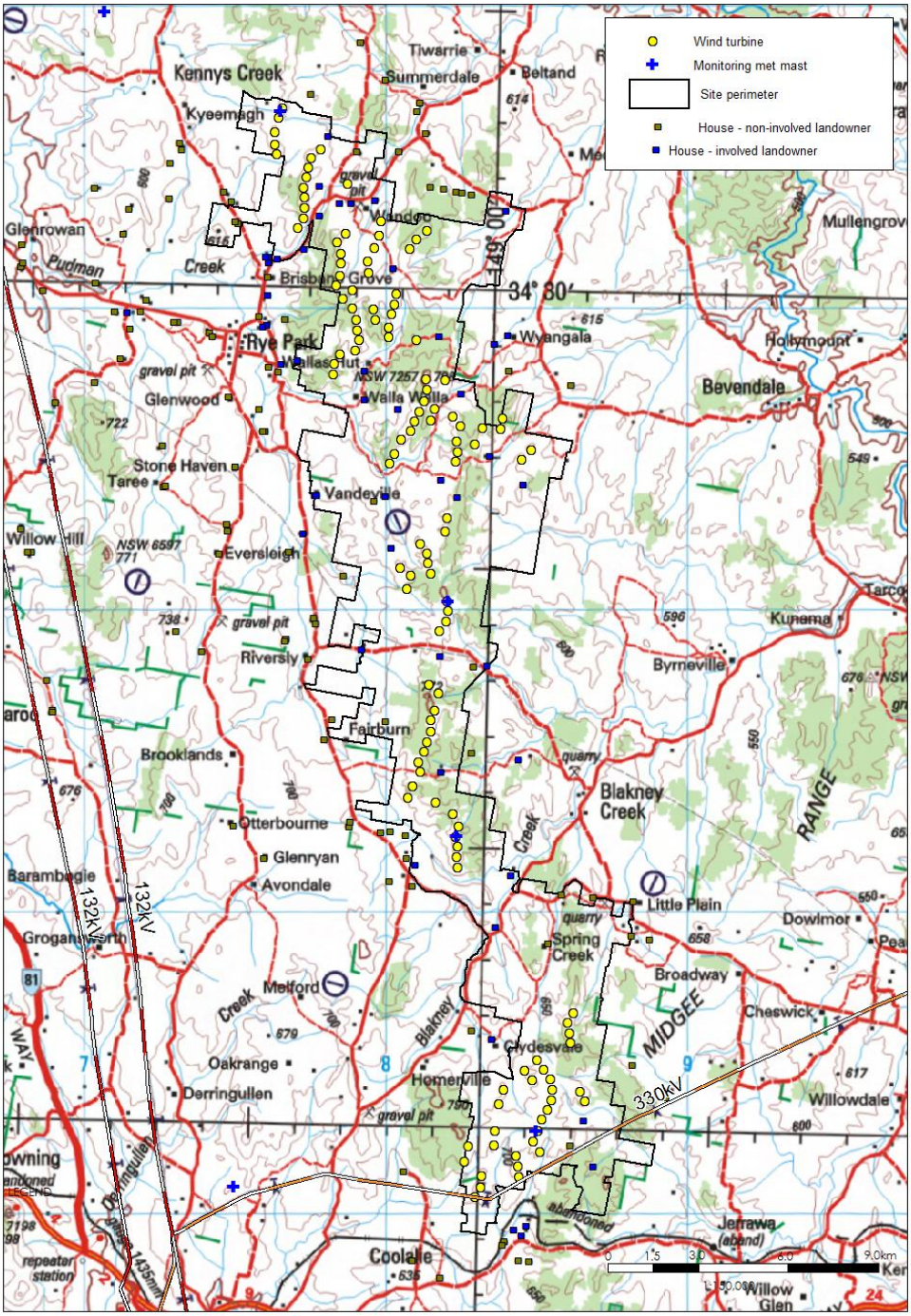
Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

Phone us:
02 8456 7400

Revised Wind Farm Layout

The revised wind farm layout shown below accommodates 131 wind turbine locations across the site. Connection to the electricity grid will be at the southern end of the site at Transgrids existing 330kV network and a suitable location for a connection substation has been identified. In designing the revised layout, the development team consulted with the local community including meeting with adjacent and neighbouring landowners and residents to obtain and consider their feedback. The majority of the feedback supported the development of the wind farm as a mechanism for generating jobs and local investment in the region. Key areas of concern, which Epuron considered in the revised layout included:

- Meeting noise standards and considering the visual impact on neighboring dwellings;
- Increase distances between turbines, nearby homes and local towns for example Rye Park and Blakney Creek;
- Regard to be given to the draft NSW Planning Guidelines for Wind Farms.



Rye Park
Wind Farm

EPURON

Project Update | March – April 2012

Community Consultation Committee

Nomination Form

We are seeking nominations for members from the local community to join the Community Consultation Committee (CCC) for the Rye Park Wind Farm.

It is planned that the CCC will meet quarterly (or as otherwise required) at a local venue to be advised.

The purpose and objectives of the CCC are;

- To enable Epuron to formally provide the local community with information about the proposal;
- To enable the community to express and for Epuron to understand any concerns regarding the potential impacts of the proposal;
- To enable Epuron to consider whether and how to incorporate any suggestions and feedback into the design of the proposal;
- To demonstrate how and where feedback has been incorporated and resulted in amendments to the proposal; and,
- To formally advise potential community benefits that can be integrated into the proposal.

Nominees Role

Yes, I would like to nominate myself to join the CCC for the Rye Park wind farm in one of the following capacities.

Please tick the relevant box below.

- ☐ **An independent chairperson**
- ☐ **A representative of the involved wind farm landowners**
- ☐ **A representative of the non involved neighbouring landowners**
- ☐ **Representation from key local stakeholder groups or associations (please provide details of group or association below)**

Nominees Details

Name: _____

Address: _____

_____

Phone: _____

Email: _____



Please provide reasons for your nomination: _____

_____

_____

_____

Thank-You for your nomination

Should you require any further information please call us on **02 8456 700**.

Please return this Nomination Form to:

Address:
Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney NSW 2060

Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

EPURON

Rye Park Wind Farm

Project Update No 5 | June - July 2012

Latest News

Development of the project is generally progressing to program and the key assessments, studies, and consultation activities are well underway. In the coming months the Environmental Assessment will be finalised with the communities ongoing input and is expected to be lodged with the Department around September/October in readiness for public exhibition.

Key development activity since the last newsletter in March includes;

- Summer environmental survey completed during March/April
- First community consultation committee meeting held 27 June
- Photomontages prepared from selected public road viewpoints
- Noise logging campaign underway at selected house locations
- Feedback from community and studies inform layout design
- Another wind monitoring mast to be installed on site in Aug/Sep

Community Consultation Committee

The first Community Consultation Committee (CCC) meeting for the wind farm was held at Yass Council Chambers on 27 June. Membership of the CCC seeks representation from local council, involved and uninvolved landowners, local community groups and the project proponent.

The CCC has been established as a forum for discussion and feedback on issues directly relating to the assessment and development of the wind farm. Councillor David Needham from Yass Valley Council is Chair of the CCC. Some key points of discussion and feedback arising from the first CCC meeting, in no particular order, include;

- **Access Roads**. Ensure Councils are consulted when the draft Traffic and Transport study is available to make sure construction access routes and any impacts on local roads are considered.
- **Community Fund**. Councils outlined their preferred model for a community fund if established for the project. The CCC is looking for feedback on how to best establish a community fund and what type of local support may be required from the project. The objective is to best maximise local and regional benefits available to the community.
- **CCC Consultation**. The CCC will write to neighbouring landowners to let them know the CCC has been established and to invite them to contribute or participate in future meetings.

Your views and ideas are important to us and we would be pleased to receive any feedback or comments you may have regarding the project. The next CCC meeting is scheduled for 2 August 2012. Details of the project and CCC meeting are available on the Epuron website at http://www.epuron.com.au/downloads/



Public Open Day coming to the Rye Park Memorial Hall

A Public Open Day for the proposed wind farm is planned for Thursday 26 July at the Rye Park Memorial Hall.

Please come along and view the information on display about the project. Your feedback is important to us and will be considered in the development of the project.

The Project Manager will be available throughout the day (9am to 5pm) to discuss the proposal and answer any questions you may have about the project.

The current wind farm layout and public road photomontages will be on display including general information about wind energy.

In order to best maximise local benefits from the project, Epuron is also seeking feedback as to how a "Community Fund" might be established, and what kind of local community support is required in the vicinity of the project. Your views and ideas are welcomed in this regard.

We look forward to seeing you at the Public Open Day.

Event: Public Open Day

Date: Thursday 26 July 2012

Time: Opens 9am and closes 5pm

Venue: Rye Park Memorial Hall

Please send us your feedback

Write to us:
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North Sydney NSW 2060

Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

Phone us:
02 8456 7400

Stages of the Environmental Assessment Process

1	Submission of the Preliminary Environmental Assessment and Request for Part 3A Assessment to the Department of Planning.
2	Director General's Requirements issued by the Department.
3	**WE ARE HERE: Preparation and submission of the Environmental Assessment report to the Department.**
4	Adequacy review by the Department to determine if the Environmental Assessment report is acceptable for exhibition.
5	Environmental Assessment report placed on public exhibition for review comment.
6	Epuron responds to submissions.
7	Assessment and Determination by the Minister



Preliminary wind farm photomontage at the corner of Cooks Hill Road and Dalton Road

Likely Benefits from the Rye Park Wind Farm

A preliminary estimate of the likely benefits that would be available to the local and regional economy resulting from development of the Rye Park wind farm include the following;

- Total project investment value approx $750m - $850m based on 393MW project (131 x 3MW turbines).
- Direct regional investment from construction – $200m.
- Direct regional investment from operations - $15m per annum for ~25 years.
- Direct jobs during construction – approximately 250 to 350.
- Direct jobs during operations – approximately 20 to 30 for ~25 years.
- Regional/state/national flow on effects, jobs and expenditure multipliers are being assessed.
- Carbon abatement (eg. tonnes of CO_2) will be calculated as part of the layout completion works.
- Community Fund contributions are being assessed and considered as part of the consultation process.

Grid Connection, Wind Farm Powerlines & Substations

Renewable power generated by the wind farm will be collected and exported to the National Grid at the existing 330kV Transgrid transmission line that crosses the southern section of the site. A new connection substation will be constructed on site adjacent to the existing Transgrid transmission line to facilitate grid connection and export of the wind farms power.

A new overhead wind farm powerline will be constructed running up the site to collect the renewable power generated by the wind turbines and feed it to the new connection substation at the south of the site. Up to three new collection substations will be located up the wind farm site to collect the power from the wind turbines and feed power into the new wind farm powerline.

EPURON

Rye Park Wind Farm

Project Update No 6 | August 2012

Project Update

It has been a busy and productive few months for the development of the wind farm. We have been incorporating findings from our specialist studies, including consultation feedback from the community, into the design of the wind farm. We anticipate a final draft layout of the wind farm will be prepared and released in the coming months. The environmental assessment document is currently being prepared and is expected to be lodged with government for public exhibition later in the year.

Archaeological & Heritage Field Survey

Following consultation with 5 locally registered Aboriginal groups, our archaeological and heritage consultant completed a 9 day field survey during July and was assisted by the Buru Ngunawal Aboriginal Corporation.

Preliminary results show the proposed impact areas to be of low archaeological and heritage significance, primarily due to their location on very rocky ridgelines, situated away from streams and rivers. A very low density of stone artefacts was found to be present on the site during the field survey (photo shown below).

Several milky quartz outcrops were recorded on the site that may have been historically exploited as sources of raw material. It has been recommended that impacts to these outcrop areas be avoided where possible during construction (photo shown below) .





Community Consultation Committee

The Community Consultation Committee (CCC) established for the project met again in Yass on 2 August. A few new members, both involved and uninvolved landowners, attended the meeting. The latest project information was presented and points discussed at the meeting included;

- Release of the traffic and transport plan for consultation
- Update and feedback on the potential for a community fund
- Feedback from the recent public open day
- Details for connecting the wind farm to the electricity grid

Project details can be found at www.epuron.com.au/project/rye-park/



Public Open Day was a Success

Thank you to all those people who attended the wind farm public open day in Rye Park on 26 July.

The open day was a great success with 51 people attending and viewing the project information on display, which included;

- Wind farm layout with 131 turbine locations.
- Seven photomontages from selected public viewpoints.
- Traffic and transport route and access map.
- General wind farm and industry information.
- Other project and corporate information.

The majority of people who attended the open day (78%) were supportive of the project and the potential benefits available to the town of Rye Park and the local region. The opportunity to capture local jobs and investment expenditure was considered a key benefit of the project.

Members of the development team were pleased to discuss the project and answer your questions. The feedback received on the day will be considered in the design of the project wherever possible and we expect to release a final layout in the coming months.

Please send us your feedback

Write to us:
Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney NSW 2060

Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

Phone us:
02 8456 7400

Rye Park
Wind Farm

EPURON

Project Update No 6 | August 2012

Community Fund

We would like to thank everyone who has contributed their feedback to us regarding the potential to establish a community fund for the project. Over the past few months we have been consulting and seeking feedback on how best to establish a community fund and to identify what type of local support is required from the project.

The following is a summary of the key feedback we received on these two points and will be considered during the preparation of the project's environmental assessment that will be publicly exhibited later in the year.

1. Feedback received…….How best to establish a community fund

- Local councils prefer that if a community fund is established it is managed by them.
- Local community wants to have a say in where and how any community funds are managed and spent.
- Draft NSW Wind Guidelines say community infrastructure contributions may be required under Part 4, Division 6 of the EP&A Act 1979, or through a voluntary planning agreement (VPA) with a planning authority, including council.
- Community funds for some other projects have been considered through a mechanism that combines involvement from representatives of both the local community and council.

2. Feedback received……Identify what type of local support is required from the project



- Upgrade and improve local roads near the project.
- Improvements to the township of Rye Park and better local amenities.
- Better mobile phone reception and internet services in the town.
- Chance to reopen some businesses and local services in Rye Park.
- Community must "go deeper" and provide attraction to keep families and younger people in the area through long term benefits and job creation

Traffic and Transport Report

The traffic and transport report for the project has been released for consultation. A copy of the report can be found on our website and the report assesses the;

- Traffic and transport issues relevant to the construction & operation of the wind farm.
- Implications of the project and potential impacts.
- Proposed mitigation measures to minimise related impacts.
- Maximum traffic impacts predicted during construction from heavy and oversized vehicles delivering equipment and material.
- Public road network proximate to the project.

Key issues addressed by the report include;

- Suitability of the existing roads for the type of heavy and oversized vehicles that will need to access the site (road type, width, radius of bends etc).
- Structural capacity of existing roads and structures, such as bridges, to handle the heavy and oversized vehicles for the delivery of equipment and materials.
- Disturbance to the local community as a result of increased vehicle movements.
- Management of traffic on the site including traffic safety, minimising ground disturbance, erosion and dust.





EPURON

Rye Park Wind Farm

Project Update No 7 | May 2013

Project Update

The Environmental Assessment (EA) for the Rye Park wind farm has been finalised and was submitted to the NSW Department of Planning & Infrastructure (DPI) for assessment just prior to Christmas. This milestone was the culmination of a number of development activities including the incorporation of results from our specialist studies into the EA and the inclusion of community consultation feedback into the layout of the wind farm. The EA is in the process of being reviewed for adequacy by DPI and is expected to be publicly exhibited in the near future. Further announcements will be made regarding public exhibition of the EA once details are known.

In the meantime we remain interested to receive any feedback or comments you may have regarding the project and contact details are listed below.

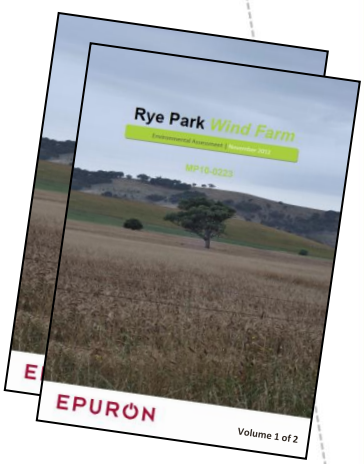
Environmental Assessment Submitted

As mentioned above, the EA has been submitted and will be publicly exhibited in the near future following adequacy review by the DPI.

The EA was prepared to assess the potential environmental impacts and highlight the key benefits associated with the development of the wind farm. The EA will be assessed by the DPI as a Major Project under Part 3A of the NSW Environmental Planning and Assessment Act 1979.

We believe the Rye Park Wind Farm project is supported by a majority of people living in the local community and trust that the public exhibition of the EA will allow the community to continue to make informed decisions about the merits of the project.

The EA comprises a main report which sets out in detail the environmental assessment for the project (volume 1) and additional project information (such has maps and consultant reports) in the form of attachments and appendices (volume 2). The main report covers both the turbines and powerline routes.



We would like to take this opportunity to thank the many stakeholders and community members who have contributed to the EA by providing their suggestions and feedback on the project all of which have been very helpful in producing, what we believe, is a thorough and well developed wind farm.

Community Consultation Committee

The Community Consultation Committee (CCC) established for the project held its fourth meeting in Yass on 17 December 2012.

The latest project information was presented and discussed at the meeting. Details of CCC meetings and minutes can be found at www.epuron.com.au/project/rye-park/downloads/. The next CCC meeting will be held during public exhibition of the EA - date TBC.

Wind Farm Sound & Health

A recent report released by the Victorian Department of Health has found that the inaudible sound caused by wind farms, known as infrasound, is no worse than that from other rural and urban environments and does not affect human health.

The Health Department review, assessed the evidence and found it does not support claims that inaudible sounds can have direct physiological effects.

The report says infrasound is generated by many sources, such as trains, breaking waves and airconditioners. The department found the evidence showed wind farms produced no more infrasound than the background level in other environments.

A copy of the report can be found on the departments website at www.health.vic.gov.au/.

Please send us your feedback

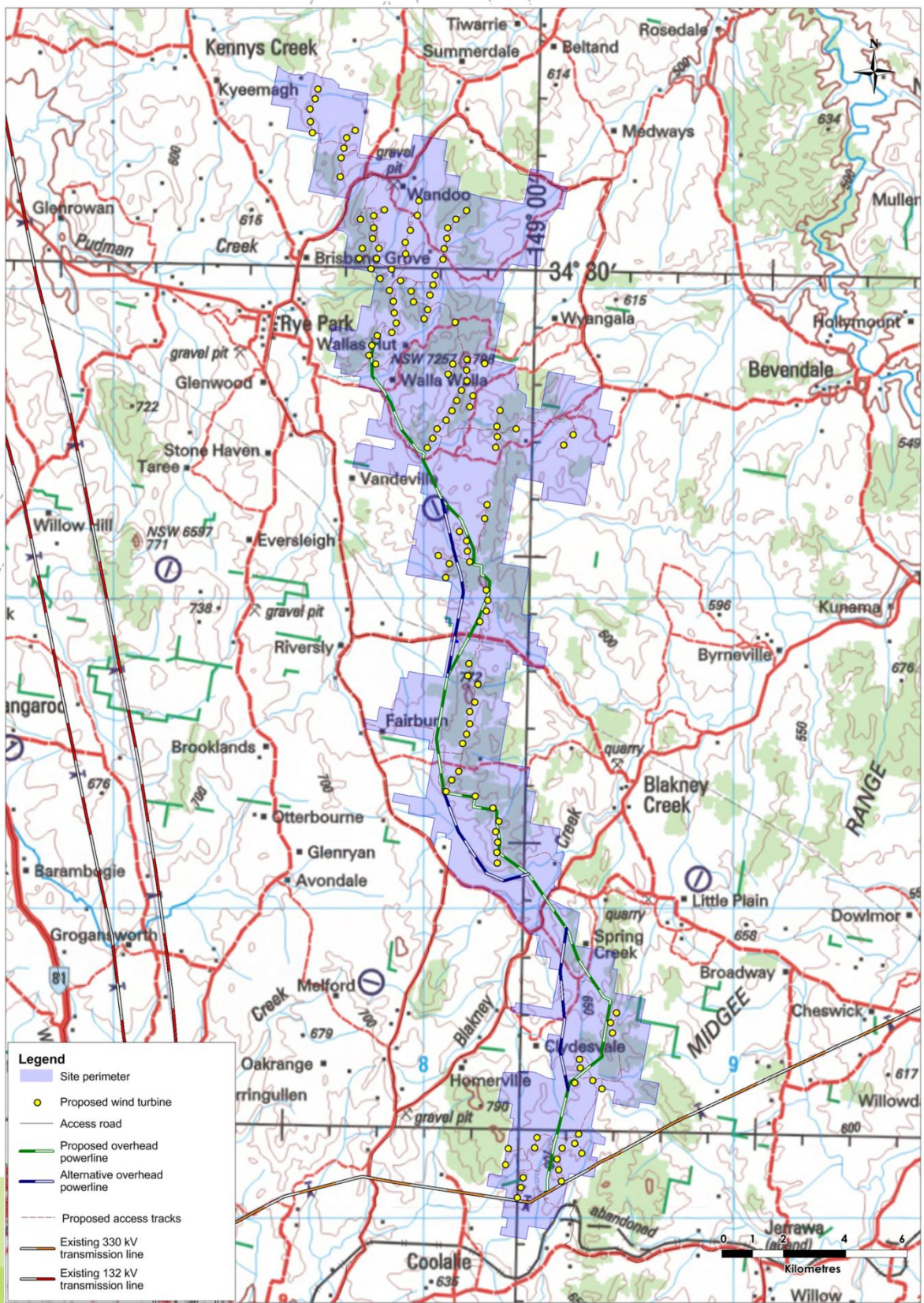
Write to us:
Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney NSW 2060

Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

Phone us:
02 8456 7400

Wind Farm Layout

The following wind farm layout forms part of the EA submitted to DPI and incorporates results from our specialist studies and community consultation feedback.



M E E T I N G A G E N D A

Meeting No.	1
Date and time	27 June 2012 3:00 pm
Location	Yass Valley Council cambers, Comur St, Yass
Members	Yass Council. Councillor David Needham (also Chair) Boorowa Council. Mayor Wendy Tuckerman Upper Lachlan Council. Councillor James Wheelwright Involved wind farm landowner. Graham Privett Non-involved wind farm landowner. Drew and Robyn Chapman Local group or association. TBC (invitations issued) Proponent (Epuron). Brian Hall
Attending	

1. Apologies
2. Declaration of pecuniary or other interests
3. Establishing the Community Consultation Committee
4. Role and governance of the Committee (including how it can provide constructive input into the development process)
    a. It's membership, purpose, what is expected of the committee, what is not expected
    b. frequency of meetings
    c. to whom the committee reports
    d. who provides feedback to the committee
5. Project Consultation details and information including:
    a. how epuron proposes to undertake consultation
    b. progress at the wind farm – assessment or operational issues
    c. issues arising from site inspections
    d. progress on studies and layout
6. General business
7. Next meeting

Rye Park Wind Farm

Community Consultation Committee Meeting No 1

27 June 2012

Meeting Agenda

1. **Epuron**
   - About us
2. **Rye Park Wind Farm**
   - Project overview and current development status
3. **Draft NSW Wind Farm Planning Guidelines**
   - Overview of Guidelines and current position
4. **Community Consultation Committee**
   - Purpose, objectives and general proceedings
5. **Project Consultation**
   - Overview of project consultation plan
6. **Project Information**
   - Location and layout
   - The likely impacts – Assessment of key issues
   - The likely benefits
   - Other reference documents
7. **Next Steps and Timing**

Epuron – Background and History

- Founded 2003
- ~15 staff based in North Sydney
- 100% Australian-owned company
- In-house expertise in wind development; planning; grid; wind modelling; GIS; wind monitoring; instrumentation; solar PV design and construction
- Extensive wind monitoring network (>50 masts)

Track record of NSW wind farm developments

Cullerin Range	Sold to Origin: Operating	30MW
Snowy Plains	Sold to Origin: Approved (lapsed)	30MW
Conroys Gap	Sold to Origin: Approved	30MW
Gullen Range	Sold to Goldwind: Approved	73 turbines
Yass Valley	Sold to Origin: seeking Approval	>100 turbines
Silverton	Sold to AGL Stage 1 Approved Stage 2 Concept Approved	 <430MW 600+MW
White Rock	Seeking approval	119 turbines
Eden	Seeking approval	7 turbines
Other	>10 sites under development	



30MW Cullerin Range Wind Farm (Goulburn, NSW)

- Developed by Epuron
- Constructed by Origin Energy in 2008/09
- Peak workforce of 100, 60 from local area
- 15 x Repower turbines = 30MW
  - net yield 47% Jul to Dec 2009 – in top 3 wind sites in Australia
  - Highest yielding wind farm in National Electricity Market, 2010
- Community fund established

Epuron - Key Markets

- Large-scale wind ("Utility scale")
  - 80-120 wind turbines, 150-360MW
  - power for 60,000 - 210,000 homes
  - investment $350-$750M each
- Small-scale wind ("Community scale")
  - 7-15 wind turbines, 15-30MW
  - power for 8,000 -17,000 homes
  - investment $30-$60M each
- Solar photovoltaics (PV)
  - 1-10 megawatts off-grid (diesel grid)
    - e.g. TKLN Solar, 1MW supplying 3 remote communities in the NT
  - investment $5-$25M each



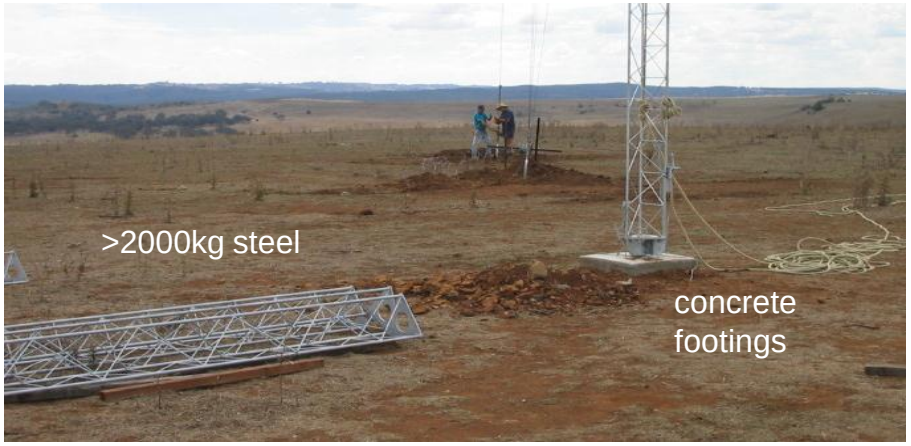
Eden Wind Farm - Photomontage

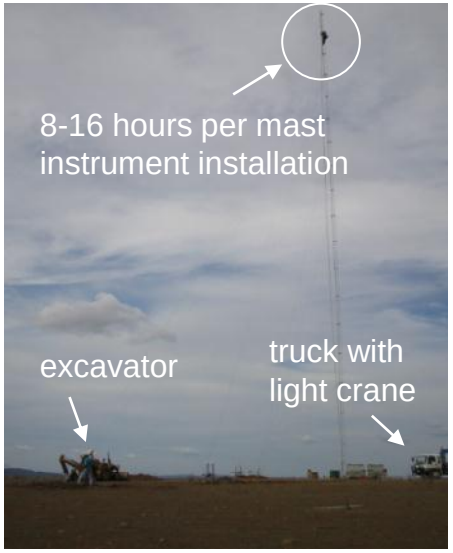


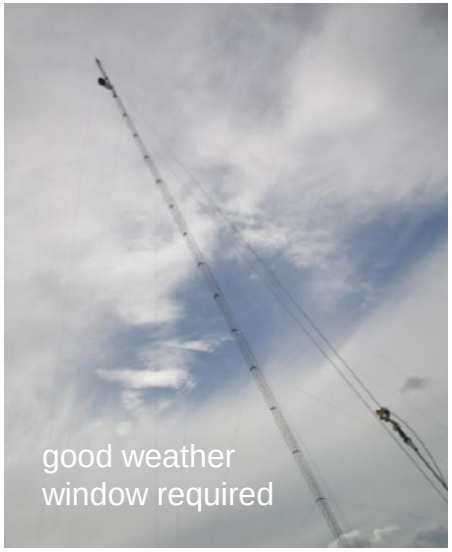
TKLN Solar Project Northern Territory

Epuron – Wind Monitoring Technology

Conventional approach – Met-mast







New approach – SODAR Fulcrum 3D



- Australian designed and built SODAR
- Range to 150m in 10m height bins
- Full3D wind data analysis
- Can be towed by any car (~350kg)
- Tow to site; level; switch on
- No weather delays

Rye Park Wind Farm – Project Overview

- Project located on freehold rural land north of Yass and East of Rye Park
- Layout (currently) consists of ~131 wind turbines and associated infrastructure
- Based on 3MW turbine would be 393MW project and approx $750m-850m investment
- Three active wind monitoring masts across site with around 2 years of data (+1 soon)
- Predicted wind speed and energy yield at hub height supports feasible development
- Turbine design envelope accommodates Siemens SWT3.0-113 or Vestas V112-3.0
- Proposed maximum turbine tip height 156.5m (100m hub height and 113m rotor)
- Grid connection at existing Transgrid 330kV transmission line crossing south of site
- Project being assessed as Major Project under Part 3a of EP&A Act 1979
- Declared Critical Infrastructure Project under Section 75C of EP&A Act 1979
- Involved wind farm landowners secured under contract

Rye Park Wind Farm – Current Development Status

- Revised turbine layout released in May 2012 newsletter – 131 turbines
- Spring/Summer environmental surveys completed in Oct-Nov 2011 and Mar-Apr 2012
- Archaeological field survey underway July 2012 – includes local indigenous reps
- Noise logging campaign underway at selected involved and uninvolved dwellings
- Visual photomontage public locations selected including neighbouring homes to 2km
- Traffic and Transport Study underway and will include consultation with councils
- Other studies including aviation, communications, shadow flicker etc underway
- Community Open Day planned to be held in Rye Park in July 2012
- Targeting EA lodgement with Department of Planning late Q3 early Q4 2012
- Project details available at website www.epuron.com.au/projects/rye-park

Draft NSW Wind Farm Planning Guidelines – Overview

- Draft NSW Wind Farm Planning Guidelines exhibited 23 Dec 2011 to 14 Mar 2012
- Government intends finalising Guidelines by mid 2012 (still outstanding)
- Policy Statement released 18 April identifying interim arrangements for existing State Significant Developments and transitional Part 3a wind farms
- The transitional arrangements vary depending on the stage of an application in the assessment and determination process

  Stage 1 - New applications for which DGRs have been issues

  Stage 2- Applications for which DGRs have been issued but are yet to be exhibited

  Stage 3 - Applications that have been exhibited but not yet determined

  Stage 4 - Applications that have been approved

Rye Park Wind Farm

Draft NSW Wind Farm Planning Guidelines – Stage 2 Transitional Arrangements

2. Applications for which DGRs have been issued but are yet to be exhibited

The guidelines will apply to the maximum extent possible to all wind farm applications for which the DGRs have been issued, but an environmental assessment has not yet been exhibited.

- Proponents are encouraged to adopt relevant provisions of the guideline relating to the construction and operation of wind farms in their environmental assessment, in particular relating to noise assessment, visual assessment, aviation safety, bushfire hazards, construction, decommissioning, monitoring and compliance programs. Please refer to the attached Checklist.
- Proponents should consult with all neighbours with dwellings within 2km of proposed wind turbines to identify any issues and potential approaches to mitigate any adverse impacts. Proponents should, where possible, seek the written agreement from neighbours with a dwelling within 2km of a proposed wind turbine.
- It is strongly recommended that proponents, if not done so already, immediately establish a Community Consultation Committee to provide for ongoing communication with the local community. Appendix C of the guidelines provides guidance on the establishment, membership and operation of the committee. The Department will assist proponents with the appointment of an independent committee chair and in the selection of members.

Draft NSW Wind Farm Planning Guidelines – Transitional Check-List

CHECK LIST
Key aspects of the 'Draft NSW Planning Guidelines Wind Farms'
relevant to applications yet to be exhibited

Issue	Potential Issues for considerations
Consultation	• Form a Community Consultation Committee. • Document the consultation process undertaken, including stakeholders consulted. Identify and tabulate issues raised by stakeholders during consultation. Describe how issues raised have been addressed. • Consult with all neighbours with dwellings within 2km of a proposed wind turbine. Identify the neighbours' issues and potential approaches to mitigate any adverse impacts. • Consider seeking agreement with neighbours with dwellings within 2km of a proposed wind turbine.
Landscape and visual amenity	• Provide photomontages from all non-host dwellings within 2km of a proposed wind turbine. • Identify the zone of visual influence of the wind farm (no less than 10km). and likely impacts on community and stakeholder values. Consider cumulative impacts on landscape and views. • Outline mitigation measures to avoid or manage impacts.
Noise	• Undertake assessment based on separate daytime (7am to 10pm) and night-time periods (10pm to 7am). • Predict noise levels at all dwellings within 2km of a proposed turbine. • Consider special audible characteristics, including tonality, amplitude modulation, and low frequency noise (apply penalties where relevant). • Outline measures to avoid, minimise, manage and monitor impacts.
Health	• Consider and document health issues, focusing on neighbours with dwellings within 2km of proposed wind turbines.
Ecological issues	• Consider potential impacts on birds and bats, particularly migratory species and outline the proposed monitoring and mitigation strategy

Draft NSW Wind Farm Planning Guidelines – Transitional Check-List

CHECK LIST
Key aspects of the 'Draft NSW Planning Guidelines Wind Farms'
relevant to applications yet to be exhibited

Aviation safety	• Outline current agricultural aerial uses on neighbouring properties. • Consider the potential for the proposed wind farm to impact on aviation safety associated with agricultural aerial uses consistent with the draft guidelines.
Bushfire hazard	• Consider bush fire issues consistent with the draft guidelines, including the risks that a wind farm will cause bush fire and any potential impacts on the aerial fighting of bush fires.
Blade throw	• Assess blade throw risks consistent with the draft guidelines. • Outline measures to avoid, minimise, manage and monitor impacts.
Economic issues	• Consider whether the wind farm use is consistent with relevant local or regional land use planning strategies. • Consider potential to impact upon mining/petroleum leases and exploration licences. • Consider any potential impacts upon property values consistent with the draft guidelines, including properties within 2km.
Decommissioning	• Include a Decommissioning and Rehabilitation Plan in the EA, including proposed funding arrangements. • Confirm that the proponent not the landowner is responsible for decommissioning.
Monitoring and compliance program	• Outline program to monitor environment performance to ensure compliance including mechanisms for reporting outcomes and procedures to rectifying non-compliance – including any provisions for independent reviews.
Council planning controls	• Outline whether the proposal is consistent with any relevant provisions of the relevant council's Development Control Plan and list any variations.

Community Consultation Committee - Purpose and Objectives

- To enable Epuron to formally provide the local community with information about the proposal;
- To enable the community to express and for Epuron to understand any concerns regarding the potential impacts of the proposal;
- To enable Epuron to consider whether and how to incorporate any suggestions and feedback into the design of the proposal;
- To demonstrate how and where feedback has been incorporated and resulted in amendments to the proposal;
- To formally advise potential community benefits that can be integrated into the proposal; and,
- To establish and strengthen good working relationships between the proponent and the local community.

Community Consultation Committee - Membership

- An independent chairperson;
  - Councillor David Needham (nominated by Yass Council to NSW DoP)
- A representative of the involved wind farm landowners;
  - Graham Privett
- A representative of the non involved neighbouring landowners;
  - Drew and Robyn Chapman
- A representative from a key local stakeholder group or association;
  - TBC
- A representative from each of the local councils; and
  - Mayor Wendy Tuckerman – Boorowa Council
  - Councillor James Wheelwright – Upper Lachlan Council
  - Councillor David Needham – Yass Council
- A representative from Epuron
  - Brian Hall – Senior Project Manager (others available as required)

Community Consultation Committee – General Proceedings

- The Chairperson to set the agenda and convene and chair meetings
- The committee is not a decision-making body and it is not a requirement that consensus be reached on issues discussed
- Meeting proceedings should generally include;
  - Apologies
  - Declaration of pecuniary or other interests
  - Confirmation of the previous meeting minutes
  - Business arising from previous minutes
  - Correspondence
  - Proponent reports and overview of development activities
  - General business
  - Next meeting
- Minutes are to be kept of all meetings of the committee
- Committee to determine frequency of meetings – suggest every 4-6 weeks for now
- Meetings to be held at a convenient location – suggest local venue

Project Consultation – The Plan

- Epuron is striving to ensure that the project is developed and built in a manner which recognises the importance of an ongoing, long term relationship with the community
- The Rye Park Wind Farm Project Consultation Plan;
  - guides community and stakeholder engagement activity for the project during the development phase (up to project approval)
  - reflects the corporate requirements set out in Epuron's Community Consultation Framework and the DGR's issued for the project by the NSW DoP
  - is dynamic and periodically updated as required during consultation activity
  - reflects the specific needs of the project and the key community stakeholders
  - has taken into consideration the NSW Draft Wind Farm Planning Guidelines. While these draft guidelines are not yet in force, there are transitional provisions in place.
- The Project Consultation Plan is available at www.epuron.com.au/projects/rye-park

Project Consultation – Scope of the Plan

- Epuron's Consultation Framework identifies the following development phases for the project during its lifecycle:
  - Phase 1 – Project Awareness
  - Phase 2 – Project Investigations
  - Phase 3 – Project Development & Approvals
  - Phase 4 – Post Development Approval and Pre Construction
  - Phase 5 – Construction & Commissioning
  - Phase 6 – Operations & Decommissioning
- The Project Plan outlines those consultation activities proposed during the pre-approval development phases of the project which are phases 1 through 3.
- A further consultation plan will be developed as the project enters Phase 4 of its development.

Project Consultation – Objectives of the Plan are to……..

- minimise undue community concern in relation to the proposal, particularly during the early stages when little information on the project was known;
- ensure the community and other stakeholders are fully informed and aware of the proposal, it's likely impacts, and its likely benefits;
- ensure that Epuron fully understands the local context for the proposal, including any local impacts that the proposal may have or opportunities that it could provide;
- incorporate the suggestions and feedback into the design of the wind farm where possible;
- explain where and how this feedback can be and has been incorporated; and,
- provide opportunities for dialogue to allow the community to receive information and provide feedback about the proposal.
- investigate how best to maximise the local and regional benefit of the development. Specifically, Epuron is looking for feedback as to how a Community Fund might be established for the project, and what kind of community support is required in the vicinity of the project.

Project Consultation – Key Stakeholder Groups

- Residents and Landowners
  - Involved landowners
  - Uninvolved neighbours (within 2km from wind turbine)
  - Nearby neighbours (2 – 5km from wind turbine)
  - Distant neighbours (5 – 15km from wind turbine)
  - General public (>15km from wind turbine)
- Community Groups
  - eg. Landcare Groups, Guardians (BDLG), CWA, Rotary and Chamber of Commerce
- Local Media
  - eg. Yass Tribune, Boorowa News and Yass FM Radio
- Local Government
  - Yass, Boorowa and Upper Lachlan Councils
- State and Federal Government
  - State and Federal members and Ministers
  - Government agencies and authorities
- Other Stakeholders
  - eg. Aerial Agricultural Association of Australia and Telco Operators (Telstra etc)

Consultation – Summary of Key Consultation Activity and Timetable

Activity	Timing	Objectives	Stakeholders	Status
Community information workshop	November 2008	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	Completed
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	Completed
Consult with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours within 2km of turbine	Completed (but ongoing)
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	Completed
Establish Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	Completed

Consultation – Summary of Key Consultation Activity and Timetable

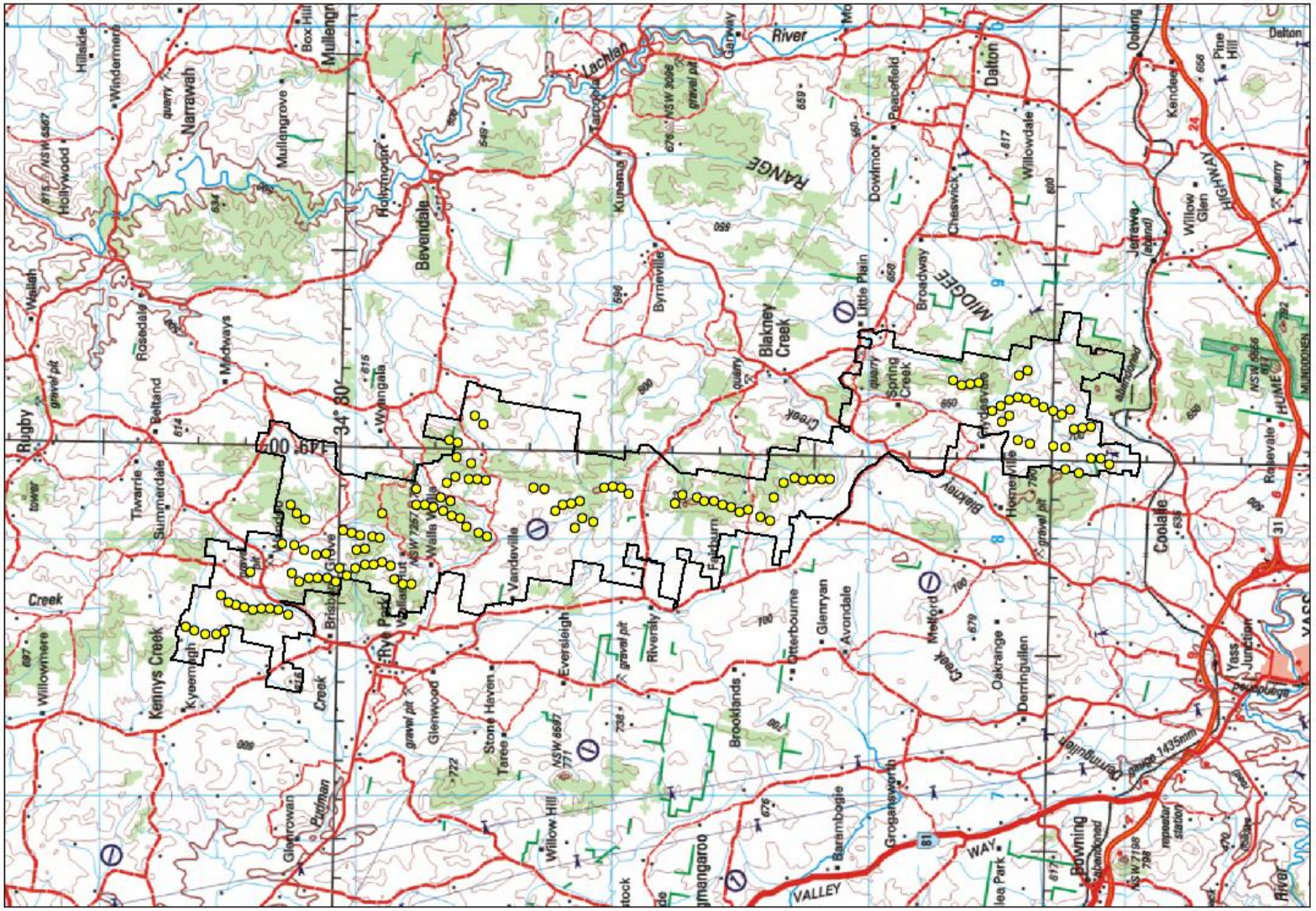
Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 1	May / June 2012	Provide project information and seek feedback	Invited members	To be held 27 June 2012
Newsletter 5 and Community Open House 1	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	pending
CCC Meeting 2	July / August 2012	Provide updated information and consider feedback including release of draft final layout	Invited members	TBC – Thursday 2 August 2012
Newsletter 6 and Community Open House 2	September / October 2012	Update on studies and consultation feedback contributing to draft final layout	Involved and uninvolved landowners (mail-out)	pending
CCC Meeting 3	September / October 2012	Provide draft final documentation for review and feedback	Invited members	TBC – Monday 17 September 2012
Pre DA submission follow up	September / October 2012	Consider feedback and any final amendments required prior to lodging application	Involved and uninvolved landowners, CCC and consultants	pending

Consultation – Communication and Feedback

- Consultation is a two-way-street and we're always listening
- Feedback and suggestions are important to us
- Available communication channels include;
  - Epuron corporate website: www.epuron.com.au
  - Rye Park project website: www.ryeparkwindfarm.com.au
  - Mailing address: Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney…NSW…2060
  - Phone: 02 8456 7400
  - Fax: 02 9922 6645
  - Email: RyePark@epuron.com.au
  - Senior Project Manager: Brian Hall
b.hall@epuron.com.au
  - Meetings Arranged by appointment

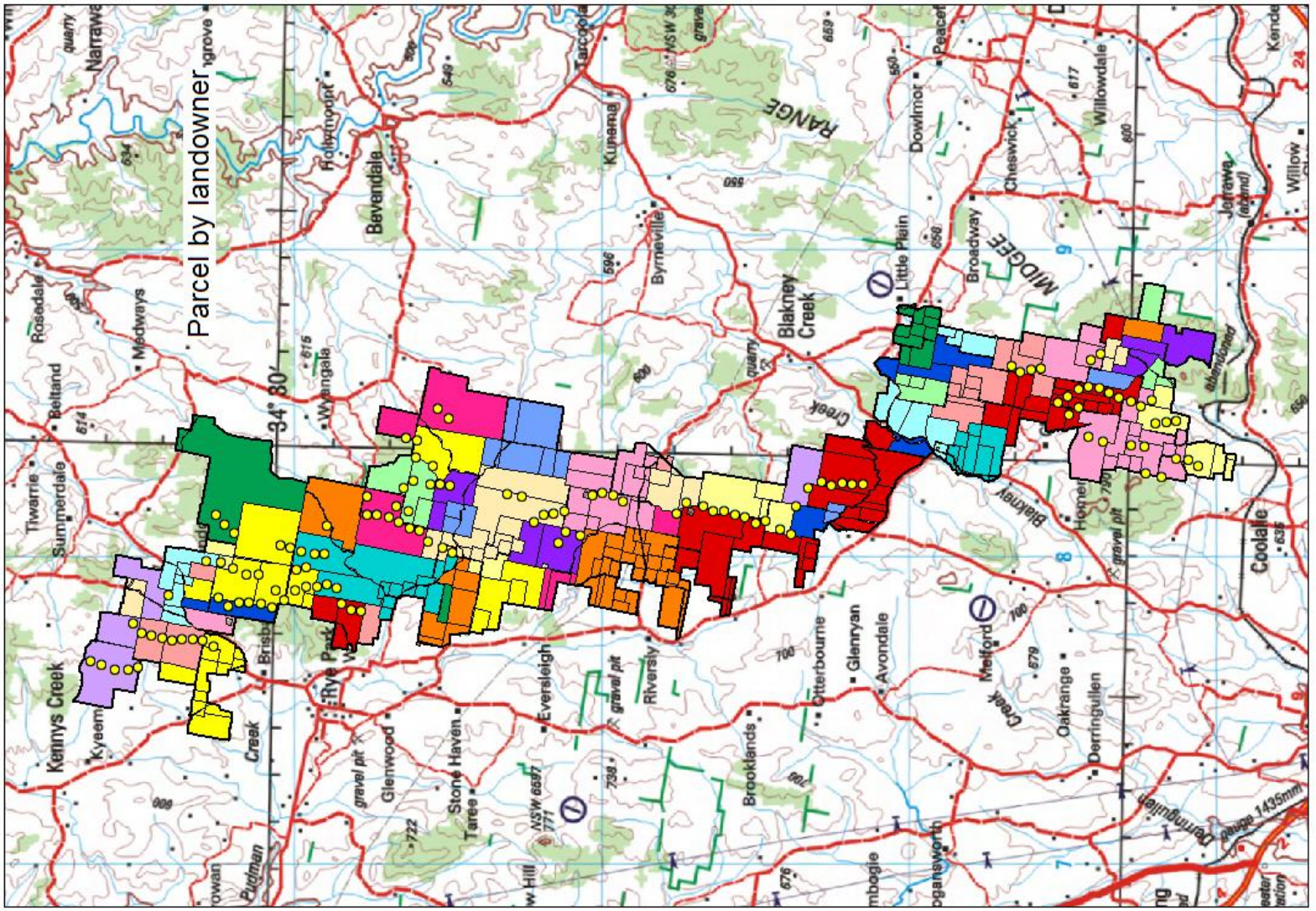
Project Information - Regional Location and Site Boundary

- Approx distance from local town to nearest turbine
  - ~3km east of Rye Park
  - ~17km south east of Boorowa
  - ~10km north east of Yass
  - ~4km west of Blakney Creek



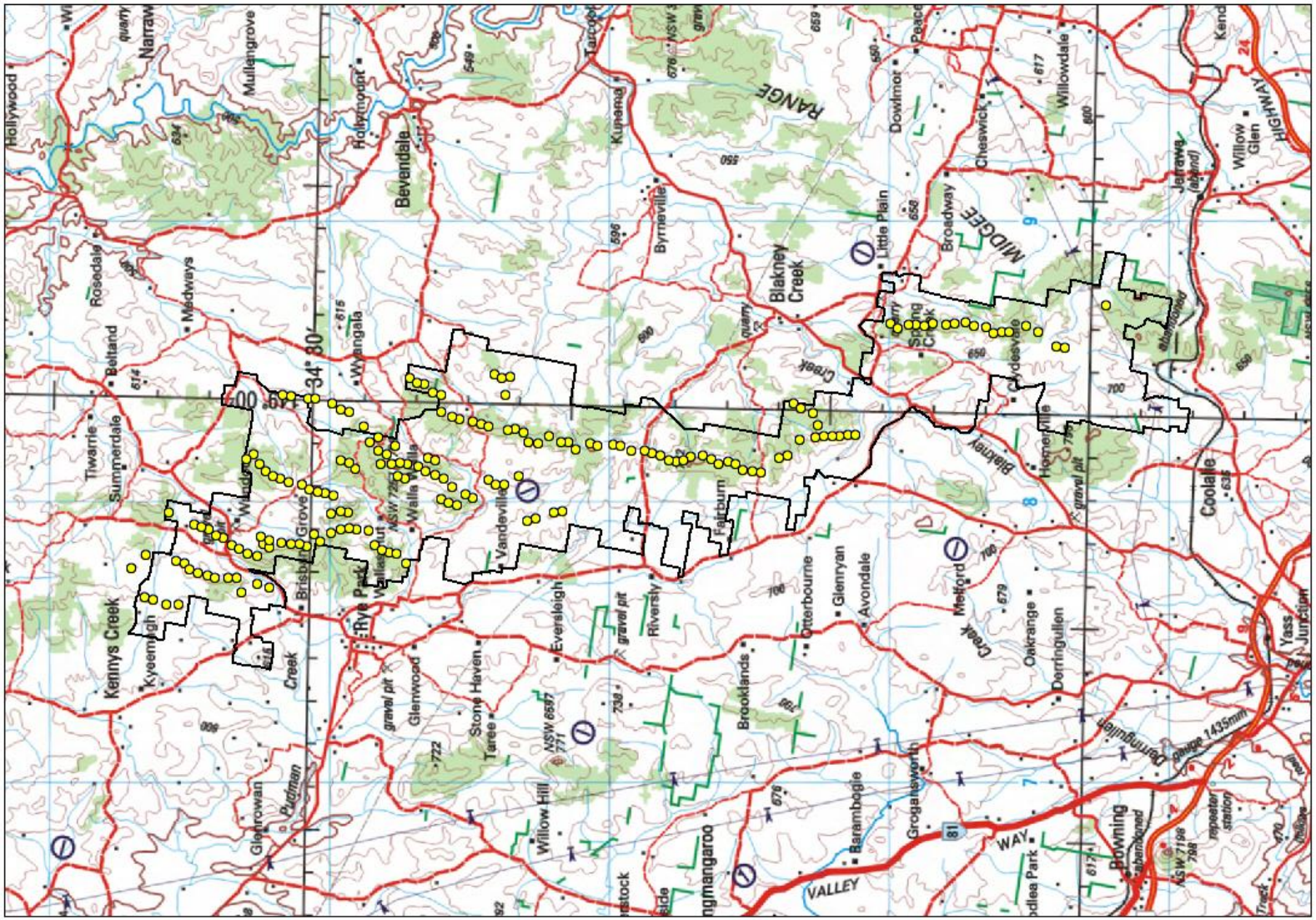
Project Information – Landowners within Site Boundary

- Approx ~45 landowners signed to be involved in wind farm project



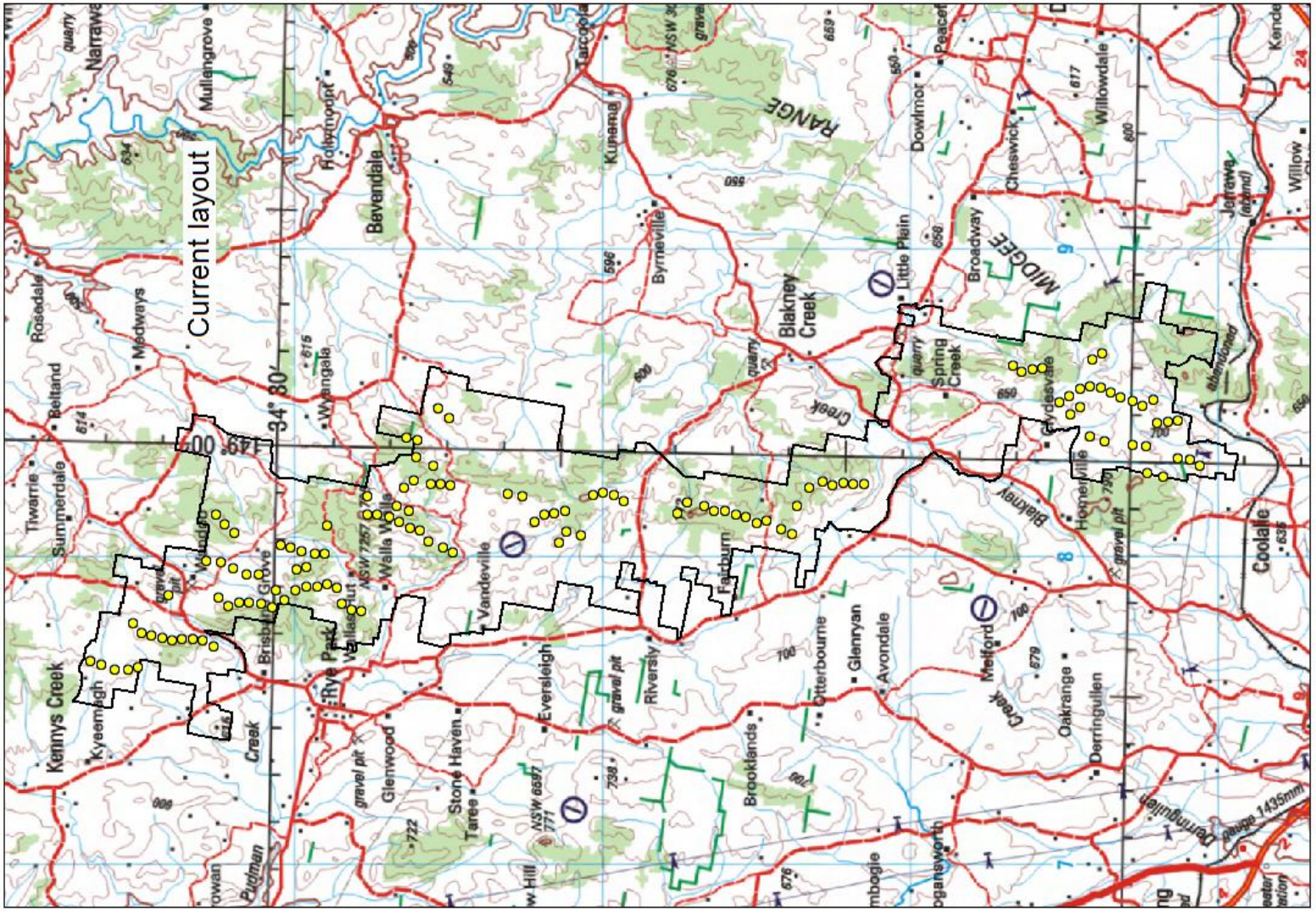
Project Information – Preliminary Layout

- Preliminary layout developed 2009-10
- Approx 180 wind turbines
- Based on initial desktop analysis, 6-12 months of wind data, land and landowner assessment



Project Information – Revised Layout

- Revised layout developed 2011-12
- Layout includes 131 wind turbines
- Based on 2011 environmental survey, 2 years of wind data, constraints analysis, land arrangements and consultation feedback

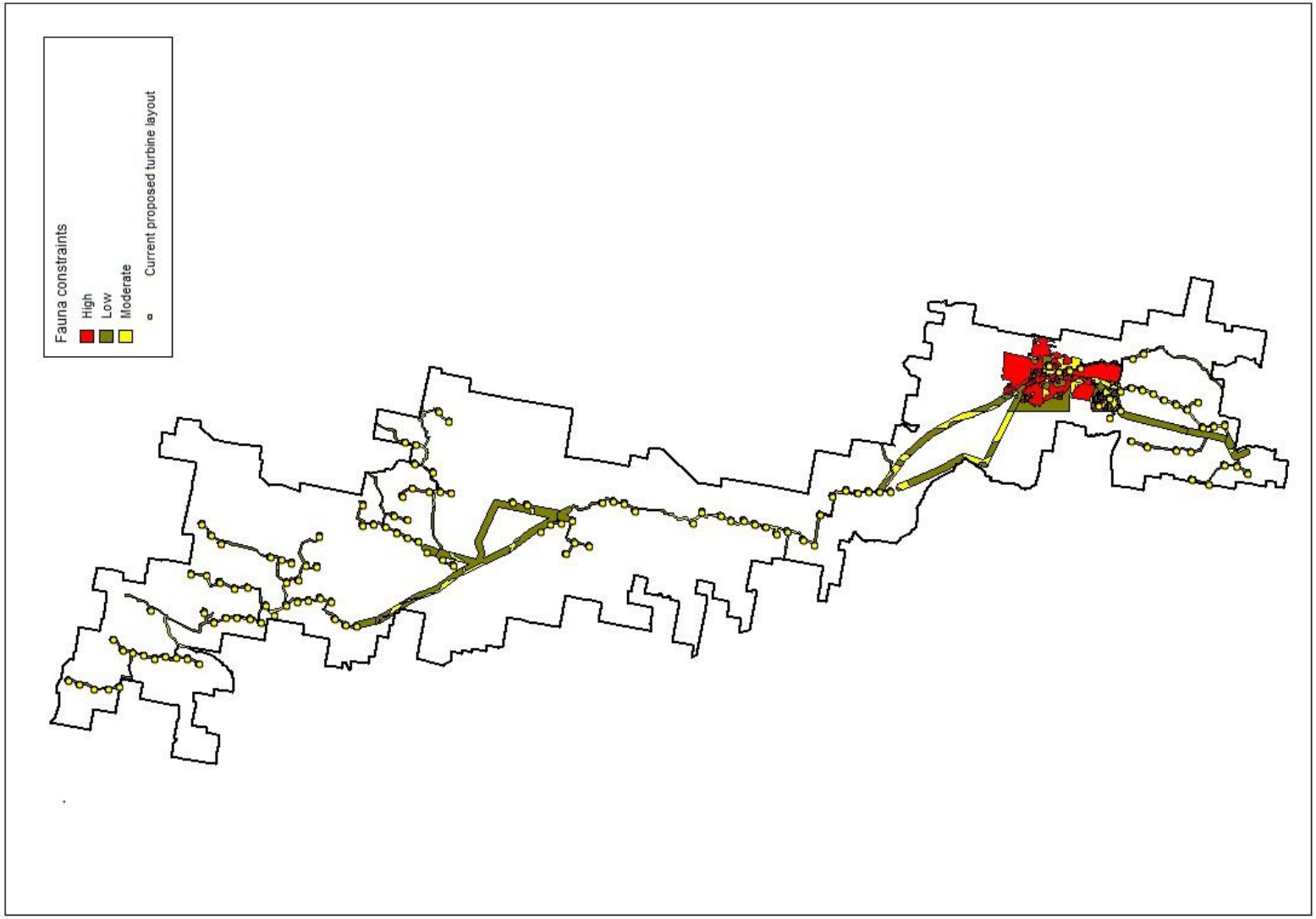


Project Information – Environmental Assessment

- Assessment of key issues;
  - Ecology (Environmental Flora and Fauna)
  - Noise (Operational and Construction)
  - Visual Amenity
  - Archaeology (Aboriginal and European Heritage)
- Other project assessments include;
  - Aviation
  - Communications
  - Electromagnetic Fields
  - Shadow Flicker
  - Fire and Bushfire Risks
- General environmental assessments include;
  - Drainage and Hydrology, Soils and Landforms, Climate and Air Quality, Mineral Exploration, Economic, Resource Impacts, Traffic and Transport

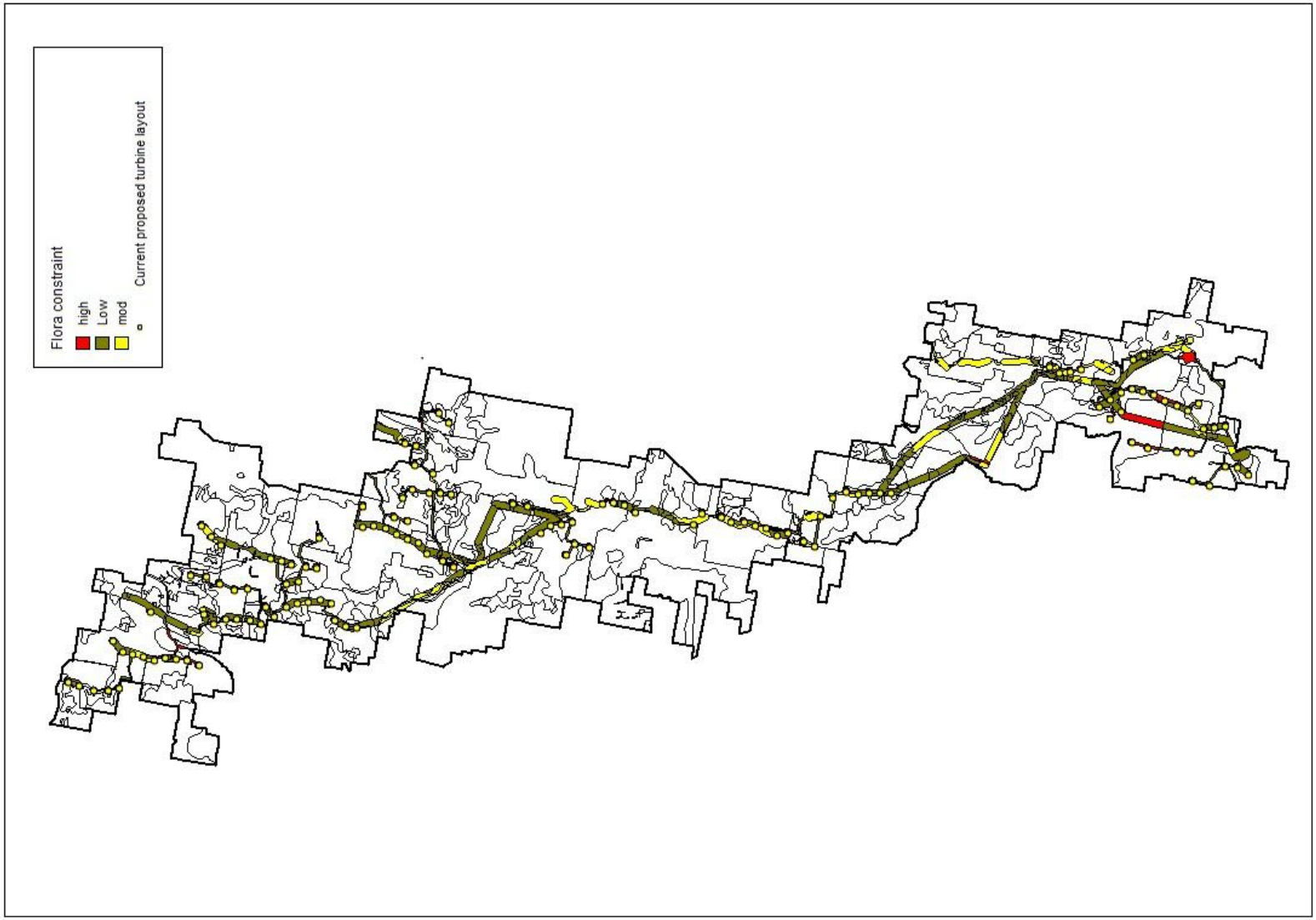
Project Information – Environmental Constraints - Fauna

- Two annual seasonal surveys completed
- Fauna habitat constraints are based on whether proposed clearing could adversely impact habitat
  - Patch size and integrity
  - Connectivity
  - Key features such as rocky outcrops or hollow bearing trees



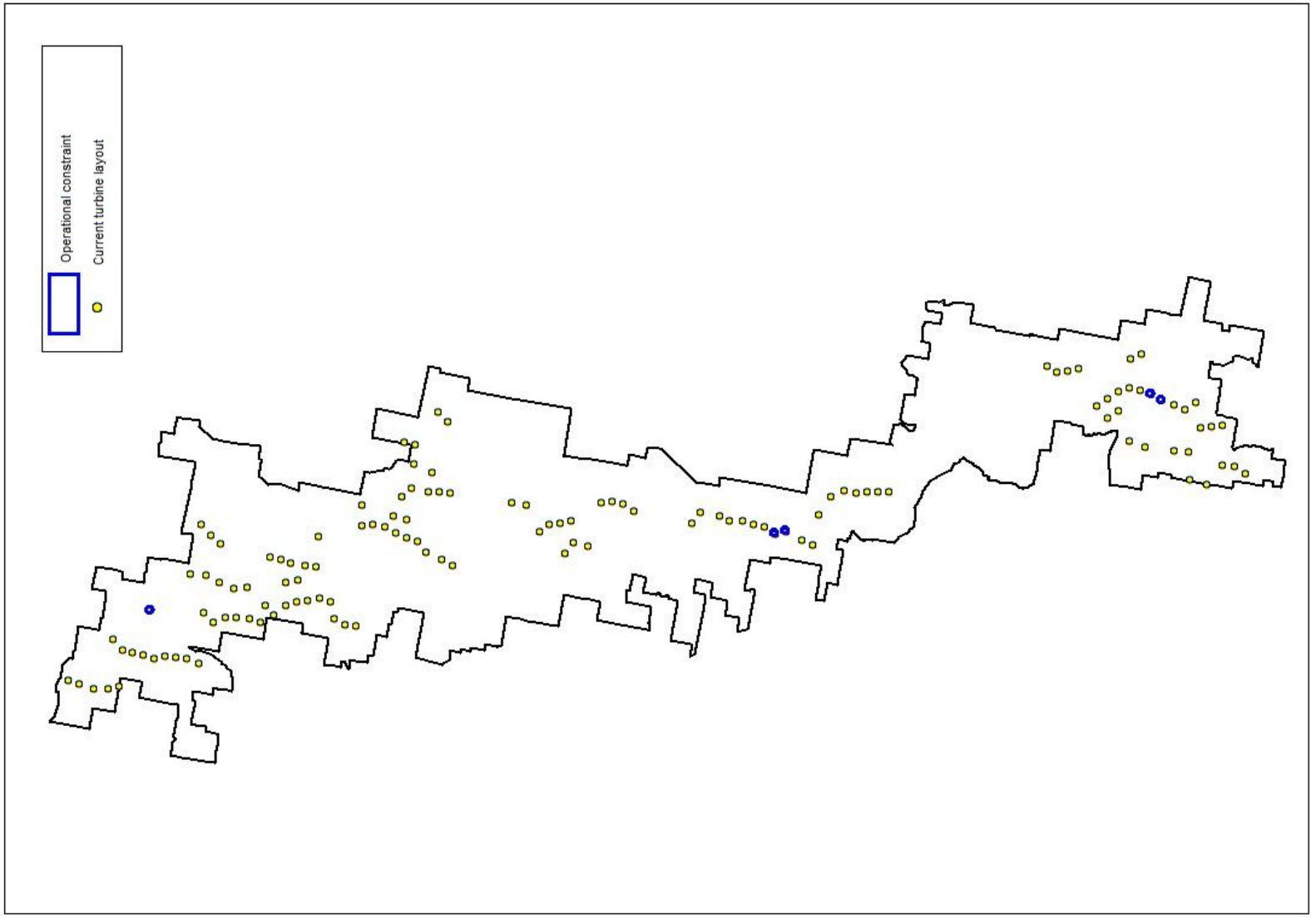
Project Information – Environmental Constraints - Flora

- Two annual seasonal surveys completed
- Majority of turbines are in low and moderate flora constraint areas
- Some turbines microsited away from high constraint areas



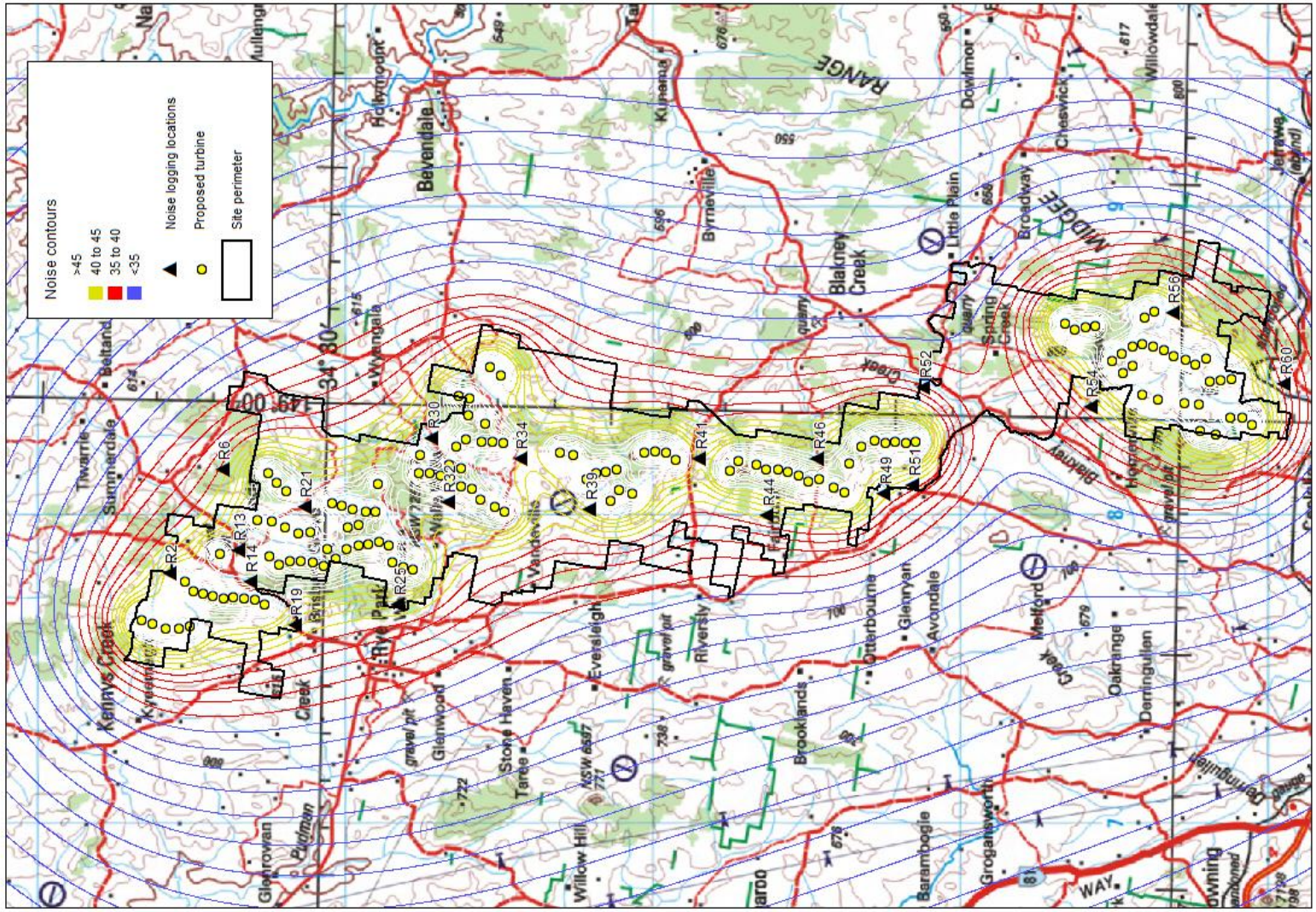
Project Information – Environmental Constraints - Operational

- Constraint assessed on potential for
  - Isolated turbines
  - Landscape position – near to heads of valleys or escarpments
  - Increased distance to nests
- Five turbines removed or relocated away from operational constraint areas



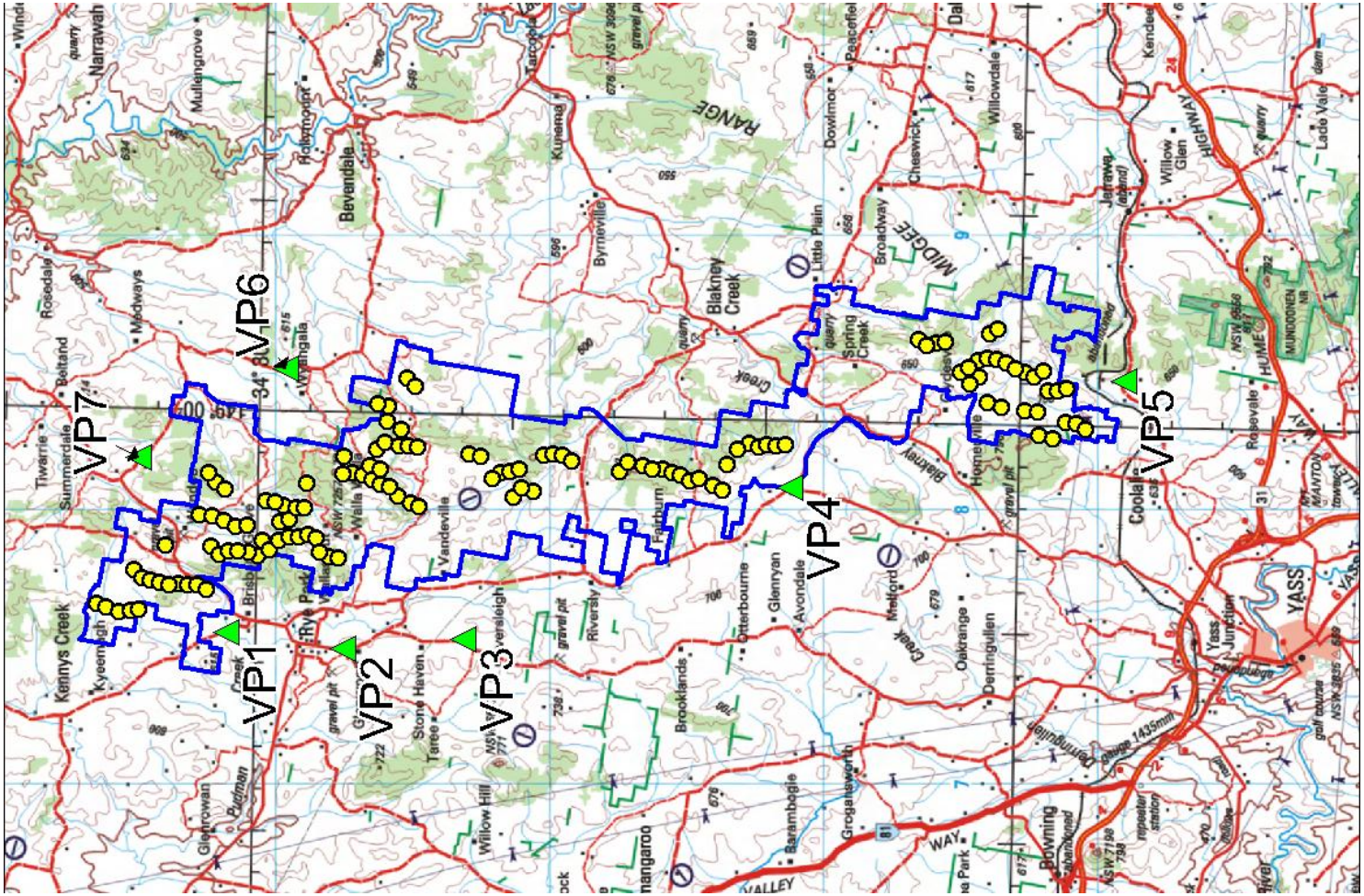
Project Information – Noise

- Preliminary noise modelling complete
- Background noise logging program underway at identified locations
- Final noise modelling to be completed when layout finalised
- Uninvolved noise limit greater of 35dBA or background plus 5dBA with separate day time and night time periods



Project Information – Visual

- Preliminary photomontages for selected public view points VP1, VP3, VP4 and VP5 have been prepared for consultation purposes
- Final photomontages for public viewpoints including VP2, VP6 and VP7 will be prepared when layout is finalised
- Epuron arranging to take photomontages at neighbouring dwellings within 2km of a wind turbine



Project Information – Visual (Preliminary Photomontages)



Viewpoint VP1 – Little Plains Road



Viewpoint VP3 – Wargeila Road

Project Information – Visual (Preliminary Photomontages)



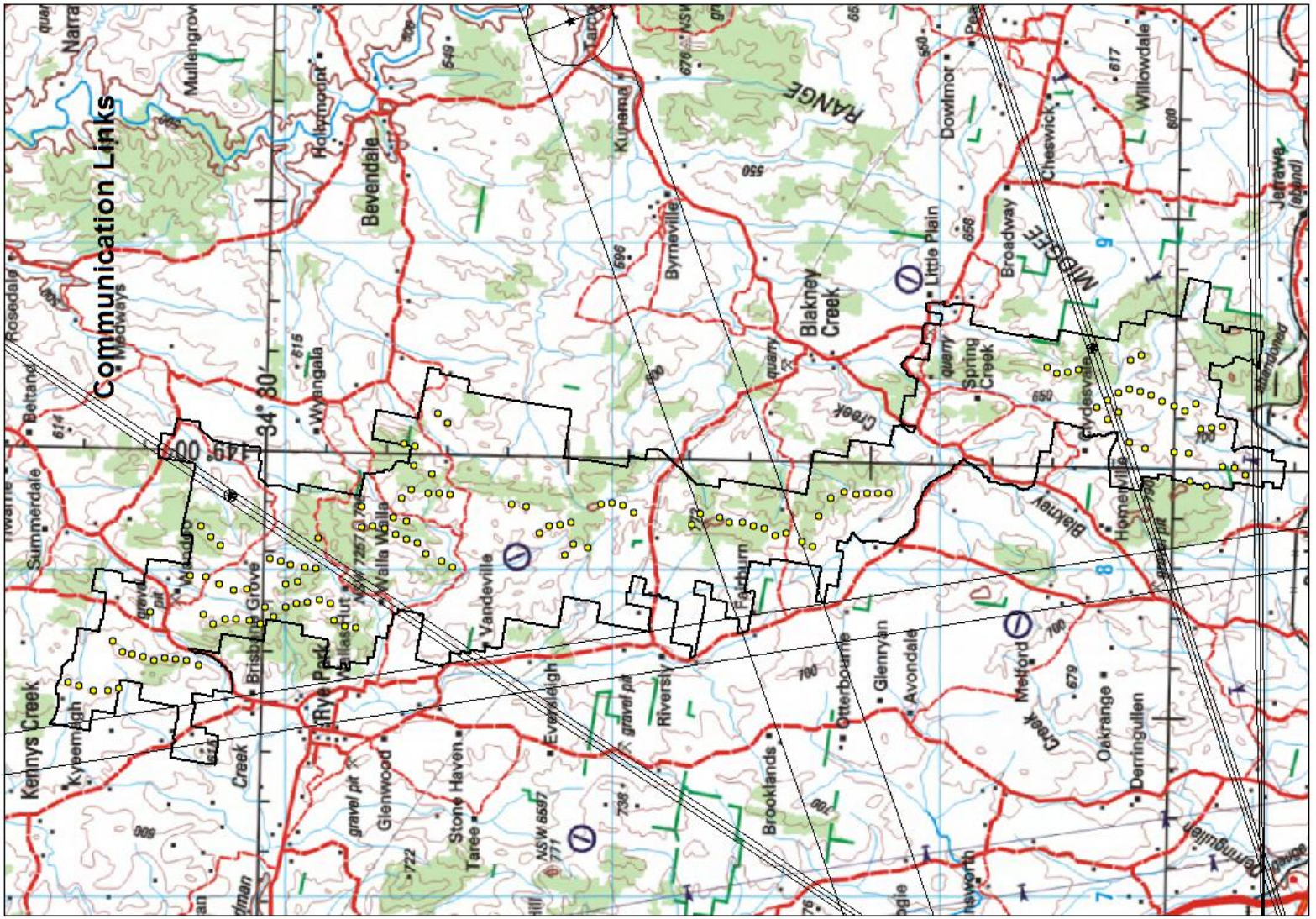
Viewpoint VP4 – Corner of Cooks Hill Road and Dalton Road



Viewpoint VP5 – Coolalie Road

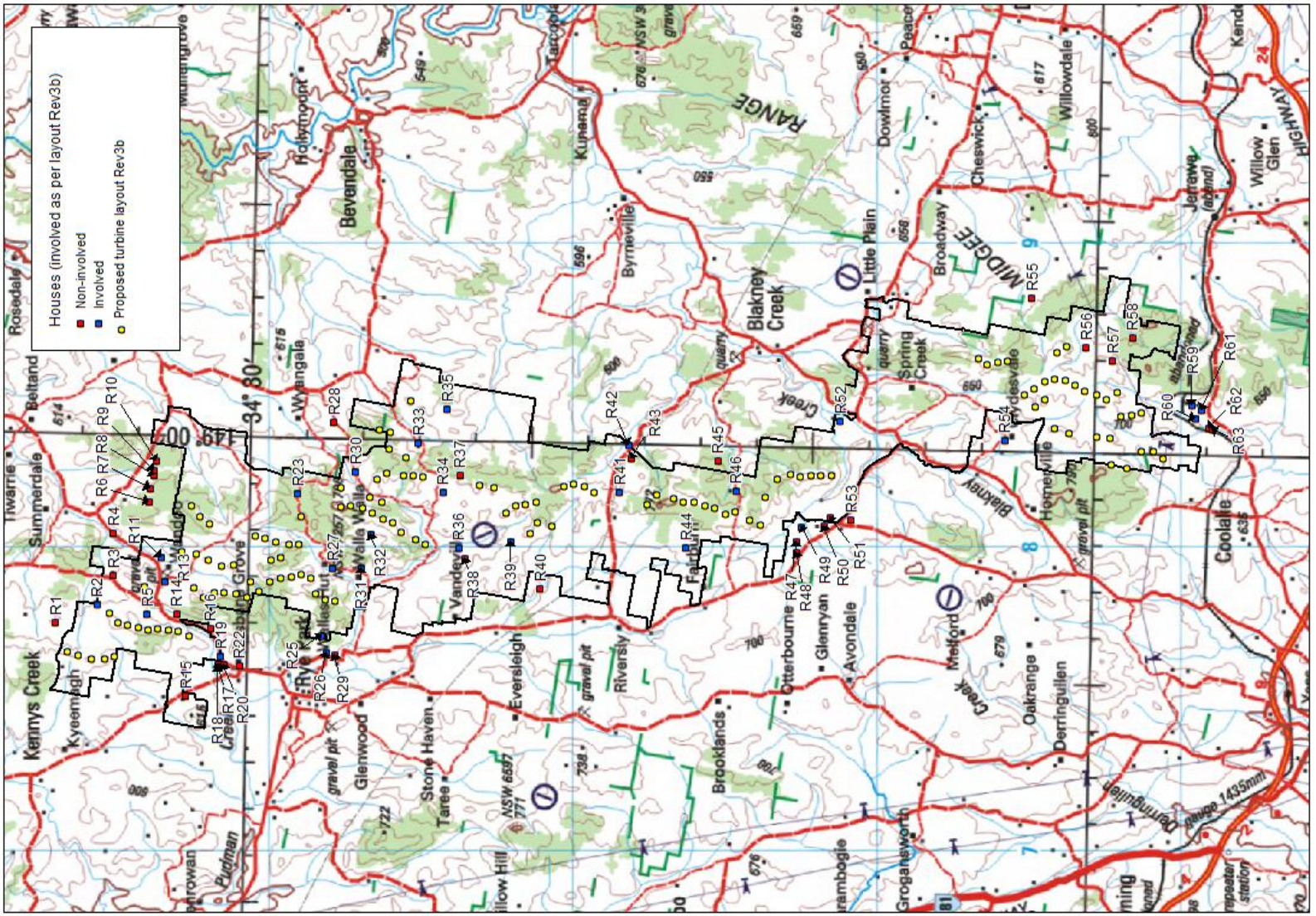
Project Information – Communication Constraints

- Existing communications infrastructure assessed
- Telcos such as Telstra consulted
- Impacts vary depending on height, location, frequency, band and type of signal



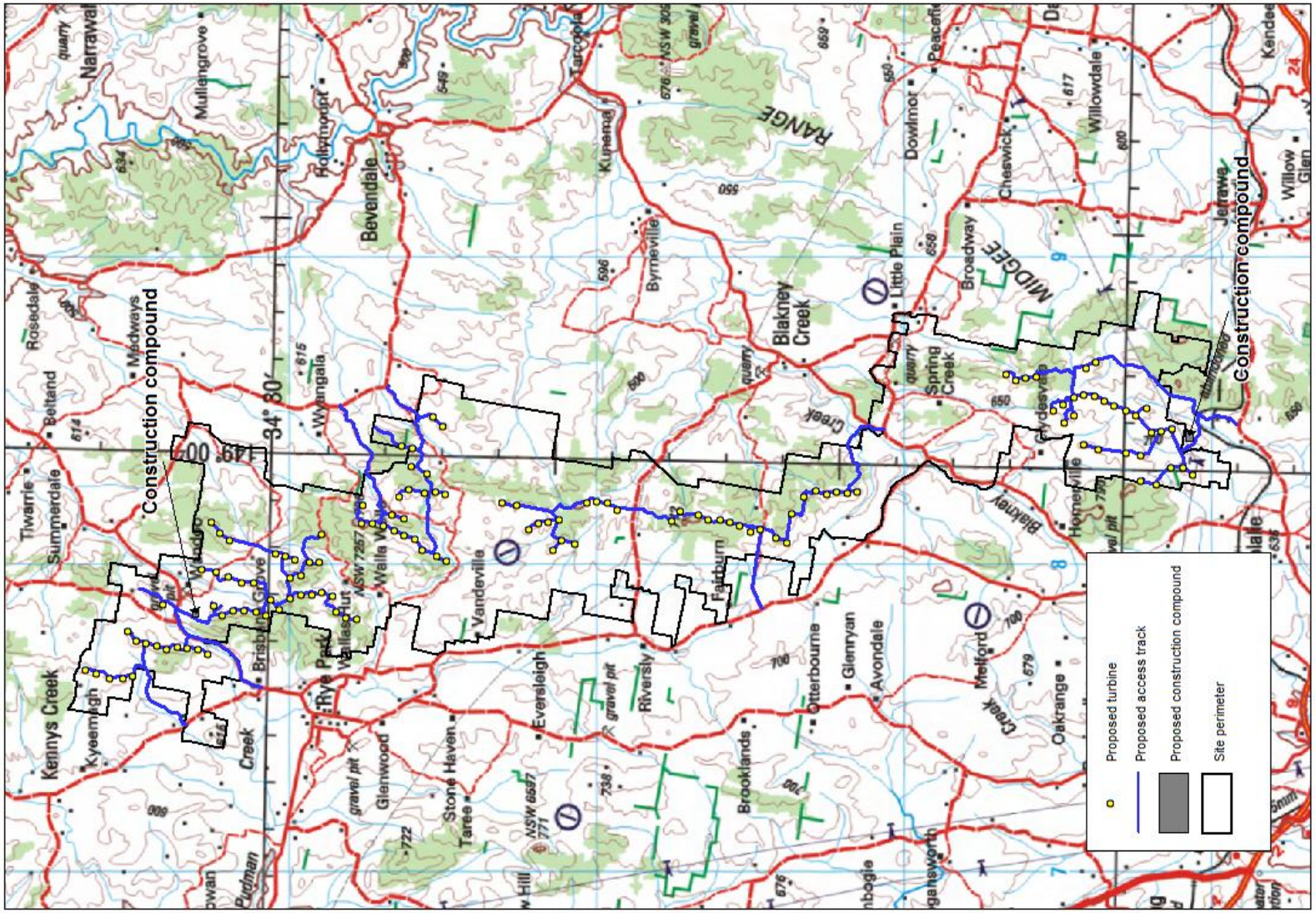
Project Information – Houses

- 27 involved landowner houses within 2km of wind turbine
- 33 uninvolved landowner houses within 2km of wind turbine



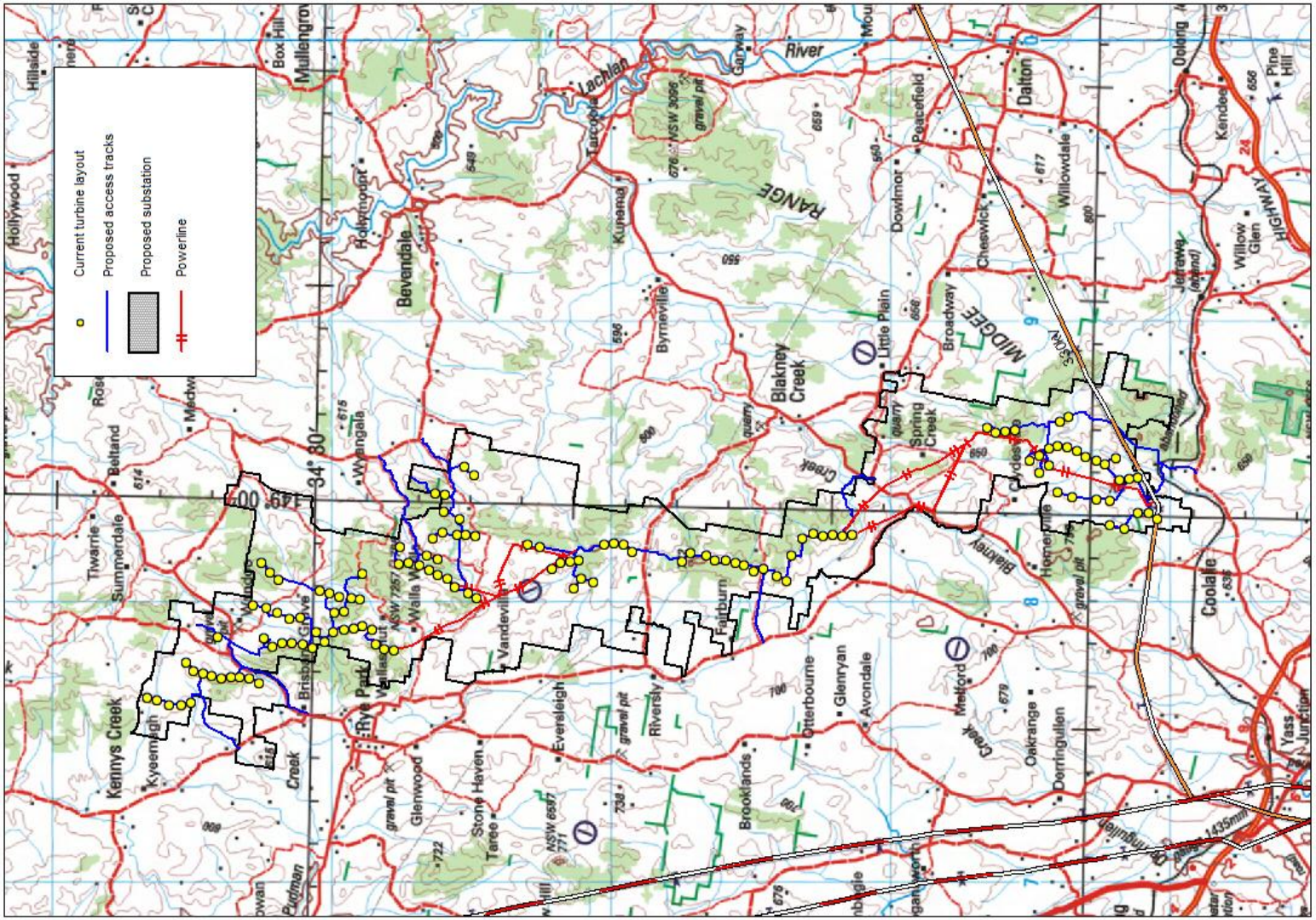
Project Information – Access Tracks and Construction Compounds

- Proposed access roads to site identified and study underway
- Construction compound locations identified



Project Information – Wind Farm Powerlines and Grid Connection

- Overhead powerlines required to link wind farm site
- On site grid connection substation land identified
- Existing Transgrid 330kV transmission line crosses south of site



Project Information – Likely Benefits (Preliminary Estimates)

- Project Investment Value $750m-$850m based on 393MW project (131x3MW)
  - 65% Wind Turbines = $488m-$552m
  - 35% Design and Construction = $262m-$298m
- Direct regional investment from construction – $200m
- Direct regional investment from operations - $15m per annum for 25 years
- Direct jobs during construction – approx 250 to 350
- Direct jobs during operations – approx 20 to 30
- Regional/state/national flow on effects, jobs and expenditure multipliers – TBC
- Carbon emissions abatement - TBC
- Community Fund – TBC (considered as part of consultation process)

Other Reference Documents

- NSW Draft Wind Farm Planning Guidelines - December 2011
- NHMRC (National Health & Medical Research Council) Review of Wind Turbines & Health - July 2010
- NSW Valuer General - Impact of Wind Farms on Property Values – August 2009
- DECCW (NSW Department of Environment, Climate Change & Water - Community Survey: “Community Attitudes to Wind Farms” – December 2010
- Clean Energy Council - Wind Farm Investment, Employment and Carbon Abatement in Australia (SKM) – June 2012

Next Steps and Timing

Update layout & design	July 2012
Newsletter No 5	End July 2012
Community Open Day	End July 2012
CCC Meeting No 2	TBC - 3pm Thursday 2 August 2012

Thank You



Ti Tree solar project

EPURON Pty Ltd

75 Miller Street
North Sydney
NSW 2060
AUSTRALIA

T +612 8456 7400
F +612 9922 6645

www.epuron.com.au



Cullerin range wind farm

Rye Park Wind Farm Pty Ltd
Level 11, 75 Miller St
NORTH SYDNEY, NSW 2060
Phone 02 8456 7400

Minutes of Meeting

Rye Park Wind Farm

Community Consultation Committee

Present:	Councillor David Needham	Yass Valley Council and Independent Chair	DN
	Mayor Wendy Tuckerman	Boorowa Council	WT
	Councillor James Wheelwright	Upper Lachlan Council	JW
	Graham Privett	Involved landowner	GP
	Brian Hall	Epuron (Rye Park Wind Farm)	BH
Apologies:	Drew and Robyn Chapman	Uninvolved landowner	DRC
Date:	27 June 2012		
Venue:	Yass Council Chambers		
Purpose:	Meeting No 1		

Minutes:

Item	Agenda / Comment / Discussion	Action
1	DN opened the Community Consultation Committee (CCC) meeting at 3pm and distributed a hard copy of the previously circulated agenda.	Noted
2	Apologies were noted for DRC who were not able to attend the CCC meeting.	Noted

3	DN asked for any declarations of pecuniary or other interests. a. WT is a member of the Rugby wind farm CCC and doesn't anticipate any conflict with membership of the Rye Park wind farm CCC. b. GP is an involved landowner to the proposed wind farm. c. Generally those present felt their participation on the CCC was relative to their interest as a local councillor or landowner etc and didn't feel it created any conflict with the wind farm CCC.	Noted
4	BH advised the following local people / groups had accepted an invitation to attend future CCC meetings but were not available for meeting number 1 due to other commitments. d. Geoffrey Minchin has confirmed he would be pleased to attend future CCC meetings as a representative of the Boorowa Catchment Management Authority in his role as the Catchment Officer. e. Chris and Jenny Hally have confirmed they would be pleased to attend future CCC meetings as uninvolved neighbours to the wind farm.	Noted BH BH
5	The CCC generally discussed a preference to try and increase representation from local landowners at future CCC meetings, if possible, particularly those living close to Rye Park. BH advised invitations to join the CCC had been widely distributed but with very few accepted responses received. GP was of the view that if uninvolved local landowners were interested in the project or had concerns about the project they would surely seek to attend the CCC. DN offered to draft and send a letter to all neighbouring landowners of the wind farm, on behalf of the CCC, inviting them to attend and or contribute to the CCC. It was acknowledged that BH (Epuron), as the project proponent, had previously sent invitations to join the CCC to all neighbouring landowners and the response was very limited. WT enquired whether a representative from the Boorowa District Landscape Guardians (BDLG) had been invited to attend the CCC meetings. BH confirmed the BDLGs had been invited to send a representative to the CCC but no response was received. WT offered to follow up with the BDLGs to see if they would reconsider and send a representative to the CCC. WT would also try to identify a willing local representative or group proximate to the town of Rye Park to attend the CCC.	Noted DN WT
6	From a planning perspective, DN discussed the need for establishing the CCC and distributed a 1 page extract form the Draft NSW Planning Guidelines for Wind Farms (Guidelines) which generally outlined the purpose, role, scope and governance expectations of the CCC. The meeting discussed that; a. Although CCC meeting frequency is suggested as quarterly in the Guidelines, BH advised CCC meetings would be required more	Noted

	frequently (approximately every 4 to 6 weeks) in the development lead up phase prior to submitting the EA to DP&I later in the year. b. DN advised the CCC reports to the Department of Planning and Infrastructure (DP&I) and is required to formally report annually to DP&I or as otherwise required. c. WT and DN discussed that the CCC should make a submission during public exhibition of the EA by DP&I regarding consultation. Each Council may make their own separate submission regarding the project more generally or Councils may wish to make a joint submission. d. DN advised that it is the role of the CCC to represent the community and to provide information about the project to the community and receive any feedback to be considered in the proposal. e. The CCC is not a decision making body.	
7	As this was the first CCC meeting, WT sought clarification on the nomination and appointment of DN as the Independent Chair of the CCC. DN stated he was nominated by Yass Valley Council who separately wrote to DP&I regarding the nomination. The Guidelines state DP&I are responsible for the appointment of an Independent Chair to a wind farm CCC.	Noted
8	BH presented detailed information including a company and project overview, development update and status of the consultation program and studies underway. The presentation consisted of 41 PowerPoint slides. A hard copy of the presentation was handed to those present at the CCC meeting and was also uploaded to the website after the meeting. Large scale photomontage posters and a map of the current wind farm layout were hung on the wall for viewing by the CCC members. Key comments, questions and feedback points arising from the presentation were (listed in no particular order); a. **Access Roads**. BH was asked to ensure Councils are consulted when the draft Traffic and Transport study is available to make sure construction access and any impacts on local roads are considered. b. **Roadwork's**. JW advised Upper Lachlan Council would be interested to tender for any roadwork contract associated with construction of the project. c. **Community Fund**. BH presentation raised the need to investigate best way to maximise local and regional benefits from the project. Specifically Epuron is looking for feedback on how to best establish a community fund and what type of local support is required from the project. JW advised Upper Lachlan Council preference for community fund payments to be based on 1% of audited capital cost (as per their DCP). Funds to be escalated at CPI and distributed annually over the life of the project. JW also advised this method and approach was generally	BH BH Noted All Noted

	adopted by AGL for the recent Dalton Gas Project.	
	DN advised Yass Valley Council preference for community fund payments to be based around the recently approved Boco Rock wind farm which contributes $2,500 per turbine per annum.	Noted
	WT advised Boorowa Council preference for community fund payments to be distributed by Council under Section 94A contributions by developers. DN agreed that this is Yass Valley Councils preference also.	Noted
	GP indicated a preference that a large part of any community fund payments to directed to local road improvements around the wind farm.	Noted
	BH acknowledged the feedback regarding the establishment of a community fund. Feedback on the type of community support required proximate to the project is important in order to progress. BH will discuss this further at the next meeting.	BH
	d. **Wind Farm Layout**. WT asked for clarification as to how the original layout of 180 turbines had evolved to the current layout of 131 turbines. BH explained (as outlined in the presentation) that the original 180 layout was based on limited early information available about the site, generally at a desk top level, to enable initial discussions with stakeholders to commence. Since then the various studies and consultation results have better identified the sites constraints and enabled the 131 layout to be optimised to accommodate updated design information. Work is ongoing in this area.	Noted
	e. **Photomontages**. BH confirmed four preliminary photomontages taken from public road viewpoints were complete and large scale posters were available for viewing at the meeting. A photomontage will be prepared for all dwellings located within 2km of a turbine (where allowed).	Noted
	f. **Local Support**. JW enquired as to the level of local support observed by Epuron during community consultation activity. BH indicated there was generally a positive level of community support amongst locals for the project, but as with all large development projects, there were some people either ambivalent or opposed to a wind farm in the area. Consultation work is ongoing and the next key event will be another newsletter and a Community Open House display proposed for Rye Park in July/August.	Noted
9	General business	
	a. BH to upload copy of presentation to website.	BH
	b. DN asked BH to prepare a draft set of minutes of meeting.	BH

10	Next meeting Date: Thursday 2 August 2012 Time: 3pm to 4.30pm Venue: Yass Council Chambers	All DN and BH to circulate details prior to next meeting
11	Meeting closed at 4.30pm	Noted

M E E T I N G A G E N D A

Meeting No.	2	
Date and time	3.00pm, Thursday 2nd August	
Location	Yass Valley Council Chambers, Comur St, Yass	
Members	Councillor David Needham (Chair)	Yass Council
	Mayor Wendy Tuckerman	Boorowa Council
	Councillor James Wheelwright	Upper Lachlan Council
	Graham Privett	Involved wind farm landowner
	Greg Medway	Involved wind farm landowner
	Bev and Alex Davis	Non-involved wind farm landowner
	Jenny Hally	Non-involved wind farm landowner
	Geoffrey Minchin	Interested community member &
	Brian Hall	Proponent (Epuron)
Attending		

1. Apologies
2. Declaration of pecuniary or other interests
3. Minutes of previous meeting
4. Matters arising
5. Establishing the Community Consultation Committee - Number and roles of committee members – discussion
6. Securing new members – report – Brian Hall
7. Role and governance of the Committee (including how it can provide constructive input into the development process)
8. Project consultation update, including:
    a. Consultation plan & progress report, including Open Day
    b. progress at the wind farm
9. General business
10. Next meeting

Details for CCC meeting No 2

Venue: Yass Valley Council Chambers

Address: 209 Comur Street, Yass

Date: Thursday 2 August 2012

Time: 3.00pm to 4.30pm

EPURON

Rye Park Wind Farm

Community Consultation Committee Meeting No 2

2 August 2012

Meeting Contents

1. **Review of CCC meeting No 1**
   - Summary of feedback and key issues
   - Summary of project information provided
2. **Community Consultation Committee update**
   - Membership update
   - Minutes of last meeting
3. **Rye Park Wind Farm – Current Development Status**
4. **Project Consultation**
   - Newsletter No 5
   - Public Open Day
   - Key consultation activity and timetable
5. **Project Information**
   - Layouts
   - Archaeology & Heritage
   - Traffic and Transport
   - Community Fund
   - Likely Benefits
   - Grid connection update
6. **Next Steps and Timing**

CCC Meeting No 1 - Summary of Feedback and Key Issues

- **Construction access roads and routes**
  - Ensure councils are consulted when draft Traffic & Transport Plan is released.
- **Construction roadwork**
  - Upper Lachlan Council expressed a desire to tender for construction roadwork package.
- **Community fund**
  - Seek community input on how to best establish fund and type of support required.
  - Councils/members discussed preferred models, contribution levels & support required.
- **Wind farm layout**
  - Members viewed current layout and layout evolution since project development commenced.
  - Study results and community feedback to feed into preparation of the final layout.
- **Photomontages**
  - Seven public road viewpoint photomontages were on display at the CCC meeting.
  - Photomontage will be prepared for dwellings within 2km of a turbine (subject to landowner).
- **Local support**
  - Members discussed local levels of support/opposition to project. Consultation is ongoing.
- **Increased participation on the CCC**
  - Letter to be sent to uninvolved landowners proximate to the site to inform about CCC.

CCC Meeting No 1 - Summary of Project Information Provided

- Corporate information about Epuron including background and track-record
- Rye Park wind farm project overview and development status
- Overview of Draft NSW Wind Farm Planning Guidelines and Part 3A Transitional Arrangements issued by the Department
- Details about the role and purpose of the Community Consultation Committee
- Status of project consultation activity and the project consultation plan
- Details about the project including
  - Project location, site boundary and landowners
  - Review of the project layout and its progression
  - Environmental constraint layers
  - Noise logging locations
  - Public road viewpoints and photomontages displayed
  - Involved and uninvolved houses
  - Overhead powerlines, access roads, construction infrastructure and substations
- A preliminary estimate of likely benefits from the project
- List of reference documents for further information

Rye Park Wind Farm – Current Development Status

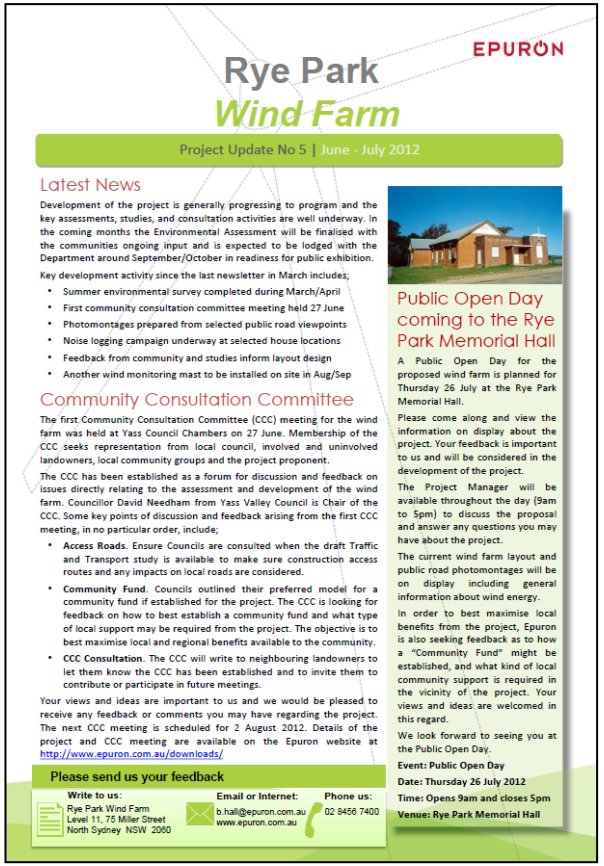
- Release of final draft wind farm layout expected mid August (….next newsletter)
- Layout to incorporate consultation feedback and results of expert studies
- 2 seasons of spring/summer environmental surveys completed
- 9 day Archaeological field survey completed July 2012
- Noise logging campaign ~90% complete at involved and uninvolved dwellings
- Visual & Landscape study well underway (will include photomontages at 2km houses)
- Traffic and Transport Plan released for consultation
- Other studies including aviation, communications, shadow flicker etc well advanced
- Public Open Day held in Rye Park on Thursday 26 July from 9am to 5pm
- Targeting EA lodgement with Department in October
- Project details available at website www.epuron.com.au/projects/rye-park

Community Consultation Committee – Membership Update

- **Independent chairperson;**
  - Councillor David Needham
- **Involved landowners;**
  - Graham Privett
  - Greg Medway
- **Uninvolved landowners;**
  - Jenny and Chris Hally
  - Bev and Alex Davis
- **Local Group or Association;**
  - Geoffrey Minchin (interested party and employed by Boorowa CMA)
- **Local councils;**
  - Mayor Wendy Tuckerman – Boorowa Council
  - Councillor James Wheelwright – Upper Lachlan Council
  - Councillor David Needham – Yass Council
- **Epuron**
  - Brian Hall – Senior Project Manager

Project Consultation – Newsletter No 5

- **Released 10 July 2012**
- **Information included;**
  - Latest news & project development update
  - Update on CCC activity
  - Announced the public open day at Rye Park hall
  - Status of the environmental assessment process
  - Outlined project benefits available to the local region
  - Overview of overhead powerlines, grid connection and substations
  - Reminder of contact details for project feedback



EPURON

Rye Park
Wind Farm

Project Update No 5 | June - July 2012

Latest News

Development of the project is generally progressing to program and the key assessments, studies, and consultation activities are well underway. In the coming months the Environmental Assessment will be finalised with the communities ongoing input and is expected to be lodged with the Department around September/October in readiness for public exhibition.

Key development activity since the last newsletter in March includes;

- Summer environmental survey completed during March/April
- First community consultation committee meeting held 27 June
- Photomontages prepared from selected public road viewpoints
- Noise logging campaign underway at selected house locations
- Feedback from community and studies inform layout design
- Another wind monitoring mast to be installed on site in Aug/Sep

Community Consultation Committee

The first Community Consultation Committee (CCC) meeting for the wind farm was held at Yass Council Chambers on 27 June. Membership of the CCC seeks representation from local council, involved and uninvolved landowners, local community groups and the project proponent.

The CCC has been established as a forum for discussion and feedback on issues directly relating to the assessment and development of the wind farm. Councillor David Needham from Yass Valley Council is Chair of the CCC. Some key points of discussion and feedback arising from the first CCC meeting, in no particular order, include;

- **Access Roads**. Ensure Councils are consulted when the draft Traffic and Transport study is available to make sure construction access routes and any impacts on local roads are considered.
- **Community Fund**. Councils outlined their preferred model for a community fund if established for the project. The CCC is looking for feedback on how to best establish a community fund and what type of local support may be required from the project. The objective is to best maximise local and regional benefits available to the community.
- **CCC Consultation**. The CCC will write to neighbouring landowners to let them know the CCC has been established and to invite them to contribute or participate in future meetings.

Your views and ideas are important to us and we would be pleased to receive any feedback or comments you may have regarding the project. The next CCC meeting is scheduled for 2 August 2012. Details of the project and CCC meeting are available on the Epuron website at http://www.epuron.com.au/downloads/

Public Open Day coming to the Rye Park Memorial Hall

A Public Open Day for the proposed wind farm is planned for Thursday 26 July at the Rye Park Memorial Hall.

Please come along and view the information on display about the project. Your feedback is important to us and will be considered in the development of the project.

The Project Manager will be available throughout the day (9am to 5pm) to discuss the proposal and answer any questions you may have about the project.

The current wind farm layout and public road photomontages will be on display including general information about wind energy.

In order to best maximise local benefits from the project, Epuron is also seeking feedback as to how a "Community Fund" might be established, and what kind of local community support is required in the vicinity of the project. Your views and ideas are welcomed in this regard.

We look forward to seeing you at the Public Open Day.

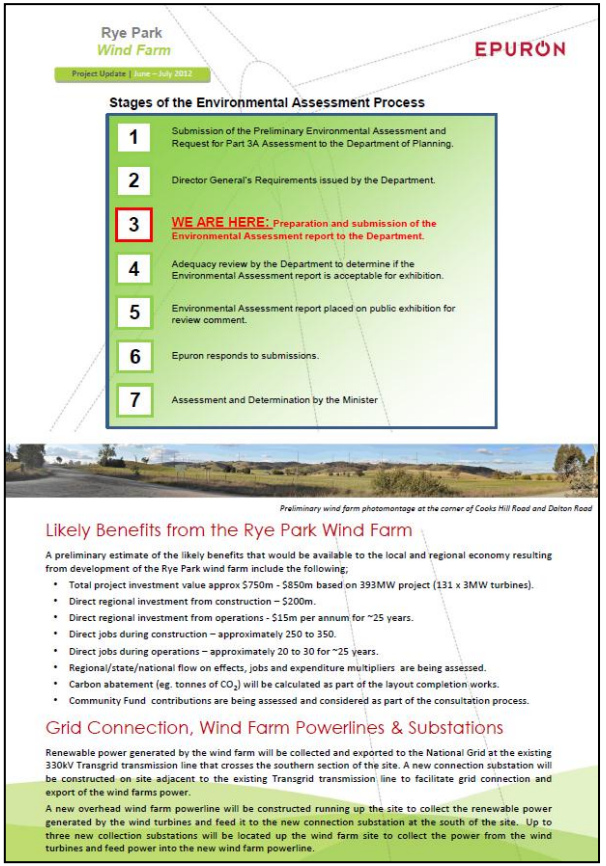
Event: Public Open Day
Date: Thursday 26 July 2012
Time: Opens 9am and closes 5pm
Venue: Rye Park Memorial Hall

Please send us your feedback

Write to us:
Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney NSW 2060

Email or Internet:
b.hall@epuron.com.au
www.epuron.com.au

Phone us:
02 8456 7400



Rye Park
Wind Farm

EPURON

Project Update | June – July 2012

Stages of the Environmental Assessment Process

1. Submission of the Preliminary Environmental Assessment and Request for Part 3A Assessment to the Department of Planning.
2. Director General's Requirements issued by the Department.
3. **WE ARE HERE:** Preparation and submission of the Environmental Assessment report to the Department.
4. Adequacy review by the Department to determine if the Environmental Assessment report is acceptable for exhibition.
5. Environmental Assessment report placed on public exhibition for review comment.
6. Epuron responds to submissions.
7. Assessment and Determination by the Minister

Preliminary wind farm photomontage at the corner of Cooks Hill Road and Dalton Road

Likely Benefits from the Rye Park Wind Farm

A preliminary estimate of the likely benefits that would be available to the local and regional economy resulting from development of the Rye Park wind farm include the following;

- Total project investment value approx $750m - $850m based on 393MW project (131 x 3MW turbines).
- Direct regional investment from construction – $200m.
- Direct regional investment from operations - $15m per annum for ~25 years.
- Direct jobs during construction – approximately 250 to 350.
- Direct jobs during operations – approximately 20 to 30 for ~25 years.
- Regional/state/national flow on effects, jobs and expenditure multipliers are being assessed.
- Carbon abatement (eg. tonnes of CO_2) will be calculated as part of the layout completion works.
- Community Fund contributions are being assessed and considered as part of the consultation process.

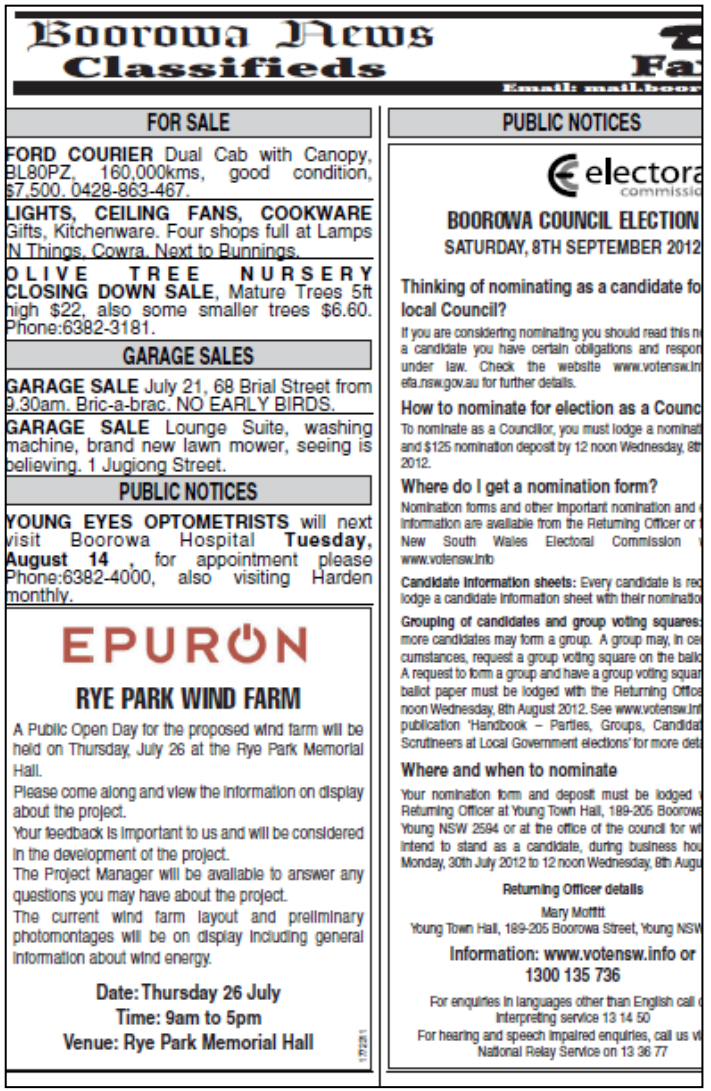
Grid Connection, Wind Farm Powerlines & Substations

Renewable power generated by the wind farm will be collected and exported to the National Grid at the existing 330kV Transgrid transmission line that crosses the southern section of the site. A new connection substation will be constructed on site adjacent to the existing Transgrid transmission line to facilitate grid connection and export of the wind farms power.

A new overhead wind farm powerline will be constructed running up the site to collect the renewable power generated by the wind turbines and feed it to the new connection substation at the south of the site. Up to three new collection substations will be located up the wind farm site to collect the power from the wind turbines and feed power into the new wind farm powerline.

Project Consultation – Public Open Day 26 July

- **Public open day was advertised in;**
  - Boorowa News
  - Yass Tribune
  - Newsletter No 5
- **51 people attended the public open day;**
  - Majority of people were supportive
  - About 11 people were opposed
  - 12 people asked for follow up information
  - 3 people/companies registered their interest in construction jobs and tender contracts
- **Material displayed included;**
  - Latest wind farm layout
  - Photomontages from 7 public viewpoints
  - Map of transport & construction access routes
  - General wind farm and industry information
  - Recent newsletter and corporate information



Boorowa News
Classifieds

FOR SALE

FORD COURIER Dual Cab with Canopy, BL80PZ, 160,000kms, good condition, $7,500. 0428-863-467.

LIGHTS, CEILING FANS, COOKWARE Gifts, Kitchenware. Four shops full at Lamps N Things, Cowra. Next to Bunnings.

OLIVE TREE NURSERY CLOSING DOWN SALE, Mature Trees 5ft high $22, also some smaller trees $6.60. Phone:6382-3181.

GARAGE SALES

GARAGE SALE July 21, 68 Brial Street from 9.30am. Bric-a-brac. NO EARLY BIRDS.

GARAGE SALE Lounge Suite, washing machine, brand new lawn mower, seeing is believing. 1 Jugiong Street.

PUBLIC NOTICES

YOUNG EYES OPTOMETRISTS will next visit Boorowa Hospital **Tuesday, August 14** , for appointment please Phone:6382-4000, also visiting Harden monthly.

EPURON

RYE PARK WIND FARM

A Public Open Day for the proposed wind farm will be held on Thursday, July 26 at the Rye Park Memorial Hall.

Please come along and view the information on display about the project.

Your feedback is important to us and will be considered in the development of the project.

The Project Manager will be available to answer any questions you may have about the project.

The current wind farm layout and preliminary photomontages will be on display including general information about wind energy.

Date: Thursday 26 July
Time: 9am to 5pm
Venue: Rye Park Memorial Hall

PUBLIC NOTICES

electora

BOOROWA COUNCIL ELECTION
SATURDAY, 8TH SEPTEMBER 2012

Thinking of nominating as a candidate fo local Council?

If you are considering nominating you should read this n a candidate you have certain obligations and respon under law. Check the website www.votensw.in efa.nsw.gov.au for further details.

How to nominate for election as a Counc

To nominate as a Councillor, you must lodge a nominat and $125 nomination deposit by 12 noon Wednesday, 8t 2012.

Where do I get a nomination form?

Nomination forms and other important nomination and information are available from the Returning Officer or New South Wales Electoral Commission www.votensw.info

Candidate information sheets: Every candidate is re lodge a candidate information sheet with their nominatio

Grouping of candidates and group voting squares: more candidates may form a group. A group may, in ce cumstances, request a group voting square on the ballo A request to form a group and have a group voting squar ballot paper must be lodged with the Returning Offic noon Wednesday, 8th August 2012. See www.votensw.in publication 'Handbook – Parties, Groups, Candidat Scrutineers at Local Government elections' for more det

Where and when to nominate

Your nomination form and deposit must be lodged Returning Officer at Young Town Hall, 189-205 Boorow Young NSW 2594 or at the office of the council for wh intend to stand as a candidate, during business hou Monday, 30th July 2012 to 12 noon Wednesday, 8th Augu

Returning Officer details

Mary Moffitt
Young Town Hall, 189-205 Boorowa Street, Young NSW

Information: www.votensw.info or 1300 135 736

For enquiries in languages other than English call Interpreting service 13 14 50
For hearing and speech impaired enquiries, call us vi National Relay Service on 13 36 77

Project Consultation – Public Open Day 26 July

- **Summary of positive points/comments expressed**
  - Good opportunity to capture local expenditure and investment
  - Local jobs available during construction & long term operations
  - Rye Park community could benefit from projects support
  - We need more clean green energy to reduce reliance on coal
  - I like the look of wind turbines in the district
- **Summary of negative points/comments expressed**
  - I am concerned that my property value will reduce if built
  - What about the health impacts from wind farms
  - Wind turbines are noisy and will be annoying
  - I don't want to see wind turbines from my house
  - I am concerned Bango wind farm is also close to me





Project Consultation – Key Activity and Timetable

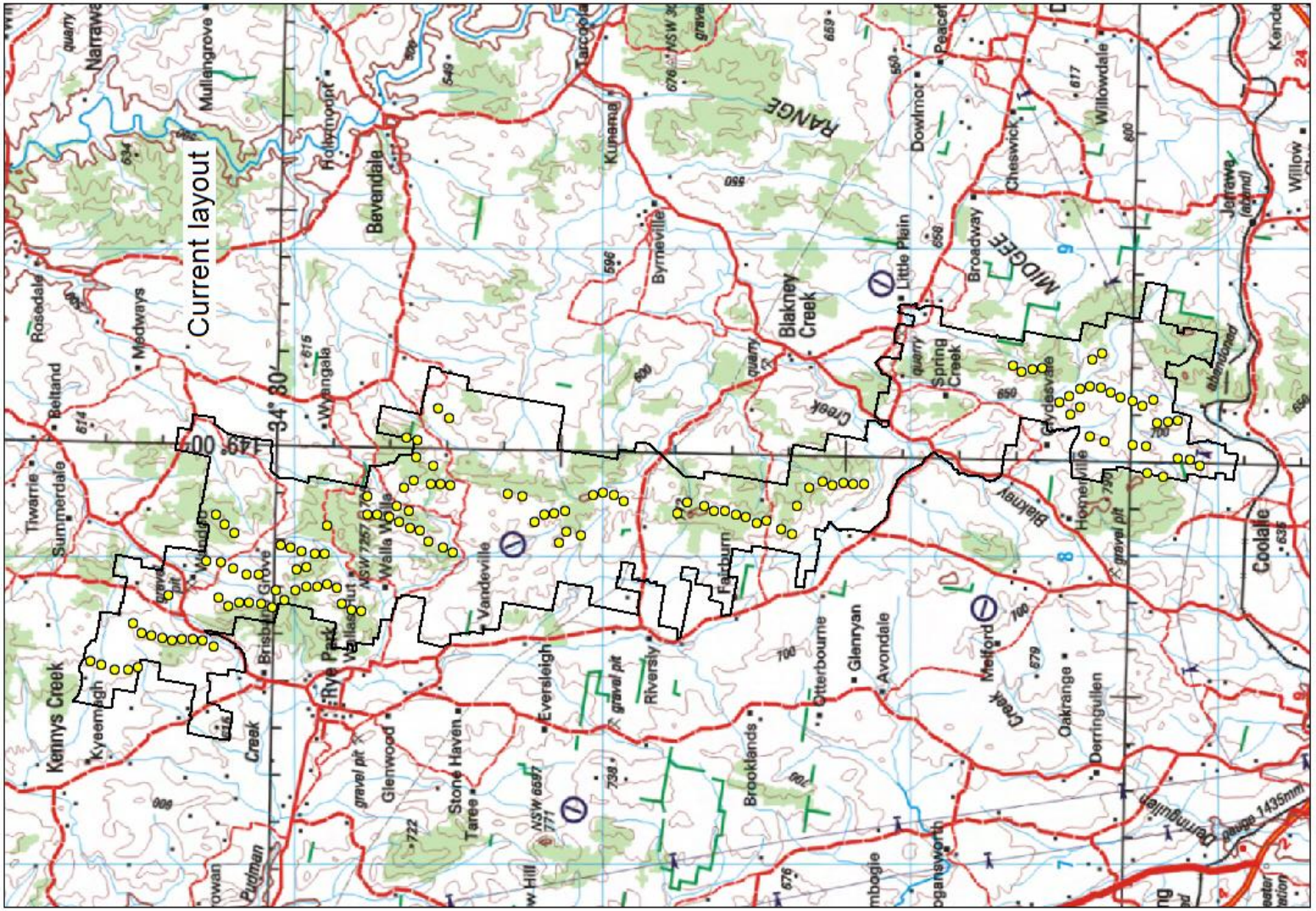
Activity	Timing	Objectives	Stakeholders	Status
Community information workshop	November 2008	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	**Completed**
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	**Completed**
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	**Completed**
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	**Completed**
Consult with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours within 2km of turbine	**Completed (but ongoing)**
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	**Completed**
Establish Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	**Completed**

Project Consultation – Key Activity and Timetable

Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 1	May / June 2012	Provide project information and seek feedback	Invited members	**Completed**
Newsletter 5 and Community Open House 1	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	**Completed**
CCC Meeting 2	**July / August 2012**	**Provide updated information and consider feedback including release of draft final layout**	**Invited members**	**To be held Thursday 2 August 2012**
Newsletter 6 and Community Open House 2	September / October 2012	Update on studies and consultation feedback contributing to draft final layout	Involved and uninvolved landowners (mail-out)	pending
CCC Meeting 3	September / October 2012	Provide draft final documentation for review and feedback	Invited members	TBC – Monday 17 September 2012
Pre DA submission follow up	September / October 2012	Consider feedback and any final amendments required prior to lodging application	Involved and uninvolved landowners, CCC and consultants	pending

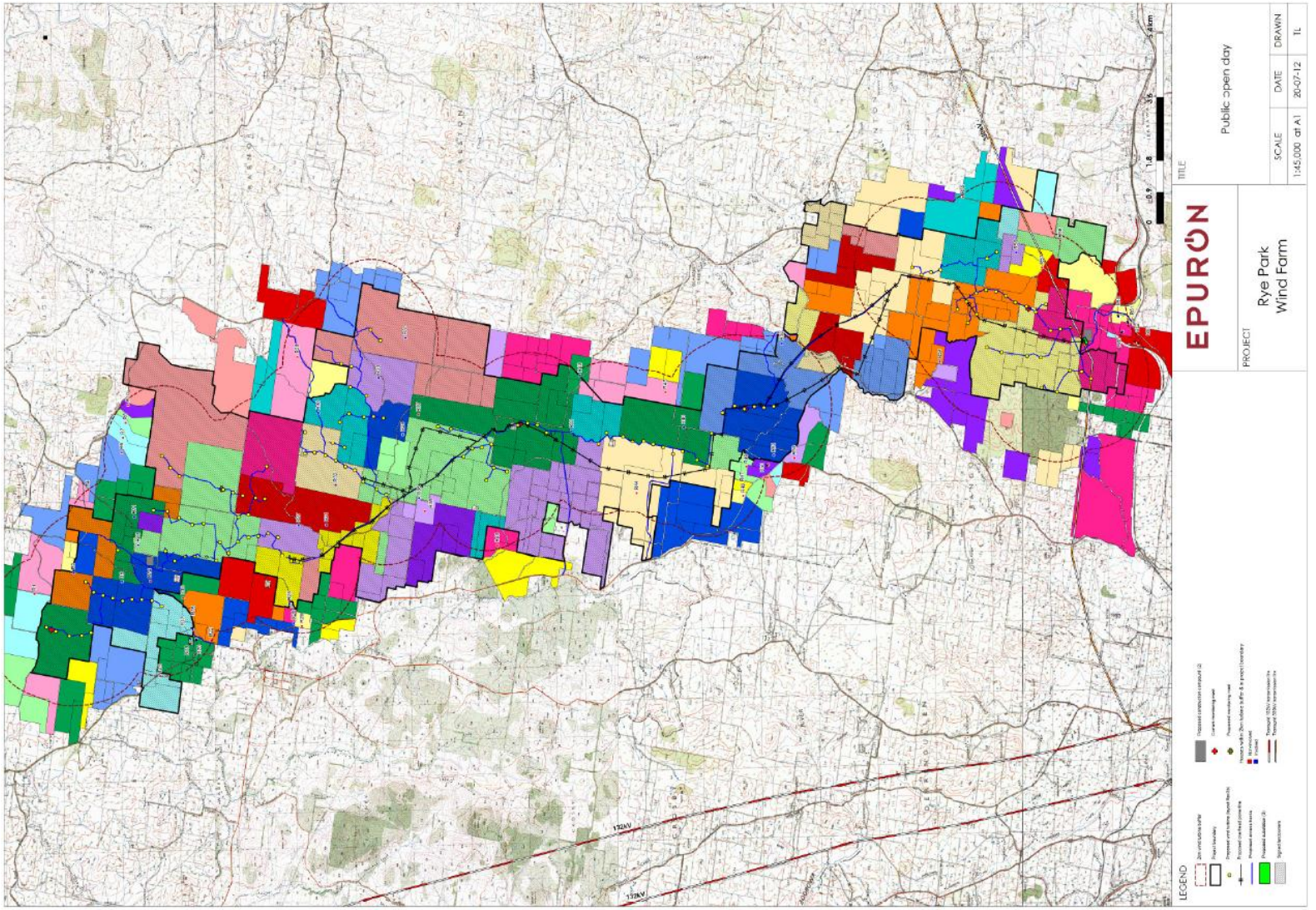
Project Information – Current Layout

- Current layout released March 2012
- Layout accommodates 131 wind turbines
- Based on 2011 environmental survey, 2 years of wind data, initial constraints analysis, land arrangements and early consultation feedback



Project Information – Current Layout updated for the Public Open Day

- Updated layout displayed at public open day included revised;
  - Access roads
  - Overhead powerlines and substations
  - Construction compounds
  - Additional wind monitoring mast
  - Houses layer
- Layout accommodates 131 turbines



Project Information – Archaeology & Heritage

- Consultation included 5 registered aboriginal parties;
  - Onerwal Local Aboriginal land Council
  - King Browns Tribal Group
  - Gunjeewong Cultural Heritage Aboriginal Corporation
  - Gundungurra Aboriginal Heritage Association Inc
  - Buru Ngunawal Aboriginal Corporation
- 9 day field survey completed during July 2012 and consultant assisted by Buru Ngunawal Aboriginal Corp.
- Preliminary results show proposed impact areas were assessed to be of low archaeological and heritage significance primarily due their location on very rocky ridgelines and situated away from streams and rivers.
- Aboriginal land use predicted to have been related to low levels of hunting, gathering and transit through country.
- Very low density of stone artefacts found to be present.
- Several milky quartz outcrops (raw material) were recorded and should be avoided during construction.





Project Information – Traffic & Transport Plan

- **Plan released for consultation and assesses;**
  - Traffic and transport issues relevant to the construction & operation of the wind farm.
  - Implications for the project and potential impacts.
  - Proposed mitigation measures to minimise related impacts.
  - Maximum traffic impacts during construction from heavy and oversized vehicles delivering equipment and material.
  - Public road network proximate to the project.
- **Key issues addressed by the Plan;**
  - Suitability of existing roads for the type of vehicles that will need to access the site (road width, radius and bends etc).
  - Structural capacity of existing roads and structures to handle the heavy vehicles for the delivery equipment and materials.
  - Disturbance to the local community as a result of increased vehicle movements.
  - Management of traffic on the site including traffic safety, minimising disturbance, erosion and dust.

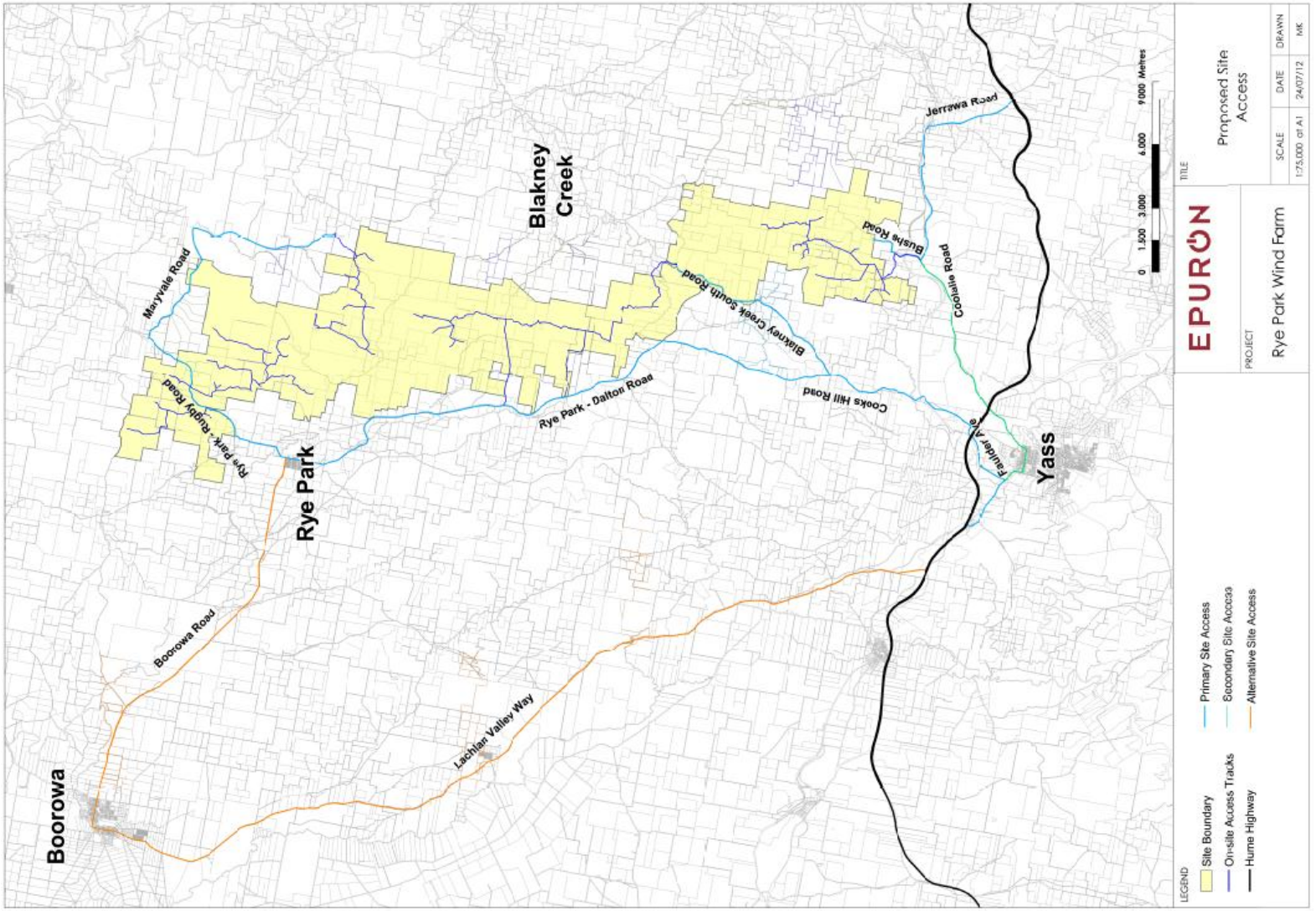






Project Information – Traffic & Transport Access Roads & Routes

- Proposed construction access roads to site
- Construction compounds to be located and northern and southern ends of site
- Traffic and Transport Plan is available for consultation



Project Information – Community Fund

Epuron has been seeking feedback on how to best establish a community fund and to identify what type of local support is required from the project.

1. **Feedback……..”how to best establish a community fund”**
   - Councils prefer that if a community fund is established it is managed by them.
   - Community wants to have a say in where/how any community funds are spent.
   - Draft Wind Guidelines say community infrastructure contributions may be required under Part 4, Division 6 of the EP&A Act 1979, or through a voluntary planning agreement (VPA) with a planning authority, including council.

2. **Feedback……..”what type of local support is required from the project”**
   - Upgrade and improve local roads near the project
   - Improvements to the township of Rye Park and better local amenities
   - Better mobile phone reception and internet services
   - Chance to reopen some businesses and local services in Rye Park
   - Attracting new families to live in the local area

Project Information – Likely Benefits (updated preliminary estimates)

- Project Investment Value around **$750m-$850m** based on 393MW project
  - 65% Wind Turbines = $488m-$552m
  - 35% BoP Design and Construction = $262m-$298m
- Direct local/regional investment from construction – **$200 million**
- Direct local/regional investment from operations - **$15 million per annum for 25 years**
- Direct local/regional jobs during construction – **approx 250 to 350 Jobs**
- Direct local/regional jobs during operations – **approx 20 to 30 Jobs**
- Local/regional/state/national flow on effect multiplier (expenditure & jobs) – **approx 3.0**
- Carbon emissions abated – **approx 1,050,000 t CO_2e per annum**
- Community Fund – Epuron currently assessing feedback

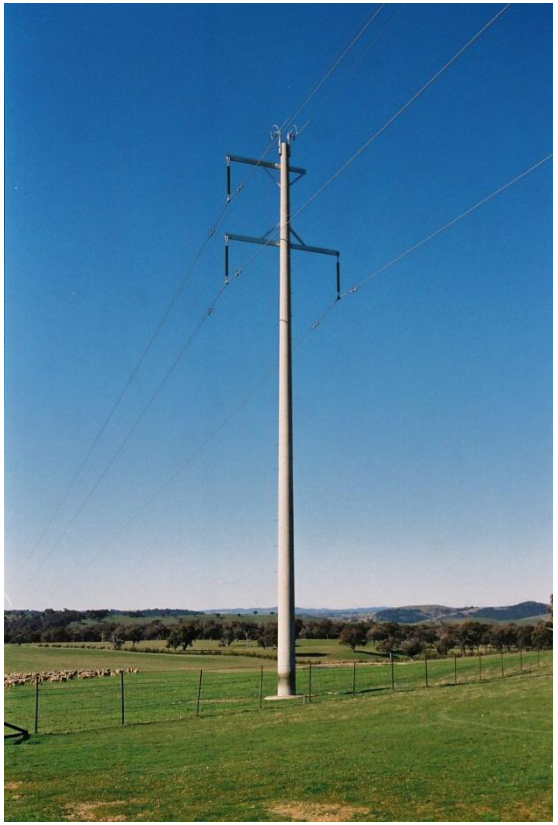
Rye Park Wind Farm – Grid Connection Update

- Wind farm will connect into the existing 330kV Transgrid transmission line that crosses the southern section of the site
- A new 330kV substation will be located adjacent to the existing Transgrid transmission line at the south of the site
- A new overhead powerline will run up the length of the wind farm site to collect the generated wind power.
- The new overhead powerline will be up to 132kV and will be mounted on a single pole type structure.
- 2 new connection substations will be constructed on the wind farm site.
- Power generated by the wind turbines will be reticulated to the 2 new connection substation via an underground electrical network.

Rye Park Wind Farm – Grid Connection Update



Example of 330kV transmission line tower structure



Example of 132kV powerline pole type structure

Next Steps and Timing

- Consultation and feedback - Ongoing
- Issue final draft layout - Mid August 2012
- Issue newsletter No 6 - End August 2012
- Hold public open day No 2 - Early September 2012
- Hold CCC meeting No 3 - 3pm Monday 17 September 2012
- Lodge EA - October

Communication and Feedback Channels Available

- Consultation is a two-way-street and we're always listening.
- Feedback and suggestions are important to us and help design the project.
- Available communication channels include;
  - Epuron corporate website: www.epuron.com.au
  - Rye Park project website: www.ryeparkwindfarm.com.au
  - Mailing address: Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney…NSW…2060
  - Phone: 02 8456 7400
  - Fax: 02 9922 6645
  - Email: RyePark@epuron.com.au
  - Senior Project Manager: Brian Hall
b.hall@epuron.com.au
  - Meetings Arranged by appointment

Thank You



Ti Tree solar project - NT

EPURON Pty Ltd

75 Miller Street
North Sydney
NSW 2060
AUSTRALIA

T +612 8456 7400
F +612 9922 6645

www.epuron.com.au



Cullerin range wind farm - NSW

Rye Park Wind Farm Pty Ltd
Level 11, 75 Miller St
NORTH SYDNEY, NSW 2060
Phone 02 8456 7400

Minutes of Meeting

Rye Park Wind Farm

Community Consultation Committee

Present:	Councillor David Needham	Yass Valley Council and Chairman	DN
	Neil and Margaret Privett	Involved landowner	NMP
	Greg Medway	Involved landowner	GM
	Alex and Bev Davis	Uninvolved landowner	ABD
	Jenny Hally	Uninvolved landowner	JH
	Brian Hall	Epuron (Rye Park Wind Farm)	BH
Apologies:	Mayor Wendy Tuckerman	Boorowa Council	WT
	Councillor James Wheelwright	Upper Lachlan Council	JW
	Geoffrey Minchin	Uninvolved landowner	GM1
Date:	2 August 2012		
Venue:	Yass Council Chambers		
Purpose:	Meeting No 2		

Minutes:

Item	Agenda / Comment / Discussion	Action
1	DN opened the Community Consultation Committee (CCC) meeting at 3.05pm. Copies of the meeting agenda and minutes of the last meeting were distributed to those present. Apologies were accepted from Mayor Wendy Tuckerman, Councillor James Wheelwright and Geoffrey Minchin who were not able to attend the meeting.	Noted
2	DN asked those present to briefly introduce themselves and to declare any pecuniary or other interests. a. All present made a brief introduction and stated their interest in attending the CCC meeting. b. ABD particularly stated their interest in attending the meeting was mainly related to a concern for bushfires. Note: Generally those present felt their participation on the CCC was relative to their interest as a local landowner (involved or uninvolved) or local representative, such as councillor, and didn't feel it created any conflict with the purpose of the wind farm CCC.	Noted
3	DN mentioned to the new CCC members that it would be useful for them to read a copy of the draft NSW Planning Guidelines for Wind Farms recently released by the NSW government. Copies of the draft Guidelines are available on the Departments website and details about the role and purpose of the CCC are set out in Appendix C. DN provided a brief overview of the draft Guidelines and also handed out a summery sheet about the draft Guidelines that was distributed at the previous meeting. Although the draft Guidelines have not been passed into legislation yet and do not fully apply to existing Part 3A projects (such as the Rye Park wind farm) the developer is obliged to have regard to them where possible.	Noted
4	Minutes of the last meeting were circulated and accepted as a true and accurate record by DN and BH.	Noted
5	DN discussed the makeup and appropriate level of membership of the CCC. DN stated this point had also been raised by WT prior to the meeting. By way of reference, the draft Guidelines state the CCC should comprise; • an independent chairman	Noted

	• five to seven representatives of the local community and other stakeholders, including at least two representatives of any landowners that own houses within 2 km of a proposed wind turbine • one representative of the local council • representatives of the proponent GM said membership has to be limited and cannot be endless. DN suggested target CCC membership from the local community should be two involved and two uninvolved landowners (as per draft Guidelines). Ideally one community group member should attend the meeting if possible and recognised BH had been seeking to identify a willing participant from a local group but had little success to date. On balance it was recognised that the current makeup of the CCC was acceptable and reasonable efforts had been made by the proponent to attract CCC membership. DN asked all CCC members to consider membership and potentially identify any local groups or community representatives, preferably proximate to Rye Park, that are willing and available to participate on the CCC for the project.	All
6	JH asked if satellite reception for television and internet services at homes around Rye Park would be impacted by the wind farm if built. JH indicated they subscribed to Skymesh satellite services. BH advised studies are conducted to identify existing communications services near a wind farm and to make sure they will not be impacted. Study findings are exhibited as part of the EA and consent conditions issued by government normally cover this aspect to protect existing services. BH will seek a response regarding satellite services and discuss at the next meeting.	BH
7	BH presented detailed information including current project status and key activity since the last meeting. The presentation consisted of 23 PowerPoint slides and was displayed by overhead projector. A hard copy of the presentation was handed to those present at the CCC meeting and will be uploaded to the website after the meeting. A large scale map of the current wind farm layout was hung on the wall for viewing by the CCC members and A3 copies were handed out. Key comments, questions and feedback points arising from the presentation were (listed in no particular order); a. **Figure in Newsletter No 5 (slide 7).** DN asked about the anticipated timing of the steps shown in the figure "Stages of the Environmental Assessment Process" on the back page of the newsletter. BH advised anticipated timing of the steps as follows; • Step 1 – complete • Step 2 – complete • Step 3 – "we are here".....current position of the project • Step 4 – October / November 2012 • Step 5 – Late 2012 early 2013 • Step 6 – Q1 2013	Noted Noted

	• Step 7 – Q2 to Q3 2013 Steps 4 to 7 are largely controlled and decided by government. b. **Public Open Day Feedback (slide 9).** Members were interested in the open day feedback points and generally discussed. BH was asked by DN to prepare a response to the negative points and will table at the next meeting. c. **Traffic & Transport Plan (slides 15 & 16).** A consultation draft of the Traffic and Transport Plan was released to members (hard copy) and will be uploaded to the website after the meeting. DN asked that a copy be forwarded to Simon Cassidy, Director Services at Yass Valley Council, and to WT and JW for their respective councils to review. d. **Community Fund (slide 17).** BH discussed feedback that was received from the ongoing consultation activity and the recent public open day. GM and JH felt having council alone manage any funds is not good enough and that the community must be involved and have a say. GM spoke about the unique opportunity a community fund potentially offers and that the community must "go deeper" and provide attraction to keep families and younger kids in the area through long term benefits and job creation. If a community fund for the Rye Park wind farm was established it could go a long way to help achieve this goal. GM discussed his background providing local "Business Management Courses" as the key source to identifying and understanding this need in the local region. Members generally discussed the potential opportunity and had strong views that benefits should be captured for the community of Rye Park. There was concern that the "town will die" in the long term if left to continue as it is today. DN suggested GM's from the three involved councils could attend the next CCC meeting to talk about how any community fund benefits would be managed and flow into the community. DN will try and arrange their attendance at the next meeting.	BH BH Note DN
8	ABD raised their concern for increased bushfire risk across the area should the wind farm be built. ABD spoke of their experience with bushfires over many years and made the following observations/comments to the meeting; • Coolalie Road is considered a high risk area for bushfires. • The existing transmission lines (330kV Transgrid) had caused problems with fires in the past. • The wind farm would be located close to forested areas and increase the risk of fires. • A copy of a local bushfire map (dated 27 July 2012) from the Yass Council website was made available for viewing at the meeting. There was general discussion regarding bushfire risk and the potential pros and	Noted

	cons of a wind farm operating in the local area. Some comments included; • Wind farm may limit the use of aerial water bombing during a fire but so does bad visibility resulting from thick smoke. • Wind farm access tracks can provide good vehicular access into fire areas where roads do not normally exist. • It was mentioned that Garry Southwell from the Rye Park Rural Fire Service was a good person to contact but he is currently away on leave until October. • NMP (Neil) advised he had been the Deputy Captain at his local fire service for nearly 20 years and didn't believe wind farms would pose an increased fire risk and may even help due to the use of better access roads. It was also suggested BH contact Peter Alley from North Yass Fire Service to discuss potential fire risk from wind farms. • DN asked if it was possible to locate an appropriate local fire representative who could discuss fire risk matters at the next meeting. BH was asked to look into this.	Noted BH BH
9	General business a. JH asked for a copy of the NSW Valuer Generals report into the impact of property values and wind farms. BH to send to JH. b. BH to upload copy of presentation material to website. c. DN asked BH to prepare a draft set of minutes of meeting.	BH BH BH
	Next meeting Date: Monday 17 September 2012 Time: 1pm to 3.30pm Venue: Yass Council Chambers	All DN and BH to circulate details prior to next meeting
	Meeting closed at 4.50pm	Noted

Rye Park Wind Farm Community Consultation Committee

M E E T I N G A G E N D A

Meeting No: 3

Date and time: 12.30 – 2.30pm, Wednesday 24 October 2012

Location: Yass Valley Council Chambers, Comur St, Yass

Members:

Nic Carmody	Independent Chairperson
Councillor David Needham	Yass Council
Mayor Wendy Tuckerman	Boorowa Council
Councillor James Wheelwright	Upper Lachlan Council
Graham and Margaret Privett	Involved wind farm landowner
Greg Medway	Involved wind farm landowner
Bev and Alex Davis	Non-involved wind farm landowner
Jenny and Chris Hally	Non-involved wind farm landowner
Geoffrey Minchin	Boorowa CMA and interested party
Brian Hall	Proponent (Epuron)

Agenda:

1. Apologies
2. Declaration of pecuniary or other interests
3. Minutes of previous meeting
4. Matters arising
5. Project consultation and development update, including:
    a. Issues from last meeting
    b. Development and consultation update
    c. Proposed final wind farm layout
    d. Next steps and submission of EA
6. General business
7. Next meeting

Details for CCC meeting No 3

Venue: Yass Valley Council Chambers
Address: 209 Comur Street, Yass
Date: Wednesday 24 October 2012
Time: 12.30pm to 2.30pm

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Rye Park Wind Farm

Community Consultation Committee Meeting No 3

24 October 2012

Agenda for CCC Meeting No 3

1. CCC membership update
2. Project development status
3. Review of CCC meeting No 2
4. Project consultation update
5. Current project information
6. Next steps

Community Consultation Committee – Membership Update

- **Independent chairperson;**
  - Nic Carmody
- **Involved landowners;**
  - Graham and Margaret Privett
  - Greg Medway
- **Uninvolved landowners;**
  - Jenny and Chris Hally
  - Bev and Alex Davis
- **Other, local Group or association;**
  - Geoffrey Minchin (interested party and employed by Boorowa CMA)
- **Local councils;**
  - Mayor Wendy Tuckerman – Boorowa Council
  - Councillor James Wheelwright – Upper Lachlan Council
  - Councillor David Needham – Yass Council
- **Epuron**
  - Brian Hall – Senior Project Manager

Rye Park Wind Farm – Current Development Status

- NSW Government changed EA lodgement deadline to 30 November 2012 latest
- New 80m wind monitoring mast to be installed on site next month (total of 5 masts)
- Proposed final version of wind farm layout prepared and available (126 turbines)
- Layout incorporates consultation feedback and results of expert studies
- 33 photomontages prepared including requested landowner houses within 2km
- Recent meeting held with Transgrid to progress grid connection application
- Wind farm powerline voltage amended from 132kV to 330kV (optimised design)
- EA document prepared and under final review prior to lodgement in November
- Consultation and interaction with the community is ongoing
- Project details available at website www.epuron.com.au/projects/rye-park

Review of information provided at CCC Meeting No 2

1. **Review of key information and issues from meeting No 1**
2. **Community consultation committee update**
   - Membership update
   - Minutes of last meeting
3. **Current project development status**
4. **Project consultation**
   - Newsletter No 5
   - Public Open Day
   - Key consultation activity and timetable
5. **Project information**
   - Layouts
   - Archaeology & Heritage
   - Traffic and Transport
   - Community Fund
   - Likely Benefits
   - Grid connection update
6. **Next steps and timing**

CCC Meeting No 2 - Summary of Key Feedback and Actions

- **Interference to satellite services (ie. local TV reception and internet)**
  - A detailed communications study has been undertaken for the project and will be provided in the publicly exhibited EA.
  - The study assessed existing communication services including radio, microwave, TV, satellite and mobile phone infrastructure.
  - Wind farm has been designed to accommodate existing communication services and not predicted to be impacted by wind farm (some turbines moved or removed).
  - Satellite services are not subject to the same topographic screening that can affect the traditional land based TV, phone and radio transmission infrastructure.
  - Due to the distance of residences from the wind farm it is very unlikely that satellite based services would be subject to any interference due to the wind farm's operation as the wind turbine would have to be within the line of sight from the antenna to the satellite.

CCC Meeting No 2 - Summary of Key Feedback and Actions….continued

- **Response to negative points expressed at public open day**
  - Potential to impact **property values** – NSW Valuer General report states property values are not negatively affected by wind farms. Full report available.
  - Possible **health** impacts – NHMRC study states there is no published scientific evidence to support adverse effects of wind turbines on health. Full report available.
  - Wind turbines are **noisy** – Strict noise compliance guidelines apply to the design, development and operation of wind farms in NSW.
  - Will I see **turbines** from my house – Depending on where you live and the orientation of your house it is likely you will see some wind turbines. A photomontage has been prepared for uninvolved houses located within 2km of a turbine (where approved by the landowner).
  - **Bango** wind farm is near my house – Cumulative impacts are considered as part of the EA process (Epuron is not the developer of this project).

CCC Meeting No 2 - Summary of Key Feedback and Actions....continued

- **Traffic and Transport Report**
  - A copy of the Traffic and Transport Report has been provided to all 3 local councils. Follow up discussions and or meetings have taken place with councils and comments incorporated where appropriate. Further comments can also be made during public exhibition process.
- **Contact North Yass Fire Service**
  - Contact has been made with Peter Alley at NYFS to discuss the project.
- **Identify local fire representative**
  - As above and ongoing.
- **NSW Valuer Generals Report**
  - A copy has been forwarded to JH as requested.
- **Upload current information to website and circulate CCC minutes**
  - Completed.

Project Consultation – Newsletter No 6

- **Released 22 August 2012**
- **Information included;**
  - Latest news & project development update
  - Incorporation of feedback and study results into the proposed final layout
  - Results of archaeological and heritage field survey
  - Update on CCC activity
  - Outcome of the public open day held at Rye Park hall
  - Consultation feedback on community fund
  - Announced release of traffic and transport report
  - Reminder of contact details for project feedback



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Rye Park
Wind Farm

Project Update No 6 | August 2012

Project Update

It has been a busy and productive few months for the development of the wind farm. We have been incorporating findings from our specialist studies, including consultation feedback from the community, into the design of the wind farm. We anticipate a final draft layout of the wind farm will be prepared and released in the coming months. The environmental assessment document is currently being prepared and is expected to be lodged with government for public exhibition later in the year.

Archaeological & Heritage Field Survey

Following consultation with 5 locally registered Aboriginal groups, our archaeological and heritage consultant completed a 9 day field survey during July and was assisted by the Buru Ngunawal Aboriginal Corporation.

Preliminary results show the proposed impact areas to be of low archaeological and heritage significance, primarily due to their location on very rocky ridgelines, situated away from streams and rivers. A very low density of stone artefacts was found to be present on the site during the field survey (photo shown below).

Several milky quartz outcrops were recorded on the site that may have been historically exploited as sources of raw material. It has been recommended that impacts to these outcrop areas be avoided where possible during construction (photo shown below).

Community Consultation Committee

The Community Consultation Committee (CCC) established for the project met again in Yass on 2 August. A few new members, both involved and uninvolved landowners, attended the meeting. The latest project information was presented and points discussed at the meeting included;

- Release of the traffic and transport plan for consultation
- Update and feedback on the potential for a community fund
- Feedback from the recent public open day
- Details for connecting the wind farm to the electricity grid

Project details can be found at www.epuron.com.au/project/rye-park/

Please send us your feedback

Write to us: Rye Park Wind Farm, Level 11, 75 Miller Street, North Sydney NSW 2060

Email or Internet: b.hall@epuron.com.au, www.epuron.com.au

Phone us: 02 8456 7400

Public Open Day was a Success

Thank you to all those people who attended the wind farm public open day in Rye Park on 26 July.

The open day was a great success with 51 people attending and viewing the project information on display, which included;

- Wind farm layout with 131 turbine locations.
- Seven photomontages from selected public viewpoints.
- Traffic and transport route and access map.
- General wind farm and industry information.
- Other project and corporate information.

The majority of people who attended the open day (78%) were supportive of the project and the potential benefits available to the town of Rye Park and the local region. The opportunity to capture local jobs and investment expenditure was considered a key benefit of the project.

Members of the development team were pleased to discuss the project and answer your questions. The feedback received on the day will be considered in the design of the project wherever possible and we expect to release a final layout in the coming months.



Rye Park
Wind Farm

EPURON

Project Update No 6 | August 2012

Community Fund

We would like to thank everyone who has contributed their feedback to us regarding the potential to establish a community fund for the project. Over the past few months we have been consulting and seeking feedback on how best to establish a community fund and to identify what type of local support is required from the project.

The following is a summary of the key feedback we received on these two points and will be considered during the preparation of the project's environmental assessment that will be publicly exhibited later in the year.

1. Feedback received.....How best to establish a community fund

- Local councils prefer that if a community fund is established it is managed by them.
- Local community wants to have a say in where and how any community funds are managed and spent.
- Draft NSW Wind Guidelines say community infrastructure contributions may be required under Part 4, Division 6 of the EP&A Act 1979, or through a voluntary planning agreement (VPA) with a planning authority, including council.
- Community funds for some other projects have been considered through a mechanism that combines involvement from representatives of both the local community and council.

2. Feedback received.....Identify what type of local support is required from the project

- Upgrade and improve local roads near the project.
- Improvements to the township of Rye Park and better local amenities.
- Better mobile phone reception and internet services in the town.
- Chance to reopen some businesses and local services in Rye Park.
- Community must "go deeper" and provide attraction to keep families and younger people in the area through long term benefits and job creation

Traffic and Transport Report

The traffic and transport report for the project has been released for consultation. A copy of the report can be found on our website and the report assesses the;

- Traffic and transport issues relevant to the construction & operation of the wind farm.
- Implications of the project and potential impacts.
- Proposed mitigation measures to minimise related impacts.
- Maximum traffic impacts predicted during construction from heavy and oversized vehicles delivering equipment and material.
- Public road network proximate to the project.

Key issues addressed by the report include;

- Suitability of the existing roads for the type of heavy and oversized vehicles that will need to access the site (road type, width, radius of bends etc).
- Structural capacity of existing roads and structures, such as bridges, to handle the heavy and oversized vehicles for the delivery of equipment and materials.
- Disturbance to the local community as a result of increased vehicle movements.
- Management of traffic on the site including traffic safety, minimising ground disturbance, erosion and dust.

Project Consultation – Key Activity and Timetable

Activity	Timing	Objectives	Stakeholders	Status
Community information workshop	November 2008	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	**Completed**
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	**Completed**
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	**Completed**
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	**Completed**
Consult with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours within 2km of turbine	**Completed (but ongoing)**
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	**Completed**
Establish Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	**Completed**

Project Consultation – Key Activity and Timetable…..continued

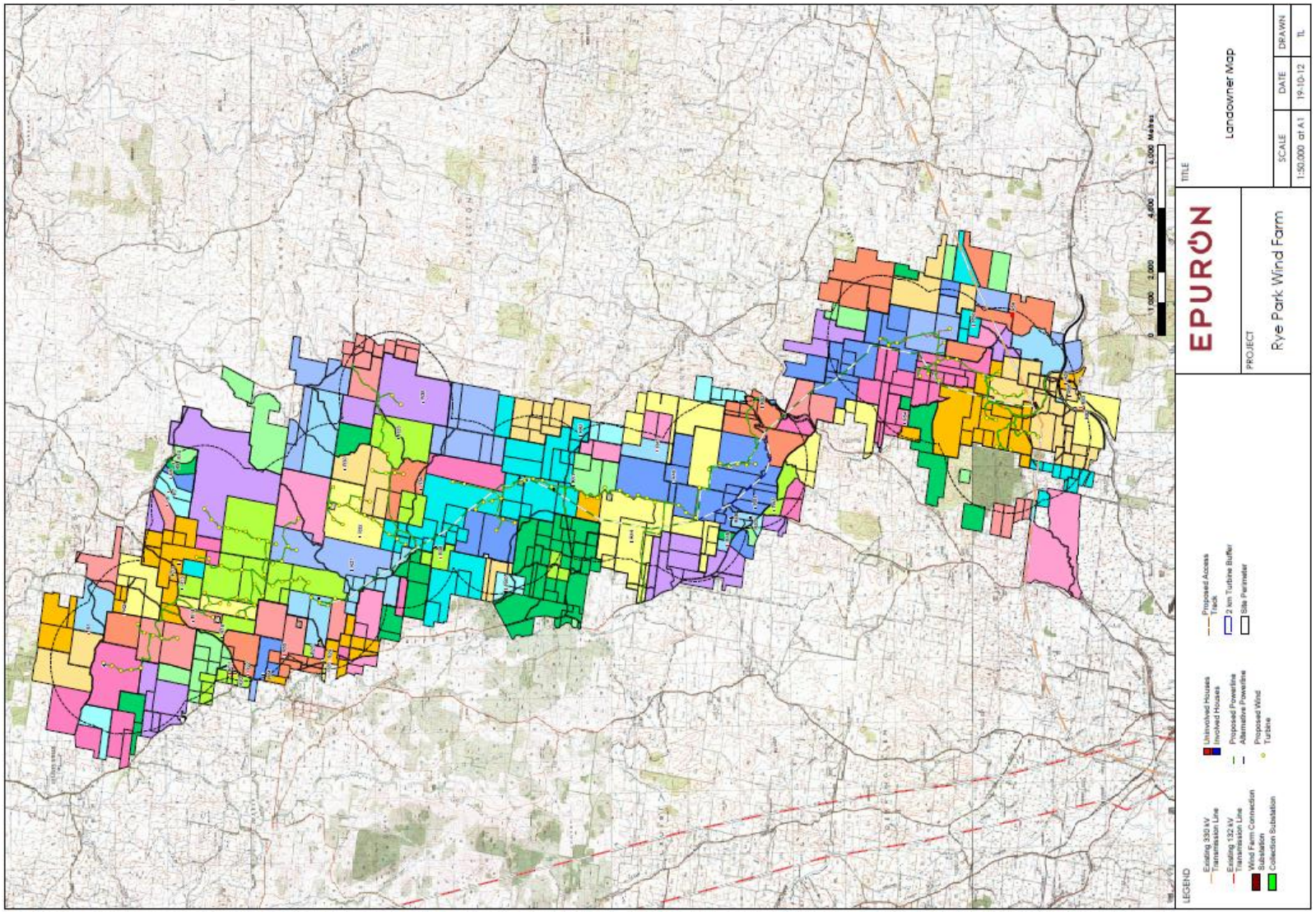
Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 1	May / June 2012	Provide project information and seek feedback	Invited members	**Completed**
Newsletter 5 and Community Open House 1	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	**Completed**
CCC Meeting 2	July / August 2012	Provide updated information and consider feedback including release of draft final layout	Invited members	**Completed**
Newsletter 6	September / October 2012	Update on studies and consultation feedback contributing to draft final layout	Involved and uninvolved landowners (mail-out)	**Completed**
CCC Meeting 3	**September / October 2012**	**Review of draft final layout incorporation feedback**	**Invited members**	**Wednesday 24 October 2012**
Newsletter 7 (optional can be wrapped into open day)	October / November 2012	Advise community of final layout incorporating feedback and study results	Involved and uninvolved landowners, CCC and consultants	pending

Project Consultation – Key Activity and Timetable…..continued

Activity	Timing	Objectives	Stakeholders	Status
Pre DA lodgement finalisation and follow up	October / November 2012	Consider feedback and any final amendments required prior to lodging application	Involved and uninvolved landowners, CCC and consultants	pending
Lodgement of EA with DP&I	November 2012	Submit EA	DP&I	pending
Community Open Day	December 2012	Inform community of EA lodgement and exhibition	Involved and uninvolved landowners, CCC and consultants	pending

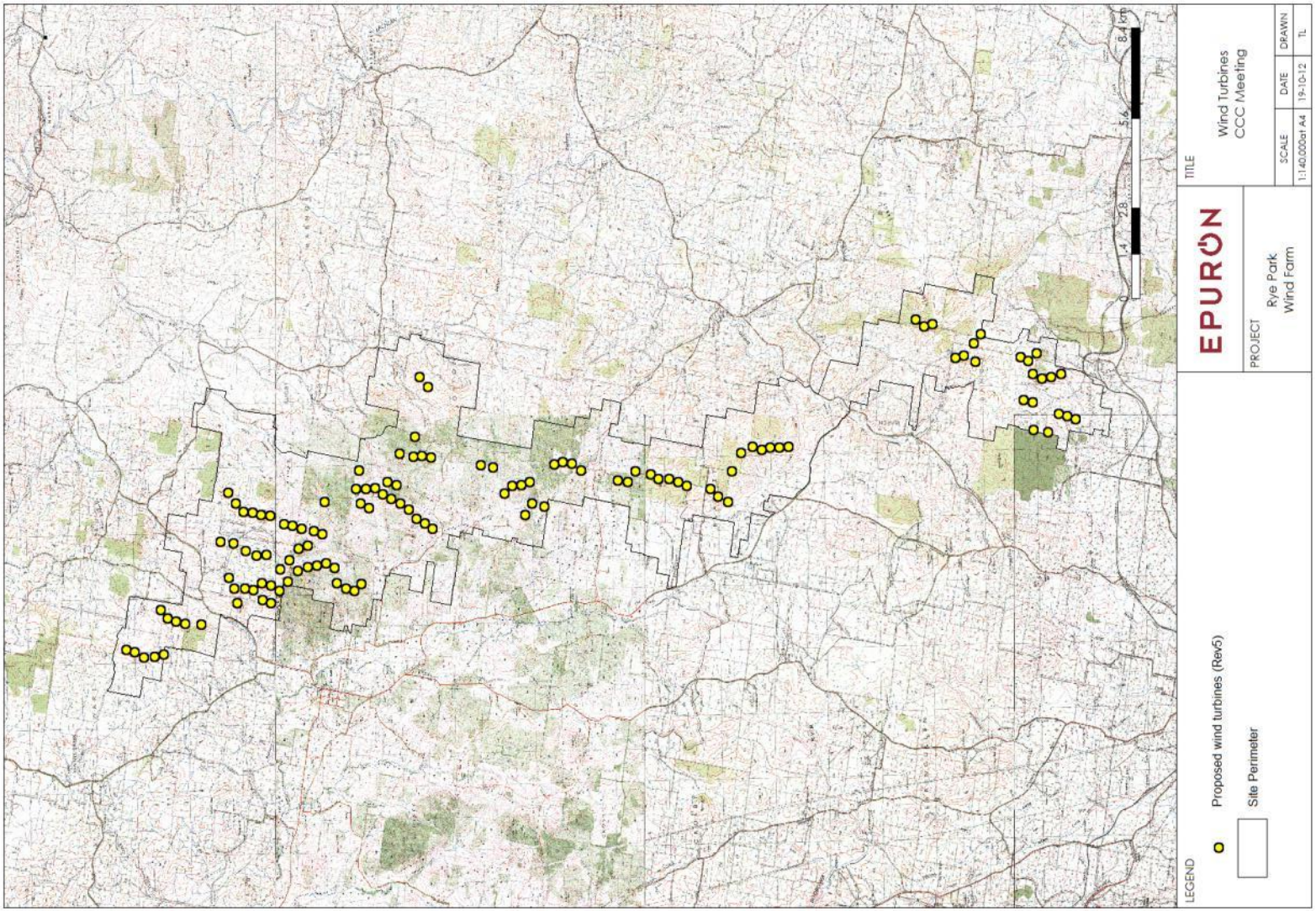
Project Information – Proposed final wind farm layout

- Layout accommodates 126 turbines
- Incorporates consultation feedback and study findings



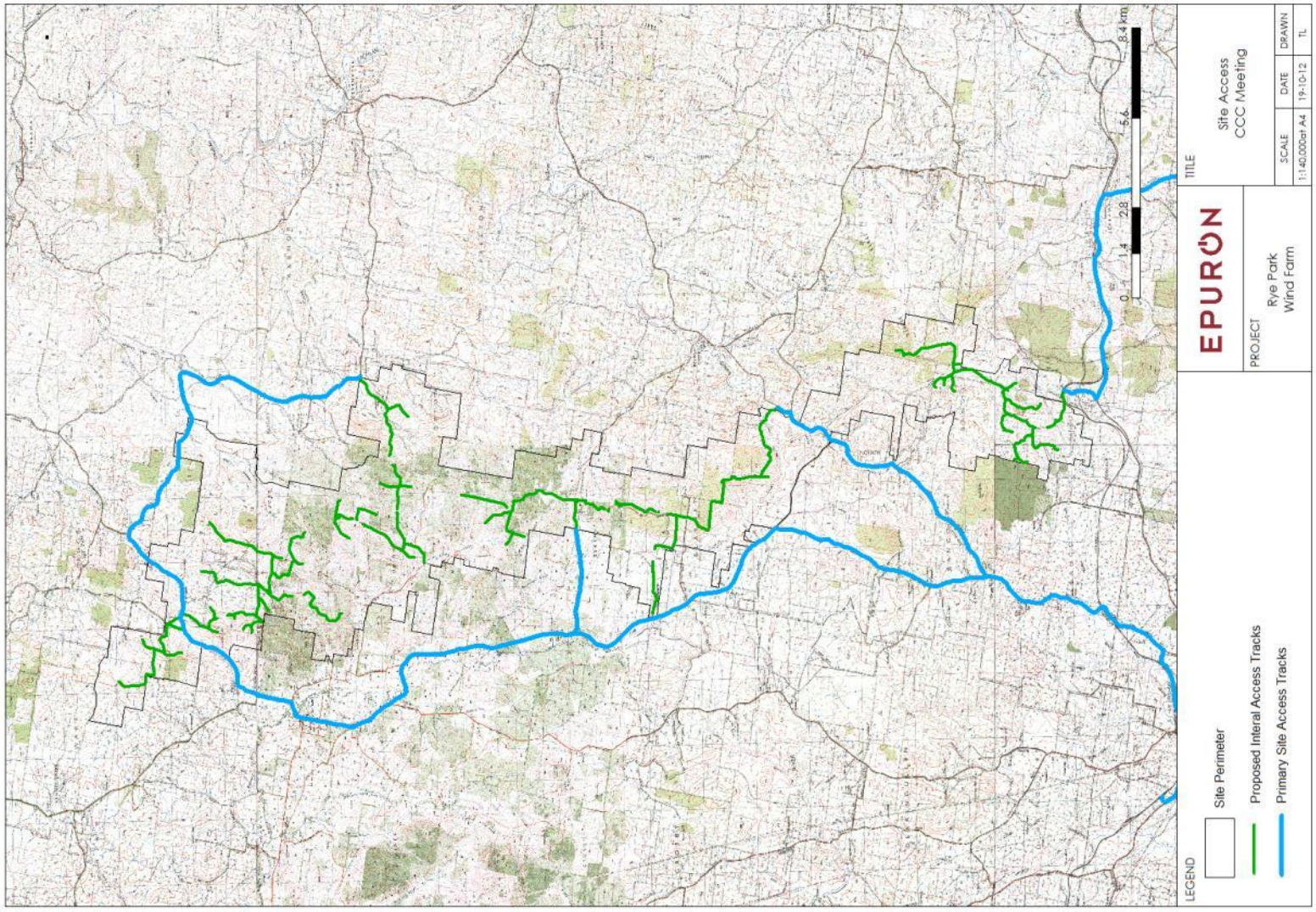
Project Information – Turbines

- Layout accommodates 126 turbines
- Some turbines have been moved or removed to accommodate feedback and or study findings



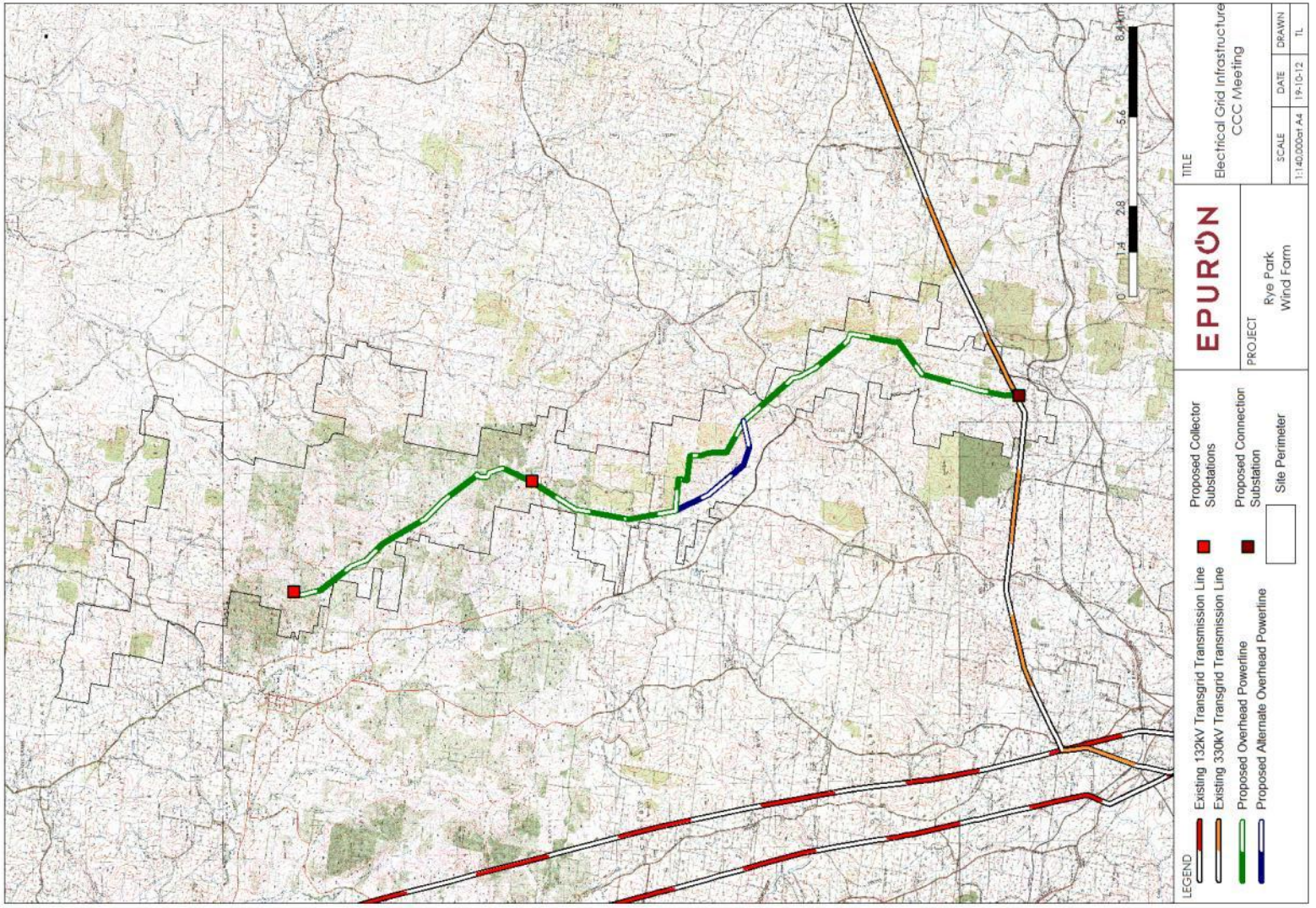
Project Information – Access Roads

- Main access roads (blue)
- Internal access tracks (green)
- Updated to incorporate feedback from councils where provided



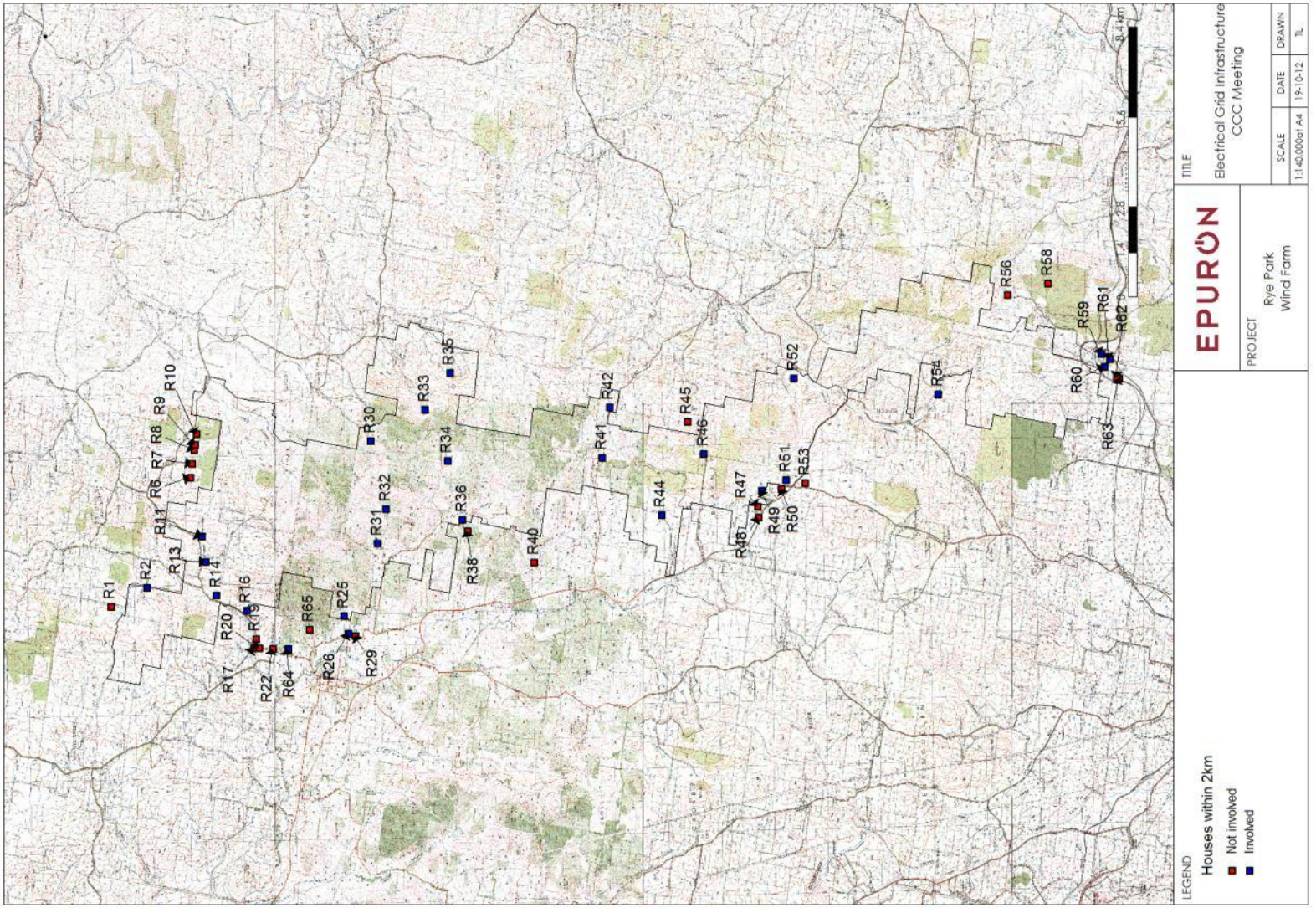
Project Information – Electrical Infrastructure

- Wind farm connects to existing Transgrid 330kV transmission line
- New powerline up to 330kV running up wind farm site
- New 330kV connection substation at existing transmission line
- New collection substations on wind farm

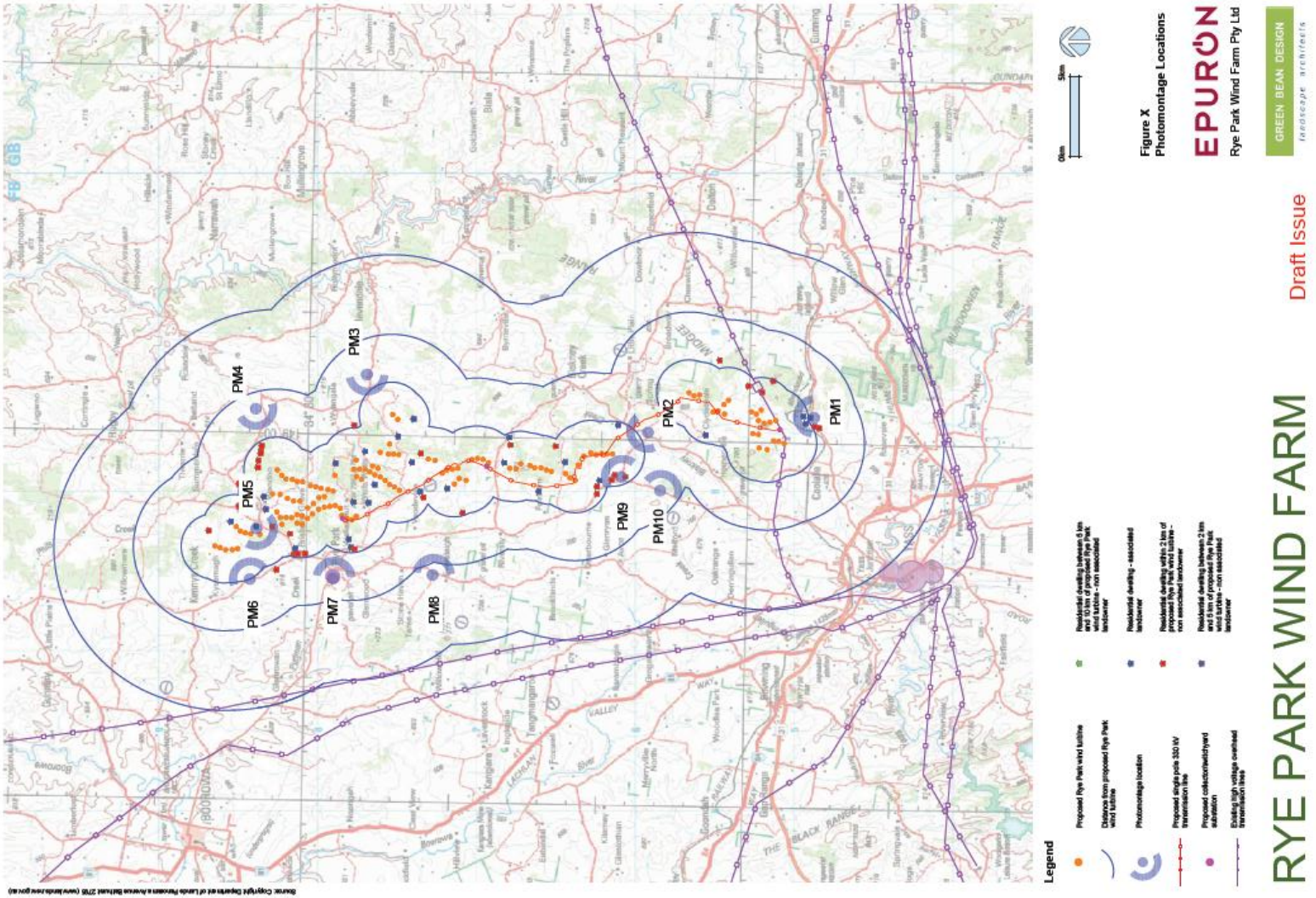


Project Information – Houses

- Uninvolved house locations within 2km of a wind turbine (red)
- Involved house locations (blue)

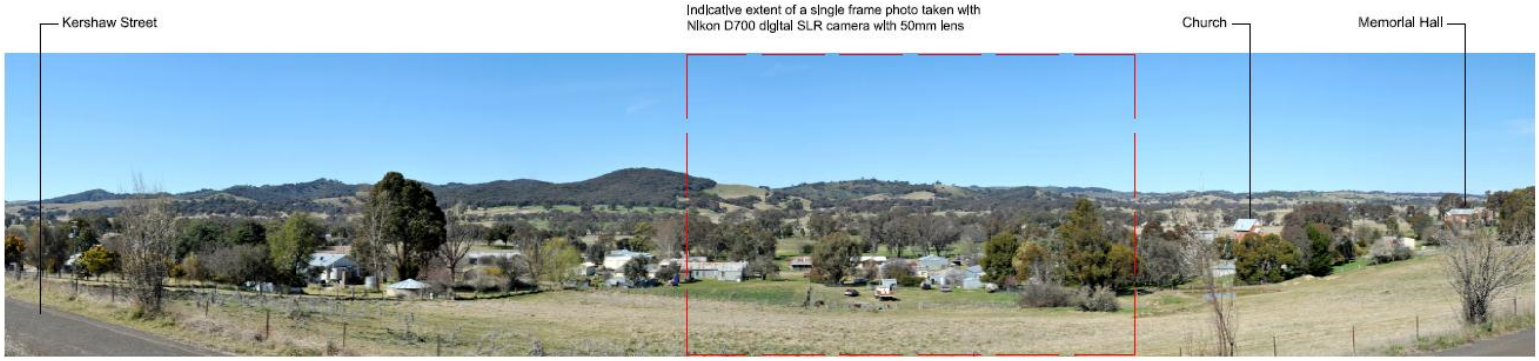


Project Information – Photomontages (public locations)



Project Information – Photomontages (public location PM7)

Figure X Public photomontage PM7, Rye Park - Kershaw Street



Public view location PM7 Rye Park - Existing view north to south east. Photo coordinate Easting:674899 Northing:6178817 (MGAz55)



Public view location PM7 Rye Park- Proposed view north to south east (Approximate distance to closest visible wind turbine 3.9 km). Photo coordinate Easting:674899 Northing:6178817 (MGAz55)

Notes

Individual panorama photos taken with a Nikon D700 digital SLR camera with 50 mm prime lens.

Individual panorama photo coordinate map datum is MGAz55 to ± 5 m.

Extent of potential wind turbine visibility and directional bearing illustrated on each photomontage is indicative only.

RYE PARK WIND FARM

Draft Issue

EPURON

Rye Park Wind Farm Pty Ltd

GREEN BEAN DESIGN

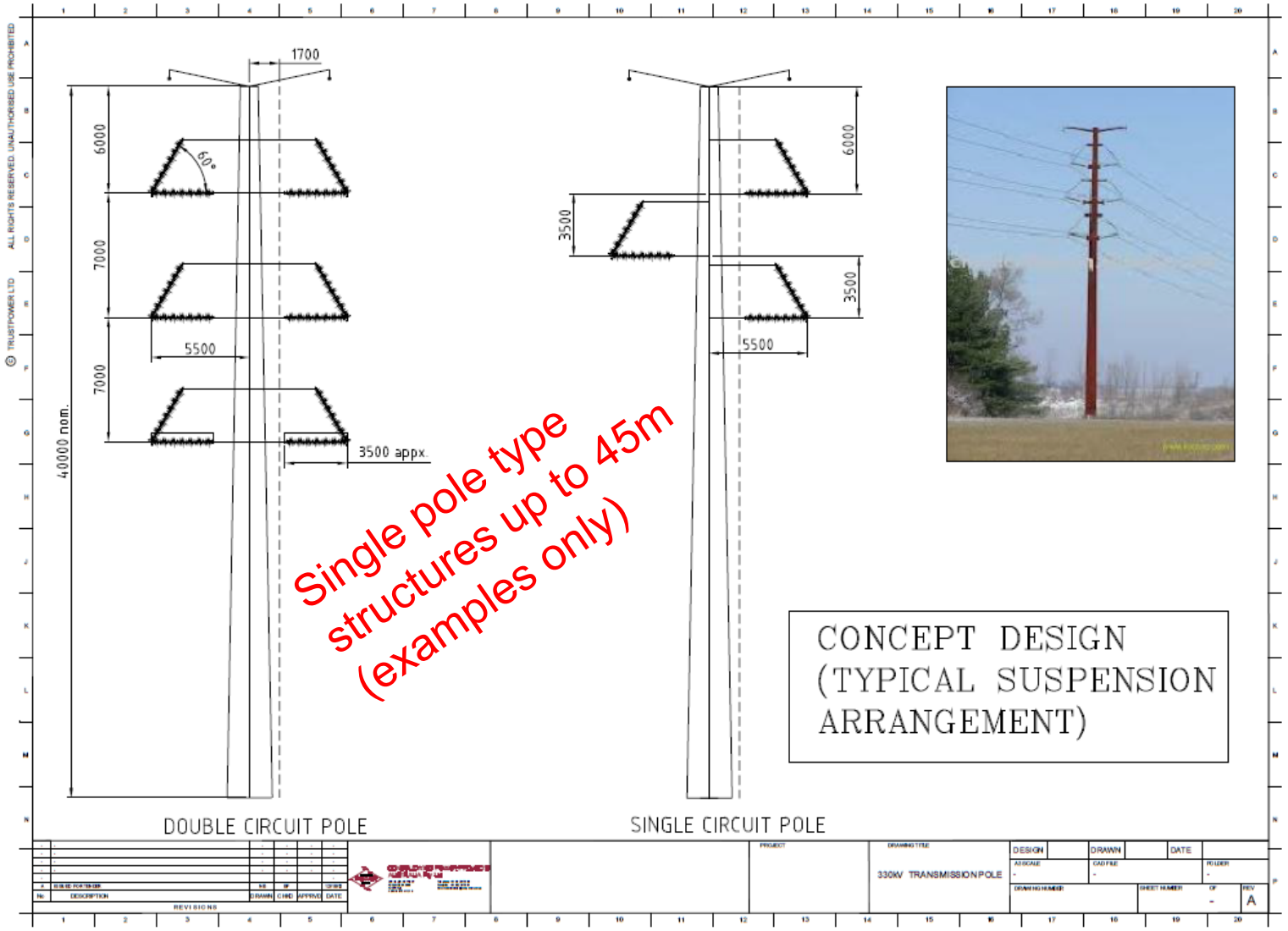
landscape architects

Project Information – Grid Connection Update

- Meeting was held recently with Transgrid to progress the grid connection application process and technical studies.
- Wind farm will connect into the existing 330kV Transgrid transmission line that crosses the southern section of the site.
- New 330kV connection substation will be located adjacent to the existing Transgrid transmission line at the south of the site. A land parcel has been identified.
- New overhead powerline (up to 330kV) will run up the length of the wind farm site to collect generated power and will be mounted on a single pole type structure.
- New collection substations will be constructed on the wind farm site.
- Power generated by the wind turbines will be reticulated to the new collection substations via an underground electrical network.

Project Information – New Powerline Poles (up to 330kV)





Project Information – Community Fund

Epuron has been seeking feedback on how to best establish a community fund and to identify what type of local support is required from the project.

1. **Feedback……..”how to best establish a community fund”**
   - Councils prefer that if a community fund is established it is managed by them.
   - Community wants to have a say in where/how any community funds are spent.
   - Draft Wind Guidelines say community infrastructure contributions may be required.
2. **Feedback……..”what type of local support is required from the project”**
   - Upgrade and improve local roads near the project
   - Improvements to the township of Rye Park and better local amenities
   - Better mobile phone reception and internet services
   - Chance to reopen some businesses and local services in Rye Park
   - Attracting new families to live in the local area
3. **Key Issues**
   - When / whether the developer makes a commitment to a fund or structure
   - How much the fund should be
   - Who should administer the fund
   - What the fund should be used for

Project Information – Community Fund…….continued

Outline of Epurons Position

- Epuron designs its wind farms to minimise impacts to the environment and local community.
- Each project should be assessed (by DPI) specifically on its merits (no cash fund influences).
- Epuron strongly believes in the value of community contributions and believes that the final investor who will commit funds to the construction and operation of the project should engage with the community in a meaningful way.
- Epuron believes that such community contributions should be:
  - applied towards local environmental, social and community initiatives led by local residents;
  - directed to initiatives raised by residents proximate to the development or likely to be impacted;
  - established at the commencement of operation and continue for the life of the development; and,
  - regularly reviewed to ensure they are providing ongoing benefits to the community.
- Epuron considers that the CCC working with the developer and ultimate project owner, is ideally placed to help develop a community fund and its administration process.
- Epuron, like most wind farm proponents, is not the ultimate project owner and accordingly it is not appropriate for Epuron to determine the final details of any community fund, and nor should these be determined as part of a development application or consent process.
- Accordingly, Epuron will not propose any specific amount payable to any community fund in its development application. However, it will commit to an ongoing consultation process to determine an appropriate basis for the establishment of a community fund.
- The EA's Statement of Commitments will set out the Community Fund details

Next Steps and Timing

- Consultation and feedback - Ongoing
- Finalise EA document - October / November
- Newsletter 7 (optional) - November
- Lodge EA with government - By end November
- Community open day - December
- Public exhibition of EA - TBC

Communication and Feedback Channels Available

- Consultation is a two-way-street and we're always listening.
- Feedback and suggestions are important to us and help design the project.
- Available communication channels include;
  - Epuron corporate website: www.epuron.com.au
  - Rye Park project website: www.ryeparkwindfarm.com.au
  - Mailing address: Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney…NSW…2060
  - Phone: 02 8456 7400
  - Fax: 02 9922 6645
  - Email: RyePark@epuron.com.au
  - Senior Project Manager: Brian Hall
b.hall@epuron.com.au
  - Meetings Arranged by appointment

Thank You


Ti Tree solar project - NT


Cullerin range wind farm - NSW

EPURON Pty Ltd

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AUSTRALIA

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Level 11, 75 Miller St
NORTH SYDNEY, NSW 2060
Phone 02 8456 7400

Minutes of Meeting

Rye Park Wind Farm

Community Consultation Committee

Present:	Nic Carmody	Chairman	NC
	Councillor David Needham	Yass Valley Council	DN
	Councillor James Wheelwright	Upper Lachlan Council	JW
	Graham Privett	Involved landowner	GP
	Alex and Bev Davis	Uninvolved landowner	ABD
	Jenny Hally	Uninvolved landowner	JH
	Brian Hall	Epuron (Rye Park Wind Farm)	BH
	Keiren Bellew	Interested local stakeholder	KB
Apologies:	Mayor Wendy Tuckerman	Boorowa Council	WT
	Greg Medway	Involved landowner	GM
	Geoffrey Minchin	Interested local stakeholder	GM1
Date:	24 October 2012		
Venue:	Yass Council Chambers		
Purpose:	Meeting No 3		

Minutes:

Item	Agenda / Comment / Discussion	Action
1	NC opened the Community Consultation Committee (CCC) meeting at 12.30pm. Copies of the meeting agenda and minutes of the last meeting were distributed to those present (already distributed prior to meeting by email/mail). Apologies were accepted from Mayor Wendy Tuckerman, Greg Medway and Geoffrey Minchin who were not able to attend the meeting. DN and BH briefly discussed the change of Chairman role from David Needham to Nic Carmody. The CCC would like to thank DN for chairing previous meetings and welcomes NC to the role.	Noted Noted
2	NC asked all present to briefly introduce themselves and to declare any pecuniary or other interests. a. All CCC members present made a brief introduction and there were no conflicting interests declared. b. Keiren Bellew attended the meeting as an interested community member (non CCC member) and stated an interest in future construction work from the wind farm. BH will ensure details of KB will be entered onto the contractors database for participation in future construction tenders.	Noted Noted BH
3	Minutes of the last meeting were circulated and accepted as a true and accurate record by DN and BH. As a general rule NC asked BH to circulated minutes of last meeting by email/mail prior to each meeting with the agenda for next meeting to ensure received by all members.	Noted BH
4	BH discussed the recent meeting/consultation discussion with Peter Alley (PA) from the Yass Valley Rural Fire Service. Key points were; • PA manages the Yass Valley region for NSWRFS and suggested it may be helpful to also discuss the project with his colleague located at Harden which covers the South West Slopes region. • RFS generally don't have concern for wind farms regarding fire risk and has operational wind farms in the region. New access roads can be helpful. • Head office for NSWRFS may consider making a submission on the project during the public exhibition phase. • PA offered the following general points for consideration regarding fire during development of the Rye Park project; o Placement of connecting powerlines needs to be considered during the design as the wind turbines themselves are not the main concern regarding fire risk.	Noted / BH

	○ Ensure tall structures are marked on pilot maps as required. ○ Aerial fixed wing and rotary aircraft can and do operate around wind farms in fire situations. ○ Wind farm to develop operating protocols for response during fires (ie. shutdown during fire on wind farm land). CCC members generally discussed the above information regarding fire and noted the following; • ABD again raised concern for fire related risks from wind farms and the regular interaction they have with the local RFS to maintain awareness. • GP stated wind farms pose little or no fire risk and this position is supported by his role of nearly 20 years as Deputy Fire Captain of the local brigade. Wind farm roads will help with access. • NC asked ABD to write down their concerns regarding fire in a letter and the CCC would forward to Peter Alley at Yass Valley RFS for a response. • BH reminded all that the NSW governments own wind farm fact sheet states that fire risk from wind farms is very low. Refer page 7 of DECCW – The Wind Energy Fact Sheet.	Noted Noted ABD/NC/BH Noted
5	BH presented detailed information including current project status and key development activity since the last meeting. The presentation consisted of 26 PowerPoint slides and was displayed by overhead projector. A hard copy of the presentation was handed to those present at the CCC meeting and will be uploaded to the website after the meeting. A3 scale maps of the proposed final wind farm layout and public road photomontage #7 were also handed out to each member for reference purposes and ease of viewing. Larger wall maps were available if needed. Key comments, questions and feedback points arising from the presentation were (listed in no particular order); a. **Interference to satellite services (slide 6).** Information was provided in response to the concern raised by JH. The wind farm has been designed to accommodate existing communications services, including satellite, and is not predicted to be impacted by the wind farm. A detailed communications study will be exhibited with the EA. GP also stated RFS radio services would soon be switching to digital signal and would provide the area with a very reliable service. b. **NSW Valuer General report (slide 7).** As part of a previous action regarding concern for property values BH provided JH with a copy of the NSW Valuer General report – Impact of Wind Farms on Property Values – August 2009. While JH has read the report she has some concern the report is potentially out of date. c. **Photomontage (slide 18 & 19).** JH felt the photomontage prepared from her home is not accurate and personally prepared a version to show the meeting a true representation. BH explained the photomontage process for the project including the engagement of a specialist consultant. Should JH have further concern BH offered to arrange a meeting/discussion with the visual expert for the project. JH to advise.	Noted Noted Noted BH/JH

	d. **Community Fund (slide 22 & 23).** After much discussion on the matter of community funds in recent months, NC summarised the committee members various positions/views as follows; • Any large development project has impacts and needs to be considered in the assessment process. Council imposed section 94 contributions are a means for recovery on use of public infrastructure. • Possible solution is a "viewing tax" based on number of turbines seen from certain locations. • Councillors will seek 1% of capital value as a contribution. • Non involved landowners would like compensation for loss of visual amenity. • Involved landowners would like funds to be spent locally on matters such as roads. • JH would like to see funds spent on placing local powerlines underground. • DN will contact to the responsible minister, or DP&I, on behalf of the CCC to ascertain their view on contribution value. Minutes of the meeting to be sent to councils to assist in this request. Epuron confirmed their position regarding a community fund for the project on slides 22 and 23 of the presentation.	Noted DN Noted
6	General Business a. NC suggested BH contact Local Historical Society for list/map of water bores located in the area. b. BH to upload copy of presentation material to website.	BH BH
7	Next meeting Date: TBC (aiming for a Monday or Friday in December) Time: TBC (aiming for 12.30 to 2.30) Venue: Yass Council Chambers	All BH asked to circulate a suggested meeting date for December
8	Meeting closed at 2.30pm	Noted

Rye Park Wind Farm Community Consultation Committee

M E E T I N G A G E N D A

Meeting No: 4

Date and time: 12.30 – 2.30pm, Monday 17 December 2012

Location: Yass Valley Council Chambers, Comur St, Yass

Members:

Nic Carmody	Independent Chairperson
Councillor David Needham	Yass Council
Mayor Wendy Tuckerman	Boorowa Council
Councillor James Wheelwright	Upper Lachlan Council
Graham and Margaret Privett	Involved wind farm landowner
Greg Medway	Involved wind farm landowner
Bev and Alex Davis	Non-involved wind farm landowner
Jenny and Chris Hally	Non-involved wind farm landowner
Geoffrey Minchin	Boorowa CMA and interested party
Brian Hall	Proponent (Epuron)

Agenda:

1. Apologies
2. Declaration of pecuniary or other interests
3. Minutes of previous meeting
4. Matters arising
5. Project consultation and development update, including:
    a. Issues from last meeting
    b. Development and consultation update
    c. Next steps including exhibition of EA
6. General business
7. Next meeting

Details for CCC meeting No 4

Venue: Yass Valley Council Chambers

Address: 209 Comur Street, Yass

Date: Monday 17 December 2012

Time: 12.30pm to 2.30pm

Rye Park Wind Farm

Community Consultation Committee Meeting No 4

17 December 2012



Presentation Contents for CCC Meeting No 4

1. CCC membership update
2. Project development status
3. CCC meeting No 3 action items
4. Project consultation update
5. Current project information
6. Next steps and timing
7. Communication and feedback channels

Community Consultation Committee – Membership Update

- **Independent chairperson;**
  - Nic Carmody
- **Involved landowners;**
  - Graham and Margaret Privett
  - Greg Medway
- **Uninvolved landowners;**
  - Jenny and Chris Hally
  - Bev and Alex Davis
- **Other, local Group or association;**
  - Geoffrey Minchin (interested party and employed by Boorowa CMA)
- **Local councils;**
  - Mayor Wendy Tuckerman – Boorowa Council
  - Councillor James Wheelwright – Upper Lachlan Council
  - Councillor David Needham – Yass Council
- **Epuron**
  - Brian Hall – Senior Project Manager

Rye Park Wind Farm – Current Development Status

- NSW Government changed EA lodgement deadline to 30 November
- EA submitted to Department of Planning & Infrastructure on 23 November for review
- Expect EA to be publicly exhibited by DPI early in the new year (DPI to set dates)
- EA layout of wind farm accommodates 126 turbines and associated infrastructure
- Layout incorporates consultation feedback and results of expert studies
- Photomontages at houses within 2km have been distributed to landowners
- Overhead powerline voltage up to 330 kV on single pole type structure to 45 m high
- New 80 m wind monitoring mast has been installed on site (total of 5 masts)
- Consultation and interaction with the community is ongoing
- Project details available at website www.epuron.com.au/projects/rye-park

CCC Meeting No 3 - Summary of Epuron Action Items

- **Update contractor database**
  - Database was updated to include details of local contractor, Keiren Bellew, who attended meeting 3 and stated an interest in wind farm construction work.
- **Circulate minutes and agenda prior to each meeting**
  - Complete and ongoing.
- **Forward letter from A&B Davis to Yass RFS for reply**
  - Received letter regarding concern for fire risk and forwarded to Yass RFS. Following up for reply.
- **J&C Hally photomontage**
  - Epuron offered specialist consultant to contact the Hally's to discuss concerns with their photomontage. Offer not taken up at this stage. Final version of photomontage has been forwarded with recent letter.
- **Contact local Historical Society for water bore locations**
  - Work in progress.
- **Upload current information to website and circulate CCC minutes**
  - Completed.

Project Consultation – Environmental Assessment Submitted



- EA submitted to DPI 23 November
- EA published in two volumes and runs to around 1,100 pages
- EA document includes;
  - Project details, setting and context
  - Response to DGR's
  - Results of assessments and investigations
  - Reports from specialist consultants (visual, heritage, noise and biodiversity)
- EA currently undergoing adequacy assessment
- Public exhibition expected in the new year by DPI and dates TBA
- Submissions and feedback will be requested during exhibition
- Final assessment and determination expected mid next year

Project Consultation – Photomontage to Landowners

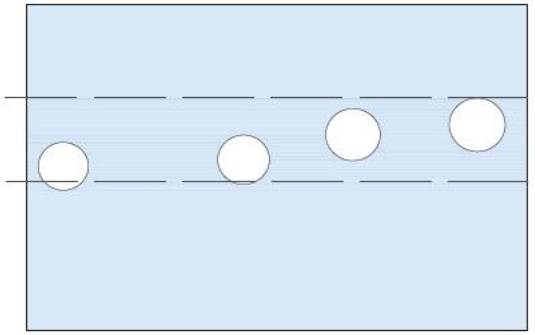
- All photomontages for dwellings located within 2 km of a proposed turbine have been prepared and forwarded to landowners
- Cover letter sent to landowners which advised and included;
  - Copy of photomontage from dwelling (before and after) printed on colour A3 size
  - Photomontages form part of the wind farm EA submission
  - Outlined process and methodology for preparing photomontages
  - Provided photomontage details including location, bearing and distance to nearest turbine
  - Provided details and illustrative figure of comparative wind turbine assessment to validate photomontage accuracy
- In some instances photomontage demonstrated landowner views toward the wind farm were blocked by hills and trees and the wind turbines may not be visible

Project Consultation – Photomontage Validation



Proposed Rye Park wind farm photomontage.

Public view location PM 4 Maryvale Road - Existing view south south west to north west.
Photo coordinate Easting:684522 Northing:6183167 (MGAz55) Approximate distance to closest visible wind turbine 3,900 m
Composite panorama photograph taken with a Nikon D700 digital SLR with a 50mm lens (equates to a 35mm SLR camera with a 50mm lens).

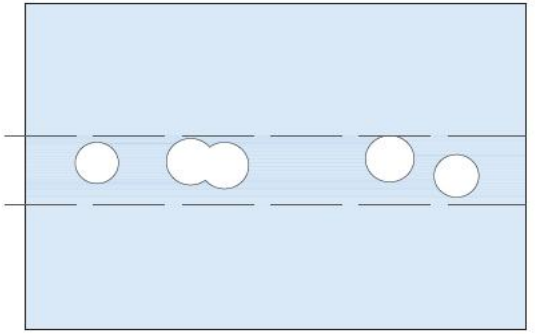


Rye Park wind turbine photomontage- comparative rotor swept area
Wind turbine 152 m tip height (101 m tower with 56 m rotor length)



Existing view toward the operational Gunning wind farm from Gunning Road.

Existing view north east to east. Photo coordinate Easting:711091 Northing 6157317 (MGAz55). Approximate distance to closest visible wind turbine 4,200 m
Composite panorama photograph taken with a Nikon D700 digital SLR with a 50mm lens (equates to a 35mm SLR camera with a 50m lens).



Gunning wind turbine photograph- comparative rotor swept area
Wind turbine 120 m tip height (80 m tower with 40 m rotor length)

Figure 63
Comparison of operational and photomontage wind turbines

Quality assurance procedures: Rye Park proposed wind farm

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Project Consultation – Photomontage View Distances

Existing Cullerin wind turbines



Photo 1 - View toward operational Cullerin wind farm turbines

View distance to closest wind turbine is approximately 2.9 km. Height of wind turbine is approximately 125 m to tip of blade.

Single frame photo taken with a Pentax K10D digital SLR camera with a 50mm lens. The camera crop factor of 1.6 equates to a 35mm full frame SLR camera with a 75mm lens.

Proposed Rye Park wind turbines (photomontage)



Photo 2 - View toward proposed Rye Park wind turbines at reduced height of 124 m to tip of blade.

View distance to closest wind turbine is approximately 1.8 km. Height of wind turbine is approximately 124 m to tip of blade.

Single frame photo taken with a Nikon D90 digital SLR camera with 50mm lens. The camera crop factor of 1.6 equates to 35mm full frame SLR camera with a 75mm lens.

Existing Capital wind turbines



Photo 3 - View toward operational Capital wind farm turbines

View distance to closest wind turbine is approximately 1.5 km. Height of wind turbine is approximately 124 m to tip of blade.

Single frame photo taken with a Pentax K10D digital SLR camera with a 50mm lens. The camera crop factor of 1.6 equates to 35mm full frame SLR camera with a 75mm lens.

Existing Capital wind turbines

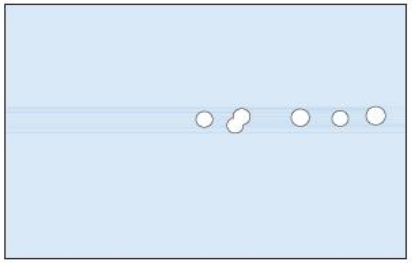


Photo 4 - View toward operational Capital wind turbines.

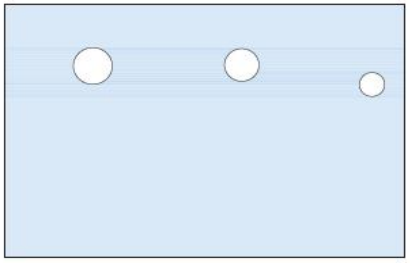
View distance to closest wind turbine is approximately 1.0 km. Height of wind turbine is approximately 124 m to tip of blade.

Single frame photo taken with a Pentax K10D digital SLR camera with 50mm lens. Camera crop factor of 1.6 equates to 35mm full frame SLR camera with a 75mm lens.

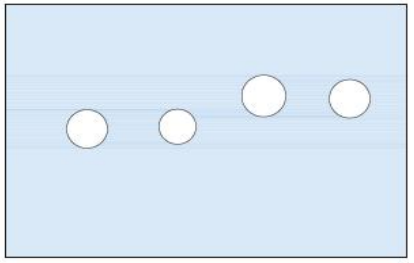
Rotor swept path area at 2.9 km



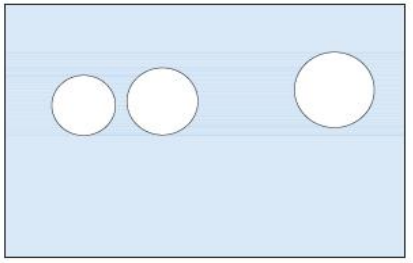
Rotor swept path area at 1.8 km



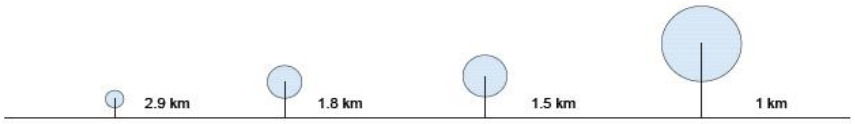
Rotor swept path area at 1.5 km



Rotor swept path area at 1 km



Relative comparison of distance effect on perceived wind turbine rotor swept path area



Relative comparison of distance effect on perceived wind turbine height

Figure 64
Comparison of operational and photomontage wind turbines

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Project Consultation – Key Activity and Timetable

Activity	Timing	Objectives	Stakeholders	Status
Community information workshop	November 2008	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	**Completed**
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	**Completed**
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	**Completed**
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	**Completed**
Consult with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours within 2km of turbine	**Completed (but ongoing)**
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	**Completed**
Establish Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	**Completed**

Project Consultation – Key Activity and Timetable…..continued

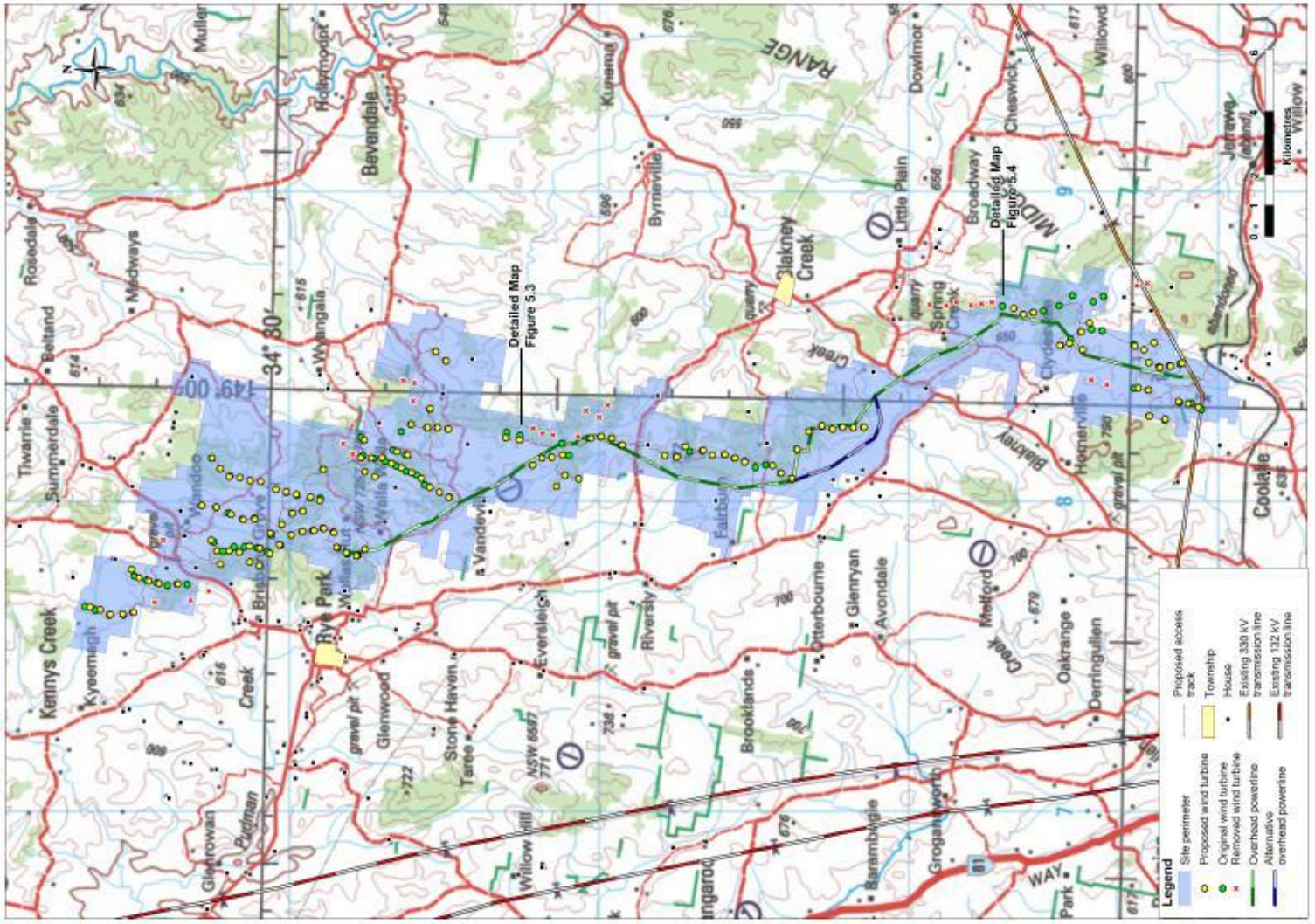
Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 1	May / June 2012	Provide project information and seek feedback	Invited members	**Completed**
Newsletter 5	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	**Completed**
Community Open Day	June / July 2012		Involved and uninvolved landowners, CCC, consultants and public	**Completed**
CCC Meeting 2	July / August 2012	Provide updated information and consider feedback including release of draft final layout	Invited members	**Completed**
Newsletter 6	September / October 2012	Update on studies and consultation feedback contributing to draft final layout	Involved and uninvolved landowners (mail-out)	**Completed**
CCC Meeting 3	September / October 2012	Review of draft final layout incorporation feedback	Invited members	**Completed**
Newsletter 7 (optional can be wrapped into open day)	**October / November 2012 (December)**	**Advise community of final layout incorporating feedback and study results**	**Involved and uninvolved landowners, CCC and consultants**	**Pending**

Project Consultation – Key Activity and Timetable…..continued

Activity	Timing	Objectives	Stakeholders	Status
Pre DA lodgement finalisation and follow up	October / November 2012	Consider feedback and any final amendments required prior to lodging application	Involved and uninvolved landowners, CCC and consultants	**Completed**
Lodgement of EA with DP&I	November 2012	Submit EA	DP&I	**Completed**
Community Open Day	**December 2012**	**Inform community of EA lodgement and exhibition**	**Involved and uninvolved landowners, CCC, consultants and public**	**Pending**

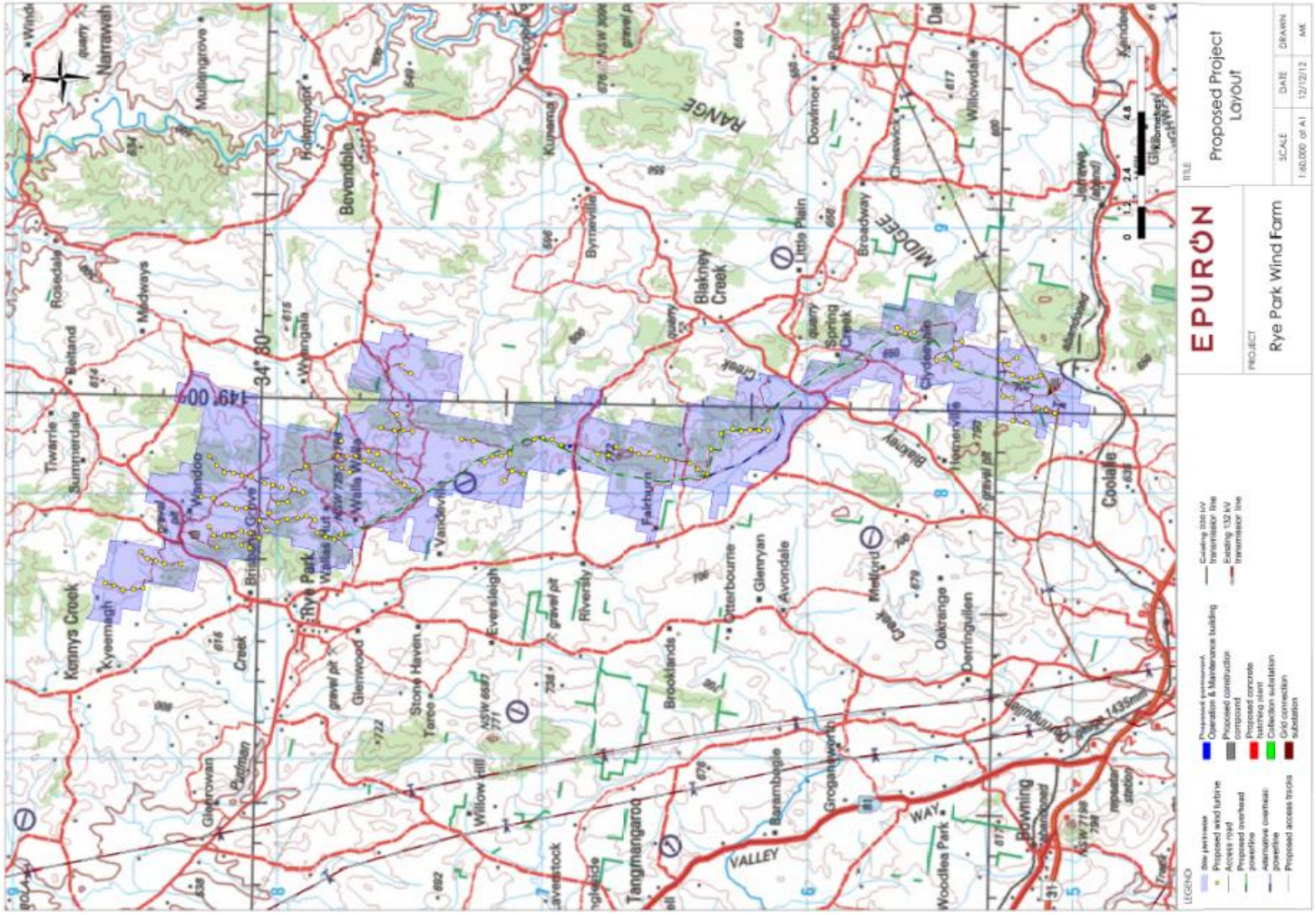
Project Information – Layout Revisions

- Design of wind farm layout has been through a number of iterations to optimise
- Some turbines have been moved or removed to accommodate community feedback and or study findings



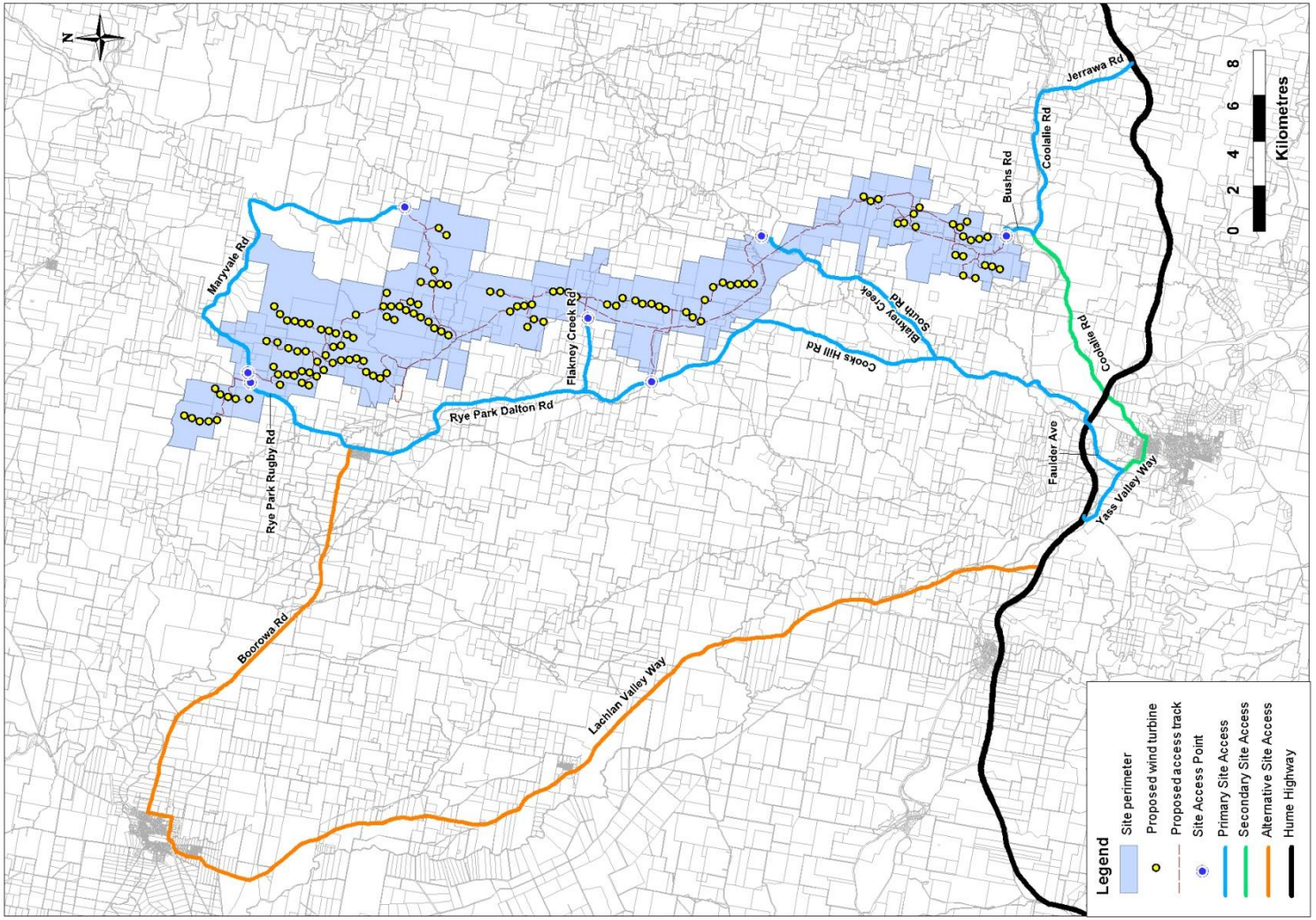
Project Information – EA Layout

- Layout accommodates 126 turbines
- Includes associated infrastructure such as;
  - Substations
  - Overhead powerlines
  - Access roads
  - Maintenance facilities
  - Permanent wind monitoring mast
  - Temporary construction facilities



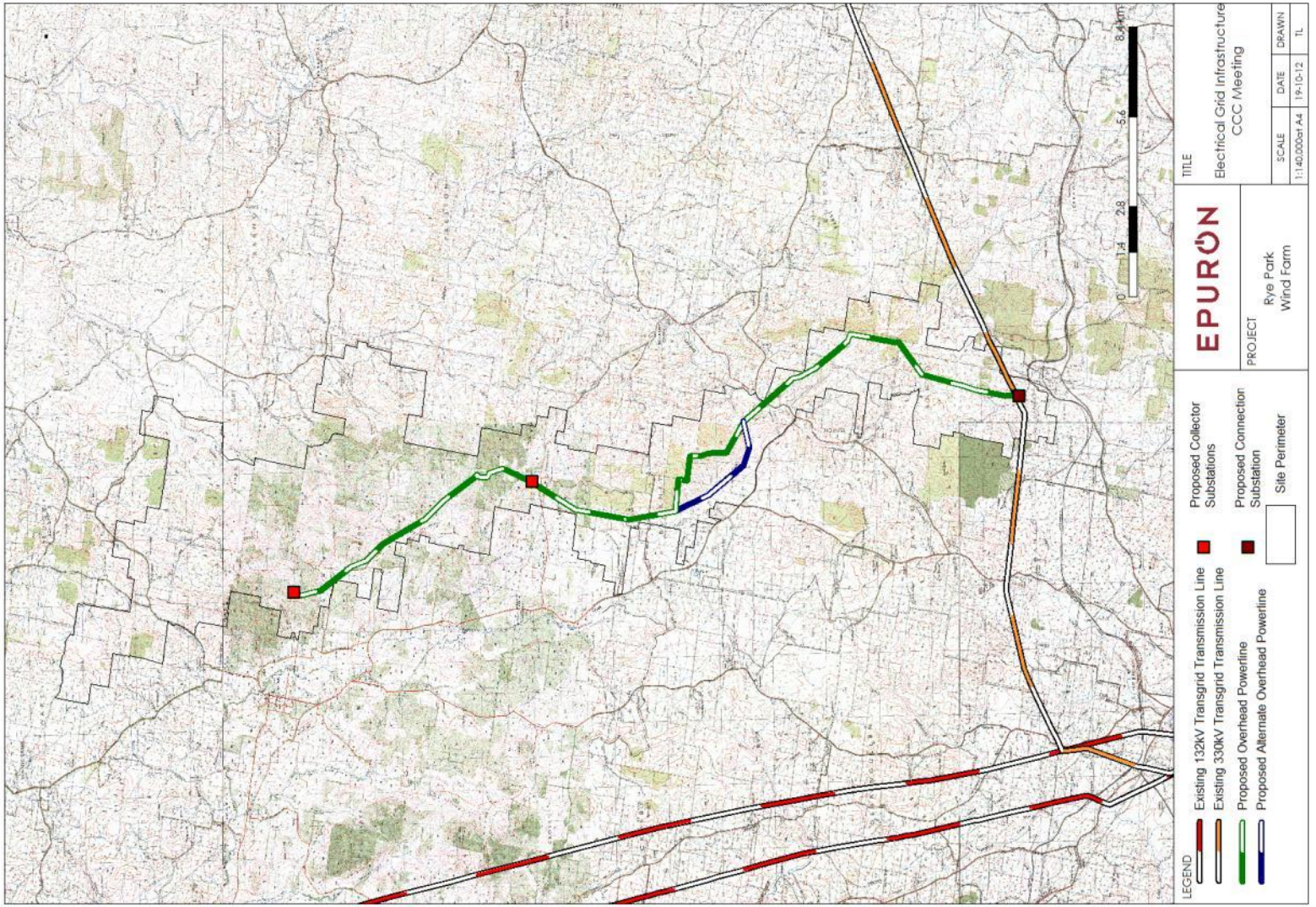
Project Information – Access Routes

- Primary site access (light blue)
- Alternative site access (orange)
- Secondary site access (green)
- Site access points (dark blue dots)
- Wind farm internal access tracks (purple)
- Hume Highway (black)



Project Information – Electrical Infrastructure

- Wind farm connects to existing Transgrid 330kV transmission line
- New powerline up to 330kV running up wind farm site
- New 330kV connection substation at existing transmission line
- New collection substations on wind farm

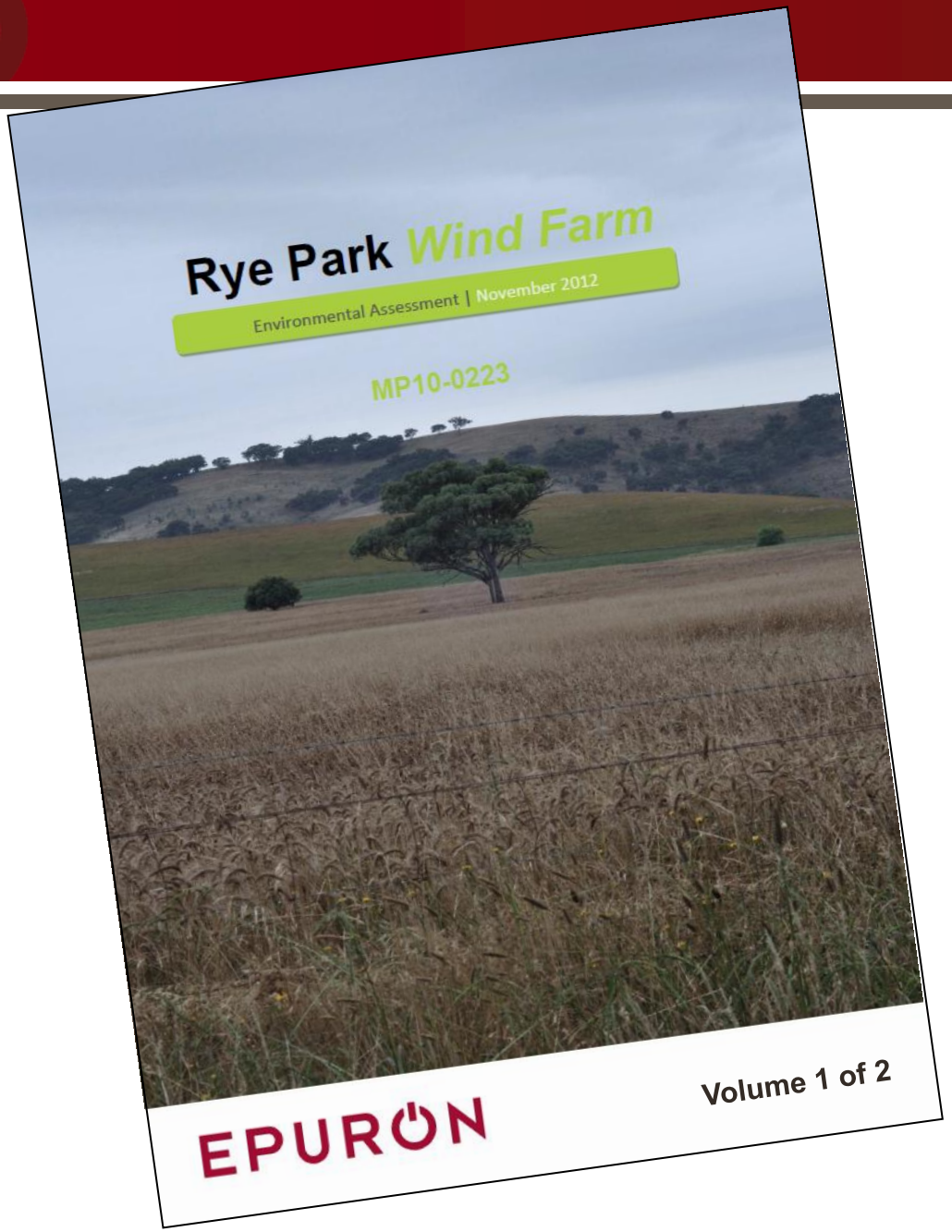


Next Steps and Timing

- DPI review of submitted EA - December / January
- Newsletter No 7 - January / February
- Community Open Day - February / March
- Public exhibition of EA - Dates to be confirmed by DPI
- Next CCC meeting - TBC (around March / April 2013)

Communication and Feedback Channels Available

- Consultation is a two-way-street and we're always listening.
- Feedback and suggestions are important to us and help design the project.
- Available communication channels include;
  - Epuron corporate website: www.epuron.com.au
  - Rye Park project website: www.ryeparkwindfarm.com.au
  - Mailing address: Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney…NSW…2060
  - Phone: 02 8456 7400
  - Fax: 02 9922 6645
  - Email: ryepark@epuron.com.au
  - Senior Project Manager: Brian Hall
b.hall@epuron.com.au
  - Meetings Arranged by appointment



Thank you for your participation in the project during 2012 and merry Christmas.



Rye Park Wind Farm Pty Ltd
Level 11, 75 Miller St
NORTH SYDNEY, NSW 2060
Phone 02 8456 7400

Minutes of Meeting

Rye Park Wind Farm

Community Consultation Committee

Present:	Nic Carmody	Chairman	NC
	Councillor David Needham	Yass Valley Council	DN
	Alex and Bev Davis	Uninvolved landowner	ABD
	Greg Medway	Involved landowner	GM
	Brian Hall	Epuron (Rye Park Wind Farm)	BH
Apologies:	Mayor Wendy Tuckerman	Boorowa Council	WT
	Councillor James Wheelwright	Upper Lachlan Council	JW
	Graham Privett	Involved landowner	GP
	Jenny Hally	Uninvolved landowner	JH
Date:	17 December 2012		
Venue:	Yass Valley Council Chambers		
Purpose:	Meeting No 4		

Minutes:

Item	Agenda / Comment / Discussion	Action
1	NC opened the Community Consultation Committee (CCC) meeting at 12.30pm. Copies of the meeting agenda and minutes of the last meeting were distributed to members prior to the meeting. Apologies were accepted from Mayor Wendy Tuckerman, Councillor James Wheelwright, Graham Privett and Jenny Hally who were not able to attend the meeting. There were no conflicts of interest declared by members present.	Noted Noted
2	Minutes of the last meeting were circulated and accepted as a true and accurate record by NC and DN with one clarification as follows; Minutes of Meeting 3, Item 5 d, last bullet point. Should read*……."DN will arrange for a council representative to contact to the responsible minister, or DP&I, on behalf of the CCC to ascertain their view on contribution value. Minutes of the meeting to be sent to councils to assist in this request".*	Noted
3	BH ran through the Epuron action items arising from last meeting; a. Update the contactors database. Complete. b. Circulate minutes of last meeting and proposed agenda items prior to each meeting. Complete. c. Forward letter from ABD to Yass RFS for response. Complete but waiting for response. d. JH photomontage. Complete. e. Contact local Historical Society. Complete. f. Update website. Complete.	Noted
4	BH presented current project information including development status and key activity since the last meeting. The presentation consisted of 19 PowerPoint slides and was displayed by overhead projector. A hard copy of the presentation was handed to those present at the CCC meeting and will be uploaded to the website after the meeting. An A3 size scale map of the proposed final wind farm layout forming part of the submitted EA was also handed out to each member for reference purposes and ease of viewing. A larger A1 size version of the layout was available and left on the wall in council chambers for viewing by the public. Key comments, questions and feedback points arising from the presentation were (listed in no particular order); a. **Submission of the EA to DPI.** The meeting discussed the recent submission of the EA to DPI and noted to following key components comprising the wind farm including; • 126 wind turbines • Access tracks including overhead and underground	Noted Noted

	powerlines • Substations and electrical grid connection equipment • Temporary construction compounds including concrete batching plant • Operations and maintenance facilities b. **EA timing and assessment process.** Members were interested to discuss the expected EA timing and assessment process, as follows; • EA submitted to DPI on 23 November • DPI undertaking adequacy review during December-January • Public exhibition of EA anticipated February-April but dates subject to DPI • Submissions report May-June • Determination from mid year c. **Letter from ABD regarding fire risk.** ABD reminded the CCC of their concerns for fire risk and the issues outlined in their letter that has been forwarded to Yass RFS. BH to follow up with the RFS for a response. d. **Postal delivery of letters locally**. ABD asked Epuron to allow a few extra days, where possible, for any information sent by mail to arrive as post is generally only delivered 2-3 days per week. e. **Community funding opportunities**. GM raised the generational opportunity available to the local community and the need to capture long term benefits resulting from the project that will get the community excited. The main aim is to establish jobs and opportunity to keep people living and working in the area. GM didn't want to see short term benefits, like building another netball court, and wanted the community to establish a long term vision to create a "Business Park" or "IT Hub". The members discussed this matter at length and generally agreed it was the communities responsibility to align their views and arrive at a preferred position as to what was required. f. **A1 size wall map for council**. As requested by DN from Yass Valley Council, Epuron provided an A1 size wall map of the proposed final wind farm layout for public display in the council office. DN asked if the following additional layers could be added to the map and reissued to council. • Involved and uninvolved houses • Council shire boundaries (allows council to determine number of turbines located within the shire) • 2 km buffer line from turbines	Noted BH Noted Noted BH
5	General Business a. BH to upload copy of presentation material to website. b. NC wished members a merry Christmas.	 BH Noted
6	Next meeting Date: TBC (aiming for a Monday or Friday around April-May) Time: TBC (aiming for 12.30 to 2.30)	All BH asked to circulate a suggested meeting date

	Venue: Yass Council Chambers	in the new year once public exhibition dates are known
7	Meeting closed at 2.15pm	Noted

Rye Park Wind Farm Community Consultation Committee

M E E T I N G A G E N D A

Meeting No: 5

Date and time: 12.30 – 2.30pm, Monday 22 July 2013

Location: Yass Valley Council Chambers, Comur St, Yass

Members:

Nic Carmody	Independent Chairperson
Councillor Ann Daniel	Yass Council
Councillor Garry Ware	Yass Council
Mayor Wendy Tuckerman	Boorowa Council
Councillor James Wheelwright	Upper Lachlan Council
Graham and Margaret Privett	Involved wind farm landowner
Greg Medway	Involved wind farm landowner
Bev and Alex Davis	Non-involved wind farm landowner
Jenny and Chris Hally	Non-involved wind farm landowner
Brian Hall	Proponent (Epuron)

Agenda:

1. Apologies
2. Declaration of pecuniary or other interests
3. Minutes of previous meeting
4. Matters arising
5. Project consultation and development update, including:
    a. Issues from last meeting
    b. Development update
    c. Next steps
6. General business
7. Next meeting

Details for CCC meeting No 5

Venue: Yass Valley Council Chambers

Address: 209 Comur Street, Yass

Date: Monday 22 July 2013

Time: 12.30pm to 2.30pm

EPURON

Rye Park Wind Farm

Community Consultation Committee Meeting No 5

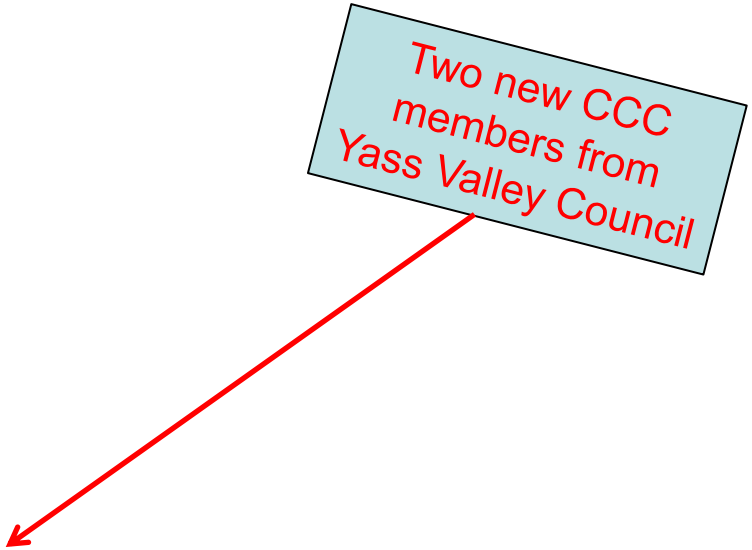
22 July 2013

Presentation Contents for CCC Meeting No 5

1. CCC membership update
2. Epuron CCC action items from meeting 4
3. Project overview
4. Introducing TrustPower
5. Development update
6. Current project information
7. Next steps and timing
8. Communication and other information

Community Consultation Committee – Membership Update

- Independent chairperson;
  - Nic Carmody
- Involved landowners;
  - Graham and Margaret Privett
  - Greg Medway
- Uninvolved landowners;
  - Jenny and Chris Hally
  - Bev and Alex Davis
- Other, local group or association;
  - As required
- Local councils;
  - Mayor Wendy Tuckerman – Boorowa Council
  - Councillor James Wheelwright – Upper Lachlan Council
  - Councillor Ann Daniel and Councillor Garry Ware – Yass Valley Council
- Epuron
  - Brian Hall – Senior Project Manager



Epuron CCC Action Items from CCC Meeting 4

- Follow up RFS for response to letter from Bev Davis
  - Epuron have sent follow up email and phone calls to Peter Alley at Yass RFS. Still awaiting response.
- Provide A1 size wall map to Yass Valley Council
  - A1 map forwarded to Yass Valley Council on 14 March for display purposes (copy also enclosed in this presentation and A3 map provided to CCC members).
  - A3 map provided to CCC members as part of meeting 5
- Upload copy of meeting presentation material to website
  - Uploaded week following last meeting.

Project Overview

- New Zealand utility Trustpower announced their project involvement in May 2013
- EA submitted to Department of Planning & Infrastructure November 2012 for review
- Expect EA to be publicly exhibited by DPI in the coming weeks / dates TBC by DPI
- EA layout of wind farm accommodates 126 turbines and associated infrastructure
- Layout incorporates consultation feedback and results of expert studies
- Overhead powerline voltage up to 330 kV on single pole type structure to 45 m high
- Transgrid progressing connection enquiry and commenced technical studies
- Five wind monitoring masts have been installed on site (>3 years data)
- Consultation and community feedback is ongoing
- Project details available at website www.epuron.com.au/projects/rye-park

Introducing TrustPower

- NZ publicly listed electricity generator / retailer (> 200,000 customers in NZ)
- 470 staff - market capitalisation of NZ$2.4 billion - NZ$800 million annual revenue
- Owns & operates 36 hydro generation stations across NZ
- 4 operating wind farms, including New Zealand's largest (Tararua Wind Farm) & Australia's 2nd largest (Snowtown Wind Farm)
- Active in Australia for last decade
- Snowtown Wind Farm (SA) – commissioned Stage 1 in 2008 (48 turbines 100MW)
- Snowtown Stage 2 under construction (90 turbines 270MW).

TrustPower

TrustPower Rye Park strategy

- TrustPower strategic plan to expand wind farm portfolio in Australia
- Rye Park Wind Farm – good fit within TrustPower strategy
- Option with Epuron to acquire the project following securing of land and planning approvals
- Working collaboratively with Epuron to enable construction feasibility as soon as possible post planning approvals
- Potential construction in 2015-16 (market demand in 2016-17)
- TrustPower has fostered strong landowner and community support for all projects
- Meeting all key stakeholders to build ongoing relationship for life of project

TrustPower

Strong support for Snowtown

BY KEIRA JAMES

Siemens Ltd, engineering and construction contractor for Snowtown wind farm stage II, has donated $10,000 to the Snowtown community through the TrustPower Lend-a-Hand foundation.

Siemens is the major contractor on the Snowtown project and on completion will maintain the 90 wind turbines, including a 15 year service contract.

"Siemens will be an integral part of the Snowtown community, both now and for the next 15 years.

"We see this contribution to the TrustPower Lend-a-Hand foundation as a reflection of our ongoing support for the future of this community," David Pryke, Executive Vice President of Energy sector Siemens Ltd, said.

Alan Large from Snowtown Lions Club said unlike other wind farm projects in the Mid North, the Snowtown community were pleased to have the development in the region.

"There's no doubt about it."

He said businesses in the region had already seen increasing sales, with workers coming up from Adelaide purchasing fuel and food from local retailers.

Mr Large accepted the cheque on behalf of the Snowtown, Lochiel, Koolunga, Blyth and Bute communities and said the TrustPower Lend-a-Hand foundation wanted to ensure the funds reached the wider community.

Discussions were underway [illegible] Wakefield Regi[illegible]

> "...will be an integral part of the Snowtown community..."

David Pryke [illegible] from out of town [illegible] the transfer of kn[illegible] workers.

TrustPower's [illegible] approach to worki[illegible] reason locals were [illegible] he said.

Snowtown Stage [illegible] megawatts of renew[illegible] tional by end of 20[illegible] wind-generated energ[illegible]

Digging deep for the community

Snowtown

Snowtown's backing for the biggest windfarm in South Australia is being repaid in spades.

The community received $10,000 from builder of the project Siemens Energy on Monday in a gesture aimed to forge a bond with the residents.

The multi-million dollar project will involve 90 turbines, a construction crew of between 60 and 100 and an operati[illegible]



Sunday Mail adelaidenow.com.au

Turbines blow away

ghosts of Snowtov

24 | Sunday focus 19.5.13

As Snowtown prepares to celebrate its 135th anniversary, a wind farm is helping erase a stain from the past.

BRAD CROUCH reports on the community's renewed spirit

IT'S identity has been defined by one of the nation's worst and most [illegible] high-profile mass murders, but the community of Snowtown is hoping towering turbines will bring a new future for the Mid North town.

Goats blowing relentlessly across the rounded, largely treeless Barunga and Hummocks ranges have brought [illegible] plenty jobs and even an image [illegible] over in their slipstream as the town becomes the state's epicentre of wind-generated power.

Snowtown – "Gateway to the Barunga Ranges" – became a casualty of evil when eight murder victims were found stored in barrels of acid in a disused bank in May 1999.

But the town has long moved on and it's keen to put the blot behind it.



New start: Nicole and Nigel McCauley with daughters Mia and Ava

Buoyant mood: Publican Phil Hyde

Benefits: Farmers Peter Dilbury and son Jarrod





Wind farm access roads aid firefighters

TrustPower

THREE grass fires in February, freakishly started by lightning – including one strike that killed a sheep – revealed a significant benefit brought by Snowtown wind farm access roads.

"They were absolutely of great benefit in helping us fight the fires," said Snowtown CFS captain, Pat Coffey. "It it weren't for those roads the fires, which were going at a fair rate of knots, would have just kept going.

"They acted as a natural fire break, giving us an edge to work back to and enabling us to back burn if we'd needed to.These new access roads provided an unexpectedbonus, but they'll help us control fires in the future."

Landowner Neville Michael, whose farm is located just north of Barunga Gap and hadabout 25ha burntout, says the upgrading of what had been rough and ready tracks enabled firefighters to get water tankers muchcloser to the fires. "It's rough and steep country and carrying water to a fire is difficult."

Neighbouring landowner Peter Ebsary, who had about 250ha burnt out, said the all-weather new roads meant fire vehicles could now hurtle along the ranges at more than 60km/h, as well as providing a very effective firebreak. "Without those roads the fire would have burnt out much more property," he said.

While Pat Coffey is pleased that his crews have access to the new roads, he wishes they'd been extended another half akilometre further south to the communications tower, and a similar distance further north, which would have provided links with other existing roads.He live in hope.

Snowtown 2 Wind Farm project manager, Jim Pearson, said he was delighted with the positive communication and working relationship that had been established between the landowners, CFS and site contractors as a result of the fires.

"CatCon and Consolidated Power Projects also supported the CFS with their firefighting utes and a diesel truck," he said. "We're pleased we were able to help inaddressing the high fire risk situation this summer."

Meanwhile, the extended summer weather has been ideal for the 110 contractors working on site, who have construction of Stage 2 of the Snowtown Wind Farm running right on track.

Construction of the transmission line is ahead of schedule, the wind farm sub-station is being built with completion due at the end of October, while pouring of the wind turbine foundations is half completed. Shipments of major components such as blades and towers are expected to begin in mid-May, with turbine construction due to start in August.



BURNT one side, s[illegible] road.–Picture supp[illegible] Flair

SNOWTOWN COMMUNITY IS ...

Skating along!

SNOWTOWN residents are thrilled to see action at the skate park site, with the preparation of the area now completed, ready for concrete to be poured.

Local, Kevin Weepers cleared and levelled the site before Christmas, with Wakefield Regional Council preparing the base andadding rubble in February.

Catcon, the construction company in charge of building the Stage 2 Wind Farm at Snowtown, has generously donated the concrete slab to the Snowtown community.

This generous donation has saved the project more than $35,000, and has enabled the Skate Park Committee to utilise its other funds to build a better skate park.

The base is se tto be poured within the next week.

After the slab is finished, steel components to complete the skate park will be built on site and secured to the concrete.

Skate Park committee member, Bernie Altmann, is looking for some volunteers to help with construction of skate jumps.



IN front of the prepared area for the skate park are Bernie Altmann, Michelle Diebint and Tanya Warner with excited local children, Karlia Altmann, Cooper Altmann, Brooke Jamieson, Henry Warner and Austin Altmann.

"The supervisor requires help with steel components to build the ramps and jumps, and we're looking for some capable people to help out," she said. If you can help, even if just for a day or few hours, please phone Bernie on 0438 780 206.

Once the park is finished, the committee will then build fences, a shelter and barbecue area, which will also benefit the caravan park area.

The committee and children of the town are hopeful the park will be operating before the end of school holidays, which run from Monday, April 12 to Monday, April 29.

TRUSTPOWER WIND FARM NEWS ADVERTISING FEATURE

CONSTRUCTION of Stage 2 of the Snowtown Wind Farm by TrustPower will create South Australia's biggest wind farm – and the second largest in Australia. This is the second in a series of special columns provided by TrustPower to inform Snowtown residents and others of the project's progress. More will appear throughout 2013.

Grassland management plan is 'win-win' for all

IN what has been described as a "win-win" for the environment, landowner productivity and wind farm developer TrustPower, about 102ha of degraded native grassland on the South Hummocks is benefiting from an innovative new management plan.

Under the Native Vegetation Act 1991, TrustPower is required to provide an environmental benefit offset for the clearance of native vegetation associated with the construction of the second stage of its Snowtown wind farm. This is often achieved by paying money into a fund managed by the Native Vegetation Council (NVC) for environmental remediation.

Instead, an alternate approach has been agreed to TrustPower, assisted by the Mid North Grasslands Working Group, has identified a suitable native grasslands offset area on a property north-east of the Kulpara township, owned by the Millard family.

As a result, a Native Vegetation Management Plan has been negotiated with the NVC that establishes a rotational grazing program as a management tool together with weed management and feral animal control; establishes a number of "cells" or paddocks with watering facilities for stock; and includes annual surveys and reporting of improvements.

Mid North Grasslands Working Group member Millie Nichols said: "I think it's a really innovative solution. This will result in an important grassland area being sustainably managed for the long term."

Bruce Munday, chair of the Native Vegetation Assessment Panel, says there are benefits all round: "Using rotational grazing to reduce weed cover will allow native grasses to flourish while the landowner gains fromimproved grazing productivity. The landowners are now committed to using rotational grazing as a tool for improving the overall condition of the grassland communities."

TrustPower Project Manager Jim Pearson said he was very pleased with the outcome. "We would especially like to thank the Millard family, the Mid North Grasslands Working Group, the NVC and our consultants EES Ecology for such a successful outcome."

PROJECT UPDATE:

Current activities in the construction of Stage 2 of the Snowtown Wind Farm (SWF-2) include:

- ✔ Foundation excavation and concrete pouring, continuing to mid year;
- ✔Access road construction;
- ✔Cable trenching and laying operations;
- ✔Commencement of construction activities at switching station 7km west of Blyth;
- ✔Construction of the 28km 275kV transmission line from Barunga Gap to the Blyth West switching station;
- ✔Currently around 100 SA-based workers are employed on site.

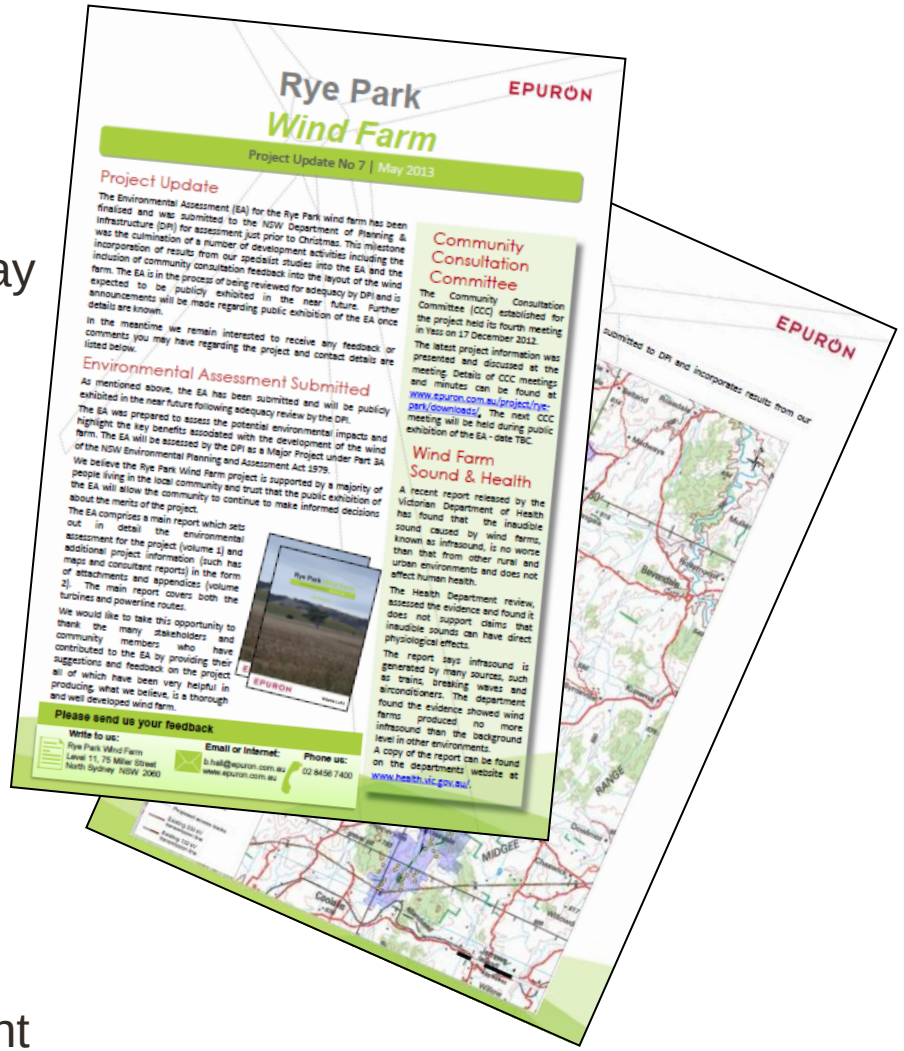
TrustPower

www.trustpower.co.nz

TrustPower

Development Update

- TrustPower announcement is significant milestone achievement
- Newsletter No 7 was released in May
- TrustPower initial site inspection for grid connection/electrical design completed end May
- Environmental winter survey was conducted across site week commencing 8 July
- Department expected to release EA for public exhibition July/August
- New 80m wind monitoring mast installed at north of site (total of 5 masts) early 2013
- Currently transitioning landowners to Agreements to Lease
- Councillor David Needham no longer representing Yass Valley Council on CCC
- Global Wind Day held on 15 June and Epuron contributed to Goulburn Post media supplement



Wind Farm Access Roads Aid Fire-fighters

During recent grass fires in SA started by lightning, it was revealed that a significant benefit was brought by access roads built for a local wind farm.

"They were absolutely of great benefit in helping us fight the fires," said the Snowtown Country Fire Service (CFS) Captain. "If it weren't for the those roads, the fires, which were going at a fair rate of knots, would have just kept going. They acted as a natural fire break, giving us an edge to work back to and enabling us to back burn if we'd needed to. These new access roads provided an unexpected bonus, but they'll help us control fires in the future."

It was said access tracks installed as part of a wind farm increased accessibility onsite and therefore had a positive impact on response time and ability to fight fires onsite or neighbouring properties.

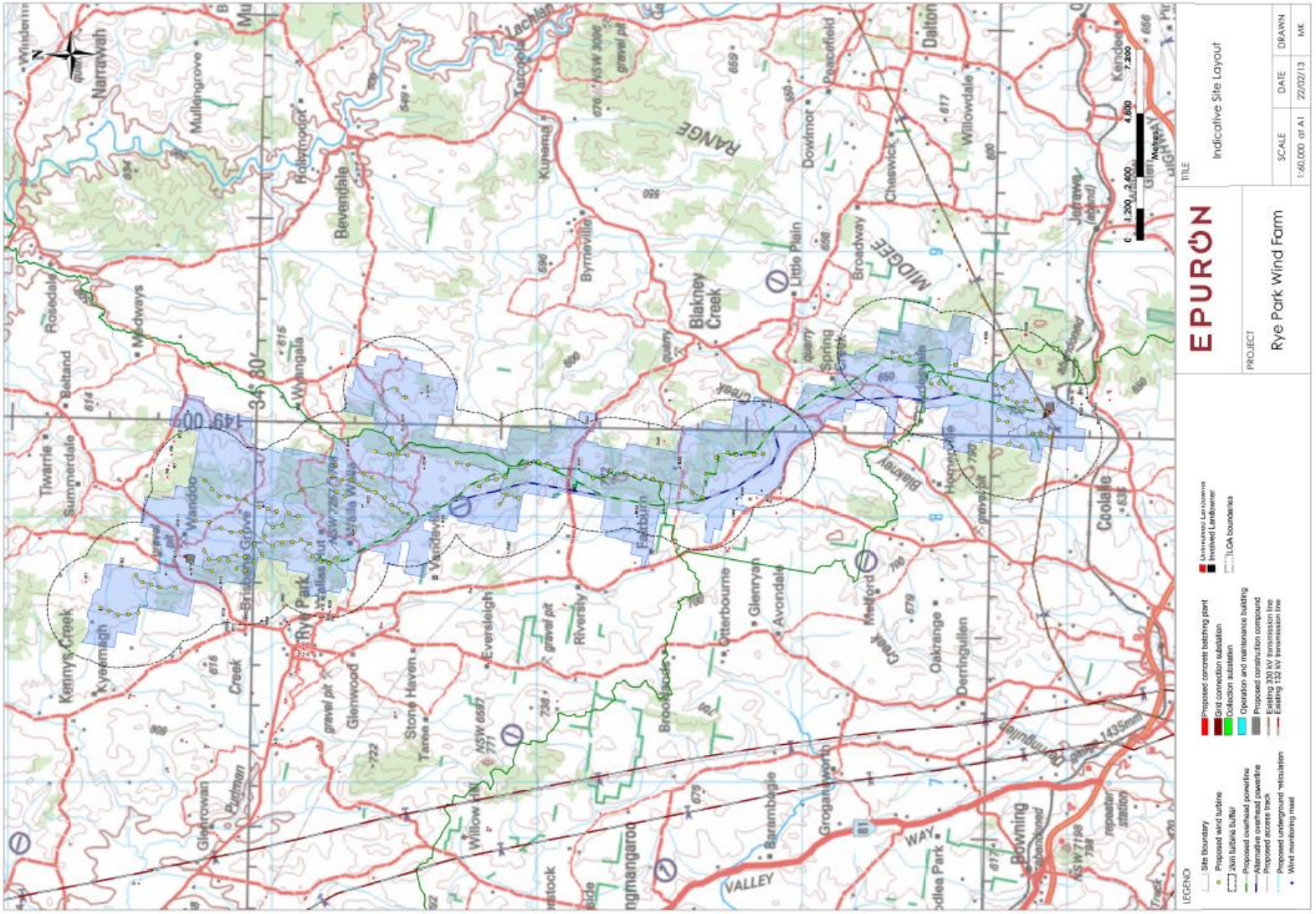
Notably, in consultation with authorities including the NSW Rural Fire Service and NSW Fire Brigade, a bushfire management plan would be prepared for Rye Park prior to commencement of construction.



Snowtown Wind Farm – SA (TrustPower)

Updated Map for Council

- A1 size map provided to council
- A3 size map provided to CCC members
- Map updated to include;
  - Council LGA boundaries
  - Involved and uninvolved houses
  - 2km buffer line from turbines



Other CCC Discussion Points

- Consultation and feedback
  - Any communication or feedback to report from community
- Community Enhancement Fund
  - Any further thinking on required community support and delivery model
- What does the involvement of TrustPower mean
- Upcoming activities
  - EA exhibition
  - Open Day
  - Newsletter

Project Consultation – Key Activity and Timetable

Activity	Timing	Objectives	Stakeholders	Status
Community information workshop	November 2008	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	Completed
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	Completed
Consult with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours within 2km of turbine	Completed (but ongoing)
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	Completed
Establish Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	Completed

Project Consultation – Key Activity and Timetable…..continued

Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 1	May / June 2012	Provide project information and seek feedback	Invited members	Completed
Newsletter 5	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	Completed
Community Open Day	June / July 2012		Involved and uninvolved landowners, CCC, consultants and public	Completed
CCC Meeting 2	July / August 2012	Provide updated information and consider feedback including release of draft final layout	Invited members	Completed
Newsletter 6	September / October 2012	Update on studies and consultation feedback contributing to draft final layout	Involved and uninvolved landowners (mail-out)	Completed
CCC Meeting 3	September / October 2012	Review of draft final layout incorporation feedback	Invited members	Completed
Lodgement of EA with DP&I	November 2012	Submit EA	DP&I	Completed

Project Consultation – Key Activity and Timetable…..continued

Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 4	December 2012	Advise CCC of final EA layout incorporating feedback and study results	Involved and uninvolved landowners, CCC and consultants	Completed
Newsletter 7	May 2013	Advise community of final EA layout incorporating feedback and study results	Involved and uninvolved landowners, CCC and consultants	Completed
CCC Meeting 5	July 2013	Consider feedback and any final amendments to lodged application	Involved and uninvolved landowners, CCC and consultants	Completed
EA Exhibition	Aug / Sept	Public exhibition of EA and submissions	Involved and uninvolved landowners, CCC, consultants and public	Pending
Community Open Day	During EA exhibition	Inform community of EA lodgement and exhibition	Involved and uninvolved landowners, CCC, consultants and public	Pending
Newsletter 8	During EA exhibition	Inform community of EA lodgement and exhibition	Involved and uninvolved landowners, CCC and consultants	Pending
CCC Meeting 6	During EA exhibition	Advise CCC of exhibited EA layout incorporating feedback and study results	Involved and uninvolved landowners, CCC and consultants	Pending

Communication and Feedback Channels Available

- Consultation is a two-way-street and we're always listening.
- Feedback and suggestions are important to us and help design the project.
- Available communication channels include;
  - Epuron corporate website: www.epuron.com.au
  - Rye Park project website: www.ryeparkwindfarm.com.au
  - Mailing address: Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney…NSW…2060
  - Phone: 02 8456 7400
  - Fax: 02 9922 6645
  - Email: ryepark@epuron.com.au
  - Senior Project Manager: Brian Hall
b.hall@epuron.com.au
  - Meetings Arranged by appointment



New RYP5 Wind Monitoring Mast – North Bearing

Questions and general discussion

Thank you for your attendance

Rye Park Wind Farm Pty Ltd
Level 11, 75 Miller St
NORTH SYDNEY, NSW 2060
Phone 02 8456 7400

Minutes of Meeting

Rye Park Wind Farm

Community Consultation Committee

Present:	Nic Carmody	Chairman	NC
	Councillor James Wheelwright	Upper Lachlan Council	JW
	Jenny and Chris Hally	Uninvolved landowner	JCH
	Greg Medway	Involved landowner	GM
	Neil Privett	Involved landowner	NP
	Malcolm Day	Involved landowner	MD
	Brian Hall	Epuron	BH
Apologies:	Mayor Wendy Tuckerman	Boorowa Council	WT
	Councillor Ann Daniel	Yass Valley Council	AD
	Councillor Garry Ware	Yass Valley Council	GW
	Alex and Bev Davis	Uninvolved landowner	ABD
	Graham Privett	Involved landowner	GP
Date:	22 July 2013		
Venue:	Yass Valley Council Chambers		
Purpose:	Meeting No 5		

Minutes:

Item	Agenda / Comment / Discussion	Action
1	NC opened the Community Consultation Committee (CCC) meeting at 12.32pm. Copies of the meeting agenda and minutes of the last meeting were distributed to members prior to the meeting. Apologies were accepted from the following members who were not able to attend the meeting; → Mayor Wendy Tuckerman – Boorowa Council → Councillor Ann Daniel - Yass Valley Council → Councillor Garry Ware - Yass Valley Council → Graham Privett – Involved landowner → Alex and Bev Davis – Uninvolved landowner There were no conflicts of interest declared by those present.	Noted
2	NC asked all members present to confirm they had received minutes of the last meeting and moved that the minutes be accepted. There were no changes proposed and the minutes were accepted by all members present.	Noted
3	It was discussed that Councillor David Needham was no longer available to represent Yass Valley Council on the CCC. The position vacated by Councillor Needham has been taken up by Councillors Ann Daniel and Garry Ware. The CCC thanks Councillor Needham for his contribution to the CCC.	Noted
4	JCH suggested Boorowa Council should consider appointing an alternate to Mayor Wendy Tuckerman as its representative on the CCC to ensure the Boorowa region is consistently represented on the CCC. Members asked BH to raise the matter of an alternate representative with WT and to ask whether the next CCC meeting could be hosted by Boorowa council.	Noted BH
5	BH ran through the Epuron action items arising from last meeting; a. Follow up Rural Fire Service (RFS) for response to letter from ABD regarding concerns for fire. o BH advised that the Yass RFS had been followed up by phone and email regarding the letter. No response to the letter had been received from the RFS to date. It is understood the letter from ABD may have been forwarded to RFS head office for consideration/response. o NC offered to send an email/letter to the State Member for Burrinjuck, The Hon Katrina Hodgkinson MP, seeking that the RFS respond to the letter from ABD.	Noted NC

	b. Provide A1 size wall map to Yass Valley council with the inclusions of council LGA boundaries, 2km buffer zone from turbines and involved and uninvolved houses. o Complete. c. Upload copy of meeting 4 presentation materials to website. o Complete.	Noted Noted
6	BH presented current project information including development status and key activity since the last meeting. The presentation consisted of 17 PowerPoint slides and a colour copy was provided to each member present at the CCC meeting and will be uploaded to the website after the meeting. An A3 size scale colour map of the proposed final wind farm layout forming part of the submitted EA was also handed out to each member for reference purposes and ease of viewing. A larger A1 size version of the layout was also displayed on the wall in council chambers for general viewing. BH presented and discussed the presentation. Key comments, questions, actions and feedback points arising from the presentation were (listed in no particular order); a. **Status of the Environmental Assessment**. It was confirmed the EA had been submitted to the Department of Planning and Infrastructure and subject to completing the adequacy review stage the EA would be placed on public exhibition in the coming weeks/months. Exhibition dates to be confirmed by the department in due course. b. **Involvement of Trustpower.** The meeting discussed the recent announcement that the NZ utility, Trustpower, was involved in the project. Trustpower has an option with Epuron to acquire the project following securing of land and planning approvals. This is a significant milestone achievement for the project. c. **Overall development timing**. JW asked for an update on the overall timing for the proposed development and an estimate of when construction could commence. BH advised the following estimate of key dates and expected timing. o EA to be exhibited second half of this year with public submissions called for by the department o Approval decision anticipated late 2013 or early 2014 o Trustpower to undertake construction feasibility as soon as possible post planning approvals o Potential construction 2015-16 d. **Wind farm access roads aids fire-fighters.** A recent media story outlined in slide 10 of the presentation was discussed in some detail as a follow on point from the letter submitted to the RFS (item 5a above) about wind farms and fires. It was noted that while wind farm access tracks provide improved ground access to fight fires there was some concern that aerial access may be reduced in some instances. Generally wind turbines are treated the same as any other obstacles in the landscape, such as powerlines and communication towers, when fighting fires. The RFS is expected to make a general industry statement about wind farms and fire fighting in due course. e. **Community enhancement funding**. Members discussed current thinking and ideas around the opportunity to establish a community	Noted Noted Noted Noted

		enhancement fund for the project. A summary of the key discussion points and views include; ○ GM discussed the significant opportunity available to the local community and the need to capture money for the future so families had more reasons to continue living and working in the area. GM didn't want to see short term projects like the building of a "skate park" instead wanting to establish a long term vision and create a "Business Park" or "IT Hub". ○ MD said if the community didn't capture the benefits on offer from the project it would become harder for some farmers to survive and may result in them walking off the land. ○ NP said the local community can't afford for the project not to proceed and must capture the benefits on offer. ○ There was a lengthy discussion amongst members around how the community could spend any funding available from the project. Some of the projects/ideas discussed included; • Business Park or IT Hub • Recreational facilities such as lighting to local fields • Payments for impacts to nearby landowners • Improvements to local towns and schools ○ Members also discussed the various ways (models) funding could be administered and the key ideas put forward included; • Councils should manage funding and not by local community groups in isolation of council • CCC should manage funding and decide on allocations for funding initiatives • Other models could be considered based on experience from other projects ○ NC suggested the CCC should administer the community enhancement fund and 50% of any funding be allocated amongst residents living within 2km of turbines and the remaining 50% be provided for approved local projects. ○ JCH advised a recent valuation of their property had declined as a result of the proposed wind farm and funding from a community enhancement fund should be provided to landowners as a payment for any loss of value. Payment should only apply to those who have a visual line of sight of the wind turbines. ○ General agreement that any money from a community enhancement fund should be spent locally on nearby affected towns (eg. Rye Park and Bevandale) and not the regional centres (eg. Yass and Boorowa). Money should not be a substitute for council rate funding tasks already allocated. ○ BH suggested that Trustpower be invited to the next CCC meeting to discuss their ideas for a community enhancement fund as they have actual experience from current operational wind farms in SA and working alongside communities. ○ NC put forward a suggested value of $1,600-2,500 per turbine per annum as a guide from other projects regarding the value of a community enhancement fund. BH indicated this seemed to be a high number and needs to be discussed further once	BH

	the type of initiatives required from the project have been identified by the community. o JW indicated, as a guide, the Crookwell wind farm project offers the community around $1,400 per turbine per annum. o It was acknowledged that more discussion is required of the CCC and community to better understand the type of project funding required to be undertaken and the preferred method (model) necessary to administer any funding. o To help inform further thinking and discussion NC asked that Epuron determine how many landowners there are within 2km and 5km of the proposed turbines so the CCC can assess how many potentially affected landowners there could be. o JW asked that Epuron determine how many proposed turbines there are in each council LGA as a potential guide to any funding allocations.	All BH BH
7	General Business / Other Matters a. BH advised that an Open Day was planned to be held during the department's public exhibition of the EA. The Open Day would assist the public to view exhibited information and to ask questions of the proponent. JCH requested that the visual consultant be represented at the open day to discuss photomontages displayed of the wind farm. Epuron will ask the visual consultant to be available for the Open Day once the date is known. JCH feel the photomontages do not accurately represent the views that will be seen of the wind farm and would like to see an alternative medium to photographs, such as hand drawn sketches. b. JCH asked that the minutes reflect that the Supplementary DGRs issued by the department for the project require the proponent to undertake additional consultation effort with particular focus on those non wind farm associated community members who live in proximity to the site. BH responded by saying every effort has been made to contact and consult with neighbouring and nearby landowners with particular focus on those within 2km of a proposed turbine. For example all landowners within 2km of a proposed turbine have been offered and provided with a photomontage where requested by the landowner. Some landowners beyond this distance have also been provided with a photomontage. Consultation continues and is an ongoing process. c. BH to upload copy of presentation material to website.	BH BH BH
8	Next meeting Date: TBC (aiming for Monday 30 September) Time: TBC (aiming for 12.30 to 2.30) Venue: TBC (aiming for Boorowa Council to host the meeting)	All

	BH to discuss the proposed next meeting date and venue with WT from Boorowa Council and advise CCC members when finalised.	BH
9	NC closed the meeting at 2.28pm	Noted

Rye Park Wind Farm Community Consultation Committee

M E E T I N G A G E N D A

Meeting No: 6

Date and time: 12.30 – 2.30pm, Monday 30 September 2013

Location: Rye Park Memorial Hall

Members:

Nic Carmody	Independent Chairperson
Councillor Ann Daniel	Yass Council
Councillor Garry Ware	Yass Council
Mayor Wendy Tuckerman	Boorowa Council
Councillor James Wheelwright	Upper Lachlan Council
Graham Privett	Involved wind farm landowner
Greg Medway	Involved wind farm landowner
Bev and Alex Davis	Non-involved wind farm landowner
Jenny and Chris Hally	Non-involved wind farm landowner
Brian Hall	Proponent (Epuron)

Agenda:

1. Apologies
2. Declaration of pecuniary or other interests
3. Minutes of previous meeting
4. Matters arising
5. Introducing TrustPower
6. Project consultation and development update, including:
    a. Issues from last meeting
    b. Development update
    c. Next steps
7. General business
8. Next meeting

Details for CCC meeting No 6

Venue: Rye Park Memorial Hall

Address: Yass Street, Rye Park

Date: Monday 30 September 2013

Time: 12.30pm to 2.30pm

EPURON

Rye Park Wind Farm

Community Consultation Committee Meeting No 6

30 September 2013

Presentation Contents for CCC Meeting No 6

1. CCC membership update
2. Epuron CCC action items from meeting 5
3. Introducing TrustPower
4. Development update
5. Current project information
6. Next steps and timing
7. Communication and other information

Community Consultation Committee – Membership Update

- Independent chairperson;
  - Nic Carmody
- Involved landowners;
  - Graham Privett
  - Greg Medway
- Uninvolved landowners;
  - Jenny and Chris Hally
  - Bev and Alex Davis
- Other, local group or association;
  - As required
- Local councils;
  - Mayor Wendy Tuckerman – Boorowa Council
  - Councillor James Wheelwright – Upper Lachlan Council
  - Councillor Ann Daniel and Councillor Garry Ware – Yass Valley Council
- Epuron
  - Brian Hall – Senior Project Manager

Epuron CCC Action Items from CCC Meeting 5

- Invite Trustpower to attend the next CCC meeting to discuss wind farm experience and community enhancement funding ideas
  - Complete.
- To help inform further CCC thinking around community enhancement funding, Epuron are to provide an estimate of the number of houses located within 2km and 5km of proposed turbines
  - 2km – approx 46
  - 5km – approx 107
- How many proposed turbines located in each council LGA
  - Yass Valley - 18
  - Upper Lachlan - 25
  - Boorowa - 83

Epuron CCC Action Items from CCC Meeting 5……..continued

- The visual consultant to be invited to attend the Open Day planned during the public exhibition process
  - Complete
- Ensure minutes of last meeting reflect consultation requirements set out in the Supplementary DGR's
  - Complete
- Upload meeting material to website
  - Complete

Introducing TrustPower



TrustPower to provide a separate presentation to the CCC

Development Update

- NSW Rural Fire Service responds to letter from Epuron seeking their position on wind farms and fighting fires. See further details in this presentation.
- Representatives from NSW Office of Environment & Heritage visited site on 2 September and to assist with completion of EA adequacy comments.
- Further survey work is required for some areas/species during the current spring period to address the concerns raised by OEH.
- Following preliminary design optimisation works and field inspections there have been some alignment adjustments and scope changes to the proposed powerline easement routes.
- It is intended the EA (adequacy phase) will be finalised and resubmitted to the Department of Planning once the current spring survey works are complete.
- Meetings have been arranged with the three local councils to introduce TrustPower to the project.
- Works to transition landowners to Agreements to Lease is progressing well.

Other CCC Discussion Points

- Consultation and feedback
  - Any communication or feedback to report from community
- Community Enhancement Fund
  - Views and ideas put forward by TrustPower
- Activities planned during EA exhibition
  - EA exhibition
  - Open Day
  - Newsletter
- Next CCC meeting
  - Suggest next meeting date to be confirmed once EA exhibition dates are known

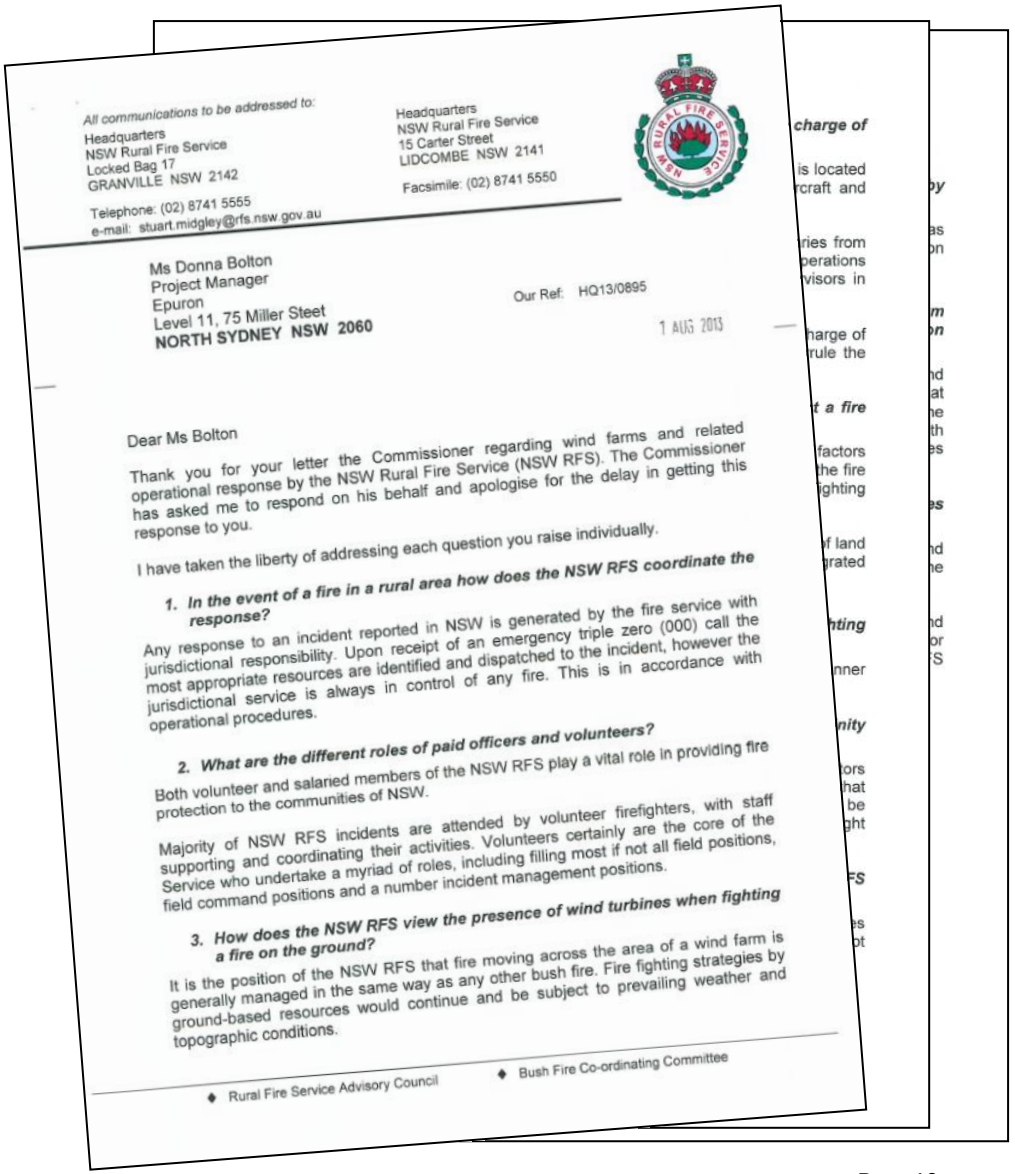
Jobs and Opportunities

- During consultation a number of people have asked us about the kinds of job and skills required to work on the wind farm construction or maintenance team during operations.
- Below is a list of general job types, skills or qualifications that local people and businesses can use as a guide for seeking employment on the wind farm.
- A project database is kept of people and businesses interested in participating in the wind farm construction or operation phases. Please let us know if you would like your details and capabilities added to this list.

- Electricians HV/LV
- Engineers / technicians
- Heavy vehicle drivers
- Steel fixers
- Riggers
- Labourers
- Crane operators
- Excavator operators
- Mechanical fitters
- Welders
- Project managers
- Environmental officers
- Plumbers
- Supervisory roles
- Project managers
- Landscapers / Gardeners
- Safety officers
- Cleaners
- Maintenance staff
- Caters
- Administration staff

NSW Rural Fire Service

- Epuron recently wrote to the NSWRFS to ask them how they viewed the presence of wind farms when fighting fires on the ground or from the air.
- The August 1, 2013 response from the NSWRFS Assistant Commissioner, Stuart Midgley, noted;
  - On the ground…….”..fire moving across the area of a wind farm is generally managed in the same way as any other bush fire. Fire fighting strategies by ground-based resources would continue and be subject to prevailing weather and topographic conditions.”
  - From the air……”..aircraft would avoid wind turbines in the same manner as they would avoid other obstructions, such as power lines.”



All communications to be addressed to:
Headquarters
NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142
Telephone: (02) 8741 5555
e-mail: stuart.midgley@rfs.nsw.gov.au

Headquarters
NSW Rural Fire Service
15 Carter Street
LIDCOMBE NSW 2141
Facsimile: (02) 8741 5550

Ms Donna Bolton
Project Manager
Epuron
Level 11, 75 Miller Steet
NORTH SYDNEY NSW 2060

Our Ref: HQ13/0895

1 AUG 2013

Dear Ms Bolton

Thank you for your letter the Commissioner regarding wind farms and related operational response by the NSW Rural Fire Service (NSW RFS). The Commissioner has asked me to respond on his behalf and apologise for the delay in getting this response to you.

I have taken the liberty of addressing each question you raise individually.

1. ***In the event of a fire in a rural area how does the NSW RFS coordinate the response?***

Any response to an incident reported in NSW is generated by the fire service with jurisdictional responsibility. Upon receipt of an emergency triple zero (000) call the most appropriate resources are identified and dispatched to the incident, however the jurisdictional service is always in control of any fire. This is in accordance with operational procedures.

2. ***What are the different roles of paid officers and volunteers?***

Both volunteer and salaried members of the NSW RFS play a vital role in providing fire protection to the communities of NSW.

Majority of NSW RFS incidents are attended by volunteer firefighters, with staff supporting and coordinating their activities. Volunteers certainly are the core of the Service who undertake a myriad of roles, including filling most if not all field positions, field command positions and a number incident management positions.

3. ***How does the NSW RFS view the presence of wind turbines when fighting a fire on the ground?***

It is the position of the NSW RFS that fire moving across the area of a wind farm is generally managed in the same way as any other bush fire. Fire fighting strategies by ground-based resources would continue and be subject to prevailing weather and topographic conditions.

♦ Rural Fire Service Advisory Council ♦ Bush Fire Co-ordinating Committee

Project Consultation – Key Activity and Timetable

Activity	Timing	Objectives	Stakeholders	Status
Community information workshop	November 2008	Introduce Epuron and the proposal to landowners and community including preliminary layout	Involved landowners and selected stakeholders	Completed
Newsletter 1	December 2009	Inform community about project and initial information	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 2	June 2010	Provide updated information and planning details including	Involved and uninvolved landowners (mail-out)	Completed
Newsletter 3	December 2011	Outline planning process and updated development progress	Involved and uninvolved landowners (mail-out)	Completed
Consult with neighbours within 2km	January / February 2012 (ongoing)	To discuss project and impacts with neighbours including feedback	Uninvolved neighbours within 2km of turbine	Completed (but ongoing)
Newsletter 4	March 2012	Advise consultation plans and release revised wind farm layout	Involved and uninvolved landowners (mail-out)	Completed
Establish Community Consultation Committee	April / May 2012	Establish formal mechanism for community participation	Invited members	Completed

Project Consultation – Key Activity and Timetable…..continued

Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 1	May / June 2012	Provide project information and seek feedback	Invited members	Completed
Newsletter 5	June / July 2012	Update on studies and consultation and layout	Involved and uninvolved landowners (mail-out)	Completed
Community Open Day	June / July 2012		Involved and uninvolved landowners, CCC, consultants and public	Completed
CCC Meeting 2	July / August 2012	Provide updated information and consider feedback including release of draft final layout	Invited members	Completed
Newsletter 6	September / October 2012	Update on studies and consultation feedback contributing to draft final layout	Involved and uninvolved landowners (mail-out)	Completed
CCC Meeting 3	September / October 2012	Review of draft final layout incorporation feedback	Invited members	Completed
Lodgement of EA with DP&I	November 2012	Submit EA	DP&I	Completed

Project Consultation – Key Activity and Timetable…..continued

Activity	Timing	Objectives	Stakeholders	Status
CCC Meeting 4	December 2012	Advise CCC of final EA layout incorporating feedback and study results	Involved and uninvolved landowners, CCC and consultants	Completed
Newsletter 7	May 2013	Advise community of final EA layout incorporating feedback and study results	Involved and uninvolved landowners, CCC and consultants	Completed
CCC Meeting 5	July 2013	Consider feedback and any final amendments to lodged application	Involved and uninvolved landowners, CCC and consultants	Completed
CCC Meeting 6	September 2013	Consider feedback and any final amendments to lodged application	Involved and uninvolved landowners, CCC and consultants	Completed
EA Exhibition	TBA	Public exhibition of EA and submissions	Involved and uninvolved landowners, CCC, consultants and public	Pending
Open Day, Newsletter and CCC Meeting	During EA exhibition	Inform community of EA lodgement and exhibition	Involved and uninvolved landowners, CCC, consultants and public	Pending

Communication and Feedback Channels Available

- Consultation is a two-way-street and we're always listening.
- Feedback and suggestions are important to us and help design the project.
- Available communication channels include;
  - Epuron corporate website: www.epuron.com.au
  - Rye Park project website: www.ryeparkwindfarm.com.au
  - Mailing address: Rye Park Wind Farm
Level 11, 75 Miller Street
North Sydney…NSW…2060
  - Phone: 02 8456 7400
  - Fax: 02 9922 6645
  - Email: ryepark@epuron.com.au
  - Senior Project Manager: Brian Hall
b.hall@epuron.com.au
  - Meetings Arranged by appointment



Rye Park No 5 Wind Monitoring Mast – North Bearing

Questions and general discussion

Thank you for your attendance

Rye Park Wind Farm Pty Ltd
Level 11, 75 Miller St
NORTH SYDNEY, NSW 2060
Phone 02 8456 7400

Minutes of Meeting

Rye Park Wind Farm

Community Consultation Committee

Present:	Nic Carmody	Chairman	NC
	Greg Medway	Involved landowner	GM
	Neil Privett	Involved landowner	NP
	Malcolm Day	Involved landowner	MD
	Joyce Day	Involved landowner	JD
	Bev Davis	Uninvolved landowner	BD
	Rodney Ahern	Proponent (TrustPower)	RA
	Rontheo Van Zyl	Proponent (TrustPower)	RVZ
	Brian Hall	Proponent (Epuron)	BH
Apologies:	Mayor Wendy Tuckerman	Boorowa Council	WT
	Councillor James Wheelwright	Upper Lachlan Council	JW
	Councillor Ann Daniel	Yass Valley Council	AD
	Jenny and Chris Hally	Uninvolved landowner	JCH
Date:	30 September 2013		
Venue:	Rye Park Memorial Hall		
Purpose:	Meeting No 6		

Minutes:

Item	Agenda / Comment / Discussion	Action
1	NC opened the Community Consultation Committee (CCC) meeting at 12.35pm. Copies of the meeting agenda and minutes of the last meeting were distributed to members prior to the meeting. Apologies were accepted from the following members who were not able to attend the meeting; → Mayor Wendy Tuckerman – Boorowa Council → Councillor Ann Daniel - Yass Valley Council → James Wheelwright – Upper Lachlan Council → Jenny and Chris Hally – Uninvolved landowners There were no conflicts of interest declared by those present.	Noted
2	NC asked all members present to confirm they had received minutes of the last meeting and asked if there were any changes. There was one change requested by NC to the tenth bullet point under item 6b of the previous minutes (meeting 5) as follows; ○ NC put forward ~~a suggested value~~indicative figures of $1,600-2,500 per turbine per annum as a guide from other projects regarding the value of a community enhancement fund. BH indicated this seemed to be a high number and needs to be discussed further once the type of initiatives required from the project have been identified by the community. As there were no other changes proposed NC moved that the minutes be accepted. The minutes of meeting 5 were accepted by all members present.	Noted BH Noted
3	NC reminded members that Councillor David Needham was no longer available to represent Yass Valley Council on the CCC. The position vacated by Councillor Needham has been taken up by Councillor Ann Daniel. The CCC thanks Councillor Needham for his contribution to the CCC.	Noted
4	BH ran through the Epuron action items arising from last meeting; a. Follow up Yass Rural Fire Service (RFS) for a response to letter from BD regarding concerns for fire. ○ BH advised that the Yass RFS had been followed up by phone and email regarding the letter from BD. No response to the letter had been received from the Yass RFS to date. It is understood the letter from BD has been forwarded to NSW RFS head office for consideration/response.	Noted

	○ NC offered to send an email/letter to the State Member for Burrinjuck, The Hon Katrina Hodgkinson MP, seeking that the Yass RFS respond to the letter from BD. b. Provide A1 size wall map to Yass Valley council with the inclusions of council LGA boundaries, 2km buffer zone from turbines and involved and uninvolved houses. ○ Complete. c. Upload copy of CCC meeting 4 presentation materials to website. ○ Complete.	NC Noted Noted
5	BH introduced RA and RVZ from Trustpower to members and explained their involvement in the project. Trustpower have an option to acquire the project and to construct subject to the successful completion of matters such as planning approvals and land etc. RA from Trustpower handed out some presentation material about the company and wind farm experience in Australia. Action items from the discussion were; a. Members asked TP to run an EOI process in due course (prior to construction) for the identification/registration of local skills and services available for construction. b. Members to provide feedback to Epuron (will pass to TP) with current thoughts on how best structure a community fund and what type of support is required from the project. ○ GP suggested any available funding should be allocated to local road upgrades, repairs and maintenance to the benefit of landowners living near the wind farm. The condition of some local roads is very poor. ○ GM would like to see any available funding allocated to the establishment of an IT Hub to help with local employment of young people which will also help to keep families living in the local area. c. BH reminded the CCC that Epuron remain the proponent for the project and all communications must be managed through them and not directly with TP at this stage.	Noted BH/RA CCC Noted
6	BH presented current project information including development status and key activity since the last meeting. The presentation consisted of 15 PowerPoint slides and a colour copy was provided to each member present at the CCC meeting and will be uploaded to the website after the meeting. An A3 size scale colour map of the proposed final wind farm layout forming part of the submitted EA was also handed out to each member for reference purposes and ease of viewing. A larger A1 size version of the layout was also displayed for general viewing. BH presented and discussed the presentation. Key comments, questions, actions and feedback points arising from the presentation were (listed in no particular order); a. **Letter from NSW RFS**. BD was appreciative of letter from RFS but felt turbines were more of a risk in the landscape than powerlines.	Noted

	b. **Community fund.** NC asked if an estimate of the number of houses and total hectares that existed out to 0-2km, 2-4km and 4-6km from turbines could be provided. This would assist the CCC to understand how many houses may be considered for seeking access to community funding. BH will provide a high level estimate on numbers.	Noted BH
7	General Business / Other Matters a. BD asked that BH contact V&C Walters who may have concerns about exiting their property in the case of a fire (helicopter landing). b. BH to upload copy of presentation material to website.	 BH BH
8	Next meeting Date: TBC (aiming for just before or just after xmas) Time: TBC (aiming for 12.30 to 2.30) Venue: TBC (aiming for Yass Valley Council to host the meeting) BH to circulate confirmation of the proposed next meeting date and venue once exhibition dates are progressed with DPI.	All BH
9	NC closed the meeting at 2.28pm	Noted

Appendix A – Landscape and Visual Assessment

Appendix B – Noise Assessment

Appendix C – Biodiversity Assessment

Appendix D – Aboriginal and European Heritage Assessment

Appendix E – Traffic and Transport Assessment

Appendix F – Telecommunications Impact Assessment

Appendix G – Decommissioning and Rehabilitation Plan



EPURON