

Doughboy *Wind Farm*

Scoping Report | September 2020



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1 Introduction

1.1 Background

The Doughboy Wind Farm will involve the construction, maintenance, operation and decommissioning of up to 52 wind turbines, together with associated operation and maintenance buildings, civil works and electrical infrastructure required to connect it into the existing transmission network (Project).

The Project is located about 40 km east of Armidale within the Armidale Regional Council boundary as indicated in Figure 1.

The Project land is freehold land used for sheep and cattle grazing purposes, although there are a number of small parcels of Crown land within the Project Boundary. The project is located on an existing high voltage overhead transmission line corridor (existing 330 kV transmission line operated by Transgrid).

There are a number of small rural communities in the vicinity including Wollomombi and Wongwibinda, and the Cathedral Rock National Park is located to the south-east of the Project as shown on Figure 4. The Project Boundary does not encroach within the Cathedral Rock National Park.

A preliminary layout for the Project is provided in section 4. Refinement of the layout will be undertaken following further environmental assessment and community input. Generally, the wind turbines have been positioned along a series of ridges surrounding Doughboy Mountain and have been located away rural communities in the area as described in Section 3.

1.2 Proponent

The Proponent for the project is Epuron Projects Pty Ltd (Epuron), an Australian renewable energy company established in North Sydney in 2003. Epuron is one of the most experienced wind energy development companies in NSW, as well as a significant developer of solar projects across Australia.

Epuron is a leader in its field with project boudnary0 MW of wind turbines in operation in Australia resulting from its development work.

Epuron approved wind energy projects in NSW totals over 2,300 megawatts (MW) and includes:

- ▶ Cullerin Range Wind Farm (15 turbines, 30 MW, operating);
- ▶ Gullen Range Wind Farm (73 turbines, 165 MW, operating);
- ▶ White Rock Wind Farm Stage 1 (70 turbines, 175 MW, operating);
- ▶ Silverton Wind Farm (58 turbines, 200 MW operating);
- ▶ White Rock Wind Farm Stage 2 (48 turbines, 216 MW, Pre construction);
- ▶ Yass Valley (Coppabella) Wind Farm (up to 75 turbines, 290 MW, approved);
- ▶ Rye Park Wind Farm (up to 92 wind turbines, 322 MW, approved); and
- ▶ Liverpool Range Wind Farm (up to 267 turbines, 960 MW, approved).

Epuron approved solar energy projects in Australia totals over 400 MW and includes:

- ▶ 7 MW of off-grid solar projects owned and operated by Epuron.
- ▶ Clermont Solar Farm (90 MW, operating, QLD);
- ▶ Nevertire Solar Farm (130 MW, operating, NSW);
- ▶ Katherine Solar Farm (34 MW, under construction, NT); and
- ▶ Walgett Solar Farm (32.5 MW, approved, NSW).

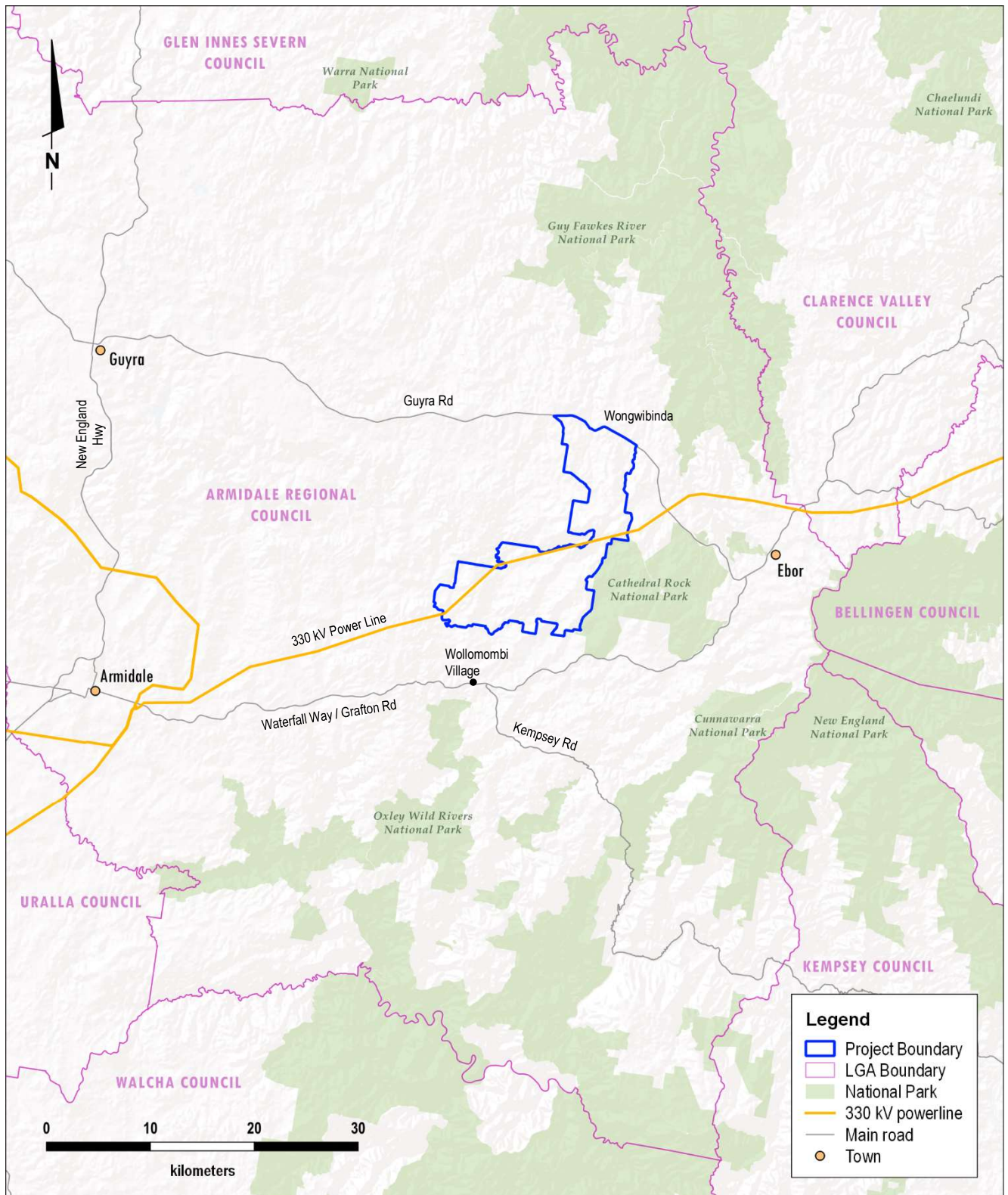


Figure 1: Project locality and Local Government Areas

1.3 Document Purpose

Epuron is seeking State Significant Development (SSD) Consent under Division 4.7 of Part 4 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) for the Project, which will be supported by an Environmental Impact Statement (EIS) to be prepared by independent environmental consultants.

This scoping report has been prepared to support an application to the Secretary of Department of Planning, Industry and the Environment (DPIE) for Secretary's Environmental Assessment Requirements (SEARs) to guide the preparation of the EIS for the Project.

The scoping report has been prepared in consideration of the 'NSW Wind Energy Framework' which comprises:

- ▶ 'Wind Energy Guideline' (Wind Guideline) (DPE, 2016a);
- ▶ 'Wind Energy: Visual Assessment Bulletin' (Visual Bulletin) (DPE, 2016b);
- ▶ 'Wind Energy: Noise Assessment Bulletin' (Noise Bulletin) (DPE, 2016c);
- ▶ 'Standard Secretary's Environmental Assessment Requirement' (SEARs); and
- ▶ Wind Energy Framework Q&As.

It has also been prepared in accordance with Section 4.2 of the Wind Guideline PEA and DPIE's SSD Scoping Report Requirements. Table 1 indicates where each requirement is addressed.

Table 1 – Wind Guideline PEA and DPIE SSD Scoping Report Requirements and where Addressed

Item	Section
WIND GUIDELINE PEA REQUIREMENTS	
Describes the proposed wind energy project and its location in context (for example, it should identify the preliminary turbine layout, nearby dwellings, key public viewpoints and other key landscape features). Proponents should demonstrate the suitability of their chosen location and the viability of wind resources in that area.	3 4
Describes steps taken to assist potentially affected people and groups in understanding the proposed development and what it could mean for them.	5.3.1.1
Describes the proposed overall approach to stakeholder consultation for the EIS development process.	5
Identifies the key issues for the particular project.	6
Includes the results of the early consultation, including in relation to landscape values, and assesses the preliminary turbine layout against the preliminary assessment tools contained in the Visual Assessment Bulletin, including negotiations with landholders.	7.1.1
Provides a high-level assessment of the environmental impacts of the project (focusing on those key issues).	7
Reports on the outcomes of community consultation undertaken to date.	5.3.2
DPIE 'SSD PROCESS'	
Describe the project	3
Identify the relevant strategic and statutory context	2
Summarise the results of any early community engagement	5
Identify the scale and nature of the impacts of the project	6
Outline the proposed approach to assessment and community engagement	7 and 5.2.2

2 Planning Framework

This section includes a description of the relevant state, local and federal strategies and legislation relevant to the development of the Project.

2.1 Strategic Planning Framework

2.1.1 NSW Electricity Strategy

The 'NSW Electricity Strategy' (DPIE, 2019a) is the NSW Government's plan for a reliable, affordable and sustainable electricity future that supports a growing economy. The NSW Electricity Strategy sets out a plan to deliver three Renewable Energy Zones (REZ) which include the New England area. The indicative location of the New England REZ as shown in Figure 2, along with Project location.

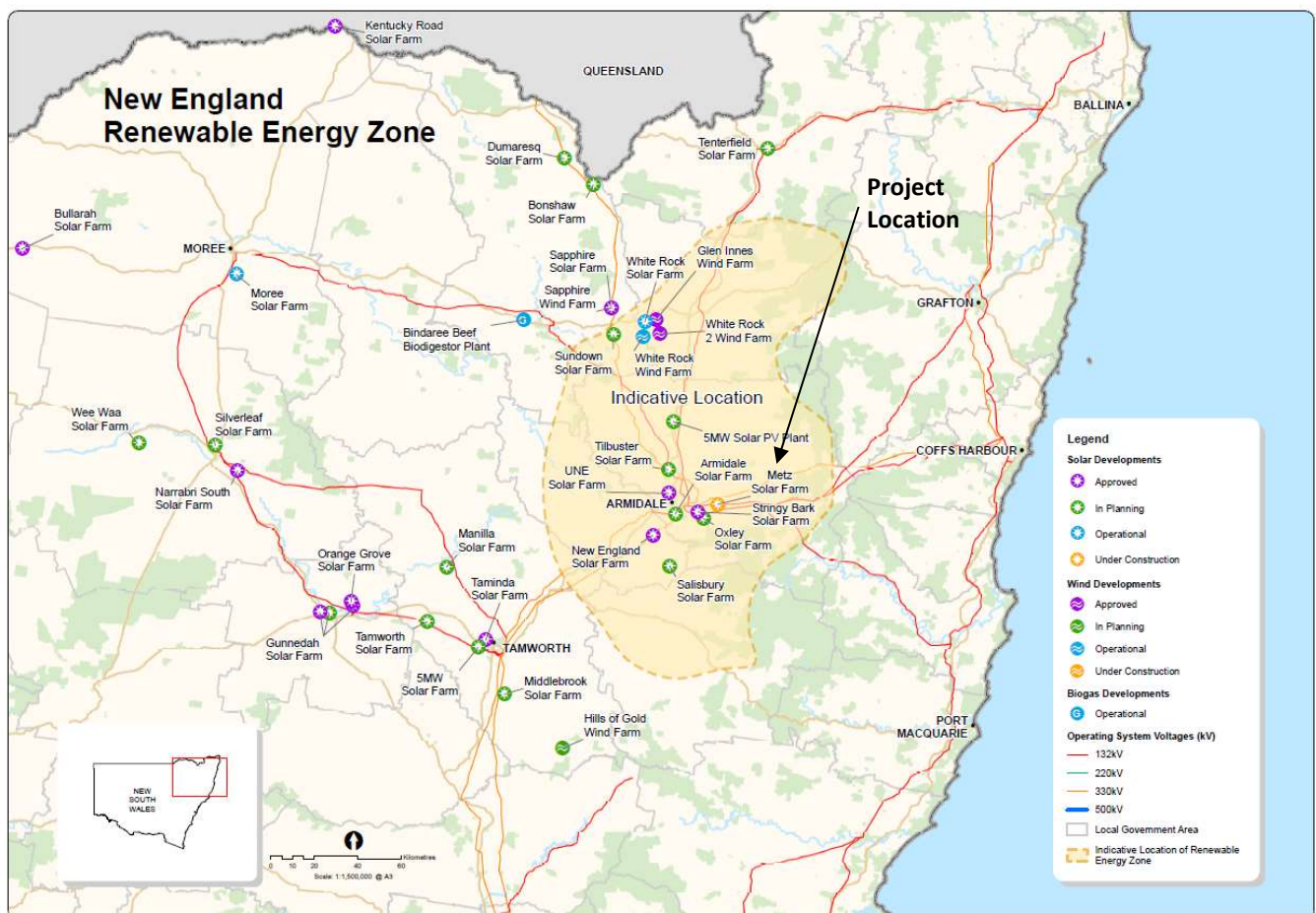


Figure 2: Indicative Location of the New England REZ

2.1.2 New England North West Regional Plan 2036

The 'New England North West Regional Plan 2036' (Regional Plan) (DPE, 2016d) guides the NSW Government's land use planning priorities and decisions until the year 2036. Goals and directions detailed in the plan that are relevant to the project are outlined below:

Goal 1 - A strong and dynamic regional economy

- 'Direction 3: Protect and enhance productive agricultural lands'. The Project is not within an area mapped as 'Biophysical Strategic Agricultural Land'.

- ▶ *'Direction 5: Grow New England North West as the renewable energy hub of NSW'*. The Project is located within a renewable energy hub.

Goal 2 - A healthy environment with pristine waterways

- ▶ *'Direction 11: Protect areas of potential high environmental value'*, The Project is not located within highly sensitive environmental areas (such as World Heritage areas).

2.1.3 Armidale Community Strategic Plan

The *Armidale Community Strategic Plan 2017-2027* (CSP) provides a community vision and strategic directions to guide the actions of the Armidale Regional Council. The community vision is as follows:

"...We want a harmonious region which celebrates the diversity and uniqueness of our communities, provides opportunities for all people to reach their potential, encourages engagement with our environment, cultures and lifestyles, while supporting growth, opportunity and innovation" (ARC, 2018, p. 5).

Key community outcomes identified in the CSP also include:

Environment and Infrastructure

- ▶ *'Community Outcome 1: The unique climate, landscape and environment of the region is protected, preserved and made accessible'*, which includes the following supporting strategies:
 - Partner with local organisations and stakeholders to develop strategies for dealing with climate change impacts on the local agricultural sector; and
 - Investigate alternative sources of power generation to reduce the community's carbon footprint.

Growth, Prosperity and Economic Development

- ▶ *'Community Outcome 2: The agricultural sector is supported as one of the pillars of growth and to sustain local and national food security'*, which includes the following supporting strategy:
 - Encourage new innovations and technological applications, and work with partners to explore new opportunities and diversification relevant to agriculture, which create a point of difference for the region; and
- ▶ *'Community Outcome 4: Economic development is supported through new initiatives, innovation and additional resources to assist growth of business and industry'*, which includes the following supporting strategy:
 - Develop a strategy with an objective of actively seeking out and encouraging businesses and organisations to locate their operations in the region.

2.2 State Planning Legislation

2.2.1 Environmental Planning and Assessment Act 1979

This Project is SSD development and will be assessed under Part 4 of the EP&A Act. The EP&A Act integrates the planning and assessment regime that requires approval from the Minister for Planning and Public Spaces and incorporates approvals and authorisations required under other NSW legislation.

The EIS will outline how the Project addresses 'Section 1.3 Objects of the EP&A Act', which relevantly include the:

- ▶ Encouragement of the proper management of natural resources, including minerals, for the purpose of promoting the social and economic welfare of the community;
- ▶ Promotion and co-ordination of the orderly and economic use and development of land; and
- ▶ Encouragement of Ecologically Sustainable Development (ESD).

2.2.1.1 Planning System Acceleration Program

To support productivity, investment and jobs during COVID-19, the NSW Government's 'Planning System Acceleration Program' seeks to fast-track SSD development assessment processes to boost the construction pipeline and fast-track new projects. The program applies to Projects that:

1. Create jobs during construction and operation;
2. Can commence quickly; and
3. Deliver or support public benefits.

The Project is one to which the Planning System Acceleration Program applies as it meets all three criteria. Approval under this program will be sought by Epuron.

2.2.2 State Environmental Planning Policy (State and Regional Development) 2011

Clause 20 of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* states that if a development for the purpose of electricity generating works, has a capital investment value of more than \$30 million, it is considered to be SSD.

The Project will have a capital investment value of more than \$30 million and therefore is classified as SSD.

2.2.3 State Environmental Planning Policy (Infrastructure) 2007

The *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) states that development for the purpose of electricity generating works may be carried out on any land in the prescribed rural, industrial or special use zones. The Project is entirely proposed on land in RU1 – Primary Production and is therefore permitted with consent as described in Section 2.3.1.

2.2.4 Other State Environmental Planning Policies

Other State Environmental Planning Policy's (SEPP's) which will be considered in the preparation of the EIS include (but is not limited to):

- ▶ *SEPP (Primary Production and Rural Development) 2019;*
- ▶ *SEPP 55 – Remediation of Land; and*
- ▶ *SEPP 33 – Hazardous and Offensive Development.*

2.2.5 Other Legislation

Section 4.41 of the EP&A Act lists the authorisations under other Acts that are not required for any SSD that has been granted development consent. Section 4.42 of the EP&A Act list the authorisations under other Acts that must be granted consistent with the development consent for SSD. Approvals under other Acts to facilitate construction of the Project will be described in the EIS.

Approvals required to facilitate the Project will be confirmed in the EIS however are likely to include:

- ▶ Environment Protection Licence under the POEO Act;
- ▶ Work in or over a public road approval under the *Roads Act 1993*;
- ▶ Approval for works over Crown Land under the *Crowns Land Management Act 2016*;
- ▶ Bushfire Management Plan under *Rural Fires Act 1997*;
- ▶ Water Access licence(s) under the *Water Management Act 2000*;
- ▶ Construction Certificates and Building Certificates under the EP&A Act; and
- ▶ Management plans and other conditions of development consent.

2.3 Local Planning Legislation

The Project is located within the Armidale Regional Council local government areas as shown in Figure 1 Local Planning Regulations that apply are discussed below.

2.3.1 Local Environmental Plans

The Project Boundary is located within the following two Local Environmental Plans:

- *Armidale Dumaresq Local Environmental Plan 2012* (Armidale Dumaresq LEP); and
- *Guyra Local Environmental Plan 2012* (Guyra LEP).

The land within the Project Boundary is zoned RU1 – Primary Production, under both the Armidale Dumaresq LEP and the Guyra LEP.

The zone objectives for the RU1 Zone under the Armidale Dumaresq LEP and the Guyra LEP include:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base; and
- To allow for non-agricultural land uses that will not restrict the use of other land in the locality for agricultural purposes.

Whilst the Project land covers a larger area, the Project disturbance footprint will be small and allows for traditional farming operations to continue. As such the Project is considered to be compatible with the land zone objectives.

The permissibility of wind farm developments is governed by the relevant LEP and by the Infrastructure SEPP. Clause 34 of the Infrastructure SEPP states that ‘electricity generating works’ may be carried out with development consent on any land within a prescribed rural, industrial or special use zone. RU1 is a prescribed rural zone.

The land use tables in the Armidale Dumaresq LEP and the Guyra LEP list the class of development that are permissible within each land zoning, and do not list ‘electricity generating works’ as a permissible class of development in zone RU1. That is, the Armidale Dumaresq LEP and the Guyra LEP are inconsistent with Clause 34 of the Infrastructure SEPP, which provides that ‘electricity generating works’ are permissible in any rural land zone. Clause 1.9 of the Armidale Dumaresq LEP and the Guyra LEP state that the provisions of any SEPP will prevail over the LEP. Therefore, the Project is permissible with development consent in zone RU1.

2.4 Federal Legislation

2.4.1 Environment Protection and Biodiversity Conservation Act (1999)

The *Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act) provides for a Commonwealth assessment and approval of proposals that have a significant impact on any of nine ‘matters of national environmental significance’ (MNES).

The EPBC Act advises the Commonwealth’s role in environment assessment, biodiversity conservation and the management of protected areas of national significance. Approval from the Minister for the Department of Agriculture, Water and the Environment (DAWE) is required for any action that may have a significant effect on one or more MNES.

In February 2015, a bilateral agreement was made under Section 45 of the EPBC Act between the Commonwealth of Australia and the State of NSW relating to environmental assessment. This bilateral agreement was amended (Amending Agreement No.1) effective 24 March 2020 to reflect changes to the EP&A Act, in particular the repeal of the *Threatened Species Conservation Act 1995* (TSC Act) and replacement with the BC Act. Under Amending Agreement No.1, the BAM and Biodiversity Offsets Scheme (BOS), as introduced under the BC Act are Accredited processes.

A proponent must make a Referral under Section 68 of the EPBC Act if the proposed action has the potential to result in significant impacts to MNES. In response, should the Project be deemed a “controlled action” for potential impacts to migratory species and/or threatened species MNES, supplementary SEARS will be issued by DPIE. Should the Project be deemed “not a controlled action”, no further action will be necessary.

An EPBC Referral on the basis of the potential to impact Commonwealth listed Threatened Ecological Communities and Threatened Species is considered likely, however, will first be confirmed as part of biodiversity studies conducted for the full EIS.

2.4.2 Native Title Act 1993

The *Native Title Act 1993* (NT Act) facilitates the recognition and protection of Native Title. Under section 13 of the NT Act, a person can apply to the Federal Court for a determination of native title.

A review of the potential for Native Title will be undertaken for the Project.

3 Project Description

This Section provides a preliminary project description. It includes a brief description of the environmental setting and a discussion on the key components of the Project. The project description will be revised and expanded upon prior to inclusion in the EIS.

3.1 Site Context

The Project is located approximately 40km north-east of Armidale which acts as the major centre and services hub for the region. The Project Boundary is shown in Figure 4 and is approximately 17,000 ha in area. The land within the Project Boundary consists of several elevated ridges located on privately owned land predominantly used for cattle and sheep grazing, which would continue with minimal interruption during the Project's construction and operation. Major electricity transmission lines run through the middle and to the south of the site. Indicative photographs of the site including ridgelines, grazing land and major electricity transmission lines is shown in Figure 3.

A combination of desktop searches and community consultation has identified 14 non-associated dwellings within 3.1 km of a proposed turbine location (see Figure 9). The approach to consultation with nearby residents and the proposed ongoing consultation plan is outlined in Section 5. The rural village of Wollomombi is located to the south of the Project Boundary approximately 5.0km away from the proposed wind turbines as shown on Figure 4. The locality of Wongwibinda is located at the northern end of the Project Boundary. The Cathedral Rock National Park is located to the east of the Project Boundary, as shown in Figure 4.



Figure 3: Indicative site photographs

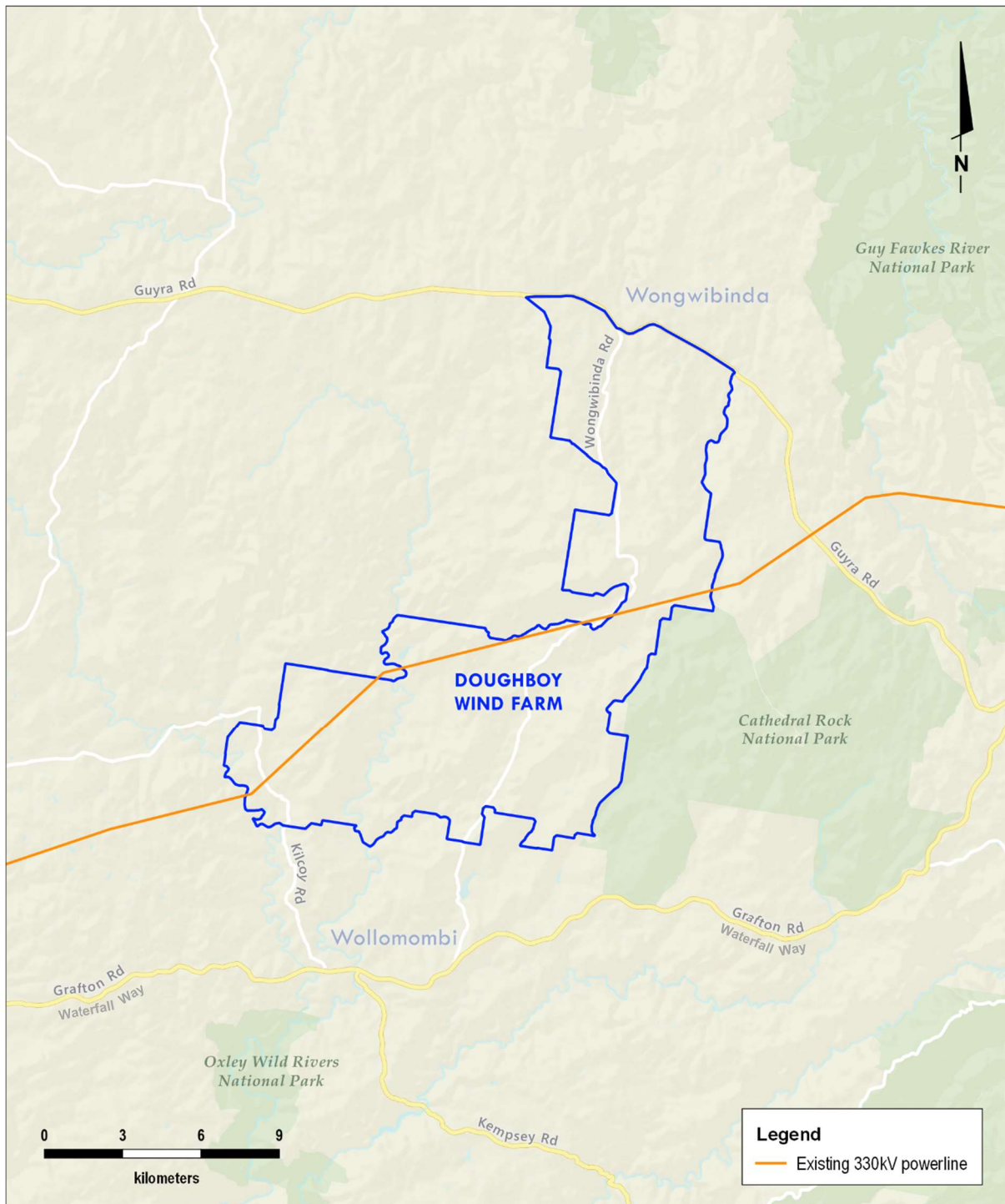


Figure 4: Project Site Context

3.2 Project Overview

The Project will involve the construction, operation, maintenance and decommissioning of key components as follows:

- ▶ Wind turbines – 52 wind turbines (rated at up to 6 MW), each with:
 - Three blades mounted on a tubular steel tower with a combined height (blade plus tower) to tip not exceeding 230 m; and
 - A crane hardstand area and turbine laydown area;
- ▶ Substation and transmission connection – linking the turbines to the existing TransGrid 330 kV transmission line network;
- ▶ Energy Storage Battery – approximately 100 MW / 400 MWh, based on lithium-ion technology and collocated in a centralised place with the substation;
- ▶ Electrical Connections – between wind turbines and the on-site substation/s, which will be a combination of underground cable and overhead powerlines linking segments of the site;
- ▶ Other Associated Infrastructure;
- ▶ Road upgrades to enable delivery access for installation and maintenance of wind turbines and related facilities; and
- ▶ Ancillary activities (including boundary adjustments and subdivision).

Figure 5 provides the conceptual layout of the Project.

The Project will have an 18-month construction period, and initial construction activities could commence within 6 months of relevant Project Approvals being obtained.

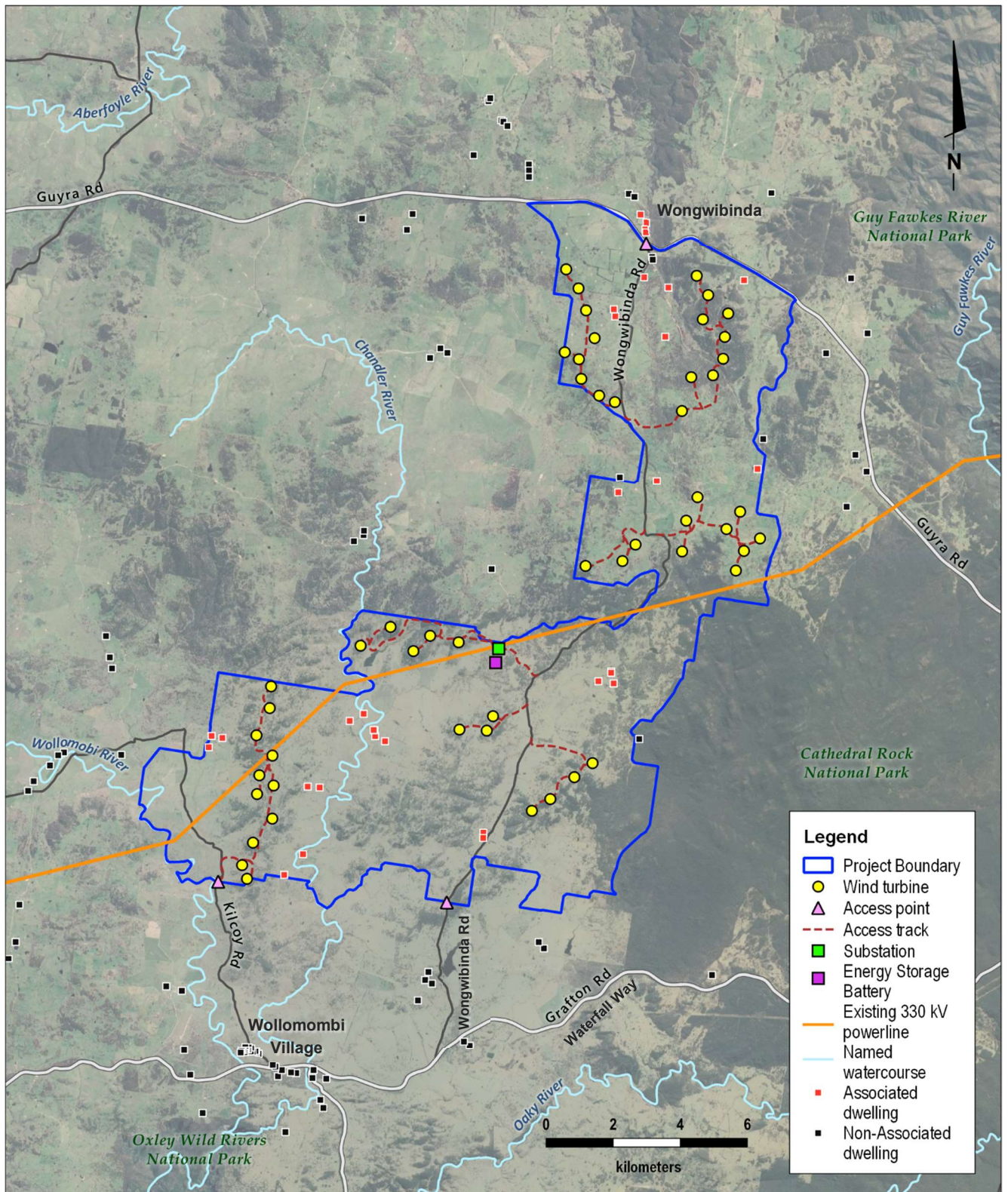


Figure 5: Doughboy Wind Farm Conceptual Preliminary Layout

3.2.1 Wind Turbines

The Project will include 52 wind turbines. Final turbine numbers and power output for the site is dependent on the outcomes of the various engineering, environmental studies and stakeholder engagement and will be described in the EIS.

3.2.2 Electrical Connections

To export the electricity generated from the Project, a new physical connection to the existing 330kV Armidale to Coffs Harbour transmission lines owned by TransGrid will be required. The physical connection will include a new 330kV substation located within the Project Boundary. Electrical connections between wind turbines and the substation will include underground and overhead connections.

A connection enquiry for the Project was lodged with TransGrid, and a response received as summarised in Section 5.4.4 of this Scoping Report. Sufficient capacity exists within the network to transmit the electricity to the required load centres.

3.2.3 Energy Storage Battery

An energy storage battery approximately 100 MW / 400 MWh in size; based on lithium-ion technology; and collocated in a centralised place next to the new 330kV substation within the Project Boundary.

3.2.4 Other Associated Infrastructure

Various ancillary infrastructure will be required for the Project including (but not limited to): onsite operations building, equipment storage facilities, concrete batching plant facilities, rock crushing, temporary and permanent laydown pads, construction compounds, access tracks to each turbine, temporary and permanent wind monitoring masts and other related facilities.

3.2.5 Road Upgrades

Minor upgrades will be required to the road network associated with the delivery of wind farm components to the Project including but not limited to temporarily road widening, temporary removal of street signage and lighting, and temporary protection near overhead distribution power.

Wind farm components and vehicles of an appropriate size that can pass through Armidale using heavy vehicles routes will access the Project via Waterfall Way / Grafton Road. Overlength and overweight items that cannot pass through Armidale, such as wind turbine blades, have the option of going via Gurya and Gurya Road to the Project.

Site entry will be predominantly from Kilcoy Road and Wongwibinda Road (via Waterfall Way / Grafton Road and Gurya Road).

3.2.6 Ancillary Activities

Materials will need to be sourced for the construction, ongoing maintenance and decommissioning of the Project (including but not limited to): road and construction materials, water and concrete.

Boundary adjustments and subdivision may also be required to assist in detailed design for infrastructure.

3.3 Options Considered

3.3.1 Overview

Epuron has conducted a number of design iterations during the development of the Project layout which considered:

- ▶ Results from the preliminary assessments;
- ▶ Feedback from associated and neighbouring landowners;
- ▶ Wind resource monitoring data;
- ▶ Additional desktop assessments; and
- ▶ The principles outlined in the Wind Energy Guideline.

The development of a wind farm layout is, by nature an iterative process, with opportunity for refinement and revision as more information is obtained from environmental studies, ongoing feedback from consultation and updated wind monitoring results.

The design process is focused around three core principles:

- ▶ Minimising and/or avoiding negative environmental and community impacts;
- ▶ Maximising positive impacts (clean energy production resulting in greenhouse gas reduction); and
- ▶ Incorporating practical and economic limitations in relation to the construction and operation of the site.

3.3.2 Site Selection and Feasibility

In 2017 Epuron commenced discussions with landowners in relation to their interest in being involved in a wind energy project in the region. An early assessment of the wind resource using portable SoDAR wind monitoring devices identified an investigation area comprising several elevated ridgelines that had the potential for hosting wind turbines. This “investigation area” was used as the basis for early consultation activities and to get feedback from the community and other stakeholders over the Project. This feedback was then incorporated into the design in this Scoping Report.

A map showing the investigation area was presented at community information sessions and meetings described in Section 5 and as shown in Figure 6. A full description of the consultation process and preliminary responses to the issues raised is outlined in Section 5. An indicative wind resource map showing the proposed Project Boundary and wind turbine locations is also shown in Figure 7 for reference purposes.

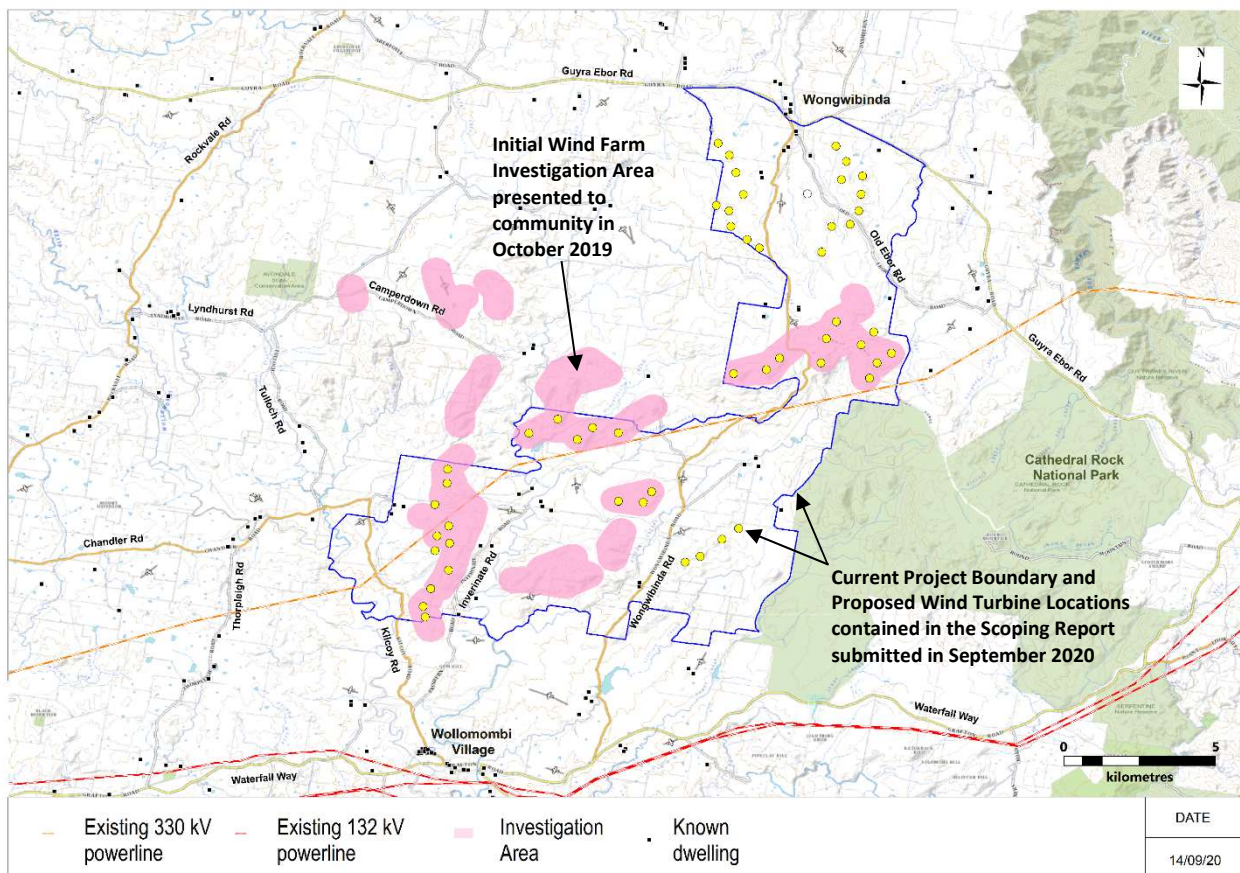


Figure 6: Investigation Area Presented to the Community in October 2019

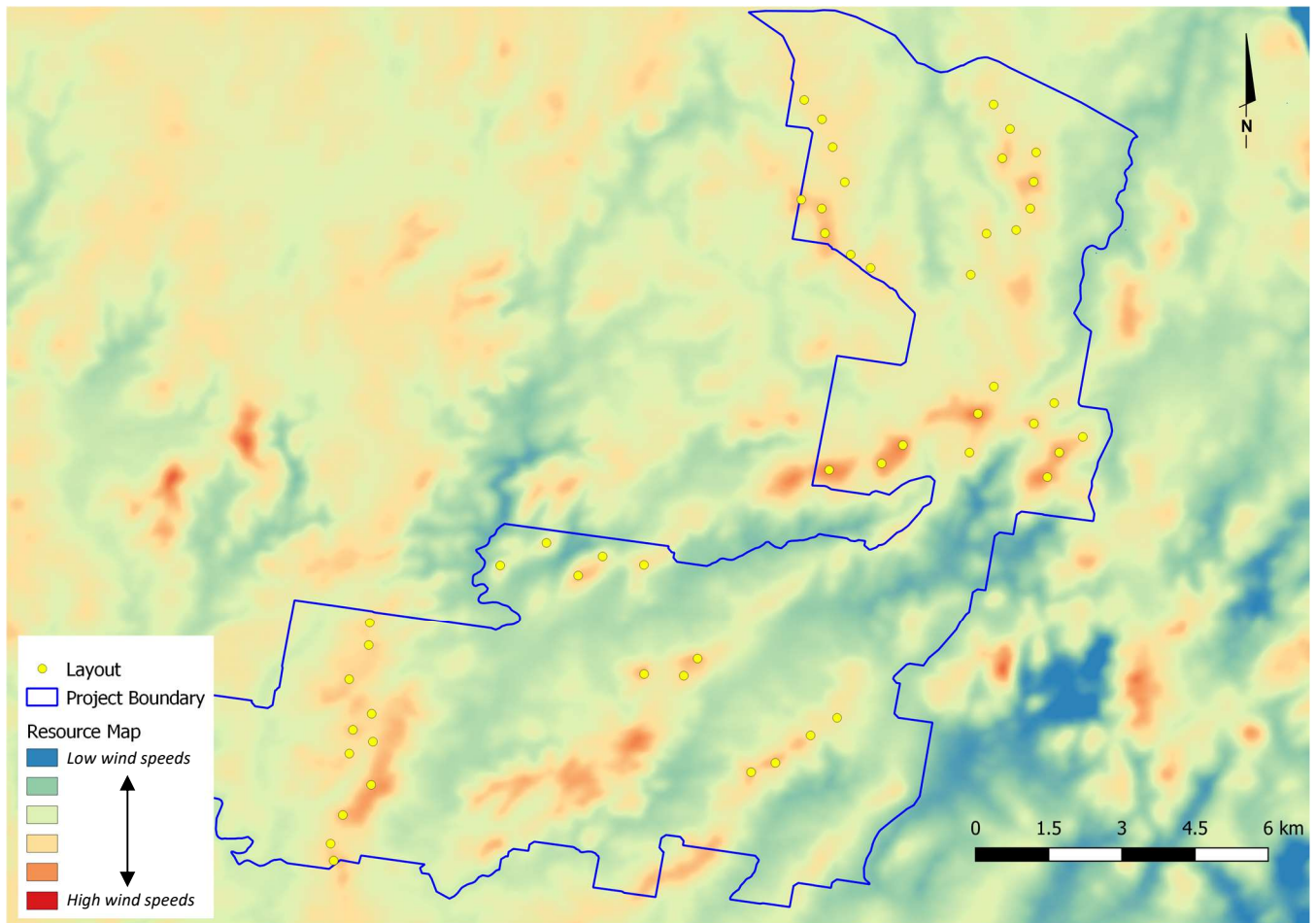


Figure 7: Indicative Wind Resource Map

3.3.3 Scoping Report Preliminary Layout

Using the investigation area as a starting point, a concept layout identified over 100 locations suitable for wind turbines. Following an iterative design process the concept layout was revised as shown in Figure 5 taking into consideration the following:

- ▶ The principles outlined in the Wind Energy Guideline;
- ▶ Landowner and community feedback in relation to the investigation area;
- ▶ Revised wind speed assessments based on additional wind data;
- ▶ Results from the preliminary noise impact assessment (NIA) (Section 7.1.2);
- ▶ Results from the preliminary visual impact assessment (VIA) (Section 7.1.1);
- ▶ Technical constraints including in relation to access; and
- ▶ Consideration of commercial viability.

3.3.4 Refinement and Revision

EIS studies will provide further information in determining the optimised locations for Project infrastructure. Additional considerations will include, but will not be limited to, the identification of any environmental constraints and the outcome of geotechnical investigations and the ongoing community and stakeholder consultation process.

3.3.5 Renewables Energy Projects in the Region

Wind Farms

The nearest operational wind farm to the proposed Project is the White Rock Wind Farm, which is shown in Figure 2. The closest White Rock wind turbine is located 70km from the Project Boundary. Additional wind turbines have been given planning approval and would be located approximately 65km from the Project Boundary, if constructed.

Two proposed wind farms in the early stages of planning are Winterbourne and Rangoon, which are located 50km to the south-west, and 50km to the north-west, of the proposed Project respectively. These proposed wind farms are shown on the NSW Planning Portal (www.planningportal.nsw.gov.au).

Solar Farms

The nearest large-scale, operational solar farm is White Rock, which is shown in Figure 2. The closest solar panel is located 80km from the Project Boundary.

The nearest large-scale solar farm approved and under construction is the Metz Solar Farm, which is shown in Figure 2. Once constructed, the edge of the Metz Solar farm would be 15km from the Project Boundary.

Two proposed solar farms in the early stages of planning are the Oxley Solar Farm and Salisbury Solar Farm, which are located 20km to the south-west, and 50km to the south-west, of the proposed Project respectively. These proposed solar farms are shown in Figure 2.

The Stringy Bark Solar Farm (less than 30 MW and not a state significant development) has also been approved and is located 20km south-west of the proposed Project. The Stringy Bark Solar Farm is also shown in Figure 2.

4 Project Justification

The Project offers several strategic and long-term benefits to the state of NSW and its people, including to:

- ▶ Reduce greenhouse gas emissions, contributing towards cleaner electricity generation and reduce the impact of climate change in a carbon-constrained environment;
- ▶ Supply renewable energy that will assist electricity retailers to fulfil their obligations under state and federal renewable energy targets, and will otherwise lead to increased burning of fossil fuels;
- ▶ Provide additional generation capacity into the NSW grid that will assist in meeting load demand as a result of retiring thermal generators and provide a clean, reliable generation mix;
- ▶ Provide an opportunity for regional investment as the renewable energy sector grows in NSW and the New England; and
- ▶ Generate approximately 130 Full Time Equivalent (FTE) jobs during its 18-month construction period and approximately 12 FTE jobs over its operational life.

The Project offers several specific benefits to the environment and local community:

- ▶ Direct injection of funds into the local economy through:
 - The provision of jobs in construction and operation;
 - Use of local services in both the construction and operation phases; and,
 - Ongoing landowner payments and financial contributions to the local community being re-injected in the local community; and
 - Agreement of and payments consistent with a Voluntary Planning Agreement (VPA) with Armidale Regional Council;
- ▶ In a typical year, based on a typical capacity factor of 35% (and assuming 52 turbines at 5 megawatts each), the wind farm could produce around 800,000 megawatt-hours of clean, renewable energy, enough for the average consumption of around 110,000 homes; which
- ▶ In turn will lead to a significant reduction in greenhouse gas emissions through the avoidance of carbon dioxide from coal fired power stations.

5 Stakeholder Engagement

This section describes stakeholder engagement undertaken generally in accordance with Section 5 of the Wind Guideline and the Visual Bulletin. It describes consultation objectives, the engagement approach, issues raised to date, and the proposed ongoing engagement.

5.1 Consultation Objectives

Wind farms in NSW are limited to sites with elevated land, good wind speeds, usually in rural areas, and with good 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 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 engagement is focused on understanding and mitigating the impacts of the wind farm, and on maximising its benefits to the local community.

Epuron has prepared a Stakeholder Engagement Plan (SEP) for the Project, the objectives of which are to:

- ▶ Ensure the community is fully informed about the Project, its likely impacts, and its likely benefits;
- ▶ Engage with stakeholders so their views, concerns and aspirations can be heard and understood;
- ▶ Ensure that the team developing the Project fully understands the local context, including any local impacts that it may have or opportunities that it could provide;
- ▶ Provide multiple opportunities for dialogue in various forms to allow the community to receive information and provide feedback about the Project;
- ▶ Incorporate the feedback into the design of the wind farm, where possible;
- ▶ Explain where and how this feedback can be and has been incorporated; and,
- ▶ Build positive, trust-based relationships with members of the local community.

Epuron's consultation process will also look at how best to maximise the local and regional benefits of the Project.

Further specific consultation will be carried out with key stakeholders including the local Aboriginal representatives (see Section 7.1.4), other potentially affected parties (e.g. telecommunications carriers), as well as representatives from relevant government agencies.

As shown on Figure 8, the scoping report represents the first stage of many for the Project assessment process. Figure 8 also illustrates the various consultation opportunities that the community will have in relation to having input in the assessment process.



Source: DPE (2019)

Figure 8: SSD Assessment and Determination Process and Engagement

5.2 Consultation Approach

The Wind Energy Guideline and Visual Bulletin outline an expectation for early and meaningful consultation with the local community and other stakeholders to enable feedback that can be incorporated into the design of the Project.

Epuron conducted a review of the Wind Energy Guideline along with the relevant SEPs from its previous wind farm proposals to update and refine its approach to consultation and to develop a site-specific SEP.

The independent stakeholder engagement specialist company, Plancom was engaged to review the consultation approach, the draft SEP and to assist Epuron with its implementation.

The following section describes the consultation conducted to date for the Project.

5.2.1 Stakeholders

The SEP identified the following preliminary Stakeholder groups:

- ▶ Landowners with the potential to host infrastructure;
- ▶ Neighbouring dwellings within 3.1km of a potential turbine location;
- ▶ Surrounding communities;
- ▶ Local Armidale Regional Council;
- ▶ Local business and community groups;
- ▶ State and Federal Government Agencies; and
- ▶ Local media.

A focus of the SEP is to ensure that those with the potential to have the greatest impact are given every opportunity to provide early and meaningful feedback on the proposal.

A variety of methods has been implemented to consult with these stakeholders to date and are proposed going forward. A summary is provided below.

5.2.2 Consultation Activities

Epuron will continue to consult with the local community and other stakeholders through a variety of means generally in accordance with its SEP and as outlined in Table 2.

Table 2 – Consultation objectives and activities

Stage	Objectives	Consultation Activities
Site Selection	1. Identify a boundary within which the site might be located. 2. Identify and introduce project to key stakeholders locally; host landowners, neighbours, local council and other interested stakeholders.	• Phone calls • Face to face meetings • Introductory letters • Gather contact details for future communications
Project Feasibility	1. Firm up the boundary of the site 2. Document engagement interactions 3. Introduce the project to the local community 4. Introduce the process to be followed 5. Explain which aspects of the project can be influenced by the community 6. Identify the benefits and impacts of the wind farm 7. Gather information and use it in the design of the project	• Face to face visits • Letter of introduction and newsletter • Baseline landscape and visual study • Community Information Session • Establish Project Website

Stage	Objectives	Consultation Activities
Planning and Approvals	1. Maintain communication channels for enquiries and information 2. Proactively gather views and expectation and address queries 3. Prepare a Social Impact Assessment (SIA) 4. Keep communications flowing to update the community	• Face to face meetings • Phone calls • Updates on project website • Establish CCC • Newsletters • Community Information Sessions • Exploration of community partnerships
Construction	1. Reduce community concerns by open dialogue and acknowledging and responding to issues 2. Demonstrate commitment to the wellbeing of the community 3. Avoid, minimise or remediate impacts 4. Maximise the opportunities of construction for communities	• Face to face visits • Phone calls • Updates on project website • CCC • Community partnerships • Complaints management mechanisms
Commissioning and Operation	1. Be an active member of the community 2. Strengthen collaboration through partnerships 3. Build a sense of community pride in a well-run wind farm	• CCC • Community partnerships • Ongoing consultation • Community events • Evaluation of engagement and improvements as required • Complaints management mechanisms
Decommissioning	1. Reduce community stress and concerns 2. Acknowledge and respond to issues	• Ongoing consultation • Easy access to plans and information • Complaints management mechanisms

5.3 Preliminary Community Consultation

A summary of community consultation activities conducted to date and the key issues raised are detailed below.

5.3.1 Consultation Activities

5.3.1.1 Project website

A project website was established for the project showing the location of the wind farm investigation area, project information and contact details to find out more about the project.

5.3.1.2 Community Newsletter

Introductory newsletters were sent to landowners and residents within 5km of the investigation area via post (where details could be obtained), or a letter box drop (where they could not be obtained). Introductory newsletters were also sent to relevant government agencies and a copy was provided on the project website. The newsletter included the following details:

- ▶ Details of the wind farm investigation area;
- ▶ Why the area was being investigated for a wind farm and the next steps;
- ▶ An invitation to a community information session; and
- ▶ Epuron contact details to find out more about the project.

5.3.1.3 Community Information Session

On 24 October 2019, Epuron held a community information session between 2pm and 6pm at the Sauer Memorial Hall located within the Wollomombi Village. The community information session was advertised in the:

- ▶ Community newsletter detailed Section 5.2.2;
- ▶ Armidale Express the week before the event; and

- ▶ On the project webpage.

The community information session included:

- ▶ Independent community engagement consultant to facilitate the community session;
- ▶ Four (4) Epuron representative to answer questions;
- ▶ Detailed aerial maps of the project investigation area for attendees to review;
- ▶ Community feedback forms for attendees to fill out; and an
- ▶ Independent visual consultant to answer questions and map areas of visual importance (to inform the Preliminary Visual Assessment detailed in section 7.1.1 of this report).

Overall, the community information session resulted in:

- ▶ 27 people attending from the surrounding area (within 5km); and
- ▶ 14 people participating in the visual mapping activity; and
- ▶ 7 feedback survey forms being submitted.

5.3.1.4 Face to Face Meetings and Phone Calls

Epuron has contacted all 10 non-associated landholders within 3.1km of proposed wind turbines via post and phone calls phone to arrange face to face meetings. Four (4) face to face meetings were conducted and five (5) phone call meetings. One meeting is yet to be conducted and has been requested via correspondence.

5.3.1.5 COVID Impacts

A second community information session was proposed but cancelled due to the COVID-19 pandemic.

5.3.2 Key Issues Raised

Key comments made during the community information session, face to face meetings and feedback forms are summarised below.

5.3.2.1 Project Status

- ▶ What stage is the project up to;
- ▶ What is the development approval process (e.g. Council or State Government) and where is the project up to in this process;
- ▶ When will the project be constructed and how long will it operate for;
- ▶ Who is Epuron and what do they do;
- ▶ Who will own the wind farm;
- ▶ What are the next steps in the project; and
- ▶ How will the community be kept up to date;

Epuron's proposed ongoing consultation is discussed in Section 5.2.2. Epuron recognises that Community Consultation Committees (CCC) play an important role in providing regular updates and receiving feedback from stakeholders in relation to a Project and its development. Epuron has committed to establishing a CCC for the Project in consultation with DPIE in accordance with the *'Community Consultative Committee Guideline State Significant Projects'* (DPE, 2019) (CCC Guideline).

5.3.2.2 Visual Amenity

- ▶ Where are the wind turbines be located and how many;
- ▶ What will the wind turbines look like and how big will they be;
- ▶ Will red aviation lights be located on top of wind turbines;

- ▶ How close wind turbines could be to each landholder's / resident's houses (this included mapping resident's houses to confirm Epuron had the dwelling details correct);
- ▶ Residents who could potentially see wind turbines (e.g. with 3km or had specific views of Doughboy Mountain) wanted to understand where turbines may be visible and expressed a desire for visual impact to be minimised; and
- ▶ Residents who would not see wind turbines generally did not express concern about visual impact.

Epuron will conduct a visual impact assessment as part of the EIS which shall include consideration of representative localities and seek to reduce visual impact where practicable (see Section 7.1.1).

5.3.2.3 Traffic and Transportation

- ▶ The Project construction and operation traffic routes;
- ▶ Local road upgrades to manage increased road traffic; and
- ▶ Security concerns over increased local traffic.

Epuron will conduct a traffic and transport impact assessment as part of the EIS which shall include consideration of construction and operational traffic (see Section 7.1.6).

5.3.2.4 Amenity

- ▶ Potential noise and health impacts that may result from the operation of the wind farm.

Epuron will conduct a noise impact assessment as part of the EIS which shall consider noise impacts against relevant NSW Guidelines (see Section 7.1.2).

5.3.2.5 Economic and Social Impact

- ▶ 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. In particular benefits that will flow to the local businesses including, local trades and contractors, hotels, restaurants and other services;
- ▶ Further information about how a community enhancement fund will be established and the criteria for grants or funding for local projects; and
- ▶ Perceived impact to property values in the vicinity of the wind farm.

Epuron will conduct a relevant assessment as part of the EIS which shall include consideration of the economic and social impacts and benefits of the Project (see Section 7.2.1.4).

5.4 Preliminary Government and Stakeholder Consultation

A summary of consultation with government agencies and other stakeholders to date and their feedback is detailed below.

5.4.1 DPIE

A preliminary meeting was held on 12 September 2019, followed by an update call 26 August 2020, where the following issues were requested to be included in the scoping report:

- ▶ Proposed turbine maximum height;
- ▶ Transmission network connection point;
- ▶ If the project includes a battery including MWh capacity, type of technology, location (centralised or decentralised and proximity to any sensitive land uses e.g. dwellings);
- ▶ Transportation routes;
- ▶ Location of dwellings surrounding the project;
- ▶ Preliminary biodiversity assessment;
- ▶ Assessment of any cumulative impacts from other projects in the region;
- ▶ Establishment of a community benefits fund;

- ▶ Proposal to develop a CCC; and
- ▶ Preliminary visual impact assessment to include:
 - Use of “black line” in visual magnitude tool (which equate to 3.1km); and
 - 8km in Multiple Turbine Analysis.
 - Proximity to National Parks and any viewpoints.

These issues are considered in relevant parts of Section 7.

5.4.2 Armidale Regional Council

Preliminary consultation with Armidale Regional Council included:

- ▶ A meeting and discussions with Planning staff to introduce and receive feedback including that the Project should consider the following issues: bushfire risk; waste management; construction management; loss of agricultural land; visual impacts (especially from houses); road impacts: biodiversity impacts; and decommissioning (these issues are considered in relevant parts of Section 7).
- ▶ A meeting and discussions with Economic Development staff to introduce the project and explore economic development opportunities;
- ▶ Discussions with Planning and Engineering staff via phone and email regarding the process to upgrade Council controlled roads and bridges to facilitate transportation of wind turbines components and construction traffic, including leasing land for project transport routes; and
- ▶ A meeting to discuss opportunities for Aboriginal community involvement in relation to Aboriginal cultural heritage investigations.

5.4.3 Other Government Agencies

Preliminary consultation with other government agencies is summarised below:

Government Agency	Comments
Airservices Australia (AA)	No comment at this stage. Advised to prepare an Aviation Impact Assessment once the project has progressed for AA and CASA to comment on.
Civil Aviation Safety Authority (CASA)	No response
NSW Environment Protection Authority (EPA)	Advised no comments at this stage
NSW National Parks and Wildlife Services (NPWS)	No comment at this stage. Advised to speak with NSW DPIE at this stage of the project
MEG	No response
TfNSW	Advised too early to provide comment at this stage
NSW Rural Fire Service (RFS)	Advised EIS will need to consider the presence of bush fire prone land and Wind Farm requirement in <i>Planning for Bush Fire Protection 2018</i>
NSW Crown Lands	Correspondence with Crown Land to discuss Crown Land matter located within the project area

5.4.4 Other Stakeholders

Preliminary consultation with other stakeholders included:

- ▶ Local Aboriginal Organisations: Preliminary discussions with Iwatta Aboriginal Corporation including providing a copy of the community newsletter. Formal consultation for the EIS will be undertaken in accordance with the Consultation Guidelines (DECCW, 2010).
- ▶ TransGrid: A Connection Enquiry response was received from TransGrid 28 February 2018 indicating no constraints with the proposed wind farm connection.

6 Risk Assessment

This section identifies the currently identified potential environmental and social impacts associated with the Project and identifies high and moderate priorities for further assessment in the EIS.

6.1 Introduction

Epuron has used its experience in wind farm development, together with a preliminary assessment of the site, to identify the key issues to be assessed in relation to the Project.

The risk assessment included a review of the Wind Energy Framework as well as the SEARs for recent wind farm projects.

Potential environmental and social impacts identified include:

- ▶ Visual amenity (including landscape and lighting)
- ▶ Noise and vibration
- ▶ Biodiversity
- ▶ Aboriginal Heritage
- ▶ Historic heritage
- ▶ Traffic and transport
- ▶ Water
- ▶ Soil, Landform and Rehabilitation
- ▶ Dust management
- ▶ Safety (including aviation, bushfire, fire and blade throw)
- ▶ Telecommunications
- ▶ Social and Economic
- ▶ Waste management
- ▶ Health (including infrasound and Electromagnetic frequencies (EMF))
- ▶ Decommissioning
- ▶ Cumulative Impacts

The EIS will be prepared generally in accordance with the SEARs to be issued by DPIE in response to this scoping report. All assessments (including specialist assessments) will be completed taking into consideration experience from other wind farm projects, consultation with stakeholders, and industry best practice guidelines.

6.2 Environmental and Social Risk Assessment

Epuron has carried out its environmental and social risk assessment based on information collected to date on site, at nearby sites, generally within the region and based on similar proposals in other regions. The assessment separates the issues into three priorities;

- ▶ High Priority (Key) - addressed through use of an independent specialist assessment;
- ▶ Moderate Priority - addressed via desktop assessment, precedent and consultation; and
- ▶ Low Priority – addressed via minor desktop assessment.

In relation to each risk, Epuron has established the Priority by taking 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 in consideration of standard industry controls; and

- ▶ The extent to which standard industry practice, statutory requirements, and standard consent conditions adequately address the issue.

Where an issue has been established as a Low Priority, this has been on the basis that:

- ▶ It is a risk which is well understood;
- ▶ Site-specific assessment is not required to understand the risk;
- ▶ It has previously been demonstrated to not affect the assessment of wind farm projects or the consent conditions relevant to them;
- ▶ It has previously been found not to be relevant to the assessment of wind farm projects; and/or
- ▶ An industry standard approach is available which adequately addresses the issue and it is proposed that this approach will be included in the EIS.

Issues which fall into the Low Priority category are discussed in Section 7.2.1.7.

Table 3 summarises the sources of impact, preliminary direct mitigation options, and proposed strategies for addressing each issue. High and moderate issues and the proposed assessment approach are discussed in detail in Section 7.1 and 7.2.

Table 3 – Risk assessment, Preliminary Direct Mitigation and Assessment Approach

Issue	Sources of impact		Priority	Assessment
Visual amenity	Impacts	Loss of visual amenity for receivers and communities Loss of visual amenity for key outlooks or tourism routes Impact on scenic/landscape character Shadow flicker disturbance Cumulative visual impacts Lighting impacts	High	Independent specialist assessment in accordance with the Visual Bulletin
	Mitigation:	Landscaping measures		
Noise amenity	Impacts	Operational noise impacts on receivers Construction noise impacts on receivers Road traffic noise Vibration Blasting Cumulative impacts	High	Independent specialist assessment in accordance with the Noise Bulletin
	Mitigation	Through turbine selection, location, and other noise control measures		
Biodiversity	Impacts	Clearing of vegetation during construction and maintenance Loss or modification of habitat for terrestrial and aquatic species Potential for spread of weeds through soil disturbance and traffic movement Impact on threatened species or endangered ecological communities Bird and bat strike through direct collision or barotrauma Cumulative impacts	High	Independent specialist assessment
	Mitigation	Relocation of equipment Appropriate environmental management procedures Species-specific mitigation options Biodiversity Offsets		
Aboriginal Heritage	Impacts	Potential to impact Aboriginal objects or heritage values	High	Independent specialist assessment
	Mitigation	Relocation of project components Appropriate environmental management procedures		
Historic heritage	Impacts	Potential to impact heritage values and items	Moderate	Independent specialist assessment
	Mitigation	Relocation of project components Appropriate environmental management procedures		

Issue	Sources of impact		Priority	Assessment
Traffic and transport	Impacts	Increased traffic on local and regional road network for each of construction and operation Construction traffic may contribute to road pavement deterioration Turbines may distract drivers Cumulative impacts	High	Independent specialist assessment
	Mitigation	Traffic Management Plan and road maintenance and upgrades, as required		
Telecommunications	Impacts	Loss of communication signals Reduction in strength of broadcast signals (TV or radio)	Moderate	Independent specialist assessment
	Mitigation	Relocation of equipment Site specific mitigation		
Soils, Landforms and Rehabilitation	Impacts	Erosion, landform and rehabilitation stability	Moderate	In house and/or independent specialist assessment
	Mitigation	Environmental Management Plan		
Water	Impacts	Availability of water for construction Erosion and sediment control leading to pollution	Moderate	In house and/or independent specialist assessment
	Mitigation	Standard practices apply		
Social and Economic	Impacts	Land use change Economic impacts	Moderate	Independent specialist assessment
	Mitigation	Economic impacts are positive		
Hazards and Safety	Impacts	Aviation safety (instruments, radar and airspace intrusion) Bushfire safety (hazards and risks) Fire management Blade throw risks Battery - Energy Storage (hazard assessment)	Moderate	In house and independent specialist assessment
	Mitigation	Standard practices apply		
Dust management	Impacts	Construction dust impacts	Low	Main EIS volume
	Mitigation	Standard practices apply		
Waste	Impacts	Generation of recyclable and general waste Generation and disposal of refurbished blades	Low	Main EIS volume
	Mitigation	Standard practices apply		
Decommissioning	Impacts	Decommissioning procedures Rehabilitation	Low	Main EIS volume
	Mitigation	Standard practices apply		
Health	Impacts	Epilepsy triggers Infrasound EMF	Low	Main EIS volume
	Mitigation	Standard practices apply and demonstrated application of the principles of prudent avoidance		

7 Preliminary Environmental Assessment

This section discusses potential environmental and social impacts associated with the Project identified in Section 6 and outlines of how each will be assessed in the EIS.

7.1 Assessment of Key Issues

7.1.1 Visual Amenity

7.1.1.1 Introduction

Geoscene International Ltd was commissioned to undertake a Preliminary Landscape and Visual Impact Assessment (PLVIA) for the Project. The PLVIA has been prepared in accordance with the Visual Bulletin and is provided in Appendix A with a summary below. The PLVIA was prepared consistent with the preliminary project description in Section 3.

7.1.1.2 Preliminary Assessment

Methodology

The assessment methodology for the PLVIA consisted of the following:

- ▶ Review of the objectives of the Visual Bulletin and a site-specific scope of work created for the Project;
- ▶ Development and implementation of the SEP as described in Section 5 to ensure that the objectives of the Visual Bulletin are met;
- ▶ Face-face meetings and community sessions to gather feedback on the local landscape values and the Project;
- ▶ Conduct a scenic quality assessment of the local area focusing on landscape features, topography, vegetation cover and land use to assist in gathering feedback from the local community;
- ▶ Assessment of the draft wind turbine layout;
- ▶ Identification of sensitive viewpoints with "Study Area";
- ▶ Preliminary landscape and visual assessment using the Visual Magnitude and Multiple wind farm tools;
- ▶ Recommendations for further assessment in the EIS.

Visual Magnitude Assessment

The NSW Visual Bulletin requires consideration of dwellings and key public viewpoints within the "Study Area", an area defined by the combination of the location of proposed turbines and the tip height of the turbines in the development application (as detailed in Figure 2 in Appendix 1). Accordingly, the Study Area is defined as anywhere within 3.05 km from a proposed wind turbine and is mapped in Figure 9.

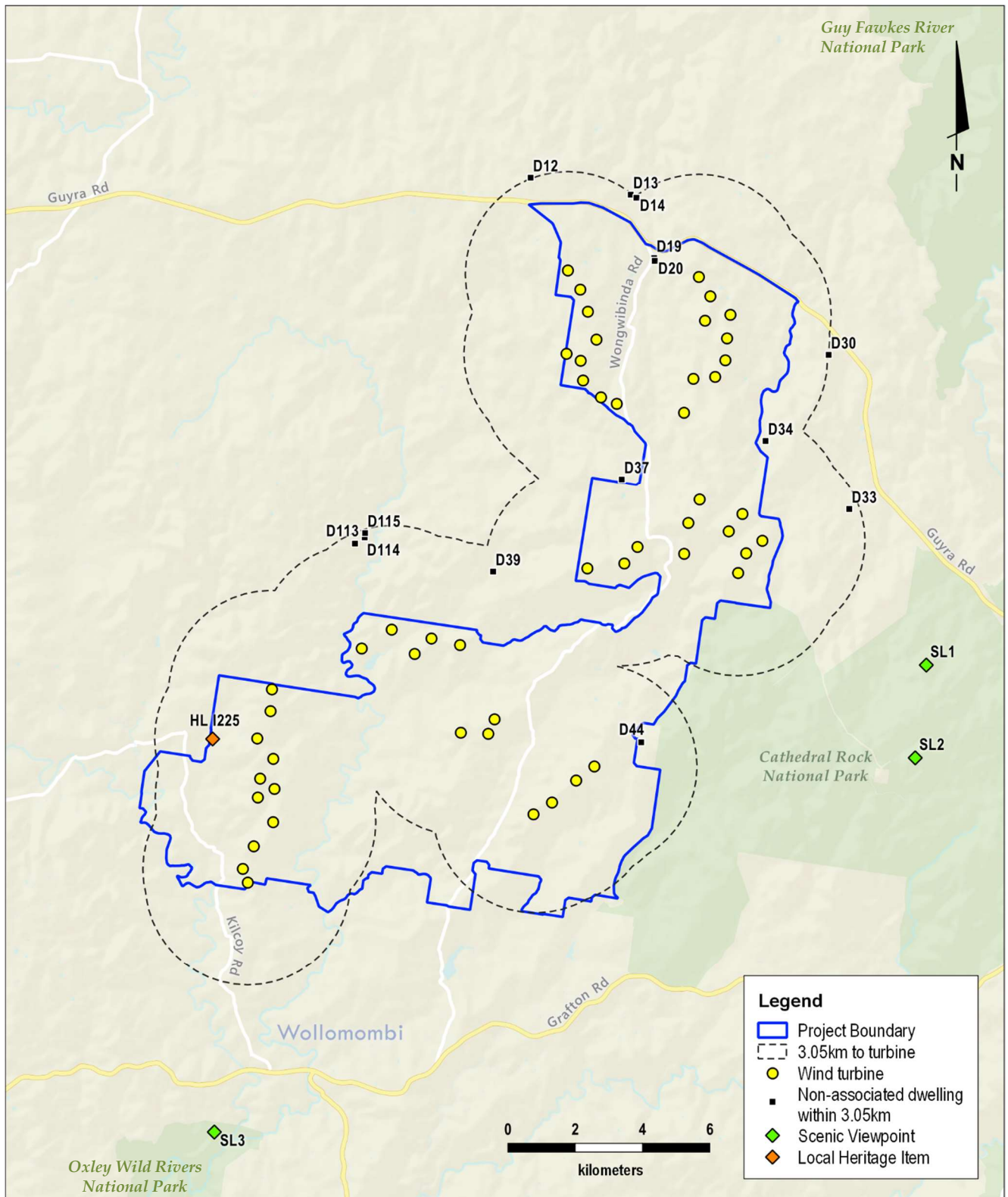


Figure 9: Viewpoints Located within the Study Area

A total of 14 non-associated dwellings and one local heritage item (former church) are located within the Study Area as shown in Figure 9 and listed in Table 4. It should be noted that the 14 non-associated dwellings occur on a total of 10 land holdings (e.g. several dwellings occur on some landholdings), and the local heritage item is located on an associated landholder's property. Table 4 also provides the distance from non-associated dwellings and the heritage site to the nearest wind turbine and its ID. These viewpoints will be further assessed as part of the detailed EIS.

The Wollomombi village is located outside the study area at a distance of 5.0km from the edge of the village¹ to the closeted proposed turbine.

The border of the Cathedral Rock National Park is partially located within the Study Area (although not in the Project Boundary), however, no scenic viewpoints are located within the Study Area. The closest viewpoints from National Parks within 8km are shown in Figure 9 and include:

- ▶ SL1 - Woolpack Rocks, Cathedral Rock National Park - 6km from proposed turbines;
- ▶ SL2 - Cathedral Rock, Cathedral Rock National Park - 7km from proposed turbines; and
- ▶ SL3 – Wollomombi Falls / Checks Lookout, Oxley Wild Rivers National Park - 7km from proposed turbines.

The closest viewpoint within the Guy Fawkes River National Park is Ebor Falls lookout located 13km to the east of proposed turbines.

Table 4 – Viewpoints within the study area

Non-associated Dwellings within Study Area (as detailed in Figure 9)	Distance to Closest Turbine (km)	Turbine ID
D12	2.9	T1
D13 and D14	2.9 and 2.9	T1
D19 and D20	1.4 and 1.3	T10
D30	3.0	T14 and T15
D33	2.7	T20
D34	2.3	T19
D37	2.0	T27
D39	2.3	T30
D44	1.5	T28
D113, D114 and D115	2.7, 2.8 and 2.9	T32
HL I225 (Former Kilcoy Presbyterian Church)	1.0	T44

Multiple Wind Turbine Assessment

The Visual Bulletin requires consideration of the extent to which dwellings or scenic viewpoints may be impacted by multiple turbines within 8km, using the Multiple Turbine Analysis Tool. Figure 10 identifies all non-associated dwellings and scenic viewpoints located within 8km.

Of all the non-associated dwellings identified in Figure 10, a total of seven non-associated dwellings have wind turbines proposed within three or more 60-degree sectors. These dwellings are listed in Table 5 and will be further assessed as part of the detailed EIS.

No scenic viewpoints shown in Figure 10 have wind turbines proposed within three or more 60-degree sectors.

It should be noted that no current or proposed wind farm projects in the region, which are listed in Section 3.3.5 of this report, were close enough to be identified by the Multiple Turbine Analysis.

¹ Based on the boundary of land use zoning for the village, which is identified in the Armidale Dumaresq Local Environmental Plan 2012, and zones the village area RU5 Village.



Table 5 – Multiple Wind Turbine Analysis Results

Rep. ID	Number of 60°sectors with wind turbines within 8km of Viewpoint	General Distance Range to Turbines
D19	3	2 - 5km
D20	4	2 - 8km
D34	3	2 - 8km
D37	4	2 - 7km
D39	4	2 - 8km
D44	4	1 - 8km
D114	3	3 - 8km

7.1.1.3 EIS Methodology

The EIS will include a detailed Visual impact Assessment which will be prepared in accordance with Visual Bulletin DPE (2016b) which will include, but is not limited to:

- ▶ Preparation of a Visual Baseline study to establish the existing landscape and visual conditions;
- ▶ Assessment of the Project against the Bulletin's Visual Performance Objectives, which includes:
 - Assessment and justification for the placement of wind turbines in within 3.1 km of non-associated dwellings;
 - Assessment and justification for the placement of wind turbines with three or more 60-degree of non-associated dwellings sectors at a distance up to 8km; and
 - Identification and assessment of key public viewpoints as required by the Visual Bulletin.
- ▶ Assessment of lighting impacts from the Project;
- ▶ Assessment of shadow flicker impacts from the Project;
- ▶ Justification of proposed wind turbines that do not meet the visual performance objectives; and
- ▶ Summary of mitigation and management options proposed for individual receivers.

7.1.2 Noise Amenity

7.1.2.1 Introduction

Epuron has undertaken a Preliminary Noise Impact Assessment (PNIA) for the Project. The PNIA has been prepared generally in accordance with the Noise Bulletin.

7.1.2.2 Background

Noise generated by wind farms is often raised by members of the local community as an issue of concern. To ensure that noise levels for people living near the proposed wind farm are at an acceptable level, developers of wind energy projects are required to demonstrate the ability to comply with strict operational and construction noise limits.

A detailed standard for conducting noise impact assessments has been developed to improve the accuracy of predicted noise levels at dwellings in the area surrounding a proposed wind farm. DPIE has adopted this standard from the '2009 South Australian Environmental Noise Guidelines' (SA, 2009) in developing its own guidelines, the 'Noise Bulletin'.

The Noise Bulletin requires a PNIA to be completed for inclusion in the Scoping Report to inform the design of the Project.

7.1.2.3 Preliminary Assessment

Methodology

Epuron has conducted a preliminary assessment on operational noise using specialised modelling software (WindFarmer) to provide indicative noise predictions. The assessment was conducted consistently with the recommendations of the PNIA, using the maximum sound power level of the likely turbine model and conservative assumptions to produce worst case noise propagation conditions.

Assumptions included:

- ▶ Turbine locations consistent with Figure 5;
- ▶ Receiver locations consistent with Figure 9 study area;
- ▶ Hard ground conditions; and
- ▶ Sound Power Level (SPL) from Vestas V162 5.6 MW turbine with 149m hub height (representative turbine); and

Indicative noise predictions generated in the modelling were compared to the base criteria adopted by the Noise Bulletin of 35dBA for non-associated residences (noise criteria).

Figure 11 below is featured in the Noise Bulletin and shows the average distances at which compliance can be achieved against a number of different noise standards. It also demonstrates the how strict the noise levels adopted by the NSW Planning system are in comparison to other jurisdictions.

These set back distances are indicative only and take no consideration for site specific terrain, vegetation cover or climatic conditions which could increase or decrease the noise levels at a dwelling. However, the Noise Bulletin states that the NSW criteria will typically be achievable at distances between 0.8 – 1.5 km.

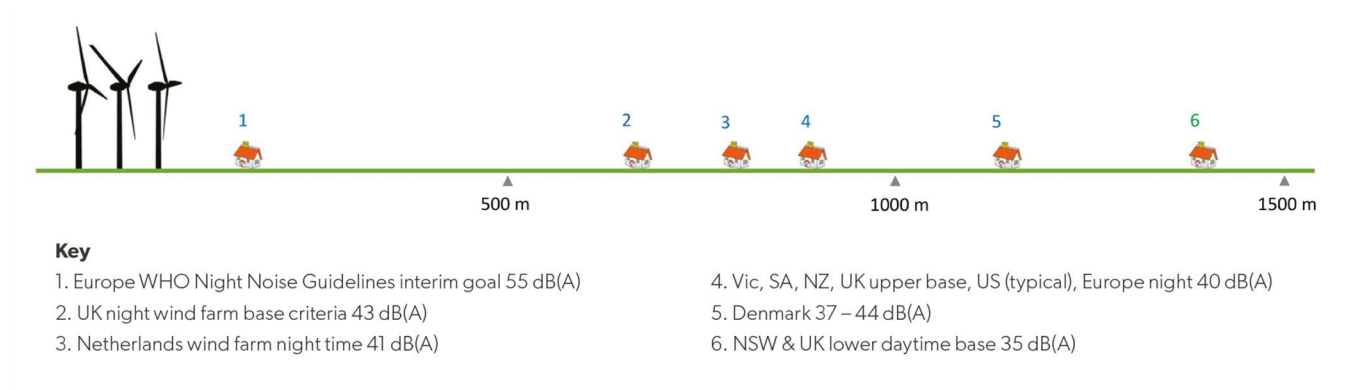


Figure 11: Noise Bulletin Average Distances for Different Noise Standards

Results

The results of the preliminary assessment modelling are shown graphically in Figure 12 and listed in Table 6. Of the 14 non-associated dwellings modelled as part of the PNIA, no exceedance of the noise criteria was predicted.

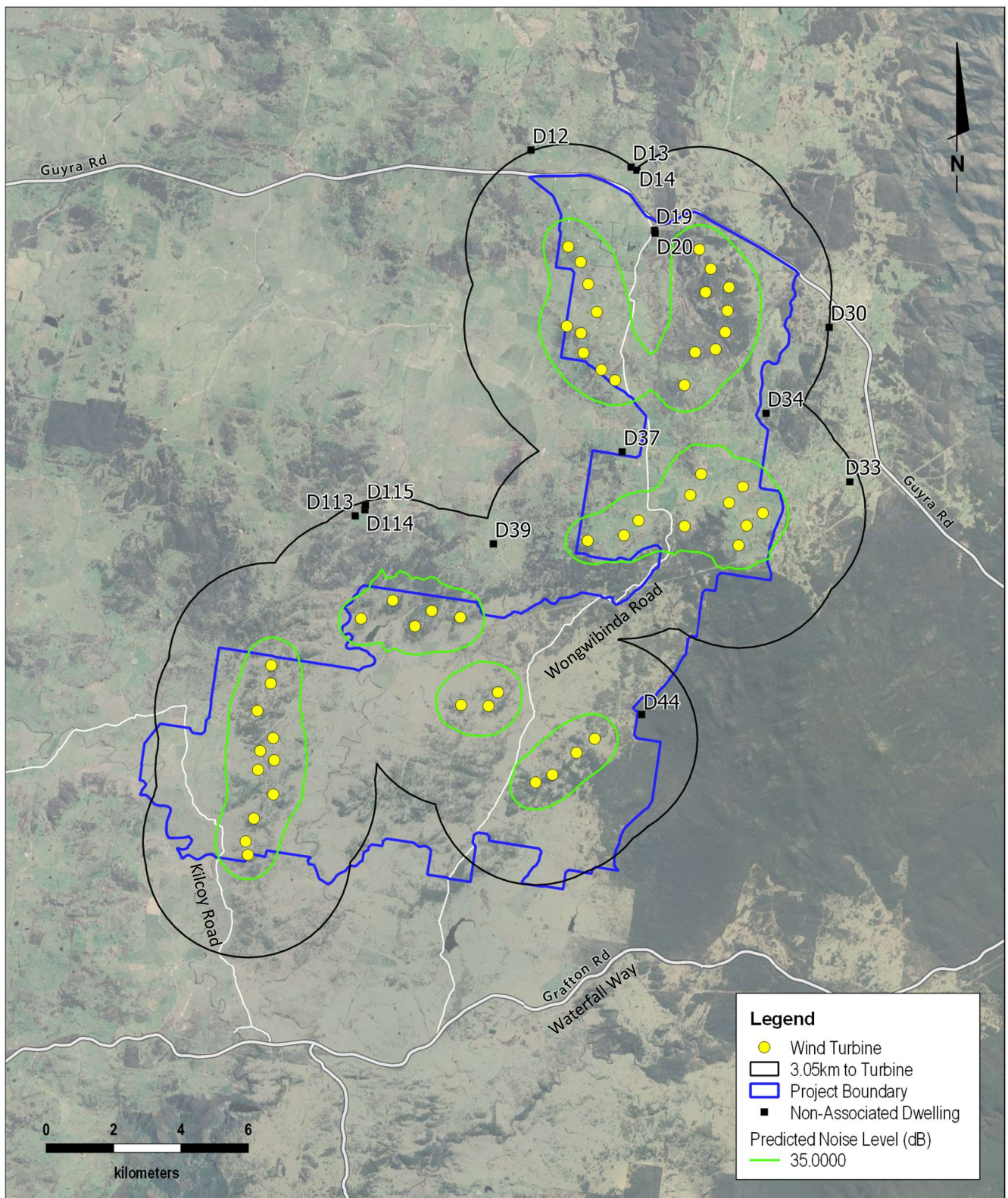


Figure 12: Preliminary Noise Assessment for Wind Turbines Only

Table 6 – Preliminary Noise Assessment Results for Wind Turbines Only at Non-Associated Dwellings

Dwelling ID	Distance to nearest turbine (km)	Turbine ID	Noise Prediction (dB(A))	Exceedance above 35dB(A)
D12	2.9	T1	24.2	No
D13	2.9	T1	25.7	No
D14	2.97	T1	25.9	No
D19	1.4	T10	31.1	No
D20	1.3	T10	31.3	No
D30	3.0	T14 and T15	27.2	No
D33	2.7	T20	26.0	No
D34	2.3	T19	29.9	No
D37	2.0	T27	31.8	No
D39	2.3	T30	27.2	No
D44	1.5	T28	28.3	No
D113	2.7	T32	25.6	No
D114	2.8	T32	24.8	No
D115	2.9	T32	24.5	No

7.1.2.4 EIS Methodology

The EIS Noise Impact Assessment (NIA) will assess all components of the Project including:

- ▶ Wind turbine noise in accordance with the Noise Bulletin (DPE, 2016c);
- ▶ Ancillary infrastructure in accordance with the 'NSW Noise Policy for Industry' (EPA, 2017);
- ▶ Construction noise under the 'Interim Construction Noise Guideline;' (DECC, 2009);
- ▶ Traffic noise under the 'NSW Road Noise Policy' (DECCW, 2011); and
- ▶ Vibration 'Assessment Vibration: A technical Guideline' (DECC, 2006).

The scope of the NIA will include:

- ▶ A relevant level of background noise survey;
- ▶ Review of site meteorology data to determine relevant meteorological data to be used in modelling;
- ▶ Predictive noise modelling of the Project's construction and operational activities;
- ▶ Road traffic noise during construction and operational activities;
- ▶ Vibration impacts at sensitive receptors;
- ▶ Blasting impacts at sensitive receptors;
- ▶ Cumulative noise impacts with surrounding industry (if any); and
- ▶ Identification of any reasonable and feasible mitigation and management measures.

7.1.3 Biodiversity

7.1.3.1 Introduction

NGH Environmental PTY LTD was commissioned to undertake a preliminary biodiversity assessment for the Project as summarised below.

7.1.3.2 Preliminary Assessment

Site Description

The Project is located within two IBRA (Interim Biogeographic Regionalisation for Australia) sub-regions; the Armidale plateau and Wongwibinda plateau. The majority of the valley flats and lower slopes have been historically cleared, as well as for fence lines and access tracks, to create grazing lands and modified pasture for sheep and cattle grazing. The majority of the ridgelines contain remnant vegetation and rocky outcrops. The Project is located to the west of the Cathedral Rock National Park. A map of the remnant native vegetation extent is shown in Figure 13.

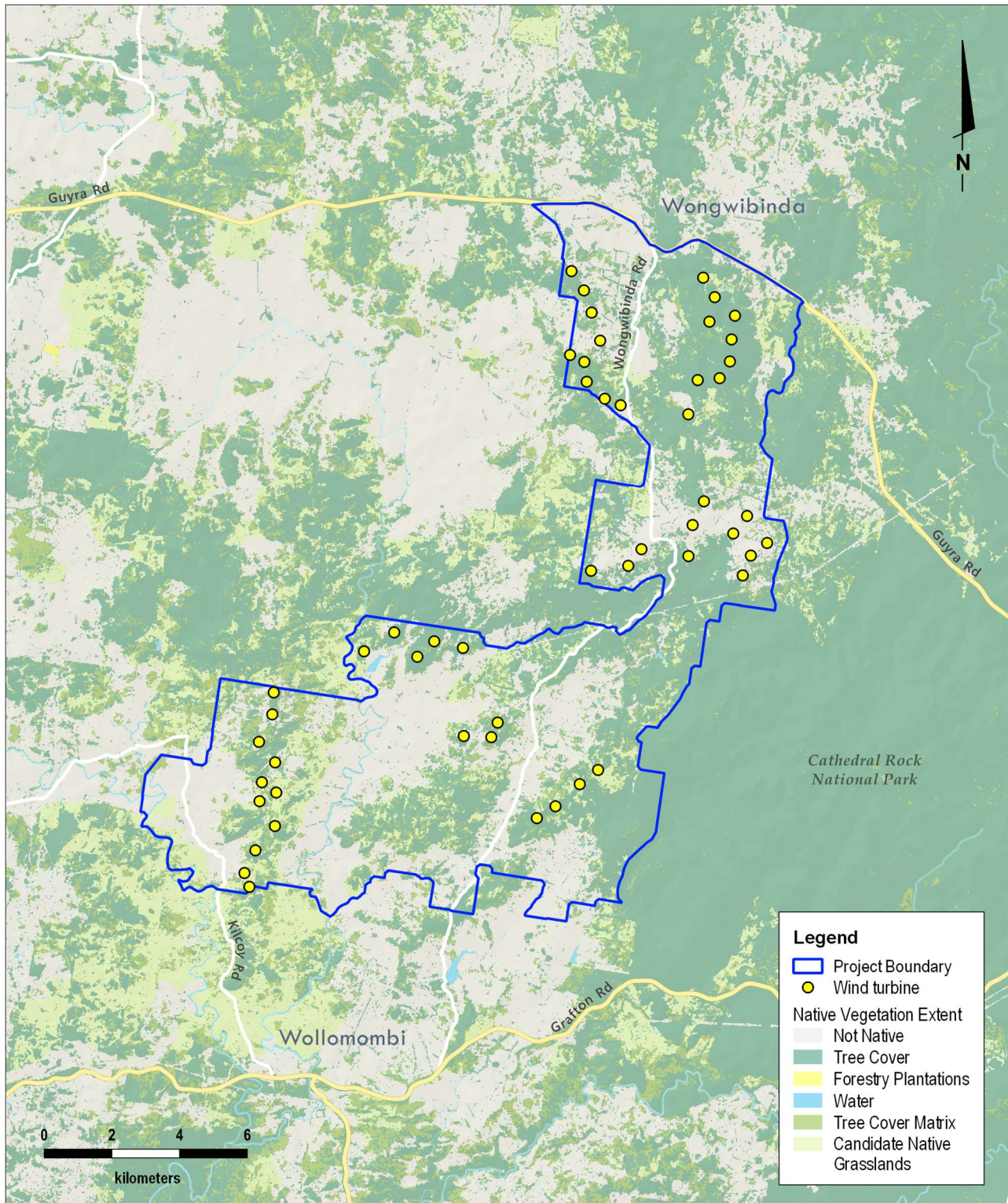


Figure 13: Native Vegetation Extent within the Project Boundary (Source: DPIE, 2019b)

Vegetation communities

At the time the preliminary biodiversity assessment was prepared, existing mapping of Plant Community Types (PCT) was not available for the Project Boundary. As a result, the PCT listed below represent the highest likelihood for PCT potential based on NGH's assessment, which included:

- ▶ Use of broader publicly available mapping in this area such as woody vegetation layers, geology soil mapping, TS habitat and available forest ecosystem mapping; and a
- ▶ Preliminary site assessment undertaken by a senior ecologist.

Based on this assessment, 14 PCT are likely to be present or have a potential to occur within the project boundary and include:

- ▶ PCT 533 - New England Peppermint grassy woodland on granitic substrates of the New England Tableland Bioregion)
- ▶ PCT 567 - Broad-leaved Stringybark - Yellow Box shrub/grass open forest of the New England Tableland Bioregion;
- ▶ PCT 568 - Broad-leaved Stringybark shrub/grass open forest of the New England Tableland Bioregion;
- ▶ PCT 565 - Silvertop Stringybark - Mountain Gum grassy open forest of the New England Tableland Bioregion;
- ▶ PCT 569 - Derived Snow Grass +/- Kangaroo Grass +/- Wild Sorghum tussock grassland of the NSW Northern Tablelands;
- ▶ PCT 704 - Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tableland Bioregion;
- ▶ PCT 934 - Messmate open forest of the tableland edge of the NSW North Coast Bioregion and New England Tableland Bioregion;
- ▶ PCT 954 - Mountain Ribbon Gum - Messmate open forest of escarpment ranges of the NSW North Coast Bioregion and New England Tableland Bioregion;
- ▶ PCT 965 - Narrow-leaved Peppermint - Mountain Ribbon Gum grassy open forest of the eastern New England Tableland Bioregion;
- ▶ PCT 970 - Narrow-leaved Peppermint - Wattle-leaved Peppermint shrubby open forest of the New England Tableland Bioregion
- ▶ PCT 983 - New England Blackbutt - stringybark grassy forest the eastern New England Tableland Bioregion and NSW North Coast Bioregion
- ▶ PCT 993 - New England Blackbutt grassy open forest of the eastern New England Tableland Bioregion
- ▶ PCT 997 - New England stringybarks - peppermint open forest of the New England Tableland Bioregion;
- ▶ PCT 1188 - Snow Gum - Black Sallee grassy woodland of the New England Tableland Bioregion; and

PCTs will need to be confirmed in a detailed Biodiversity Assessment Report (BDAR) as required under the *Biodiversity Conservation Act 2016* (BC Act).

Threatened Ecological Communities (TECs)

Of the PCTs identified as potentially occurring within the Project Boundary, three are associated with Threatened Ecological Communities (TECs) as identified below:

- ▶ White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland);
- ▶ Ribbon Gum - Mountain Gum - Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion;
- ▶ New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion.

TECs will be confirmed in a detailed BDAR.

Threatened Species

A search of the NSW OEH BioNet Atlas and the EPBC Act Protected Matters Search Tool returned the following known or potential threatened species: 27 flora; five amphibian; 30 avifauna; three reptile; and 18 mammals, as listed in Table 7.

Table 7 - Potential Threatened Species

Flora		
<i>Bertya Ingramii</i>	<i>Eucalyptus approximans</i>	<i>Marsdenia longiloba</i>
<i>Callistemon pungens</i>	<i>Eucalyptus magnificata</i>	<i>Persicaria elatior</i>
<i>Callitris oblonga</i>	<i>Eucalyptus nicholii</i>	<i>Senna acclinis</i>
<i>Chiloglottis anaticeps</i>	<i>Euphrasia arguta</i>	<i>Pterostylis metcalfei</i>
<i>Cryptostylis hunteriana</i>	<i>Gaultheria viridicarpa</i>	<i>Styphelia perileuca</i>
<i>Cynanchum elegans</i>	<i>Gentiana wissmannii</i>	<i>Tasmannia glaucifolia</i>
<i>Dichanthium setosum</i>	<i>Grevillea beadleana</i>	<i>Thesium australe</i>
<i>Diuris eborensis</i>	<i>Hakea fraseri</i>	<i>Tylophora woollsii</i>
<i>Diuris pedunculata</i>	<i>Haloragis exalata subsp. velutina</i>	<i>Zieria floydii</i>
Amphibians		
Booroolong Frog (<i>Litoria booroolongensis</i>)	Glandular Frog (<i>Litoria subglandulosa</i>)	Stuttering frog (<i>Mixophyes balbus</i>)
Yellow-spotted Bell Frog (<i>Litoria castanea</i>)	Peppered Tree Frog (<i>Litoria piperata</i>)	
Avifauna		
Regent Honeyeater (<i>Anthochaera phrygia</i>)	Little Lorikeet (<i>Glossopsitta pusilla</i>)	Barking Owl (<i>Ninox connivens</i>)
Rufous Scrub-bird (<i>Atrichornis rufescens</i>)	Painted Honeyeater (<i>Grantiella picta</i>)	Powerful Owl (<i>Ninox strenua</i>)
Dusky Woodswallow (<i>Artamus cyanopterus cyanopterus</i>)	White-bellied Sea Eagle (<i>Haliaeetus leucogaster</i>)	Eastern Curlew (<i>Numenius madagascariensis</i>)
Fork-tailed Swift (<i>Apus pacificus</i>)	Little Eagle (<i>Hieraetus morphnoides</i>)	Scarlett Robin (<i>Petroica boodang</i>)
Australasian Bittern (<i>Botaurus poeciloptilus</i>)	White-throated Needletail (<i>Hirundapus caudacutus</i>)	Flame Robin (<i>Petroica phoenicea</i>)
Curlew Sandpiper (<i>Calidris ferruginea</i>)	Swift Parrot (<i>Lathamus discolor</i>)	Australian Painted Snipe (<i>Rostratula australis</i>)
Glossy-black Cockatoo (<i>Calyptorhynchus lathami</i>)	Square-tailed Kite (<i>Lophoictinia isura</i>)	Diamond Firetail (<i>Stagonopleura guttata</i>)
Spotted Harrier (<i>Circus assimilis</i>)	Hooded Robin (<i>Melanodryas cucullata cucullata</i>)	Black-breasted Button-quail (<i>Turnix melanogaster</i>)
Varied Sittella (<i>Daphoenositta chrysoptera</i>)	Black-chinned Honeyeater (<i>Melithreptus gularis gularis</i>)	Masked Owl (<i>Tyto novaehollandiae</i>)
Red Goshawk (<i>Erythrorhynchus radiatus</i>)	Turquoise Parrot (<i>Neophema pulchella</i>)	Sooty Owl (<i>Tyto tenebricosa</i>)
Reptiles		
Bells Turtle (<i>Wollumbinia belli</i>)	Stephens Banded Snake (<i>Hoplocephalus stephensii</i>)	Three-toed Snake-tooth Skink (<i>Coeranoscincus reticulatus</i>)
Mammals		
Eastern Pygmy Possum (<i>Cercartetus nanus</i>)	Eastern Bentwing Bat (<i>Miniopterus schreibersii oceanensis</i>)	Long-nosed Potaroo (<i>Potorous tridactylus tridactylus</i>)
Large-eared Pied Bat (<i>Chalinolobus dwyeri</i>)	Southern Myotis (<i>Myotis macropus</i>)	New Holland Mouse (<i>Pseudomys novaehollandiae</i>)
Grey-headed Flying-fox (<i>Pteropus poliocephalus</i>)	Squirrel Glider (<i>Petaurus norfolcensis</i>)	Hastings River Mouse (<i>Pseudomys oralis</i>)
Spot-tailed Quoll (<i>Dasyurus maculatus maculatus</i> SE mainland population)	Greater Glider (<i>Petauroides volans</i>)	Koala (<i>Phascolarctos cinereus</i>) (combined populations of Qld, NSW and the ACT)
Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>)	Yellow-bellied Glider (<i>Petaurus australis</i>)	Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>)
Little Bentwing Bat (<i>Miniopterus australis</i>)	Brush-tailed Rock Wallaby (<i>Petrogale penicillata</i>)	Eastern Cave Bat (<i>Vespadelus troughtoni</i>)

The purpose of these search tools is to identify entities that may be or are likely to occur and to guide the site investigations. Detailed site field work will be undertaken to identify all species and communities relevant to the site. The presence of threatened species will need to be confirmed in a detailed BDAR.

Other matters

Other matter requiring consideration identified in the preliminary biodiversity assessment include:

- ▶ Remnant native vegetation containing potential habitat; and
- ▶ Intact areas of forest and woodland may present a higher risk with regard to bird and bat collisions.

The presence of potential habitat and areas of high collision risk will need to be confirmed in a detailed BDAR.

7.1.3.3 Methodology

A detailed BDAR will be undertaken in consideration of the BC Act with site specific assessment of flora, ground-based fauna, and aerial fauna (including bats and birds) to determine Project impacts.

The scope of the BDAR will generally include:

- ▶ Detailed background from existing literature sources;
- ▶ A desktop review of relevant databases and extensive available literature to identify flora, fauna species, Groundwater Dependent Ecosystem (GDEs) and vegetation communities with a potential to occur;
- ▶ Seasonal field surveys of vegetation communities, flora and fauna (terrestrial and aquatic) and habitat condition to comply, where possible, with DPIE – Biodiversity Conservation Division (BCD) and DAWE's recommendations for survey;
- ▶ Mapping the distribution of vegetation communities;
- ▶ Targeted searches for threatened species, populations and communities (as listed under the schedules of the BC Act and EPBC Act) that may potentially occur;
- ▶ Habitat assessments;
- ▶ Assessment of impacts on listed vegetation communities and threatened flora and fauna species;
- ▶ Assessment of impact of the Project on birds and bats from blade strikes, low air pressure zones at the blade tips (Barotrauma), and alteration to moment patterns resulting from the turbines; and
- ▶ Identification of any impact avoidance, mitigation and offset measures.

The BDAR will be conducted in accordance with relevant guidelines including:

- ▶ Biodiversity Assessment Method 2017 (OEH1 2017);
- ▶ OEH. (2016b). NSW Guide to Surveying Threatened Plants.
- ▶ OEH. (2018). 'Species credit' threatened bats and their habitats. NSW survey guide for the Biodiversity Assessment Method.
- ▶ Wind Farms and Birds: Interim Standards for Risk Assessment, AusWEA (AusWEA, 2005);
- ▶ Wind Farm collision risk for birds – Cumulative risks for threatened and migratory species (DEH, 2006);
- ▶ EPBC Act Policy Statements, Supplementary Significant Impact Guidelines 2.1.1 Wind Farm Industry Sector (DEH, 2005);
- ▶ Wind Energy Framework (DPE, 2016);
- ▶ Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (DPI);
- ▶ Risk Assessment Guidelines for GDEs (DPI Water, 2012);
- ▶ Commonwealth assessment requirements including DoEE's guidelines for identifying the White box – Yellow box – Blakeley's Red Gum Grassy woodlands and Derived Native Grasslands (DEH, 2006); and
- ▶ Commonwealth (2006). Significant Impact Guidelines. EPBC Act Policy Statement 1.1. Matters of National Environmental Significance.

Avoiding and minimising impact to the vegetation has been considered during initial design and will be further developed with the benefit of mapped constraint areas identified during the preparation of the BDAR.

7.1.4 Aboriginal Heritage

7.1.4.1 Background and Preliminary Assessment

An Aboriginal Heritage Information Management System (AHIMS) database search was undertaken on 30 July 2020. The AHIMS search found no Aboriginal sites near proposed wind turbine locations.

7.1.4.2 Methodology

An Aboriginal Archaeology and Cultural Heritage Impact Assessment (AACHIA) for the Project will be prepared in accordance with the *National Parks and Wildlife Act 1974* and the *'Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales'* (DECCW, 2010).

Consultation with the Aboriginal Community will be undertaken in accordance with the *'Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW'* (OEH, 2011), the *'Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW'* (OEH, 2010b) and the *'Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010'* (DECCW, 2010) (now BCD Guidelines).

The scope of the AACHIA will include:

- ▶ Desktop review, including relevant searches, and a review of previously completed studies conducted in the area to assist in the development of a predictive model;
- ▶ Aboriginal stakeholder consultation;
- ▶ A field-based AACHIA with members of the local Aboriginal community to identify and record any sites of Aboriginal Cultural Heritage (social, historical, scientific and aesthetic values);
- ▶ Preparation of an AACHIA to meet relevant BCD guidelines and provide to the local Aboriginal community for comment. This will include an assessment of any additional Aboriginal Cultural Heritage issues or places identified during the field work; and
- ▶ Development of appropriate management and mitigation strategies for any Aboriginal Archaeology and Cultural Heritage sites that are identified to be directly or indirectly impacted by the Project.

7.1.5 Historic Heritage

7.1.5.1 Background and Preliminary Assessment

National Heritage Lists

A search of available national heritage inventories was undertaken within 5 km of the Project Boundary including: Register of the National Estate, Commonwealth Heritage List and the National Heritage List. No items were located within 5km of the Project Boundary. The closest item was the 'Gondwana Rainforests of Australia' within the National Heritage List and located at least 7km from the Project Boundary.

State and Local Heritage Lists

A search of available state and local heritage inventories was undertaken within 5 km of the Project Boundary and the results are summarised in Table 8. No state heritage-listed sites are located within 5 km the Project Boundary.

The former Kilcoy Presbyterian Church is the only locally-listed item identified within the Project Boundary on the Armidale Dumaresq Local Environmental Plan 2012 (as shown in Figure 9). Heritage items within the vicinity of the Project Boundary will be further assessed as part of the EIS.

Table 8 – State and Local Heritage items within 5km of Project Boundary

Register	Site Name	Details	Location
State Heritage Register	High Conservation Value Old Growth Forest	Listing No 01487 Plan No 3196	Outside Project Boundary
Armidale Dumaresq Local Environmental Plan 2012	Former Kilcoy Presbyterian Church	Item Number I255	Inside Project Boundary
Armidale Dumaresq Local Environmental Plan 2012	Kilcoy Cemetery	Item Number I254	Outside Project Boundary
Guyra Local Environmental Plan 2012	National Park - Cathedral Rock - 'Gwenda Gardens' Homestead	Item Number I022	Outside Project Boundary

7.1.5.2 Methodology

An Historic Heritage Impact Assessment (HHIA) will be completed for the Project in accordance with the 'Heritage Manual' (Heritage Branch, 1996). The scope of the HHIA will include:

- ▶ A review of any relevant existing heritage assessment reports and other sources of information regarding heritage items;
- ▶ A field survey with an emphasis on sites identified during preliminary research and areas with archaeological potential and the recording of any items located;
- ▶ Assessment of the heritage significance of identified items;
- ▶ Preparation of a HHIA which considers the potential for impacts on any significant adjacent heritage items; and
- ▶ Identification of any necessary impact mitigation and management measures.

7.1.6 Traffic and Transport

7.1.6.1 Preliminary Assessment

The proposed road transportation route to deliver wind farm components to the Project will be from Port of Newcastle via Tamworth to Armidale utilising the Hunter Expressway, Golden Highway and New England Highway, and local roads.

Existing wind farm projects located north of Armidale in Glen Innes have previously used similar port and road routes for heavy and over-sized vehicles to deliver of plant and turbine components, with appropriate road upgrades and traffic management. Additional minor upgrades to this existing road transportation route have been identified as required to facilitate the transportation of larger blades proposed as part of this Project. These include and are not limited to temporarily road widening, temporary removal of street signage and lighting, and temporary protection near overhead distribution power. These upgrades will be further investigated in consultation with relevant parties as part of the EIS.

The proposed road transportation routes to deliver wind farm components from Armidale to the Project, are shown in Figure 14, and will include a combination of the following roads:

- ▶ New England Highway (Classified Highway);
- ▶ Guyra Road and Waterfall Way (Classified Main Roads); and
- ▶ Wongwibinda Road and Kilcoy Road (local roads).

Wind farm components and vehicles of an appropriate size that can pass through Armidale using heavy vehicles routes will access the Project via Waterfall Way / Grafton Road. Overlength and overweight items that cannot pass through Armidale, such as wind turbine blades, have the option of going via Guyra and Guyra Road to the Project. Site entry will be predominantly from Kilcoy Road and Wongwibinda Road (via Waterfall Way / Grafton Road and Guyra Road). Identification of upgrades to the existing road network will be undertaken in consultation with relevant parties as part of the EIS.

Identification of upgrades to the existing road network associated with general construction traffic, such as light vehicle traffic transporting workers to and from site from surrounding regional centres, will be further investigated in consultation with relevant parties as part of the EIS.

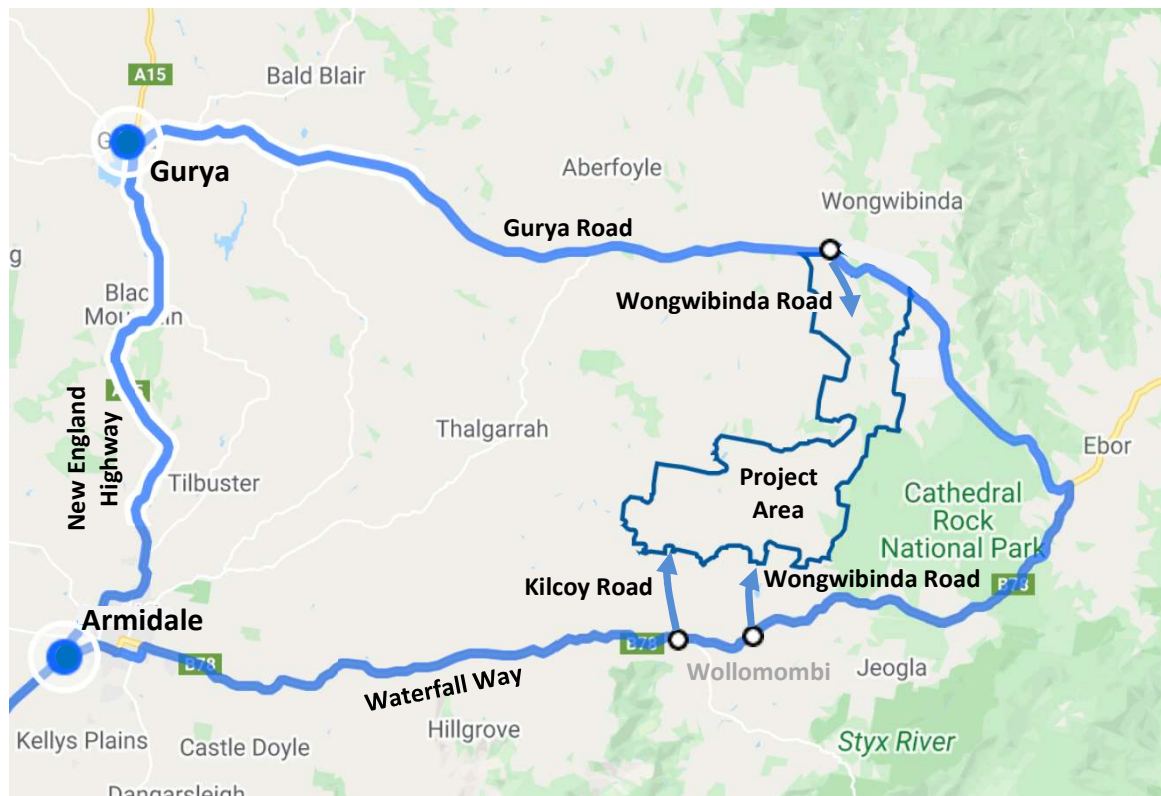


Figure 14: Wind farm road transportation routes from Armidale to the Project Area

7.1.6.2 Methodology

A Traffic and Transport Impact Assessment (TTIA) will be included in the EIS and focus primarily on the transportation routes for construction traffic generally in accordance with the 'Guide to Traffic Generating Developments' (RTA, 2002), Road Design Guide and relevant Austroads Standards and 'Austroads Guide to Traffic management' (Austroads, No Date).

The scope of the TTIA will include:

- ▶ Review of any previous traffic impact assessments undertaken for the surrounding area;
- ▶ Traffic counts in selected areas (if not available);
- ▶ An assessment of likely Project-alone and cumulative traffic impacts during the construction and operational phases of the Project (including intersection performance, capacity, safety and site access);
- ▶ Consultation with relevant stakeholders; and
- ▶ The identification of any mitigation and management measures necessary.

A commitment to the preparation of a transportation management plan in consultation with Councils and Transport for NSW (TfNSW) adopting relevant learnings from previous experiences to ensure the disruption to local communities is minimised will also be included.

7.2 Minor Issues

7.2.1.1 Telecommunications

A number of telecommunications towers in the area have been identified and the operators of equipment on each of these towers which cross the site will be consulted in carrying out the assessment of potential impacts to telecommunication signals via an Electro-Magnetic Interference (EMI) study.

The EMI study will also address broadcast services including television and radio services in accordance with the 'ICNIRP Guidelines for Limiting exposure to Time-varying Electric, magnetic and Electromagnetic Fields' (ICNIRP, 1998).

7.2.1.2 Soils, Landforms and Rehabilitation

The land within the Project Boundary does not contain 'Biophysical Strategic Agricultural Land' identified by the NSW Government – see Section 2.1.2 of this report for details.

The land within the Project Boundary was reviewed using NSW Government Land and Soil Capability Classes and identified to predominantly contain Classes 4 and 5, and small areas of Classes 6 and 7. Classes 4 and 5 are described as land with 'moderate' soil capability for agricultural purposes, and Classes 6 and 7 as land with 'low' to 'very low' soil capability for agricultural purposes (DPIE, 2018).

As part of the EIS, a soil and landform issues assessment will focus on soil disturbance from vegetation clearing, erosion from excavation work given the potentially-erosion prone nature of the slopes of the site and rehabilitation where required.

The soil and landform impact assessment will generally consider the following guidelines:

- ▶ 'Soil and Landscape Issues in Environmental Impact Assessment' (OEH, 2000); and
- ▶ 'Landslide Risk Management Guidelines' (AGS, No Date); and
- ▶ 'Site Investigations for Urban Salinity' (OEH, 2002).

7.2.1.3 Water Resources

The Project is located within the Macleay River and Clarence River Catchments. There are no significant wetlands within the site or surrounding area, however, the Chandler River is located within the Project Boundary, and the Wollomombi River on the Western Project Boundary, as shown in Figure 15.

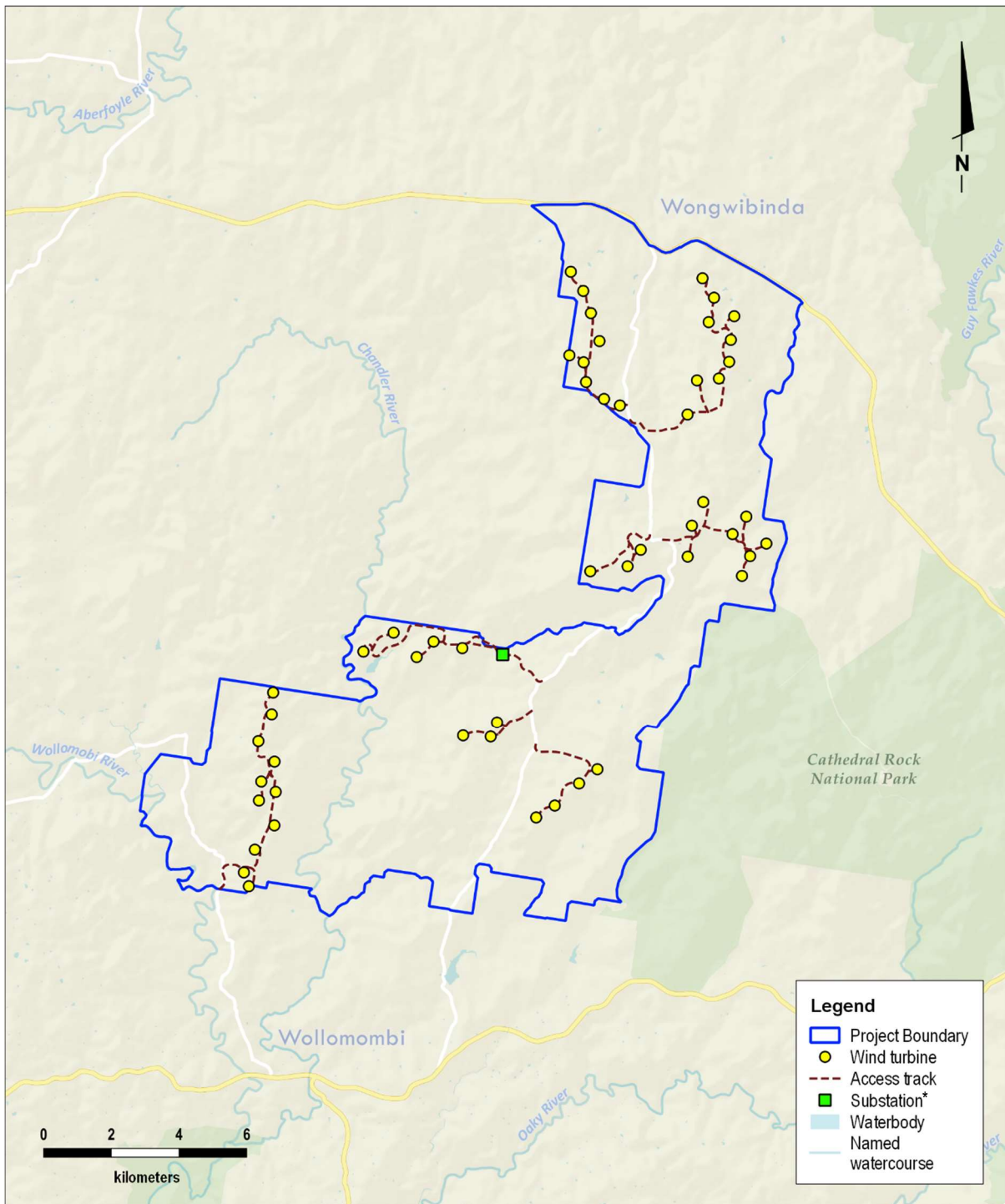
A relevant water assessment will include a review of standard construction environment management plans to ensure that impacts from mobilisation of sediment and pollutants generated during excavation, road works, transport of machinery, etc will be adequately mitigated through avoidance, minimisation and management.

It will also quantify and identify sources of water required for construction and operation of the Project and whether any licences under the WM Act are required.

A relevant assessment on the impacts to groundwater will also be included in the water impact assessment.

The water assessment will be generally undertaken in accordance with:

- ▶ 'Managing Urban Stormwater; Soils & Construction' (Landcom, 2004);
- ▶ 'Guidelines for Controlled Activities on Waterfront Land' (DPI Water, 2018);
- ▶ 'Relevant Water Sharing Plans' (DPI Water); and
- ▶ 'Guidelines for Watercourse Crossings on Waterfront Land' (DPI Water, 2012b).



Note: * Substation co-located Energy Storage Battery

Figure 15: Key waterbodies and waterways

7.2.1.4 Social and Economic

A Social and Economic Assessment will review the impacts and benefits of the Project for the region and State as a whole, including consideration of any increase in demand for accommodation and community infrastructure services.

7.2.1.5 Hazards and Safety

A Hazards and Safety Assessment will be undertaken in relation to aviation, bushfire, blade throw risk and the energy storage battery.

Aviation

A preliminary review of aerodromes and aircraft landing areas within 30km of the Project Boundary showed several private airstrips. Armidale Airport is located outside this zone, approximately 50 km south-west of the Project Boundary.

Aviation impacts will be assessed considering the local aviation operations and the Australian aviation regulations in accordance with the 'National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft'. (DIRDC, 2012). The assessment shall consider potential impacts on aviation safety including wake / turbulence issues, need for aviation hazard lighting, consideration of defined air traffic routes, heights procedures, radar and communications systems and navigation aids.

Bushfire

Part of the land within the Project Boundary is identified as 'Bush Fire Prone' by the NSW Rural Fire Service (NSW RFS, 2020). A relevant bushfire assessment will be undertaken in accordance with the NSW Rural Fire Service 'Guide for Bush Fire Prone Land Mapping', vegetation based on vegetation type and potential risk, and Rural Fire Service *Planning for Bush Fire Protection 2018*. Consideration will also be given to any important findings arising out of the 2019/2020 bushfires.

Blade Throw

A blade throw risk assessment will be undertaken as part of the EIS.

Energy Storage Battery

A relevant hazard assessment will be conducted for the proposed 100 MW / 400 MWh energy storage battery component of the Project. The proposed energy storage battery will use lithium-ion technology and will be collocated in a centralised place next to the new 330kV substation within the Project Boundary, shown in Figure 5. A preliminary assessment indicates that the proposed location of the energy storage battery is greater than 2.5km from the closest sensitive land use (e.g. dwelling).

7.2.1.6 Mining and Petroleum

Mineral Exploration Licence EL6419 is located on the western boundary of the Project Area. However, no turbines, ancillary infrastructure or access roads are proposed within the Exploration Licence area. Consultation with the Exploration Licence holder will be undertaken as part of the EIS. No other Exploration Licence or Mining titles are present within the Project Area. No other Exploration Licences or Mining Titles are present within the Project Area.

7.2.1.7 Minor Issues

Additional consideration will be given to the following issues in the EIS:

- ▶ Air quality management – in accordance with relevant NSW guidelines in relation to construction;
- ▶ The potential for any health impacts (including infrasound and Electromagnetic fields (EMF));
- ▶ Waste - quantify and classify the likely waste streams to be generated during construction and operation and describe measures to manage, reuse, recycle and dispose of this waste in accordance with 'Waste Classification Guidelines' (EPA, 2014);
- ▶ Decommissioning; and
- ▶ Cumulative impacts.

8 Glossary and Acronyms

°C	Degrees Celsius
AACHIA	Aboriginal Archaeology and Cultural Heritage Impact Assessment
AEMO	Australian Energy Market Operator
AGS	Australian Geomechanics Society
AHIMS	Aboriginal Heritage Information Management System
AusWEA	Australian Wind Energy Association
BC Act	<i>Biodiversity Conservation Act 2016</i>
CASA	Civil Aviation Safety Authority
CCC	Community Consultative Committee
dB(A)	A-weighted decibels
DAWE	Department of Agriculture, Water and the Environment
DPIE	Department of Planning, Industry and the Environment
DPI	Department of Primary Industry
MEG	Mining, Exploration and Geoscience
EIS	Environmental Impact Statement
EMF	Electromagnetic Fields/Frequencies
EMI	Electromagnetic Interference
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
GDE	Groundwater Dependent Ecosystems
GWh	Gigawatt-hour
HHIA	Historic Heritage Impact Assessment
IBRA	Interim Biogeographic Regionalisation for Australia
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ISP	Integrated System Plan
km	kilometres
kV	kilovolt
LCOE	Levelised Cost of Electricity
LEP	Local Environmental Plan
LLS	Local Land Services
MNES	Matters of National Environmental Significance
MW	Megawatt
MWh	Megawatt-hour
NEM	National Electricity Market
NHMRC	National Health and Medical Research Council
NIA	Noise Impact Assessment
NSW	New South Wales
NT Act	<i>Native Title Act 1993</i>
OEH	Office of Environment and Heritage
PCT	Plant Community Types
PEA	Preliminary Environmental Assessment
PLVIA	Preliminary Landscape and Visual Impact Assessment
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
PV	Photo Voltaic
REA	NSW Renewable Energy Action Plan
RET	Renewable Energy Target
RFS	Rural Fire Service
RMS	Roads and Maritime Service
TfNSW	Transport for NSW

SEARs	Secretary's Environmental Assessment Requirements
SEP	Stakeholder Engagement Plan
SEPP	State Environmental Planning Policy
SPL	Sound Power Level
SSD	State Significant Development
TTIA	Traffic and Transport Impact Assessment
VIA	Visual Impact Assessment
VPA	Voluntary Planning Agreement
WM Act	<i>Water Management Act 2000</i>
ZVI	Zone of Visual Influence

9 References

- ARC (2018) Armidale Regional Council Community Strategic Plan 2017-2027, accessed 28 August 2020 via the World Wide Web:
<https://www.armidaleregional.nsw.gov.au/ArticleDocuments/267/AI%202018%2012420%20%20Community%20Strategic%20Plan%202017-2027%20FINAL%2030518.pdf.aspx>)
- Austrroads (No Date). *Austrroads Guide to Traffic management*.
- AusWEA and Australian Council of National Trusts (2005). *Wind Farms and Landscape Values; Stage 1 Final Report*.
- AusWEA (Jul 2005). *Wind Farms and Birds: Interim Standards for Risk Assessment*.
- AusWEA (Dec 2006). *Best Practice Guidelines for Implementation of Wind Energy Projects in Australia*.
- Commonwealth (2006). *Significant Impact Guidelines. EPBC Act Policy Statement 1.1. Matters of National Environmental Significance*.
- DECC (2006). *Assessment Vibration: A technical Guideline*.
- DECC (2009). *Interim Construction Noise Guideline*.
- DECCW (2010). *Aboriginal Cultural Heritage Consultation Requirements for Proponents*.
- DECCW (2011). *NSW Road Noise Policy*.
- DEH (2006). *Wind Farm collision risk for birds – Cumulative risks for threatened and migratory species*.
- DEH (2005). *EPBC Act Policy Statements, Supplementary Significant Impact Guidelines 2.1.1 Wind Farm Industry Sector*.
- DIRDC (2012). *National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft*.
- DPE (2013). *NSW Wind Farms*.
- DPE (2016a). *Wind Energy Guideline for State significant wind energy development*.
- DPE (2016b). *Wind Energy Visual Assessment Bulletin for State significant wind energy development*.
- DPE (2016c). *Wind Energy Noise Assessment Bulletin for State significant wind energy development*.
- DPE (2016d). *New England North West Regional Plan 2036*.
- DPE (2019). *Community Consultative Committee Guideline. State Significant Projects*.
- DPE (2019). *The SSD Process*.
- DPI Water (2002). *NSW State Groundwater Dependent Ecosystem Policy*.
- DPI Water (2012). *Risk Assessment Guidelines for GDEs*.
- DPI Water (2012b). *Guidelines for Watercourse Crossings on Waterfront Land*.
- DPI Water (2018). *Guidelines for Controlled Activities on Waterfront Land*.
- DPIE (2018). *Land and Soil Capability Mapping for NSW*, accessed 14 September 2020 via the World Wide Web:
<https://data.nsw.gov.au/data/dataset/land-and-soil-capability-mapping-for-nsw4bc12>)
- DPIE (2019a). *NSW Electricity Strategy*, accessed 28 August 2020 via the World Wide Web:
<https://energy.nsw.gov.au/government-and-regulation/electricity-strategy>)
- DPIE (2019b). *WMS - NSW Native Vegetation Extent 5m Raster v1.2*, accessed 28 August 2020 via the World Wide Web:
<https://data.gov.au/dataset/ds-nsw-98028b88-e917-4502-91fa-9e571f58385a/details?q=>)
- EPA (2014). *Waste Classification Guidelines*.
- EPA (2017). *NSW Noise Policy for Industry*.
- Heritage Branch, NSW Department of Planning (1996). *NSW Heritage Manual*.
- ICNIRP (1998). *ICNIRP Guidelines for Limiting exposure to Time-varying Electric, magnetic and Electromagnetic Field*.
- Landcom (2004). *Managing Urban Stormwater; Soils & Construction*.

NSW RFS (2020). *NSW Bush Fire Prone Land*, accessed 14 September 2020 via the World Wide Web: (<https://data.gov.au/dataset/ds-nsw-dfa0b81c-b06d-4aea-9db9-7da805ee8355/details?q=>)

OEH (2000). *Soil and Landscape Issues in Environmental Impact Assessment*.

OEH (2002). *Site Investigations for Urban Salinity*.

OEH (2007). *Threatened Species Assessment Guidelines – Assessment of Significance*.

OEH (2010). *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*.

OEH (2010b). *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW*.

OEH (2011). *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW*

OEH (2016). *OEH NSW Climate Change Policy Framework*.

OEH (2017). *Biodiversity Assessment Method*.

RTA (2002). *Guide to Traffic Generating Developments*.

South Australian Environment Protection Authority (SA) (Jul 2009). *Wind Farms Environmental Noise Guidelines*.