



Meridian.

RANGOON WIND FARM SCOPING REPORT

Prepared for Meridian Energy Australia

Prepared by EPS

NEW ENGLAND REGION, NSW

Reference No. 11482 July 2020

EPS

www.enviroproperty.com.au

DOCUMENT CONTROL AND QUALITY ASSURANCE

Document Information	Details
Title	Rangoon Wind Farm Scoping Report
File Reference	11482
Project	Scoping Report and Preliminary Environmental Assessment to accompany Application and Request for SEARs

Revision	Date	Prepared by	Reviewed by	Approved by
0	15 June 2020	Simon Duffy	Alina Tipper	Steve McCall
Final	30 June 2020	Simon Duffy	Alina Tipper	Steve McCall
Final V02	14 July 2020	Simon Duffy	Alina Tipper	Steve McCall

Declaration

Submission of this Scoping Report prepared under the *Environmental Planning and Assessment Act 1979* is in respect to the development of the Rangoon Wind Farm.

The opinions and declarations in this Scoping Report are ascribed to EPS and are made in good faith and trust and are neither false nor misleading.

In preparing this Scoping Report, EPS has considered and relied upon information obtained from the public domain, supplemented by discussions between EPS staff, MEA, representatives from governing agencies and independents and specialist consultants.

CONTENTS

Document Control and Quality Assurance	i
1. Introduction	1
1.1. Background.....	1
1.2. Proponent.....	1
1.2.1. Wind Energy in Australia	1
1.3. Document Purpose.....	2
2. Strategic Context	4
2.1. National Context.....	4
2.2. Energy Market Context	4
2.2.1. Closure of Coal-Fired Generators	4
2.2.2. Integrated System Plan and Renewable Energy Zones	5
2.3. National Electricity Market System Security and Reliability	6
2.4. State Context	6
2.4.1. NSW Net Zero Plan	6
2.4.2. NSW Electricity Strategy.....	7
2.5. Regional and Local Context	7
2.5.1. New England North West Regional Plan 2036	7
2.5.2. New England Development Strategy 2010	8
2.5.3. Glen Innes Severn Land Use Strategy 2010.....	8
3. Regulatory Context	9
3.1. Regulatory Approval Process.....	9
3.1.1. Environmental Planning and Assessment Act 1979	9
3.1.2. State Environmental Planning Policy (State and Regional Development) 2011	9
3.1.3. State Environmental Planning Policy (Infrastructure) 2007.....	10
3.1.4. Other State Environmental Planning Policies.....	10
3.1.5. Glen Innes Severn Local Environmental Plan 2012	10
3.1.6. Guyra Local Environmental Plan 2012	10
3.1.7. Other Legislation	11
4. Project Description	12

4.1.	Site Context	12
4.2.	Project Overview	15
4.2.1.	RWF South	15
4.2.2.	RWF North	15
4.2.3.	Wind Turbines	16
4.2.4.	Electrical Connections	17
4.2.5.	Other Associated Infrastructure	17
4.2.6.	Minor Local Road Upgrades	17
4.2.7.	Site Access	18
4.2.8.	Ancillary Activities	21
4.2.9.	Indicative Construction and Operation Timelines.....	21
4.3.	Options Considered	22
4.3.1.	Overview.....	22
4.3.2.	Site Selection and Feasibility	22
4.3.3.	Scoping Report Preliminary Layout	26
4.3.4.	Refinement and Revision	26
5.	Project Justification.....	28
5.1.	Site Selection	28
5.2.	New Generation Requirement	30
5.3.	The Future Generation of Electricity	31
5.3.1.	Lowest Cost of New Generation.....	31
5.3.2.	Climate Change and Global Warming Science	32
5.3.3.	Global Warming Impact	33
5.3.4.	Government Agencies and Institutions Response to Global Warming.....	33
5.4.	Project Benefits	34
6.	Stakeholder Engagement	36
6.1.	Consultation Objectives	36
6.2.	Consultation Approach.....	38
6.2.1.	Stakeholders.....	38
6.2.2.	Government and Agencies Consultation.....	39
6.2.3.	Non-Associated Landowner Consultation.....	40

6.2.4.	Broader Community Consultation.....	40
6.2.5.	Community Consultation Committee.....	41
6.3.	Key Issues Raised by the Community	41
6.3.1.	Approval Process and Timing	41
6.3.2.	Visual Amenity.....	41
6.3.3.	Traffic and Transportation.....	42
6.3.4.	Amenity	42
6.3.5.	Economic and Social Impact.....	42
6.3.6.	Ecology	43
6.3.7.	Waste.....	43
6.4.	Government Agencies and Other Stakeholders.....	43
6.5.	Ongoing Engagement	45
7.	Risk Assessment.....	46
7.1.	Risk Assessment Overview	46
7.2.	Environmental And Social Risk Assessment	47
8.	Preliminary Environmental Assessment	51
8.1.	Assessment of Key Issues	51
8.1.1.	Visual	51
8.1.2.	Noise.....	54
8.1.3.	Biodiversity.....	57
8.1.4.	Aboriginal Heritage.....	62
8.1.5.	Historic Heritage.....	63
8.1.6.	Traffic and Transport.....	65
8.2.	Minor Issues	66
8.2.1.	Telecommunications	66
8.2.2.	Soils, Landforms and Rehabilitation.....	66
8.2.3.	Water.....	67
8.2.4.	Social and Economic.....	69
8.2.5.	Hazards and Safety	69
8.2.6.	Waste.....	69
8.2.7.	Other Issues.....	69

Glossary and Acronyms 70

References..... 72

TABLE OF FIGURES

Figure 1-1: Wind Farm Locality and Local Government Areas2

Figure 4-1: Site Context – Proposed Project16

Figure 4-2: Site Access Indicative Locations18

Figure 4-3: Site Access Point 1 – New England Highway.....19

Figure 4-4: Site Access Point 2 – New England Highway.....19

Figure 4-5: Site Access Point 3 and 4 – New England Highway20

Figure 4-6: Site Access Point 5 and 6 – Maybole Road.....20

Figure 4-7: Site Access Point 7 and 8 – Wandsworth Road21

Figure 4-8: Investigation Area24

Figure 4-9: Regional Wind Farm Reference Map25

Figure 4-10: Scoping Report Preliminary Layout.....26

Figure 4-11: Scoping Report Preliminary Layout Aerial Background27

Figure 5-1: Wind Resource Map illustrating potential of the Project area for a wind energy project29

Figure 5-2: NEW Electricity Consumption – Actual and Forecast.....30

Figure 5-3: LCOE Cost of Building New Generation by Technology Type.....32

Figure 6-1: SSD Assessment and Determination Process and Engagement (Source: DPI&E 2019).....37

Figure 8-1: Preliminary Assessment Tool 1 – Potential Visual Impacts for Further Detailed Consideration52

Figure 8-2: Noise Bulletin Average Distances for Different Noise Standards.....55

Figure 8-3: Desktop Ecological Constraints Map.....58

Figure 8-4: Key Waterbodies and Waterways.....67

Figure 8-5: Stream Order Plan68

LIST OF TABLES

Table 1-1: Wind Guideline and DPI&E SSD Key Matters and Corresponding Section of Scoping Report.....	3
Table 7-1: Risk Assessment, Preliminary Direct Mitigations and Assessment Approach.....	47
Table 8-1: Historic Heritage within the vicinity of the Project Area.....	64

APPENDICES

APPENDIX 1 Preliminary Landscape and Visual Impact Assessment

APPENDIX 2 Preliminary Noise Impact Assessment

1. INTRODUCTION

1.1. BACKGROUND

The Rangoon Wind Farm comprises two parts, Rangoon Wind Farm South and Rangoon Wind Farm North. The Rangoon Wind Farm will include, but not be limited to, the construction, maintenance, operation and decommissioning of approximately 25 wind turbines, battery energy storage 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 near the villages of Ben Lomond and Glencoe NSW approximately 60km north of Armidale and 40km south of Glen Innes. The Project is within the Local Government Areas of Glen Innes Severn Shire Council and Armidale Regional Council as indicated in Figure 1-1.

The Project area and surrounding land is primarily used for farming and grazing operations.

The Project is primarily on freehold land within and adjacent to agricultural areas. There are several small parcels of Crown land within the Project area.

A preliminary layout for the Project is provided in Section 4. Refinement of the preliminary layout will be undertaken following further environmental assessment and community input. Generally, the wind turbines are positioned along a series of ridges running north-south as described in Section 4.

There are two rural villages in proximity to the Project, being Ben Lomond and Glencoe.

1.2. PROPONENT

The proponent for the Project is Meridian Energy Australia (MEA) a wholly owned subsidiary of Meridian Energy Limited (Meridian). Meridian is Australasia's largest 100% renewable energy generator and the largest electricity generator in New Zealand.

1.2.1. Wind Energy in Australia

MEA owns and operates two wind farms in Australia, both of which are GreenPower accredited and support employment in regional areas;

- The Mt Millar Wind Farm is located on the Eyre Peninsula in South Australia and produces approximately 180 GWh of renewable energy each year – enough to power around 36,000 households; and

- The Mt Mercer Wind Farm is located 30km south of Ballarat in Victoria and produces approximately 400 GWh of renewable energy each year – enough to power around 80,000 households.

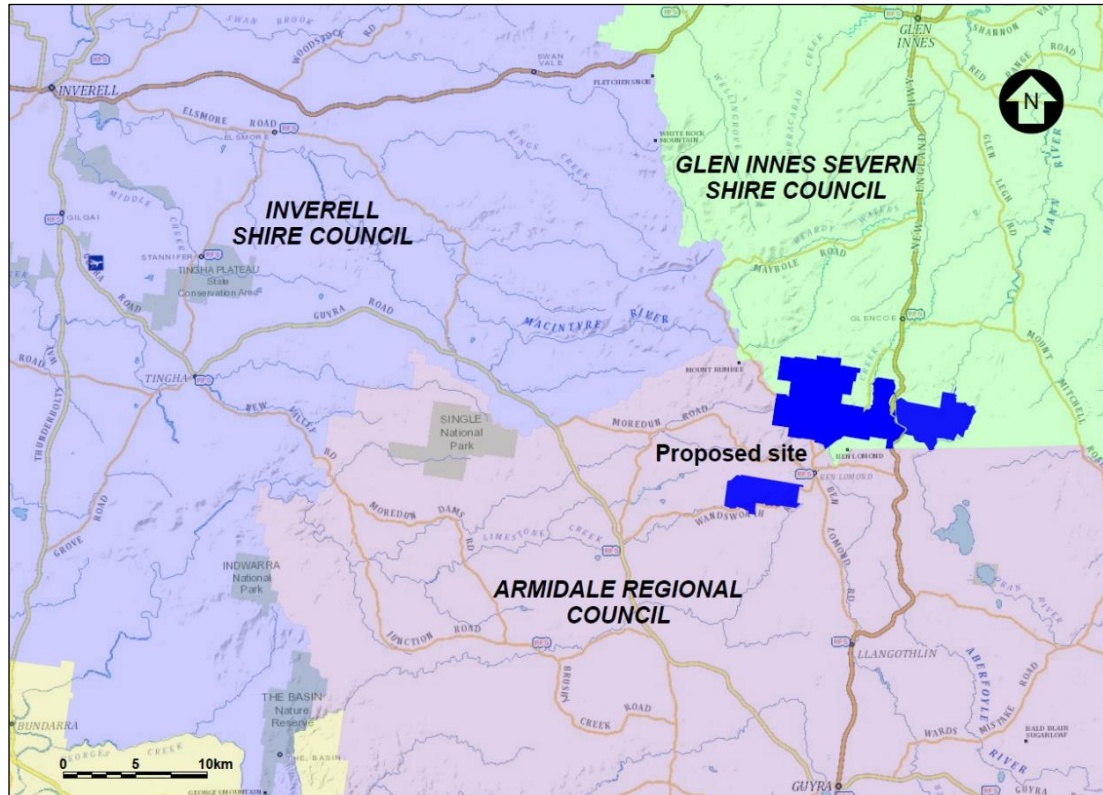


Figure 1-1: Wind Farm Locality and Local Government Areas

1.3. DOCUMENT PURPOSE

MEA 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 EPS.

This scoping report supports an application to the Secretary of the Department of Planning, Industry & Environment (DPI&E) for Secretary’s Environmental Assessment Requirements (SEARs) to guide the preparation of the EIS for the Project and has been prepared with reference to the following wind energy guidelines and EIS guidelines including:

- ‘Wind Energy Guideline’ (Wind Guideline) (DPI&E, 2016);
- ‘Wind Energy: Visual Assessment Bulletin’ (Visual Bulletin) (DPI&E, 2016);
- ‘Wind Energy: Noise Assessment Bulletin’ (Noise Bulletin) (DPI&E, 2016);
- ‘Wind Energy Framework Standard Secretary’s Environmental Assessment Requirement’ (SEARs); and
- The June 2017 draft Environmental Impact Assessment Guidance Series including guideline 3 - Scoping and Environmental Impact Statement.

Table 1-1 summarises the key matters to be covered in a Scoping Report and identifies the sections in this Scoping Report addressing those key matters.

Table 1-1: Wind Guideline and DPI&E SSD Key Matters and Corresponding Section of Scoping Report

Item	Section
Wind Guideline Preliminary Environmental Assessment 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.	4,5,6
Describes steps taken to assist potentially affected people and groups in understanding the proposed development and what it could mean for them.	6
Describes the proposed overall approach to stakeholder consultation for the EIS development process.	6
Identifies the key issues for the project.	6,7
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.	6,8
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.	6
DPI&E 'SSD PROCESS'	
Describe the project	4
Identify the relevant strategic and statutory context	2,3
Summarise the results of any early community engagement	6
Identify the scale and nature of the impacts of the project	7,8
Outline the proposed approach to assessment and community engagement	6

2. STRATEGIC CONTEXT

This section provides the strategic justification of the Project in the context of Commonwealth, State and Local Government policies, initiatives, plans and agreements.

2.1. NATIONAL CONTEXT

Australia is a participant in the United Nations Paris Agreement on Climate Change. Pursuant to Art 4(2) of the Paris Agreement, Australia's current "Nationally Determined Contribution" is to reduce greenhouse gas emissions by 26–28% below 2005 levels by 2030. Australia's progress towards achieving these targets is being closely observed and debated.

Australia's emissions have increased on average since 2014. Without Australia relying on its Kyoto carry over credits some independent domestic and international analysis concludes that Australia will not meet the 2030 target under its current suite of policy measures. Around the time of the Paris Agreement or since, most Australian States also announced their own targets to reduce net emissions to zero by 2050.

The Commonwealth Department of Industry, Science, Energy and Resources released on the 21/05/20 a technology investment roadmap discussion paper that includes recognition of renewable energy's important role in Australia reducing its emissions.

Once constructed the Project will contribute to the reduction in emissions from electricity production and consequently contribute to Australia's commitment under the Paris Agreement to reduce greenhouse gas emissions.

2.2. ENERGY MARKET CONTEXT

2.2.1. Closure of Coal-Fired Generators

Approximately 70% of Australia's existing coal generation fleet, with a generation capacity of approximately 16 GW, will approach the end of its intended operating life by 2040. Within the next 15 years more than 9 GW of coal-fired generators are scheduled to close, which includes more than 6 GW in NSW.

The Project will contribute to providing the renewable electricity generation required to replace the retiring coal-fired generators.

2.2.2. Integrated System Plan and Renewable Energy Zones

AEMO's Integrated System Plan (ISP) is a whole-of-system plan that provides an integrated roadmap for the efficient development of the National Electricity Market (NEM) over the next 20 years and beyond. AEMO published the inaugural ISP for the NEM in 2018 to be updated every two years. The 2020 ISP is currently under development. The 2018 ISP key analysis included:

- Identifying that fundamental changes are occurring in the energy sector including:
 - The fact that over the next 20 years, a percentage of the NEM's existing coal resources will be approaching the end of their technical lives;
 - The changing investment profile and capabilities of various supply resources;
 - The falling costs of new renewable plants and the advancements in, and availability of, storage technologies;
 - The current transmission network being primarily designed to connect to large centres of thermal and hydro generation to major demand centres some distance away; and
 - The good wind and solar resources are located on the periphery of this thermal and hydro generation transmission network where generally the network is weak in terms of both capacity and system strength.
- AEMO reviewed various transmission reinforcement options, assessing the costs and time to implement these relative to the modelled benefits. The ISP delivers economic benefits under all scenarios. These include:
 - Group 1: Near-term construction to maximise economic use of existing resources;
 - Group 2: Developments in the medium term to enhance trade between regions, provide access to storage and support extensive development of Renewable Energy Zones (REZs); and
 - Group 3: Longer term developments to support REZs and system reliability and security.

The Project is a renewable energy project that will:

- Contribute to replacing the existing coal resources used for electricity generation;
- Be located within the NSW governments proposed Northern NSW Tablelands REZ; and
- Support a NEM major transmission corridor that includes a proposed upgrade to the Queensland to NSW interconnector.

2.3. NATIONAL ELECTRICITY MARKET SYSTEM SECURITY AND RELIABILITY

AEMO is responsible for forecasting reliability of the NEM to meet the reliability standard which it does each year in the Electricity Statement of Opportunities (ESOO) report. The August 2019 report highlights that after the retirement of coal fired power stations the level of unserved energy (USE) is projected to increase significantly without further development of the NEM. AEMO forecasts reliability risks to continue in NSW and Victoria for the rest of the outlook period discussed in the ESOO report if there is not enough new investment beyond committed projects.

Due to a range of long-lead items encountered during project development, investment in energy generating capacity must occur years in advance of when new capacity is needed to meet supply.

The Project will enhance the security of the electricity system through the provisions of new generating capacity and storage.

2.4. STATE CONTEXT

2.4.1. NSW Net Zero Plan

The Net Zero Plan Stage 1: 2020-2030 is the foundation for NSW's action on climate change and goal to reach net zero emissions by 2050. It outlines the NSW Government's plan to grow the economy, create jobs and reduce emissions over the next decade.

The plan aims to enhance the prosperity and quality of life of the people of NSW, while helping the state to deliver a 35% cut in emissions by 2030 compared to 2005 levels. The plan will support a range of initiatives targeting electricity and energy efficiency, electric vehicles, hydrogen, primary industries, coal innovation, organic waste and carbon financing.

The Project is consistent with the NSW Government's Net Zero objectives and will contribute towards achieving the target by reducing GHG emissions by an estimated 369,000 tonnes per annum for the life of the Project.

2.4.2. NSW Electricity Strategy

The 2019 NSW Electricity Strategy incorporating the 2018 NSW transmission infrastructure strategy is the NSW Government's plan for a reliable, affordable, and sustainable electricity future that supports a growing economy. The strategy identifies key challenges including NSW's traditional generators are aging, the NSW transmission system is congested, and electricity prices are putting pressure on households and businesses.

The strategy responds to these challenges and supports a new affordable and reliable energy system and one that meets both NSW generation needs and NSW emissions reduction target. The strategy has a number of actions including the creation of REZ's in the State's Central-West, New England and South-West regions. This builds on the NSW Transmission Infrastructure Strategy and supports the implementation of the AEMO's ISP.

The Project is located in the proposed Northern NSW Tablelands REZ and will support the proposed upgrade of the Queensland-NSW Interconnector.

2.5. REGIONAL AND LOCAL CONTEXT

2.5.1. New England North West Regional Plan 2036

The 2017 New England North West Regional Plan 2036 (Regional Plan) is the NSW Government's strategy for guiding regional and local land use planning decisions for the New England North West for the next 20 years. The New England North West consists of twelve local government areas including Armidale Regional and Glen Innes Severn.

Council's local plans and strategies must be consistent with the directions and actions outlined in the Regional Plan.

The Regional Plan Goal 1 is for a strong and dynamic regional economy. Direction 5 is to grow New England North West as a renewable energy hub of NSW. Action 5.1 is to diversify the energy sector by identifying renewable energy resource precincts and infrastructure corridors with access to the electricity network.

The Project is within the proposed Northern NSW Tablelands REZ and has access to the existing electricity network.

2.5.2. New England Development Strategy 2010

The New England Development Strategy (WorleyParsons, 2010) was prepared for Armidale Dumaresq, Guyra Shire, Uralla Shire and Walcha Councils to inform the provisions of each Council's Local Environmental Plan. Each Council adopted the Strategy at the time and it was endorsed by the then Department of Planning. The Strategy has a timeframe up to 2032 and identifies where growth and change is expected to occur, as well as the land use planning objectives and strategies to guide this growth and change.

The 2010 strategy only makes a brief reference to renewable energy i.e. *“A range of land uses and activities need to be catered for in rural areas in the sub-region, including mining, extractive industries, forestry, tourism, recreation, renewable energy projects and intensive agriculture”*.

The Project is a renewable energy project located in a rural area.

2.5.3. Glen Innes Severn Land Use Strategy 2010

The primary aim of the strategy was to develop a strategic planning framework for the new Glenn Innes Severn Local Government Area that would reflect the then current and future needs of the community. The overall objective of the project was to produce a strategy that would guide the development of the Glen Innes Severn Local Environmental Plan 2012.

The 2010 strategy does not make reference to renewable energy.

3. REGULATORY CONTEXT

This section provides the regulatory framework for the assessment and determination of the Project.

3.1. REGULATORY APPROVAL PROCESS

3.1.1. Environmental Planning and Assessment Act 1979

The EP&A Act 1979 and *Environmental Planning & Assessment Regulation 2000* provide the regulatory framework for environmental planning and assessment in NSW.

The Project is declared State Significant Development (SSD) by the provisions of *State Environmental Planning Policy (State and Regional Development) 2011* discussed below. Part 4, Division 4.7 specifies the assessment and determination requirements for SSD projects including:

- s4.40 (s4.15) – The matters for consideration a consent authority must take into consideration when determining an SSD development application;
- s4.41 – A list of authorisations which are not required for SSD projects that are authorised by a development consent; and
- s4.42 – A list of authorisations which must be consistently applied to SSD projects that are authorised by a development consent. For the Project, s4.42 approvals will be confirmed in the EIS and are likely to include:
 - Environment Protection Licence under the *Protection of the Environment Operations Act 1997*; and
 - Work in or over a public road approval under the *Roads Act 1993*.

3.1.2. 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 under Part 4 of the EP&A Act.

3.1.3. State Environmental Planning Policy (Infrastructure) 2007

The *State Environmental Planning Policy (Infrastructure) 2007* (Infrastructure SEPP) Division 4 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 on land zoned RU1 – Primary Production and is therefore permitted with consent.

3.1.4. Other State Environmental Planning Policies

Other State Environmental Planning Policy's (SEPP's) which will be considered in the preparation of the EIS include:

- *State Environmental Planning Policy (Primary Production and Rural Development) 2019;*
- *State Environmental Planning Policy (SEPP) 44 – Koala Habitat Protection;*
- *SEPP 55 – Remediation of Land;* and
- *SEPP 33 – Hazardous and Offensive Development.*

3.1.5. Glen Innes Severn Local Environmental Plan 2012

The relevant Local Environmental Plan (LEP) for those parts of the Project in the Glen Innes Severn Council area is the *Glen Innes Severn Local Environmental Plan 2012* (GILEP). The land within the Project area is zoned RU1 – Primary Production.

The permissibility of wind farm developments is governed by the GILEP 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 GILEP RU1 land use table lists the class of development that are permissible within each land zoning. The GILEP includes 'electricity generating works' as a permissible class of development in zone RU1. The GILEP is consistent with Clause 34 of the Infrastructure SEPP, which provides that 'electricity generating works' are permissible in any rural land zone.

3.1.6. Guyra Local Environmental Plan 2012

The relevant LEP for those parts of the Project in the Armidale Regional Council area is the *Guyra Local Environmental Plan 2012* (GLEP). The land within the Project Boundary is also zoned RU1 – Primary Production.

The permissibility of wind farm developments is governed by the GLEP 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 GLEP RU1 land use table lists the class of development that are permissible within each land zoning. The GLEP does not list ‘electricity generating works’ as a permissible class of development in zone RU1. That is, the GLEP is 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 GLEP states that the provisions of any SEPP will prevail over the GLEP. Therefore, the Project is permissible with consent in zone RU1.

The RU1 zone objectives encourage sustainable primary industry production and the diversification of primary industry enterprises appropriate for the area. Whilst the Project area covers a large area, the Project’s disturbance area will be very small and allow for traditional farming operations to continue. As such the Project is considered compatible with the RU1 zoning.

3.1.7. Other Legislation

Other legislation to be considered in the preparation of the EIS includes:

- *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* including the NSW bilateral agreement;
- *NSW Biodiversity Conservation Act 2016*;
- *NSW Biosecurity Act 2015*;
- *NSW Crown Land Management Act 2016*;
- *NSW Heritage Act 1977*;
- *NSW Local Land Services Act 2013*;
- *NSW National Parks and Wildlife Act 1974*;
- *NSW Native Title Act 1994*;
- *NSW Protection of the Environment Operations Act 1997*;
- *NSW Roads Act 1993*;
- *NSW Rural Fires Act 1997*; and
- *NSW Water Management Act 2000*.

4. 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.

4.1. SITE CONTEXT

The Project is within the Local Government Areas of Glen Innes Severn Shire Council and Armidale Regional Council as indicated in Figure 1-1.

The Project is near the villages of Ben Lomond and Glencoe, NSW approximately 60km north of Armidale and 40km south of Glen Innes.

The Project area and surrounding area is primarily used for farming and grazing operations. The Project landholdings comprise a total area of approximately 6,000ha, with 5,000ha at RWF North and 1,000ha at RWF South. The Project's development footprint will be a very small proportion (<2%) of the consolidated Project landholding area.

The Project is located primarily on freehold land within and adjacent to agricultural areas. There are a number of small parcels of Crown land within the Project Boundary.

There are two rural villages in proximity to the Project, being Ben Lomond and Glencoe.

Glencoe

Glencoe is located 4km north of RWF North on the New England Highway (A15). It is surrounded by rural agriculture in rolling hills. The population is recorded at 192 (2016 census) and village amenities include a post office, tavern and church. Glencoe has an elevation of approximately 1,150 metres. The village is predominantly located east of the highway. The northern part of Glencoe is relatively low-lying with the south-eastern edge of the township defined by the meandering Marowan Creek. Vegetation cover is scattered across the village within both private and public parcels of land.

Ben Lomond

Located halfway between RWF North and RWF South, at 1,370m above sea level (ASL), Ben Lomond is the highest village in northern NSW and occasionally receives snow fall (Armidale Regional Council, 2020). The population is recorded at 152 (2016 census). The village is located on the closed Main North railway line.

The railway station is of heritage significance (NSW heritage register SHR no. 01083), as one of the smallest brick passenger stations constructed in 1884. The village has scattered houses, a public primary school, War Memorial Hall and a cemetery.

The southern patch of Ben Lomond is situated on higher terrain and is enclosed by rising topography to the north, south, west and east as Moredun Creek traverses through the village and between the associated elevated crests. The centre of Ben Lomond is not distinguishable with few public amenities and no shops. The main street appears to be Old Ben Lomond Road which runs parallel with the old railway line and where the community hall is located. Vegetation cover is characterised as 'grassy woodlands' and is denser along both waterway and road corridors. Vegetation cover is scattered intermittently across the southern portion of the village.

Single National Park is approximately 15km to the west of the nearest Project area boundary. Warra National Park is approximately 13km to the east of the nearest Project area boundary. Little Llangothlin Nature Reserve is approximately 8.5km south east of RWF North and 13km to the east of RWF South.

A combination of desktop searches and community consultation has identified 85 residential dwellings within 4km of a proposed turbine location.

A total of 14 of these dwellings are owned by landowners associated with the Project. The approach to consultation with nearby residents and the proposed ongoing consultation plan is outlined in Section 6.

The Project is located predominantly on privately owned land mainly used for cattle and sheep grazing and other agriculture purposes. It is proposed that these existing uses will continue with minimal interruption from the Project's operation.

There are no gas pipelines mapped on the register held by the Australian Energy Market Commission within or near the Project area. The closest pipelines are in Tamworth (170km north) and Narrabri (320 km west).

The Geosciences Australia Australian Mines Atlas shows there are no operating mines, mineral deposits, historic mines within or near the Project area. The closest mineral deposit is approximately 25 km south in Guyra (Guyra Bauxite Project). There are no Mineral Exploration Licence Applications, Mineral Exploration Licenses, Mineral Assessment Lease Applications, Mineral Assessment Leases, Mineral Mining Lease Applications or Mineral Mining Leases within or near the Project area on the NSW Government MinView.

The Land and Soil Capability Mapping for NSW identifies the site as a range of land capability classes from 3 – Moderate Limitations through to 7 – Extremely Severe Limitations. There is no Class 1 or 2 land within the Project area. The New England North West Strategic Regional Land Use Plan maps show all Land and Soil Capability - Class 3 land as Biophysical Strategic Agricultural Land across the Project area.

4.2. PROJECT OVERVIEW

The Project involves the construction, operation and decommissioning of Rangoon Wind Farm (Project). The Project capacity is proposed to be up to 130MW. The Project comprises two parts, Rangoon Wind Farm South (RWF South) and Rangoon Wind Farm North (RWF North) as indicated in Figure 4-1. The project's key components include but are not limited to:

4.2.1. RWF South

- Wind turbines - up to 4 wind turbines, rated at approximately 5.5-6.5MW each with:
 - Three blades mounted on a tubular steel tower, with a combined height of blade and tower limited to a maximum tip height of 250m; and
 - Adjacent pad mounted turbine transformer, crane hardstand area, cable stays and related turbine lay down area.
- Substation, balance of plant and transmission connection – linking the turbines to the existing Essential Energy 66kV Guyra to Glen Innes transmission line;
- Electrical Connections – between wind turbines and the on-site substation which may be a combination of underground cable and overhead powerlines linking segments of the site;
- Other associated infrastructure including (but not limited to) site offices, equipment storage facilities, temporary and permanent laydown pads, construction compounds, access tracks to each turbine, security fencing, and permanent monitoring masts;
- Minor road upgrades to enable delivery access for installation and maintenance of wind turbines and related facilities;
- Rock crushing facilities, on-site quarry and stockpile sites, concrete batching plant(s) and other construction related facilities;
- Ancillary activities including (but not limited to) materials sourced for construction, ongoing maintenance facilities and decommissioning of the Project;
- Drainage, earthworks and vegetation clearing for Project works; and
- Boundary adjustment/subdivision if required.

4.2.2. RWF North

- Wind turbines - up to 21 wind turbines, rated at approximately 5.5-6.5MW each with:
 - Three blades mounted on a tubular steel tower, with a combined height of blade and tower limited to a maximum tip height of 250m; and
 - Adjacent pad mounted turbine transformer, crane hardstand area, cable stays and related turbine lay down area.
- Battery Energy Storage System – 100MW/400MWh energy storage system to be located at the Project's substation.
- Substation, balance of plant and transmission connection – linking the turbines to the existing TransGrid 132kV Armidale to Glen Innes transmission line;

- Electrical Connections – between wind turbines, the on-site substation and energy storage system (e.g. battery) to be a combination of underground cable and overhead powerlines linking segments of the site;
- Other associated infrastructure including (but not limited to) on-site operations building, equipment storage facilities, temporary and permanent laydown pads, construction compounds, access tracks to each turbine, on-site concrete batching plant facilities, on-site quarry, rock crushing facilities and stockpile sites, other construction related facilities, security fencing, and permanent monitoring masts;
- Regional and minor road upgrades to enable delivery access for installation and maintenance of wind turbines and related facilities;
- Ancillary activities including (but not limited to) materials sourced for construction, ongoing maintenance and decommissioning of the project;
- Drainage, earthworks and vegetation clearing for project works; and
- Boundary adjustment/subdivision, if required.

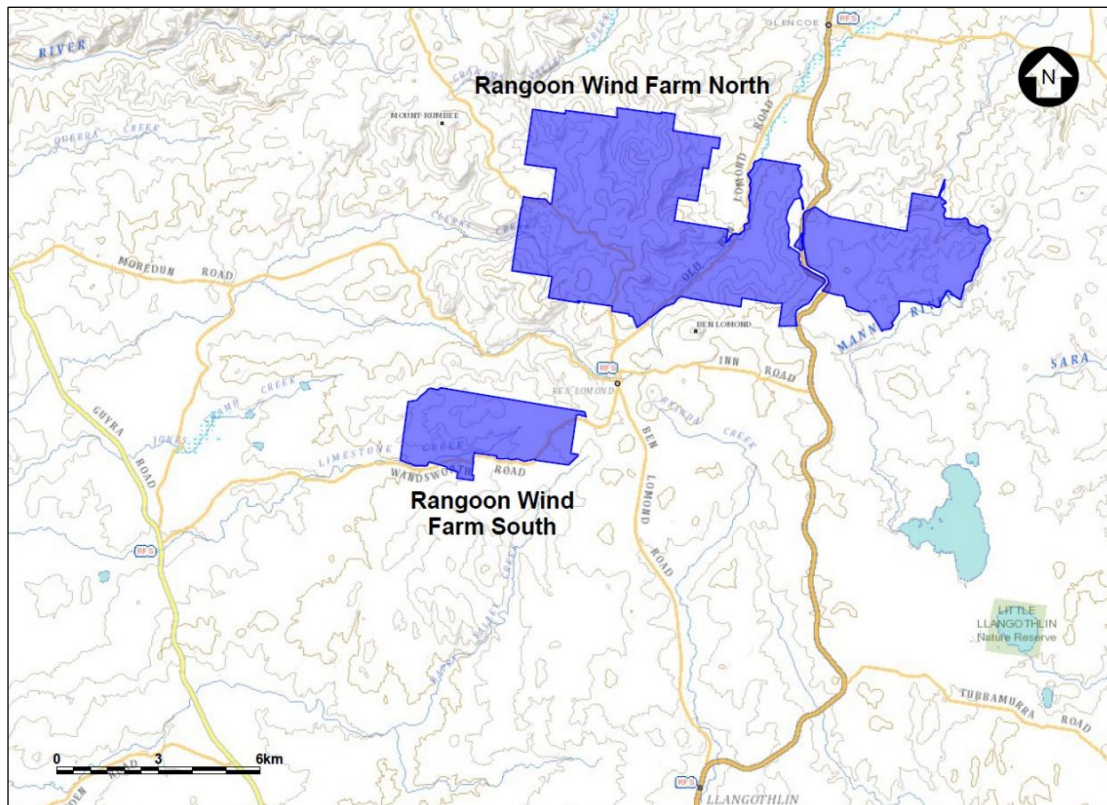


Figure 4-1: Site Context – Proposed Project

4.2.3. Wind Turbines

The Project will include approximately 25 wind turbines. Final turbine numbers and power output for the site is dependent on the outcomes of the various engineering and environmental studies and is subject to change.

4.2.4. Electrical Connections

To export the electricity generated from the Project, new physical connections to the existing electricity network will be required. Sufficient capacity exists within the network to transmit the electricity to the required load centres.

RWF South includes a substation and transmission connection linking the turbines to the existing Essential Energy 66kV Guyra to Glen Innes transmission line.

RWF North includes a Battery Energy Storage System located adjoining the Project's substation and transmission connection linking the turbines to the existing TransGrid 132kV Armidale to Glen Innes transmission line.

Connection enquiries for the Project have been lodged with both TransGrid and Essential Energy. An initial response has been received and subsequent discussions have been held with both Network Service Providers about the proposed grid connection options.

4.2.5. 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, quarries, rock crushing, temporary and permanent laydown pads, construction compounds, access tracks to each turbine, temporary and permanent wind monitoring masts and the other related facilities.

4.2.6. Minor Local Road Upgrades

Traffic associated with the construction phase of the Project will consist of both light vehicles for transporting workers and heavy and over-sized vehicles for delivery of plant and turbine components.

Upgrades to the existing road network will be required where necessary to facilitate the construction, ongoing maintenance, and decommissioning of the Project.

Several options are currently under consideration to provide access from the New England Highway including:

- Ben Lomond Rd;
- Old Ben Lomond Rd;
- Maybole Rd;
- Wandsworth Rd; and
- Bournes Rd.

The preferred Heavy Vehicle access route will be identified and assessed in the EIS.

4.2.7. Site Access

Access to the site will be via the New England Highway and then on designated local roads. The most likely international port for delivery of turbine components will be the Port of Newcastle (PoN). The PoN already receives components for other wind farms in the New England Region. An assessment of the full delivery route for project components from the PoN to the site will be undertaken.

At this preliminary stage it has been identified that approximately eight site access points may be required for the construction phase of the Project. A detailed Traffic and Transport Impact Assessment (TTIA) will be included in the EIS and will consider site access points.

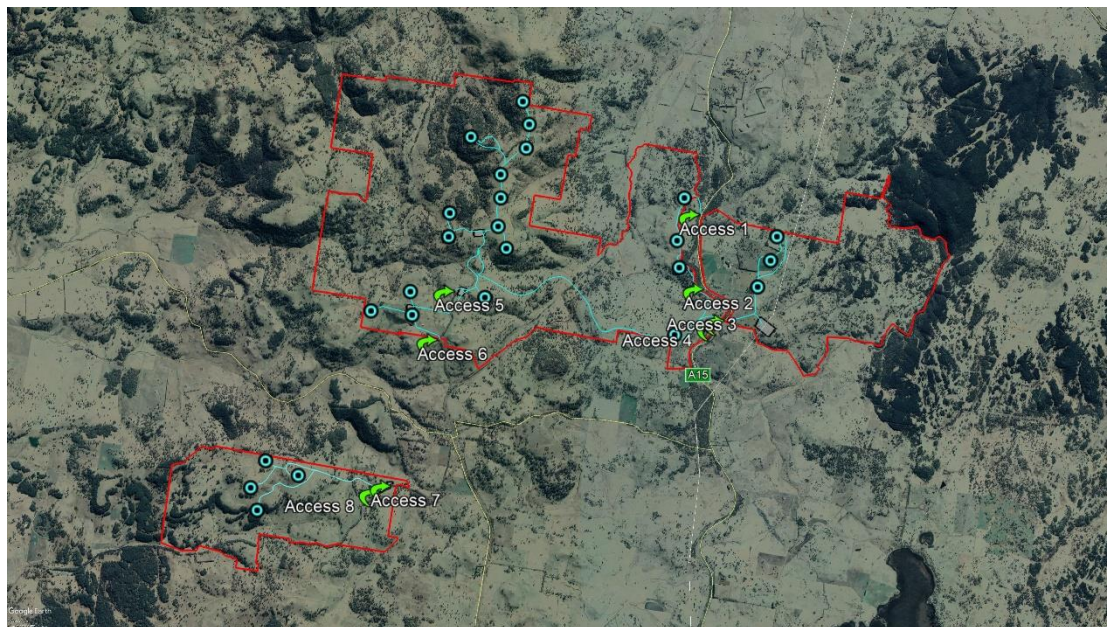


Figure 4-2: Site Access Indicative Locations



Figure 4-3: Site Access Point 1 – New England Highway



Figure 4-4: Site Access Point 2 – New England Highway



Figure 4-5: Site Access Point 3 and 4 – New England Highway

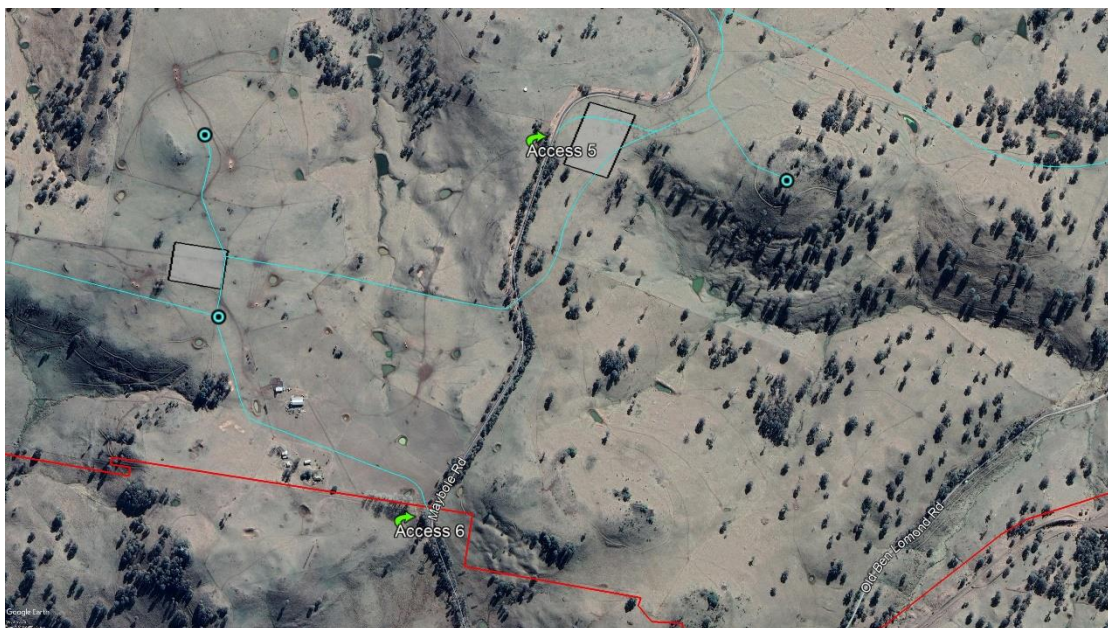


Figure 4-6: Site Access Point 5 and 6 – Maybole Road



Figure 4-7: Site Access Point 7 and 8 – Wandsworth Road

4.2.8. 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.

Geotechnical assessments will be required to inform detailed engineering design in relation to the positioning of Project infrastructure. Boundary adjustments and subdivision may also be required to assist in detailed design for infrastructure.

4.2.9. Indicative Construction and Operation Timelines

The proposed commencement date for construction is in March 2022, with construction being complete and the grid energised approximately 18 months after commencement.

The operational life of the Project is proposed to be from January 2024, to at least January 2054.

4.3. OPTIONS CONSIDERED

4.3.1. Overview

MEA has contemplated a number of design iterations during the development of the Project layout which considered:

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

The development of a preliminary 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.

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.

4.3.2. Site Selection and Feasibility

Due to the wind resource of the region, landholder support and location of previous wind farm proposals, the Project has evolved from two previous proposed wind farms.

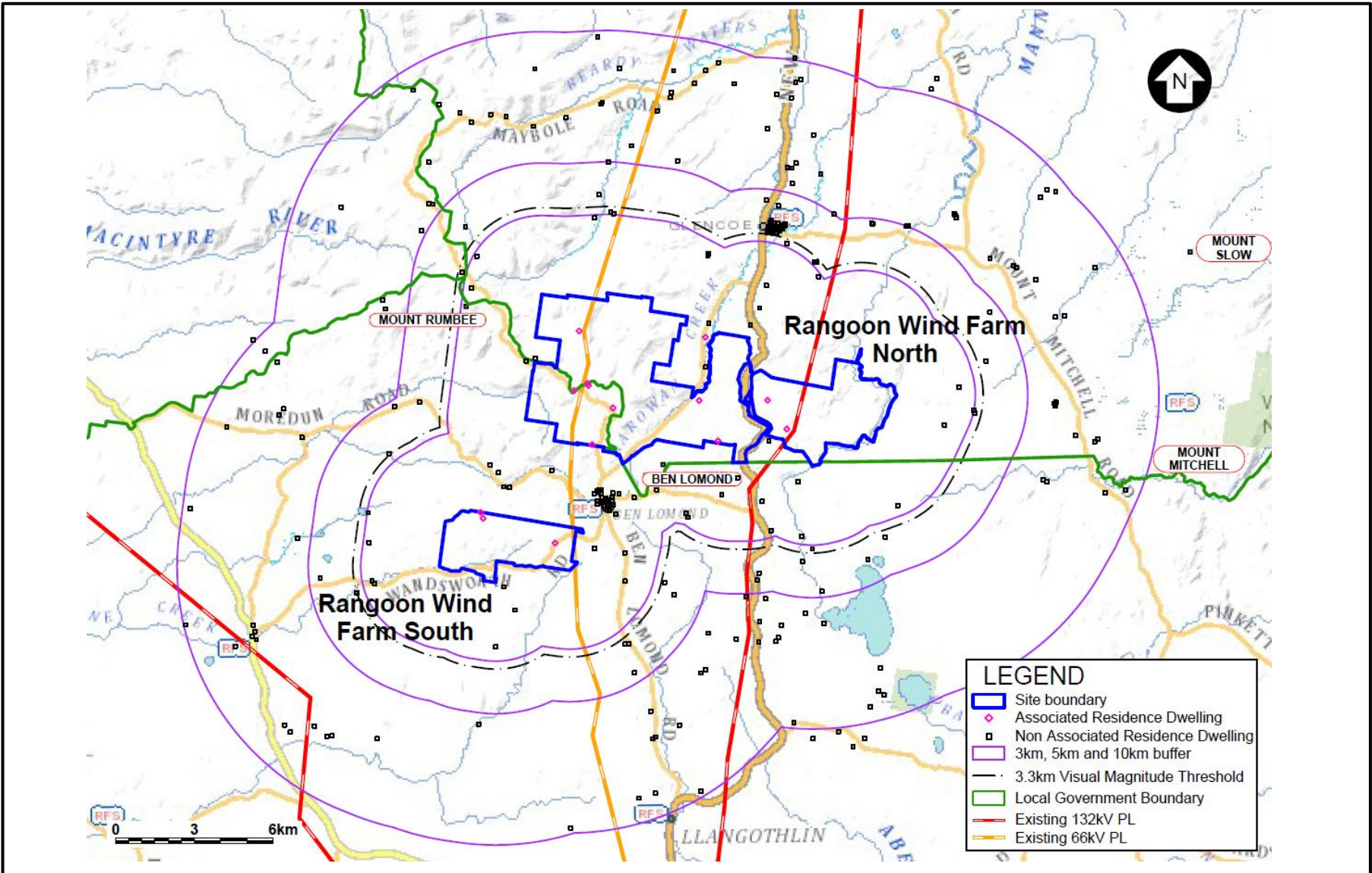
Ben Lomond Wind farm included approximately 9,990 hectares with a total of 98 wind turbine generators across 13 privately owned rural landholdings within the Glen Innes Severn and Guyra Shire local government areas. Following the issuing of SEARs an Environmental Impact Statement was prepared but not lodged with the previous Department of Planning. The RWF North area overlaps the Ben Lomond Wind farm with approximately 4 – 5 associated landholdings in common. The Ben Lomond Wind Farm is no longer progressing. The Part 3A process was never completed and a Development Consent was never issued.

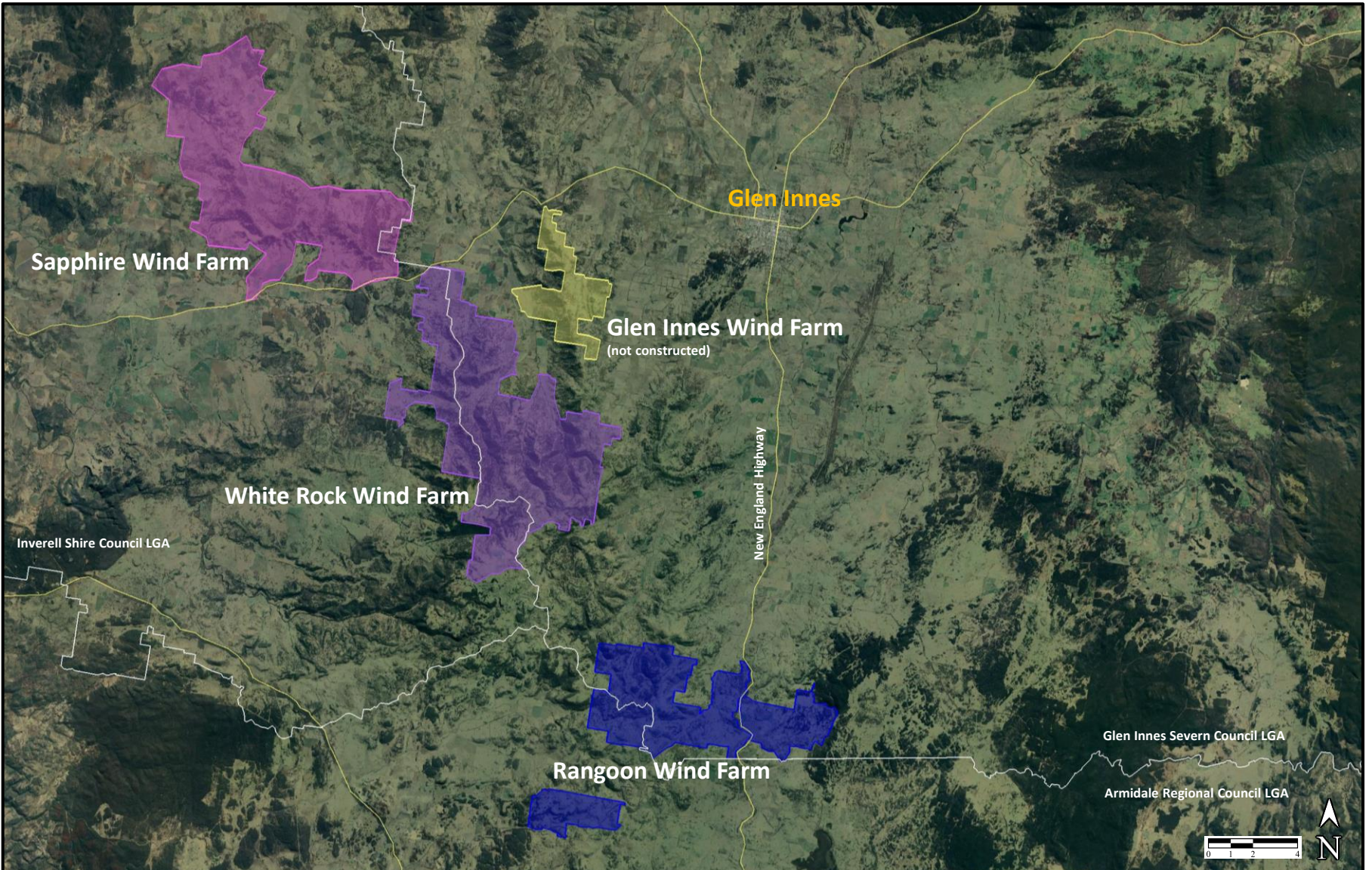
Box Hill Wind farm included approximately 1000 hectares with a total of up to 12 wind turbine generators across privately owned rural landholdings within the Guyra Shire local government area. Box Hill Wind farm was granted development consent (Development Approval No. 29-2004/2005) on the 9 February 2005 by the then Guyra Shire Council and has achieved physical commencement.

The RWF South area and the Box Hill Wind farm are the same site and within the same landholding. The Development Consent for this project is currently valid. Due to the proposed changes in turbine technology, it is proposed to lodge a new application for this Project as part of the Rangoon Wind Farm application.

The two previous proposed wind farms conducted various assessments including a wind resource assessment in each area that identified several elevated ridgelines that had the potential for hosting wind turbines. Preliminary turbine layouts were prepared for the previous wind farms and they included a larger number of turbines than what is proposed under this application. The reduction in the number of turbines is a result of an improvement in the efficiency of the turbine technology. As such, the number of turbines and their geographical spread has significantly reduced from the two earlier proposals, to generate a similar electrical output, acknowledging that the new turbines are larger in size.

In 2019 MEA commenced discussions with landowners in relation to their interest in being involved in the Rangoon Wind Farm. The investigation area is shown in Figure 4-8.





4.3.3. Scoping Report Preliminary Layout

Using previous wind farm information, specialist assessments, wind energy planning controls and guidelines, GIS information, landowner discussions and ground truthing, the site constraints were identified and mapped. The site constraints formed a critical baseline of data that was then combined with wind resource and engineering requirements for various wind turbine models to develop a preliminary layout for the Project. This process resulted in a positive evaluation of the site as suitable for a wind farm.

Following the iterative design process the concept layout was revised to the preliminary layout as shown in Figure 4-10 and Figure 4-11.

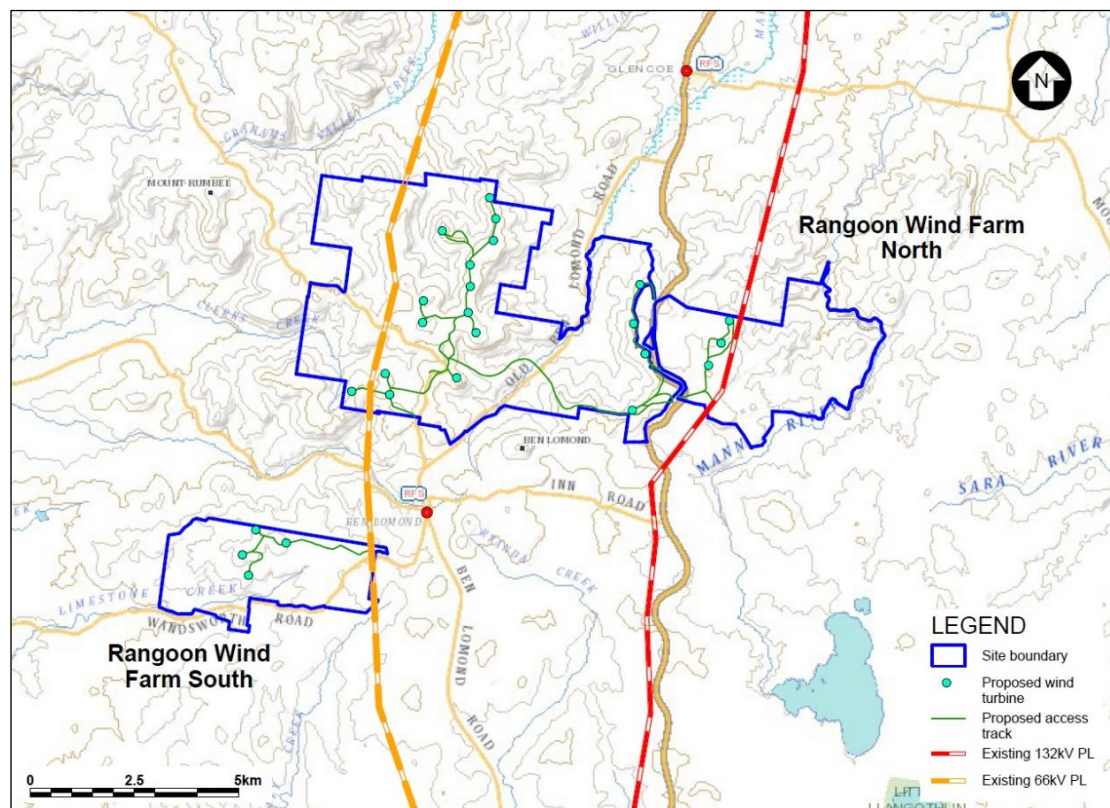


Figure 4-10: Scoping Report Preliminary Layout

4.3.4. 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, alternate route options for roads and cabling, the outcome of geotechnical investigations and the ongoing community and stakeholder consultation process.

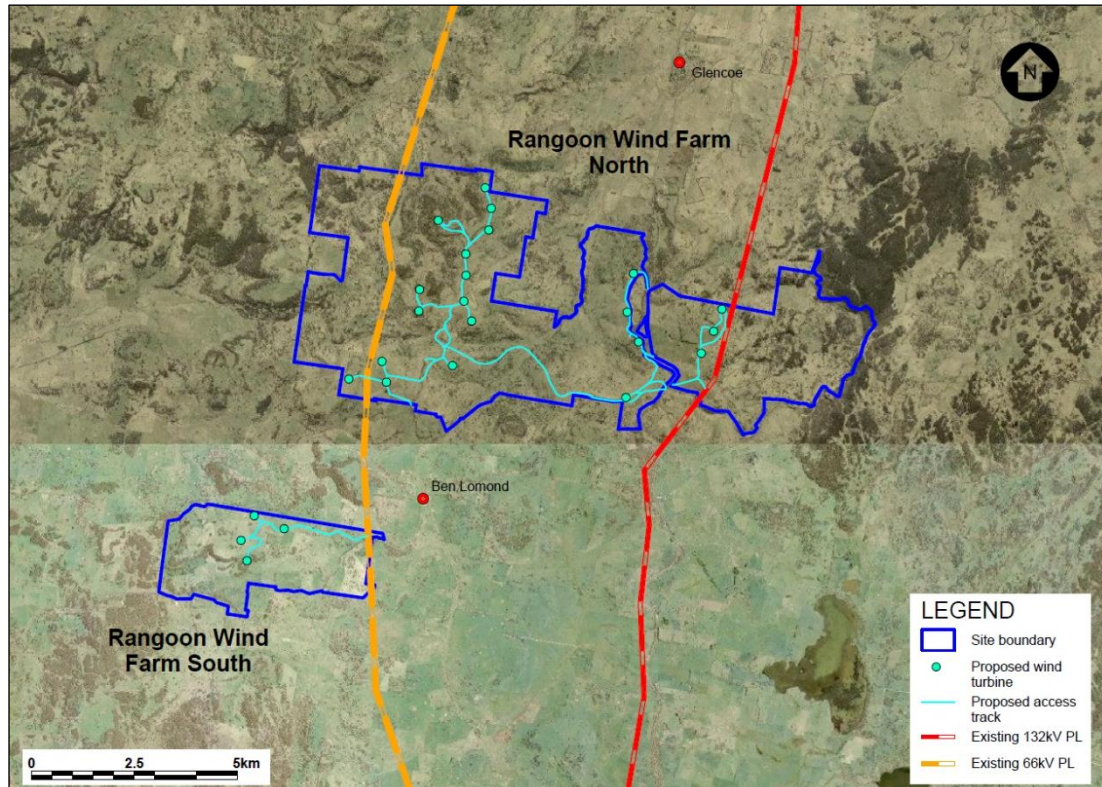


Figure 4-11: Scoping Report Preliminary Layout Aerial Background

5. PROJECT JUSTIFICATION

This Section provides a detailed justification of the Project including a discussion on the suitability of the site, the need for additional renewable energy generation, climate change and Government agencies and institutions policies responding to climate change. It also provides a summary of the Project's socio-economic benefits.

5.1. SITE SELECTION

MEA has been developing wind energy projects in Australia for the past 10 years and over that period MEA has developed considerable experience in site identification and selection. There are several key areas of consideration when selecting a site for development, including:

- Wind resource – To confirm the viability of wind projects, MEA has assessed wind speeds from various sources including wind monitoring masts. MEA's initial assessment confirmed that wind speeds at the Project area are sufficient for a viable wind farm using contemporary wind turbine models. MEA will install a wind monitoring mast in the Project area to further validate the wind resource at the Project area. Figure 5-1 shows the preliminary turbine layout overlaid on Government wind energy mapping illustrating the potential of the Project area for a wind energy project.
- Environmental impact on the land – The properties selected for involvement in the Project are generally used for cattle and sheep grazing and other agricultural purposes. Ridgelines where turbines are proposed are mostly cleared of vegetation. Opportunities for micro-siting will form part of the Project assessment and assist in ameliorating direct land impacts.
- Access to the local electricity network – The Project is close to multiple connection points to the electricity network which have sufficient capacity to export the design output. RWF South will connect to the existing Essential Energy 66kV Guyra to Glen Innes transmission line while RWF North will connect to the existing TransGrid 132kV Armidale to Glen Innes transmission line.
- Local communities – The properties selected for the Project area are large land holdings that naturally provide a buffer to non-associated (or neighbouring) residences. The low to medium population density of the surrounding area combined with the site topography assists in ameliorating potential noise or visual impacts from the Project.
- Proximity to resources – During the construction phase it will be necessary to source water and materials for the construction of roads and turbine foundations. In the local area there are a number of possible quarries and water sources that will be able to accommodate the requirements for construction of a project of this size.
- Economic impact – The local population centres of Armidale and Glenn Innes are well established to cater for an increase in workforce for accommodation and catering demands.

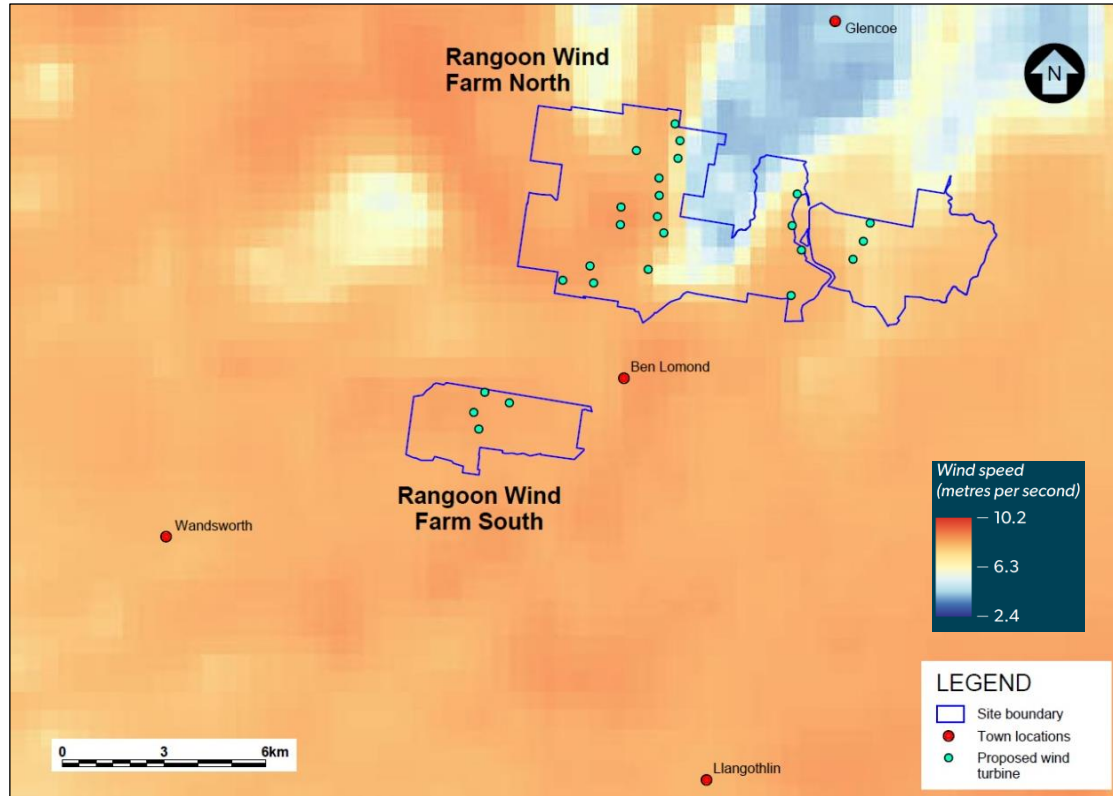


Figure 5-1: Wind Resource Map illustrating potential of the Project area for a wind energy project

5.2. NEW GENERATION REQUIREMENT

NSW is part of the NEM that involves the wholesale generation of electricity that is transported via high voltage transmission lines from generators to large scale industrial energy users and to local electric distributors in each region which deliver to homes and businesses.

According to the AEMO August 2019 ESOO report, consumption on the NEM over the next 10 years is expected to remain generally flat. While underlying growth in consumption is projected across the NEM, partly due to the uptake in electric vehicles, further improvements in energy efficiency, changes in consumer behaviour and more rooftop solar are anticipated to balance out these projected increases. The NSW operational consumption forecast shown in Figure 5-2 generally mirrors the NEM outlook i.e. short to medium term (0-10 years) maximum demand forecast is flat while the long term (10-20 years) maximum demand is forecast to grow slowly.

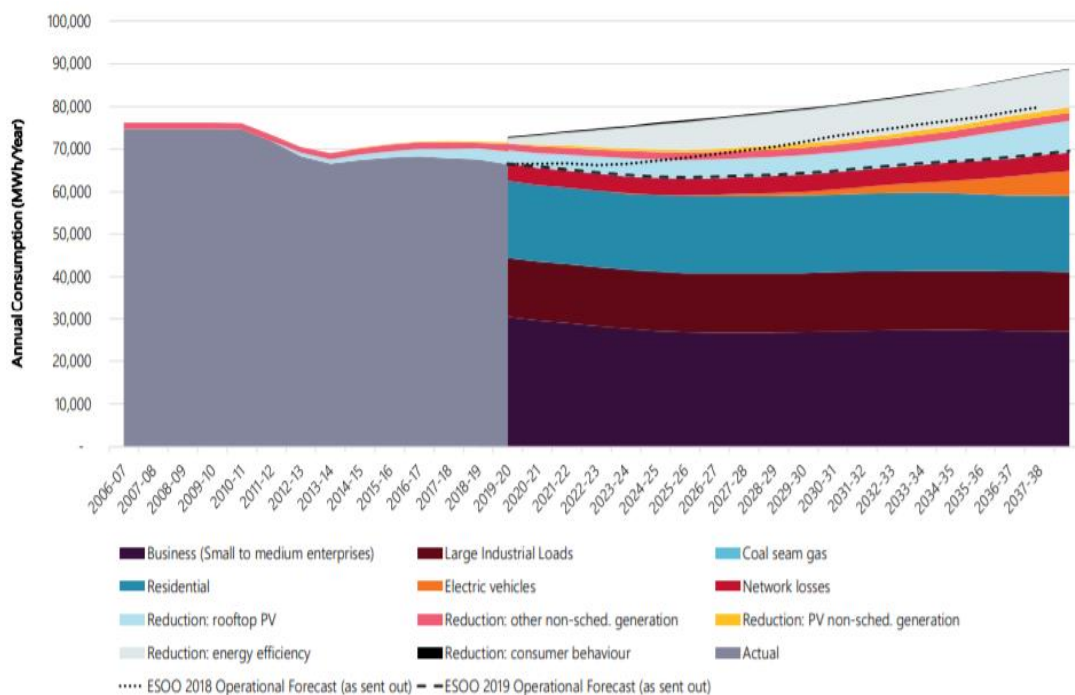


Figure 5-2: NEW Electricity Consumption – Actual and Forecast

The main generators for NSW electricity are coal-fired power stations. The ESOO’s reliability outlook includes assessing the ability of existing and committed generation to meet forecast demand. ESOO identifies a number of risks to the reliability of electricity supply in the NEM NSW including the retirement of the aging thermal plants:

“The retirement of any full power station of the mainland would require significant investments, several years ahead of the event, to ensure the reliability standard is met. Transparency and certainty about closure dates from aging thermal plant is extremely important to manage these closures without causing significant risks to USE (Unserviced Energy) and ensure cost-effective, long-term solutions can be implemented ahead of time”

The Liddell Power Station in NSW (1,800 MW summer capacity) will retire one unit in April 2022 – 450MW and the remaining three units in April 2023 1,350MW. The ESOO examines the potential impact of the Liddell Power Station closure:

- The ESOO analysis assumes that the aging Liddell Power Station units remain in adequate condition to remain operational until the announced closure dates in 2022 and 2023. Any catastrophic failure of these units would advance the supply scarcity risks identified in the reliability forecasts from 2023-24 onwards; and
- In the years following the Liddell retirement there is a risk of 19-23% that the level of USE would exceed the current reliability standard. Under extreme summer conditions that drive demands up towards the 10% POE level, the probability of load shedding in excess of 0.002% would be much higher. To put this in perspective, 0.002% USE is equivalent to 660,000 households in New South Wales without power for one hour, and such outages could occur once every four to five years.

In addition to the announced retirement of Liddell Power Station, the remaining coal-fired power stations supplying the NEM are forecast to retire over the next 10-15 years. The 2019 ESOO report continues to highlight that there are significant risks to the reliability of supply in Victoria this summer, and in New South Wales (from 2023-24) and South Australia (from 2023-24), following the withdrawal of thermal generating capacity.

5.3. THE FUTURE GENERATION OF ELECTRICITY

There are a number of factors that will likely inhibit the use of fossil fuel power stations for the future production of electricity while promoting generation of electricity from renewables.

5.3.1. Lowest Cost of New Generation

The ISP developed by AEMO in 2018 takes a holistic and technology neutral approach when considering the future generation mix of the NEM at the lowest overall consumer expense. Modelling in the ISP shows that once the existing fleet of coal fired power plants reaches retirement age, the most cost-effective replacement generation source is renewables, primarily wind and solar PV.

This is supported by modelling done by CSIRO and AEMO of the projected electricity generation technology costs (CSIRO, 2018). By 2020 the overall cost to produce one unit of electricity (MWh), referred to as the levelised cost of electricity (LCOE), for wind and solar PV is expected to be significantly less than new coal or gas fired power plants. This will also be the case if wind and solar PV plants were required to install firming capacity (battery storage) to complement the variable renewable energy resource (CSIRO, 2018).

Figure 5-3 shows the projected costs for installation of new generation for each technology (CSIRO, 2018).

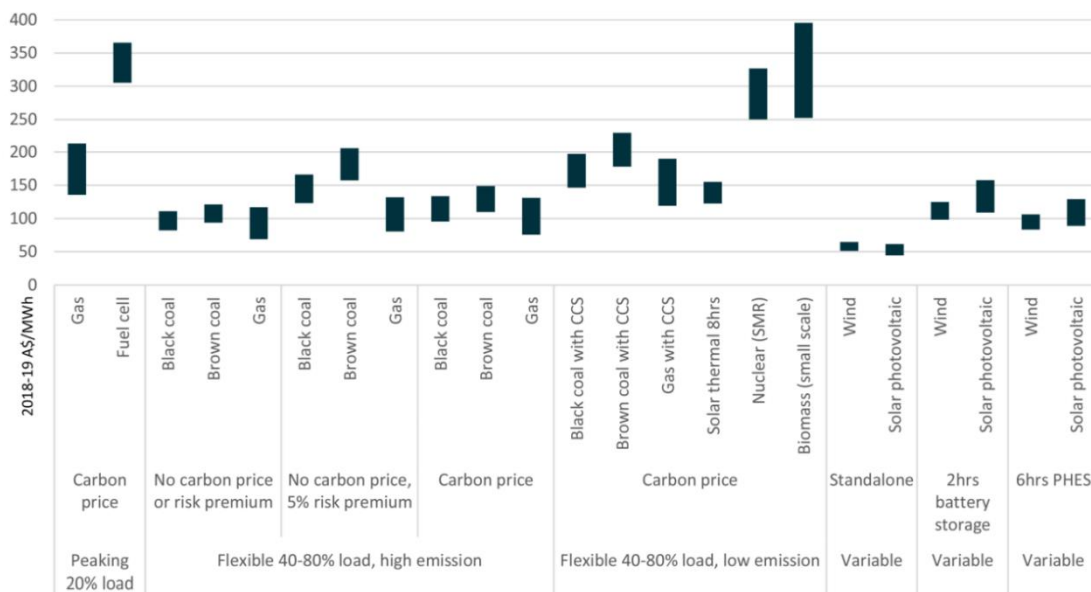


Figure 5-3: LCOE Cost of Building New Generation by Technology Type

5.3.2. Climate Change and Global Warming Science

The Intergovernmental Panel on Climate Change (“IPCC”) research concludes the earth is currently in a global warming phase which is the long-term heating of Earth’s climate system observed since the pre-industrial period (between 1850 and 1900) due to human activities, primarily fossil fuel burning, which increases heat-trapping greenhouse gas levels in Earth’s atmosphere. The IPCC October 2018 report *Global Warming of 1.5° C* report (IPCC report) indicates a consensus that global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate.

This current global warming phase has prompted a new geological unit unofficially known as the Anthropocene Epoch, a period in Earth’s history when human activity started to have a significant impact on the planet’s climate and ecosystems. As of May 2020, neither the International Commission on Stratigraphy (ICS) nor the International Union of Geological Sciences (IUGS) has officially approved the term as a recognised subdivision of geologic time however on the 21 May 2019, 29 members of the 34 person Anthropocene Working Group

(AWG), an interdisciplinary research group made up of world leading scientists/experts, voted in favour of an official proposal to be made by 2021.

5.3.3. Global Warming Impact

The IPCC climate models project robust differences associated with warming of 1.5°C, which will increase risks to health, food security, water supply, human security and economic growth.

Australia is unlikely to be any different from the rest of the world in experiencing the physical impact of climate change, and there is evidence suggesting that Australia may be more vulnerable. The Australian Bureau of Meteorology has confirmed that Australia's annual warming trend is consistent with that observed for the globe. The annual national mean temperature was 1.14°C above average in 2018, and the annual national mean maximum temperature was the second warmest on record at 1.55°C above average. There has been a sequence of severe weather events, including a prolonged heatwave in January 2019 which was unprecedented in its scale and longevity and the 2019-20 bushfires in NSW which were unprecedented in their extent and intensity.

The IPCC report warns that limiting global warming to 1.5°C requires rapid and far reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems, which are unprecedented in terms of scale and if these rapid and far-reaching transitions do not occur or do not occur soon enough, the IPCC's scientific consensus is that there will be major and cascading environmental, economic and social impacts, compounding the physical and other consequences of global warming which are already observable today or are locked in over the near term.

5.3.4. Government Agencies and Institutions Response to Global Warming

Various Australian Government Agencies and institutions that play an important role in Australia's ecology, financial system, energy sector and economy, have acknowledged the risks posed by global warming through legislation, policy and guidelines including:

- DPI&E notes climate change is predicted to be the greatest long-term threat to biodiversity in many regions and is listed as a key threatening process in State and Commonwealth legislation;
- The Reserve Bank of Australia (RBA), the Australian Securities and Investment Commission (ASIC) and the Australia Prudential Regulation Authority (APRA) have all issued directions and guidance on assessing, managing and disclosure of climate change related risks and opportunities. The Deputy Governor of the RBA in March 2019 noted *"the physical impact of climate change and the transition are likely to have first-order economic effects"*;

- The Australian Accounting Standards Board (“AASB”) and the Auditing and Assurance Standards Board (“AUASB”) issued a joint guidance statement on the relevance of climate-related risks for financial statement accounting estimates. The guidance confirms that entities engaged in both financial (e.g. banks, insurance groups, asset owners and managers) and non-financial (e.g. energy, transportation, material/buildings, agriculture, food and forest products) sectors should consider how climate risk affects their impairment assessments and other decisions made in relation to the recognition or measurement of items in the financial statements;
- Australia’s major banks, superannuation funds, insurance companies, financial sector peak bodies and academia have formed the Australian Sustainable Finance Initiative (ASFI). The ASFI are setting out Sustainable Finance Roadmaps that provide pathways and policy signals and set frameworks to enable the finance sector to contribute more systematically to the transition to a more resilient and sustainable economy, consistent with global goals set out in the Paris Agreement on climate change and United Nations Sustainable Development Goals; and
- Large lending institutions are taking a range of actions to reduce their risk to climate change assets while supporting security of energy supply in Australia and New Zealand. For example the NAB’s current actions include:
 - Increasing plans to provide environmental finance from \$55 billion to a targeted \$70 billion by 2025. NAB is Australia’s largest arranger of renewable energy finance and 69% of NAB’s energy financing portfolio in 2019 was for renewables;
 - Supporting current customers involved in coal-fired power generation that are implementing transition pathways aligned with Paris Agreement goals of 45% reduction in emissions by 2030 and net zero emissions by 2050. NAB will not finance new or material expansions of coal-fired power generation facilities unless there is technology in place to materially reduce emissions; and
 - Capping thermal coal mining exposures at current levels and reducing thermal coal mining financing by 50% by 2028 and effectively to zero by 2035, apart from holding guarantees for current customers for rehabilitation of existing coal assets. NAB will not take on new-to-bank thermal coal mining customers.

5.4. PROJECT BENEFITS

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; and
- Provide an opportunity for regional investment as the renewable energy sector grows in NSW and the New England area.

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;
 - 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 Council.
- In a typical year, based on a typical capacity factor for this type of wind farm project the wind farm could produce around 450,000 megawatt-hours of clean, renewable energy, enough for the average consumption of around 58,000 homes (greater than the total existing houses in the two LGAs) which in turn will lead to a significant reduction in greenhouse gas emissions through the avoidance of carbon dioxide from coal fired power stations.

6. STAKEHOLDER ENGAGEMENT

This section describes stakeholder engagement undertaken generally in accordance with the Wind Energy Guideline, the Visual Bulletin and the DPI&E SSD process adapted to reflect restrictions experienced during the COVID-19 pandemic. It describes consultation objectives, the engagement approach to date, proposed ongoing engagement and issues raised to date.

6.1. CONSULTATION OBJECTIVES

Wind farms in NSW are limited to sites with elevated land, consistent wind speeds, usually in rural areas, and with capacious transmission line access. Such sites are relatively rare, often located in the vicinity of rural dwellings and in some cases in the vicinity of small to medium sized regional communities. This can cause concern or 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. MEA has prepared a Community and Stakeholder Engagement Plan (CSEP) for the Project, the aims of which are to:

- Obtain and maintain a Social Licence to Operate with the identified community and other stakeholders;
- Enable and collaborate with the community and other stakeholders to provide feedback and input to the Project; and
- Establish and maintain an open, honest and genuine relationship with the community and other stakeholders.

In addition, the consultation process will also look at how best to maximise the local and regional benefit of the Project.

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

As shown in Figure 6-1 the scoping report represents the first stage of many for the Project's SSD assessment process. The SSD assessment process provides various consultation opportunities for community engagement and input.



Figure 6-1: SSD Assessment and Determination Process and Engagement (Source: DPI&E 2019)

6.2. CONSULTATION APPROACH

The Project is dedicated to directly informing adjacent landowners and the local community about the Project in an effort to build a genuine relationship. The location of the Project is dictated by a number of key factors, including access to wind resources, topography, and grid connection. As a result, the approach of community and stakeholder engagement is to focus on understanding and mitigating the effects of the Project, and on demonstrating and maximising its benefits to the local community.

The approach to engagement has been developed in accordance with:

- Community and Stakeholder Engagement – Draft Environmental Impact Assessment Guidance Series 2017;
- Scoping and Environmental Impact Statement;
- Wind Energy Guideline for State Significant Wind Energy Development (December 2016);
- Community Consultative Committee Guideline – State Significant Projects (January 2019); and
- NSW and Commonwealth COVID 19 health directions.

The activities typically undertaken during the early phases of consultation for an SSD in accordance with standard industry practice and guidelines have been adapted to reflect the COVID-19 situation. Specifically, a zero face-to-face contact approach for the Scoping Phase has been undertaken. It is the intention of the Project to modify the approach in future phases and proceed to hold information days and meet face to face with most interested stakeholders once COVID-19 restrictions are lifted and it is safe to do so.

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

6.2.1. Stakeholders

The CSEP identified the following preliminary Stakeholder groups:

- Landowners and occupiers of the:
 - Properties forming the Project area;
 - Adjacent properties; and
 - Neighbouring properties within 10km radius of the Project area.
- Key government and agency members:
 - Department of Planning, Industry and Environment;
 - TransGrid;
 - Essential Energy;
 - Crown Lands;
 - State member for Northern Tablelands – Adam Marshall, MP; and

- Federal member for New England – Barnaby Joyce, MP.
- CEO, Mayor and relevant directors of Glen Innes Severn Shire Council and Armidale Regional Council;
- Guyra Local Aboriginal Land Council and Glen Innes Local Aboriginal Land Council;
- The wider Ben Lomond, Glencoe communities and established groups (e.g. Country Women’s Association, NSW Farmers, Landcare);
- Aeronautical agencies, groups and associations; and
- The relevant authorities who manage the registered easements across the Project area.

Additional stakeholders will likely be identified during the engagement process and as the Project progresses over time. The Project will continue to review the above list as stakeholders gain or lose interest in participating in the engagement process.

A focus of the CSEP 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 consultation methods have been implemented as part of this scoping phase to consult with stakeholders. The following is a summary of the scoping phase consultation to date.

6.2.2. Government and Agencies Consultation

A scoping meeting was held with DPI&E representatives Nicole Brewer (Director Energy Assessments) and Iwan Davies (Senior Planning Officer) on Tuesday 12/05/20.

A 05/05/20 introductory letter was sent to Armidale Regional Council (ARC) representatives Susan Law (CEO), Simon Murray (Mayor) and Mark Piorkowski (GM), A following telephone conference with ARC representatives took place on the 20/05/20.

A 05/05/20 introductory letter was sent to Glen Innes Severn Council (GISC) representatives Craig Bennett (GM), Carol Sparks (Mayor) and Graham Price (Director of Development, Regulatory and Sustainability Services). A following telephone conference with GISC representatives took place on the 14/05/20. On the 21/05/2020 the Glen Innes Councillors were briefed on the project by Graham Price (Director of Development, Regulatory and Sustainability Services).

A 21/05/20 introductory letter was sent to Adam Marshall, MP - State member for Northern Tablelands. An introductory meeting is being organised with the State member.

A 27/05/20 introductory letter was sent to Barnaby Joyce, MP Federal member for New England. A response letter was received 5/06/2020 acknowledging and appreciating receipt of the introductory information about the Project.

TransGrid and Essential Energy has been consulted and formal grid connection enquires commenced.

6.2.3. Non-Associated Landowner Consultation

An introductory project flyer inviting the community to engage with and to inform about the Project was sent via a mailbox drop through Australia Post to non-associated landowners within 10km of the Project area. Further follow up letters were hand delivered to properties within 5km of the Project area. The Project will continue mail-outs and newsletters to interested parties.

Where direct contact details were able to be established, approximately 70 non-associated residences within 4km of the investigation area were telephoned to introduce the Project, provide Project information available at this stage, allow for questions and issues to be raised and for feedback to be given. Follow up phone-calls, emails and provision of project information was provided to non-associated residences where relevant.

Comments from the non-associated landowners have been summarised in Section 6.3 along with the Project's response to date.

6.2.4. Broader Community Consultation

Broader community consultation was undertaken to inform the community about the Project as well as seeking individual and community views on issues. Consultation has taken place via the following avenues:

- Project website, email address, telephone number and postal address. The feedback form on the website included questions relevant to visual attributes and values;
- Advertisements in the newspapers that included contact details;
- Media interviews and articles via local and regional radio and newspapers (e.g. ABC New England Radio, Guyra Argus and Northern Daily Leader);
- Information brochure in an unaddressed mailout to the broader community including Ben Lomond and Glencoe communities with an invitation to register interest in the project and receive a call back from a Project officer for one-on-one engagement;
- Information brochure to Guyra Local Aboriginal Land Council and Glen Innes Local Aboriginal Land Council;
- Phone-call with Ben Lomond Public School; and
- Information brochure to key community groups (e.g. Country Women's Association, Landcare and NSW Farmers Association).

To date there has been 11 feedback forms received, 78 telephone conversations and 57 e-mail enquiries and updates.

Comments from the feedback forms, conversations and e-mails are summarised in Section 6.3 along with the Project's response to date.

6.2.5. Community Consultation Committee

The Project 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.

As with other regional wind farms, the Project will establish a CCC for the Project in consultation with DPI&E in accordance with the 'Community Consultative Committee Guideline State Significant Projects' (DPI&E, 2019) (CCC Guideline).

The Project has been recording preliminary expressions of interest for involvement in the CCC from feedback provided within the Project Feedback Form.

6.3. KEY ISSUES RAISED BY THE COMMUNITY

The key comments from the feedback forms, conversations and e-mails are categorised and summarised below.

6.3.1. Approval Process and Timing

- What stage of the process is the project at and what activities are involved in the following stages?
- Anticipated timing for the development and approval process and also the expected duration that it will take to construct the Project;
- Strong desire to have regular communication and information provided on the Project status and ongoing activities. Newsletters and individual letters were suggested as good options for regular updates, along with information sessions when more information was available, for example once results of the EIS is available; and
- Expressed a desire to be part of a CCC as a non-involved landowner.

6.3.2. Visual Amenity

- The communities surrounding the Project were interested to understand the proposed locations for wind turbines. Maps showing the Project area that had the potential to

host wind turbines were provided. This was done to allow for initial feedback to be incorporated into the design of the layout at the earliest stage;

- Specific landscape features were requested to be included in an assessment of visual impact during the EIS phase including:
 - Ranges;
 - Valleys; and
 - Trout fisheries.
- Residents generally within 3km of proposed turbine locations expressed a desire for visual impact to be minimised and are keen to understand where turbines may be visible.

The Project will conduct a visual impact assessment as part of the EIS which shall include consideration of representative localities and shall seek to reduce visual impact where practicable.

6.3.3. Traffic and Transportation

- Concern about traffic volumes from construction traffic on Wandsworth Rd.
- Concern about interaction with local airstrips.

The Project will conduct a traffic and transport impact assessment as part of the EIS which shall include consideration of construction and operational traffic and noise in relation to New England Highway, Ben Lomond Rd, Old Ben Lomond Rd, Maybole Rd Wandsworth Rd and Bournes Rd.

6.3.4. Amenity

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

The Project will conduct a noise impact assessment as part of the EIS which shall consider noise impacts against relevant NSW Guidelines.

6.3.5. 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;
- Perceived impact to property values in the vicinity of the wind farm; and

- Perceived impacts to local tourism businesses (i.e. farm stays).

The Project 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. A Voluntary Planning Agreement (VPA) for any community fund will be established with the relevant Council/s.

6.3.6. Ecology

- Bird strike – the potential for birds to collide with wind energy infrastructure resulting in injury or death; and
- Preference for preservation of trees and vegetation along the Wandsworth Rd.

The Project will complete an assessment of potential for bird strike and ecological impacts as part of the EIS.

6.3.7. Waste

- Concern with what will happen to the wind energy infrastructure after decommissioning.

The Project will complete a technology lifecycle assessment and consider waste as part of the EIS.

6.4. GOVERNMENT AGENCIES AND OTHER STAKEHOLDERS

At the 12/05/20 scoping meeting DPI&E raised the following matters:

- The number of residences within 5km of the Project area and beyond;
- Ben Lomond township's position to the Project;
- Ben Lomond's position between the RWF south cluster and the RWF north cluster and the potential cumulative impact;
- The potential cumulative impact of White Rock Wind Farm and RWF on parts of the local community;
- Consultation with Councils regarding road upgrades to occur and detailed assessment will be part of the EIS;
- Demonstrate the RWF investigation area is a suitable site taking into consideration the Wind Energy guidelines and bulletins; and
- Consultation must be extensive enough so that when DPI&E delivers the Scoping Report to the public via the website the Project does not come as a surprise to the local community.

At the 14/05/2020 consultation meeting with Glen Innes Severn Council, Council confirmed it's positive experience with other SSD wind projects and noted Council's support for the

Project because of the associated economic development and job creation for the region. Key issues raised for Project consideration were prioritising community engagement, considering the villages of Ben Lomond and Glencoe, assessing traffic and road dilapidation, and management of waste. The Project team and Council committed to working together collaboratively to address any issues over the course of the EIS phase.

The 20/05/2020 consultation meeting with Armidale Regional Council advised Council's general support of the Project due to economic development and job creation in the region. Key issues raised were that there has been lots of interest in renewable energy development in the region following the New England Renewable Energy Zone announcement related to the region, the community has expressed interest in understanding project life-span, and that Council was likely to be in Administration shortly (this has now occurred). The Project team and Council committed to working together throughout the EIS phase to address matters such as site access, road condition, traffic and community benefit, and to understand any concerns, constraints and advice on an ongoing basis.

These matters are considered in relevant parts of Section 8. The Project will continue to consult throughout the planning process with relevant government, government agencies and stakeholders including:

- DPI&E;
- Councils – ARC and GISC;
- Environment Protection Authority (EPA);
- Roads and Maritime Services (RMS);
- Local Land Services (LLS);
- NSW Rural Fire Service (RFS);
- Civil Aviation Safety Authority (CASA);
- Local Aboriginal Land Councils; and
- Australian Aerial Application Association.

During the EIS preparation phase, consultation with Registered Aboriginal Parties and 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).

The Project is also concurrently working through the grid connection process with both TransGrid and Essential Energy.

6.5. ONGOING ENGAGEMENT

The Project will continue to consult with the local community and other stakeholders through a variety of means generally in accordance with its CSEP.

7. RISK ASSESSMENT

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

7.1. RISK ASSESSMENT OVERVIEW

MEA has used its experience in wind farm development, together with a preliminary assessment of the Project area, 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 (flora and fauna);
- Aboriginal Heritage;
- Historic heritage;
- Traffic and transport;
- Water;
- Soil and landforms;
- Dust management;
- Safety (including aviation, bushfire, fire and blade throw);
- Telecommunications;
- Social and economic;
- Waste management;
- Health (including infrasound and Electromagnetic frequencies (EMF));
- Decommissioning; and
- Cumulative Impacts.

The EIS will be prepared in accordance with the SEARs to be issued by DPI&E 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 community, consultation with stakeholders, and industry best practice guidelines.

7.2. ENVIRONMENTAL AND SOCIAL RISK ASSESSMENT

The Project 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;
- Low Priority – addressed via desktop assessment.

In relation to each risk the Project has established the priority by taking into consideration:

- The level of information already available about that issue;
- The extent to which Project area-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;
- Project area-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.

Table 7-1 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 8.

Table 7-1: Risk Assessment, Preliminary Direct Mitigations and Assessment Approach

Issue	Sources of Impact	Priority	Assessment
Visual amenity	Impacts: Loss of visual amenity for receptors and communities Loss of visual amenity for key outlooks or tourism routes Impact on scenic/landscape character Shadow flicker disturbance	High	Independent specialist assessment in accordance with the Visual Bulletin

Issue	Sources of Impact	Priority	Assessment
	Cumulative visual impacts Lighting impacts Mitigation: Landscaping measures		
Noise amenity	Impacts: Operational aerodynamic or mechanical noise impacts on receptors Construction noise impacts on receptors Road traffic noise Vibration Cumulative impacts Mitigation: Through turbine selection, location, and other noise control measures	High	Independent specialist assessment in accordance with the Noise Bulletin
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 Mitigation: Relocation of equipment Appropriate environmental management procedures Species-specific mitigation options Biodiversity Offsets commitment	High	Independent specialist assessment
Aboriginal heritage	Impacts: Potential to impact Aboriginal objects or heritage values Mitigation: Relocation of project components Appropriate environmental management procedures	High	Independent specialist assessment
Traffic and transport	Impacts:	High	Independent specialist assessment

Issue	Sources of Impact	Priority	Assessment
	<p>Increased traffic on local and regional road network for each of construction and operation</p> <p>Construction traffic may contribute to road pavement deterioration</p> <p>Turbines may distract drivers</p> <p>Cumulative impacts</p> <p>Mitigation:</p> <p>Traffic Management Plan and road maintenance and upgrades, as required</p>		
Historic heritage	<p>Impacts:</p> <p>Potential to impact heritage values and items</p> <p>Mitigation:</p> <p>Relocation of project components</p> <p>Appropriate environmental management procedures</p>	Moderate	Independent specialist assessment
Telecommunications	<p>Impacts:</p> <p>Loss of communication signals</p> <p>Reduction in strength of broadcast signals (TV or radio)</p> <p>Mitigation:</p> <p>Relocation of equipment</p> <p>Site specific mitigation</p>	Moderate	Independent specialist assessment
Soils, landforms and rehabilitation	<p>Impacts:</p> <p>Erosion, landform and rehabilitation stability</p> <p>Mitigation:</p> <p>Environmental Management Plan</p>	Moderate	In house and/or independent specialist assessment
Water	<p>Impacts:</p> <p>Availability of water for construction</p> <p>Erosion and sediment control leading to pollution</p> <p>Mitigation:</p> <p>Standard practices apply</p>	Moderate	In house and/or independent specialist assessment
Social and economic	<p>Impacts:</p> <p>Land use change</p> <p>Economic impacts</p> <p>Mitigation:</p> <p>Economic impacts are positive</p>	Moderate	In house and/or independent specialist assessment
Hazards and safety	<p>Impacts:</p>	Moderate	In house and/or independent

Issue	Sources of Impact	Priority	Assessment
	Aviation safety (instruments and airspace intrusion) Bushfire safety (hazards and risks) Fire management Blade throw risks Mitigation: Standard practices apply		specialist assessment
Dust management	Impacts: Construction dust impacts Mitigation: Standard practices apply	Low	Main EIS Volume
Waste	Impacts: Generation of recyclable and general waste Generation and disposal of refurbished blades and components Disposal of infrastructure following decommissioning Mitigation: Standard practices apply	Low	Main EIS Volume
Decommissioning	Impacts: Decommissioning procedures Rehabilitation Mitigation: Standard practices apply	Low	Main EIS Volume
Health	Impacts: Epilepsy triggers infrasound EMF Mitigation: Standard practices apply and demonstrated application of the principles of prudent avoidance	Low	Main EIS Volume

8. PRELIMINARY ENVIRONMENTAL ASSESSMENT

This section discusses potential environmental and social impacts associated with the Project identified in Section 7 and outlines of how each will be assessed in the EIS.

8.1. ASSESSMENT OF KEY ISSUES

8.1.1. Visual

Introduction

Arup Australia Pty Ltd (ARUP) 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 1. The following information summarises the PLVIA's key points.

Background

Baseline mapping was undertaken to locate dwellings and key public view points with reference to the preliminary turbine layout, to assess the visual magnitude of each turbine relative to known dwellings and key public view points. The scale of turbine used for the PLVIA assessment has a maximum tip height of 250m.

The key focus within the PLVIA concentrates on dwellings and view points within 3.3km of a turbine. The 3.3km radius has been derived using the 250m tip height for the turbine and reference to graph within the Visual Bulletin's Figure 2 – *Preliminary Assessment Tool 1 indicating potential visual impacts for further detailed consideration*. Additionally, consideration is also given to view points out to beyond a 10km radius and to cumulative impacts out to 8km radius.

While the Visual Bulletin provides assessment tools and estimated thresholds, it is recognised that individual factors such as landowner perceptions, topography, building orientation, vegetation and elevation may result in additional dwellings beyond the initial 3.3km radius to be a focus for more detailed assessment. Accordingly, the visual assessment in the EIS stage will also provide further assessment of dwellings more distance than 3.3km and greater than 5km as referenced with the Visual Bulletin's Figure 5 – *Visual magnitude thresholds for visual assessment*. Field investigations to ground truth the PLVIA findings and neighbour consultations will inform where additional assessments will be undertaken. Consultation activities with landowners within 10km of the Project area are ongoing.

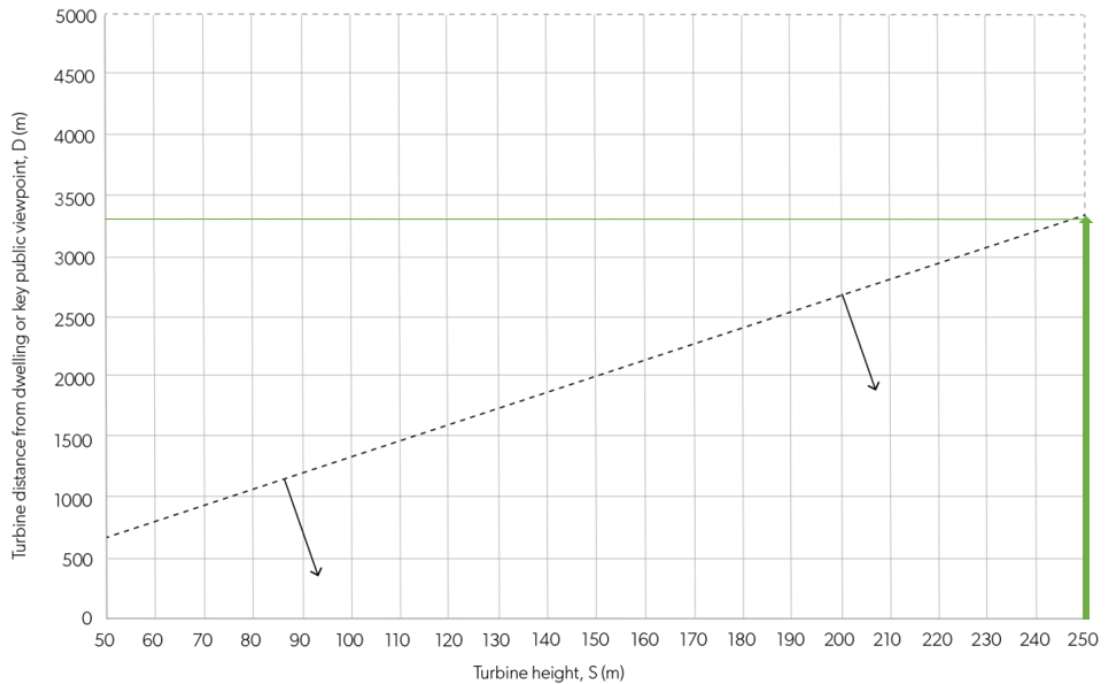


Figure 8-1: Preliminary Assessment Tool 1 – Potential Visual Impacts for Further Detailed Consideration
(Note: the green arrow and line indicate the threshold for a 250m turbine tip height)

Preliminary Assessment

Visual Magnitude Assessment

Within 3.3 km of a turbine, 51 non-associated dwellings were identified and assessed. The PLVIA includes tables identifying the relevant dwellings and key public viewpoints and provides the distances to the nearest turbine, number of turbines that are partially visible and the number of turbines that may be fully visible.

As part of the EIS ongoing consultation process the Project will liaise directly with the relevant landowners to further assess the potential of any visual impact and seek to identify and implement mitigation or amelioration options where appropriate.

Multiple Wind Turbine Assessment

The Visual Bulletin’s Multiple Wind Turbine Tool is designed to assess the number of visible wind turbines and cumulative impacts from being able to see multiple wind turbines. The southern portion of White Rock Wind Farm is in the vicinity of the Project. The tool provides guidance for further assessment of relevant dwellings and key public viewpoints that may be impacted by multiple turbines.

The PLVIA assessed the 51 non-associated residential dwellings out to a distance of 3.3km from the proposed wind turbines and identifies the relevant number of 60° sectors where

turbines may be visible. Of the 51 non-associated residential dwellings, only three non-associated dwellings were identified to have views of turbines in three or more sectors.

Additionally, the PLVIA assessed the potential impact on the village of Ben Lomond by incorporating multiple residential dwellings into a single view location at the Ben Lomond Hall because the dwellings occur within a cluster around this site. ARUP considers that views from these locations will be either very similar or identical in most cases. The Ben Lomond assessment also incorporates the cumulative impact assessment of turbines located within RWF North and RWF South for the village.

The assessment indicates that up to 13 turbines may be visible towards RWF North (within two 60° sector) 4 turbines may be visible towards RWF South (within only one 60° sector) from the village of Ben Lomond. The number of turbines with full extent of blades visible is predicted to be 9, with 3 visible from the hub upwards and 5 visible with only the top 10% of the turbines (~25m of blade) would be visible on the horizon, and that no full view of any turbine is anticipated.

The assessment also considered the village of Glencoe by incorporating dwellings into a single view location at the Red Lion Tavern, Glencoe. 20 turbines are anticipated to be visible intermittently between roadside vegetation, from the RWF North site (looking south) from the viewpoint location. Four turbines potentially being seen from the ground level to blade tip.

Cumulative Assessment

The PLVIA identified that 16 non-associated dwellings are located within 8km of the wind turbines of both the Project and White Rock Wind Farm. A cumulative impact assessment was undertaken including individual zone of visual influence maps for each of the 16 non-associated dwellings. The assessment identifies the distance to the nearest Project turbine, the turbine identification, the number of partially visible turbines, the number of fully visible turbines and the number of 60° sectors the turbines may be visible within from the dwelling. Of the 16 non-associated dwellings only three non-associated dwellings would have turbine views within three or more 60° sectors. As part of the EIS ongoing consultation process the Project will liaise directly with the relevant landowners to further assess the potential of the cumulative impact and seek to identify and implement mitigation or amelioration options where applicable.

EIS Methodology

The EIS will include a detailed visual impact assessment and lighting assessment which shall consider all components of the Project in accordance with the Visual Bulletin which will include (but not be limited to):

- An assessment and justification for the placement of wind turbines in sensitive areas, including those located within and between the 3.3km and 5km distance offsets from the wind turbine locations, plus additional locations where required;
- A description of the mitigation and management measures to be employed to reduce impacts. Including a consideration of whether site-specific factors such as topography, relative distance and existing vegetation may minimise or eliminate the impacts of the project will be made;
- An assessment of the circumstances where dwellings or key public viewpoints located above the line may require further consideration due to topography or other landscape features. The further detailed assessment and ground-truthing at the visual assessment stage will also consider impacts on these dwellings or key viewpoints;
- A consideration of any issues identified in stakeholder engagement to date including an assessment of specific landscape features, public viewing points and representative photomontages;
- A consideration of shadow flicker as an amenity impact;
- Further assessment and justification for the placement of wind turbines within 3 or more 60° sectors where necessary; and
- A description of the proposed mitigation measures to reduce visual impacts.

8.1.2. Noise

Introduction

Marshall Day Acoustics Pty Ltd (Marshall Day) was commissioned to undertake a Preliminary Noise Impact Assessment (PNIA) for the Project. The PNIA has been prepared in accordance with the Noise Bulletin and is provided in Appendix 2. The following information summarises the PNIA's key points.

Background

Baseline mapping has been undertaken to locate dwellings and key public view points with reference to the preliminary turbine layout, to assess the operational noise of each turbine and the operational noise of an RWF North substation/BESS and operational noise of an RWF South substation relative to known dwellings and key public view points. The turbine assessment was carried out on a candidate turbine that represents the upper end range for sound power levels that are typical for the size of turbines being considered for the Project. The RWF North substation/BESS and RWF South substation assessment was carried out on typical electrical plant for this size Project.

Figure 8-2 below is featured in the Noise Bulletin and shows the average distances at which compliance can be achieved against several different noise standards. It also demonstrates 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 receiver. However, the Noise Bulletin states that the NSW criteria will typically be achievable at distances between 0.8 – 1.5 km.



Key

- | | |
|--|--|
| 1. Europe WHO Night Noise Guidelines interim goal 55 dB(A) | 4. Vic, SA, NZ, UK upper base, US (typical), Europe night 40 dB(A) |
| 2. UK night wind farm base criteria 43 dB(A) | 5. Denmark 37 – 44 dB(A) |
| 3. Netherlands wind farm night time 41 dB(A) | 6. NSW & UK lower daytime base 35 dB(A) |

Figure 8-2: Noise Bulletin Average Distances for Different Noise Standards

Preliminary Assessment

Wind Turbine Assessment

The key wind turbine assessment findings are:

- The predicted noise levels from the Project are below the Noise Bulletin’s base criteria at all assessed non-associated receptors;
- The results of the modelling demonstrate that the Project can be designed and operated to comply with the operational noise requirements of the NSW Noise Assessment Bulletin. Once the SEARs are released for this Project, further detailed assessment will be undertaken. This would include background noise monitoring, revised modelling and, if required, layout refinements to demonstrate how compliance would be achieved for the specific noise matters defined by the SEARs for the Project.

RWF North substation/BESS and RWF South substation

The key RWF North substation/BESS and RWF South substation assessment findings are:

- The nearest residential dwelling receptor to the RWF North substation/BESS is approximately 700m. The nearest residential dwelling receptor to the RWF South substation is approximately 750m; and
- The noise of the RWF North substation/BESS and RWF South substation is expected to be below the most stringent noise level criteria, as outlined in the NSW EPA's Noise Policy for Industry, even accounting for any adjustments (if applicable at the receptor) for the potential tonal characteristics associated with transformers.

Cumulative Assessment

The key cumulative assessment findings are:

- The White Rock Wind Farm Stage 2 (WRWF2) is identified for the review of potential cumulative noise considerations because the Stage 2 turbines are closest to the Project;
- The WRWF2 predicted noise levels are based on a WRWF2 acoustic report; and
- Based on an assessment of predicted noise levels of the Project and WRWF2 cumulative noise considerations are not applicable to the Project.

EIS Methodology

The EIS will include a detailed Noise Impact Assessment (NIA) which shall consider all components of the Project in accordance with the Noise Bulletin which will include (but not be limited to) all components of the Project including:

- Wind turbine noise in accordance with the Noise Bulletin;
- 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;
- Cumulative noise impacts with surrounding industry (if any); and
- Identification of any reasonable and feasible mitigation and management measures.

8.1.3. Biodiversity

Introduction

WSP has been commissioned to undertake a preliminary ecological constraints assessment to identify potential biodiversity constraints that may occur within the study area. A desktop ecological constraints map is shown in Figure 8-3.

Background

The ridgetops where the turbine layout is proposed are mostly dominated by grassland, with scattered remnants of woodland and open forest. Many scattered paddock trees occur along the ridgetops. The steep gullies and sides of the ridgetops contain open forest, with the lower slopes dominated by woodland and grassland. The creek-lines are a mixture of open forest and cleared lands.

No wetlands of International (RAMSAR) or national significance occur within the study area. Little Llangothlin Lagoon is listed as a RAMSAR and nationally significant wetland and occurs approximately 12km to the east of RWF south.

The closest National Parks Estate properties are Warra National Park, which occurs approximately 14km to the east and Single National Park, which occurs approximately 20km to the west of the study area.

Both RWF north and RWF south occur within the New England Tablelands IBRA bioregion. RWF North occurs in Glen Innes – Guyra Basalts to the west and Night Cap to the east sub-bioregions. RWF south occurs wholly within Glen Innes – Guyra Basalts sub-bioregion.

Preliminary Assessment

Threatened Species

A search of the BioNet Atlas database, within a 10km buffer identified 32 species listed on the *Biodiversity Conservation Act 2016*, that have potential to occur in the study area. Twenty-six animal species and 6 plant species.

Of the six threatened plant species two have records in the study area on the BioNet Atlas. Of the twenty-six fauna species, four were recorded by NSW BioNet Atlas as occurring within the study area.

The threatened species that already have records within the study area are:

- Eucalyptus camphora subsp. Relicta – flora;
- Thesium austral – flora;
- Swift Parrot – fauna;
- Greater Broad-nosed Bat – fauna;
- Yellow-bellied Sheath-tail-bat – fauna;
- Large Bent-winged Bat – fauna.

A search of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protected matters search, within a 10km buffer of the study area identified 41 threatened species that have potential habitat within the study area. Consisting of 17 plant species, 9 bird species, 2 fish, 3 frogs, 8 mammals, 2 reptiles. One threatened bird species, the Swift Parrot has been previously recorded within the study area.

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.

Vegetation Communities

A desktop assessment was conducted to map the vegetation communities or Plant Community Types (PCT) known to occur within the study area. A review of the regional mapping projects identified 12 vegetation types that are likely to occur where infrastructure is proposed including:

1. Black Sallee - Snow Gum grassy woodland of the New England Tablelands Bioregion (PCT 507);
2. Candidate Native Grasslands (Needs field verification to align PCT);
3. Montane Stringybark-Gum (Needs field verification to align PCT);
4. New England Stringybark – Peppermint (PCT 997);
5. Peppermint (PCT 534);

6. Peppermint-Mountain/Manna Gum (PCT 534);
7. Snow Gum -Mountain/Manna Gum (PCT 1195);
8. Snow Gum-Black Sallee (PCT 1188);
9. Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tablelands Bioregion (PCT 1104);
10. Silvertop Stringybark - Mountain Gum grassy open forest of the New England Tableland Bioregion (PCT 565);
11. Upland wetlands of the New England Tableland Bioregion (PCT 665); and
12. Youman's Stringybark - Mountain Gum open forest of the western New England Tableland Bioregion (PCT 559).

Threatened Ecological Communities (TECs)

1. Seven potential threatened ecological communities could be aligned to the vegetation communities that have been mapped by the regional mapping. These include:
2. Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland;
3. Ribbon Gum - Mountain Gum - Snow Gum grassy/open forest or woodland of the New England Tablelands Bioregion;
4. McKies Stringybark/Blackbutt Open Forest in the Nandewar and New England Tableland Bioregions;
5. New England Peppermint (*Eucalyptus nova-anglica*) Woodland on basalts and sediments;
6. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and derived native grassland;
7. PCT 1104 Ribbon Gum - Mountain Gum - Snow Gum grassy open forest or woodland of the New England Tablelands Bioregion; and
8. Upland wetlands of the New England Tableland Bioregion.

All threatened communities will be verified as part of the field surveys.

EIS Methodology

The following methodology will be conducted to inform the Biodiversity Development Assessment Report (BDAR) and a referral to the Department of Agriculture, Water and the Environment:

- Desktop assessments and literature review;
- Database searches including BioNet, NSW Department of Primary Industries (DPI) freshwater threatened species distribution maps, The federal Department of the Environment and Energy's Protected Matters Search Tool (PMST), BioNet NSW Vegetation Classification database, Bureau of Metrology groundwater dependant ecosystem search and Atlas of Living Australia;
- Conduct vegetation mapping, determine number of vegetation zones, threatened ecological communities and vegetation integrity;

- Undertake Biodiversity Assessment Methodology (BAM) plots in accordance with the BAM;
- Assessing the habitat suitability for threatened species;
- Conduct targeted seasonal surveys for threatened species as required by the BAM calculator and any additional threatened species that are required by DPIE; and
- Conduct targeted bird and bat surveys for assessment of the impacts of wind turbine strikes on relevant protected animals.

Upon completion of the field surveys a BDAR will be prepared in accordance with Appendix 12 of the BAM and results of the site surveys. The report will include the following sections as a guide:

- Introduction – providing project background, describing and identifying the development site, and outlining the legislative context and SEARs;
- Methods – outlining in detail the assessment approach and methods used in preparation of the BDAR;
- Landscape features – identifying landscape features and site context components in accordance with Section 4 of the BAM;
- Native vegetation, threatened ecological communities and vegetation integrity – identifying, describing and illustrating the native vegetation, Plant community types, and threatened ecological communities recorded within the study area in accordance with Section 5 of the BAM;
- Habitat suitability for threatened species – identifying ecosystem credit and species credit species considered likely to occur within the site, excluding species that are unlikely to occur, and outlining the results of the targeted threatened species surveys in accordance with Section 6 of the BAM;
- Protected species (birds and bats) assessment in relation to BAM prescribed matters;
- Matters of National Environmental Significance (MNES) – identifying, describing and illustrating threatened and migratory species listed under the EPBC Act that occur within the study area. Final assessment of the significance of impacts will be done according to the self-assessment process outlined in the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*;
- Impact avoidance and minimisation – discussions on how the project has sought to reduce and/or minimise impacts on biodiversity such as retaining native vegetation, moving development footprint, etc;
- Assessment of impacts – description of impacts on native vegetation and habitat, clearing of native vegetation, threatened ecological communities and threatened species habitat, prescribed biodiversity impacts (particularly important for this project given that it involves a wind farm), and other direct and indirect impacts as identified during the assessment;
- Mitigating and managing impacts on biodiversity values – a section outlining the mitigation approach;

- Thresholds for the assessment and offsetting of impacts – identifying which impacts need to be offset; and
- Biodiversity credit requirements – results of entering development impacts into the BAM Credit Calculator.

An EPBC Referral will be submitted to the Department of Agriculture, Water and the Environment (DAWE) to determine if the Project is likely to result in a controlled action upon MNES. Initial field surveys will be conducted before submission of the EPBC referral to inform the ability to avoid impacts to MNES through project design refinement and potentially avoid a controlled action.

The preliminary assessment of the significance of impacts will be done according to the assessment process outlined in the *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*.

The following guidelines will be addressed and considered for the BDAR:

- Biodiversity Assessment Methodology (OEH, 2016);
- Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (2013);
- Wind Farms and Birds: Interim Standards for Risk Assessment (AusWEA, 2005);
- Wind Farm Industry, EPBC Act Policy Statement 2.3 (2009);
- Species Credit threatened bats and their habitat Survey Guidelines (OEH, 2018);
- Commonwealth survey guidelines for threatened birds, bats, frogs, mammals and reptiles;
- Surveying threatened plants and their habitats (DPIE, 2020);
- Draft Survey Guidelines for Australia’s threatened Orchids (Commonwealth of Australia, 2013); and
- White Box Yellow Box Blakely’s Red Gum grassy woodlands and derived native grassland assessment guidelines (DEH, 2006).

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 detailed assessments.

8.1.4. Aboriginal Heritage

Background and Preliminary Assessment

An Aboriginal Heritage Information Management System (AHIMS) database search was undertaken on 02/03/2020 for an area that included the Project area. The AHIMS search found 1 Aboriginal site within the Project area and 3 outside the Project area.

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).

The scope of the AACHIA will likely include:

- Desktop review, including AHIMS database search, Native Title Search, 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) within the Project boundary and transport route upgrades, and revisiting existing sites registered on the AHIMS database;
- Preparation of an AACHIA to meet the OEH 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.

8.1.5. Historic Heritage

Background and Preliminary Assessment

A search of available historic heritage inventories was undertaken for an area that encompassed the Project area including Commonwealth Heritage List, National Heritage List, NSW State Heritage Register, NSW State Heritage Inventory, GLEP 2012 and GISLEP 2012.

There were no World, Commonwealth for National heritage listed sites in the vicinity of the Project area.

The closest State Heritage Item is the Ben Lomond Railway Station located within the village of Ben Lomond.

Table 8-1 summarises the heritage items listed in the GLEP 2012 and GISLEP 2012 heritage registers in the vicinity of the Project area.

Table 8-1: Historic Heritage within the vicinity of the Project Area

Suburb	Site Name	Address	LEP Schedule No & Significance	Lot / DP
Ben Lomond	War Memorial Hall	Ben Lomond Road	GLEP 2012 - I005 – Local	Lot 145, DP 753665
Ben Lomond	Ben Lomond Cemetery	Government Lane and Ben Lomond Road	GLEP 2012 - I006 – Local	Lot 7011, DP 94117
Ben Lomond	Ben Lomond Public School	Inn Road	GLEP 2012 - I007 – Local	Lot 45, DP 753665
Ben Lomond	St Patrick’s Catholic Church and cemetery	Inn Road	GLEP 2012 - I008 – Local	Lot 15, DP 665620
Ben Lomond	Ben Lomond Railway Station	Main Northern Railway	GLEP 2012 - I009 – State	Railway reserve
Ben Lomond	Presbyterian Church	4–6 Marowan Street	GLEP 2012 - I010 – Local	Lot 144, DP 753665
Ben Lomond	“Morehun”, station and cemetery	1419 Morehun Road	GLEP 2012 - I011 – Local	Lot 3, DP 1075339; Lot 7001, DP 94235
Ben Lomond	Ben Lomond Station	120 Streeters Road	GLEP 2012 - I012 – Local	Lot 165, DP 751436
Ben Lomond	Ollera Station— St Bartholomew’s Church of England	196 Tenterden Road	GLEP 2012 - I014 – Local	Lot 1, DP 162622
Ben Lomond	St Pauls Anglican Church	Wandsworth Road	GLEP 2012 - I015 – Local	Lots 4 and 5, Section 2, DP 2391
Ben Lomond	Disused slaughterhouse	1081 Ben Lomond Road	GLEP 2012 – A002 – Local	Lot 196, DP 657841
Ben Lomond	Watermill remains	120 Streeters Road	GLEP 2012 – A003 – Local	Lots 11 and 165, DP 751436

Methodology

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

- A review of any relevant existing heritage assessment reports and other sources of information regarding heritage items in the region;
- A field survey of the Project Boundary, 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 within the Project Boundary;
- Preparation of a Non-Indigenous Heritage Impact Assessment which considers the potential for impacts on any significant adjacent heritage items; and
- Identification of any necessary impact mitigation and management measures.

8.1.6. Traffic and Transport

Background and Preliminary Assessment

The construction phase of the Project will generate the greatest volume of traffic and accordingly presents the most potential issues. Traffic associated with the ongoing operations of the Project are minimal both in terms of number and type of vehicles.

Access to the site will be via the New England Highway and then on designated local roads. The most likely port for delivery of international turbine components will be the Port of Newcastle (PoN). The PoN already receives components for other wind farms in the New England Region. An assessment of the full delivery route for project components from the PoN to the site will be undertaken.

Upgrades to local roads necessary to permit over-sized vehicles will be carried out prior to delivery of turbine components and maintenance of these roads will be ongoing through the construction phase.

Additional traffic volumes generated from the Project are not expected to constitute a material increase in existing volumes on the New England Highway. Additional traffic volumes generated from the Project are expected to constitute a material increase in existing volumes on the local roads.

Methodology

A detailed 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 likely include:

- Review of any previous traffic impact assessments undertaken for delivery route and 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); 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 RMS adopting relevant learnings from previous experiences to ensure the disruption to local communities is minimised will also be included.

8.2. MINOR ISSUES

8.2.1. 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 EMI study. Preliminary telecommunication assessment has been undertaken to inform the draft Project layout.

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).

8.2.2. Soils, Landforms and Rehabilitation

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);
- ‘Landslide Risk Management Guidelines’ (AGS, No Date); and
- ‘Site Investigations for Urban Salinity’ (OEH, 2002).

8.2.3. Water

Due to the elevation of the site at the peak of the Great Dividing Range, the Project is located at the head of multiple water catchments. There are no significant wetlands associated or waterways within the project boundary as shown in Figure 8-4. There are a number of first, second and third order streams within the project boundary and surrounds, as illustrated in Figure 8-5. Most of the site drains west into the MacIntyre and Severn Rivers (eventually ending up in the Darling River). The eastern portions of the site near Glencoe drain east into the Mann River (eventually ending up in the Clarence River). First and second order streams within the site flow into Grahams Valley Creek, Marowan Creek, Back Creek, Clerks Creek, Moredun Creek, Limestone Creek, Ban Ban Creek, Ryanda Creek and Liangothlin Lake. Numerous farm dams occur throughout.

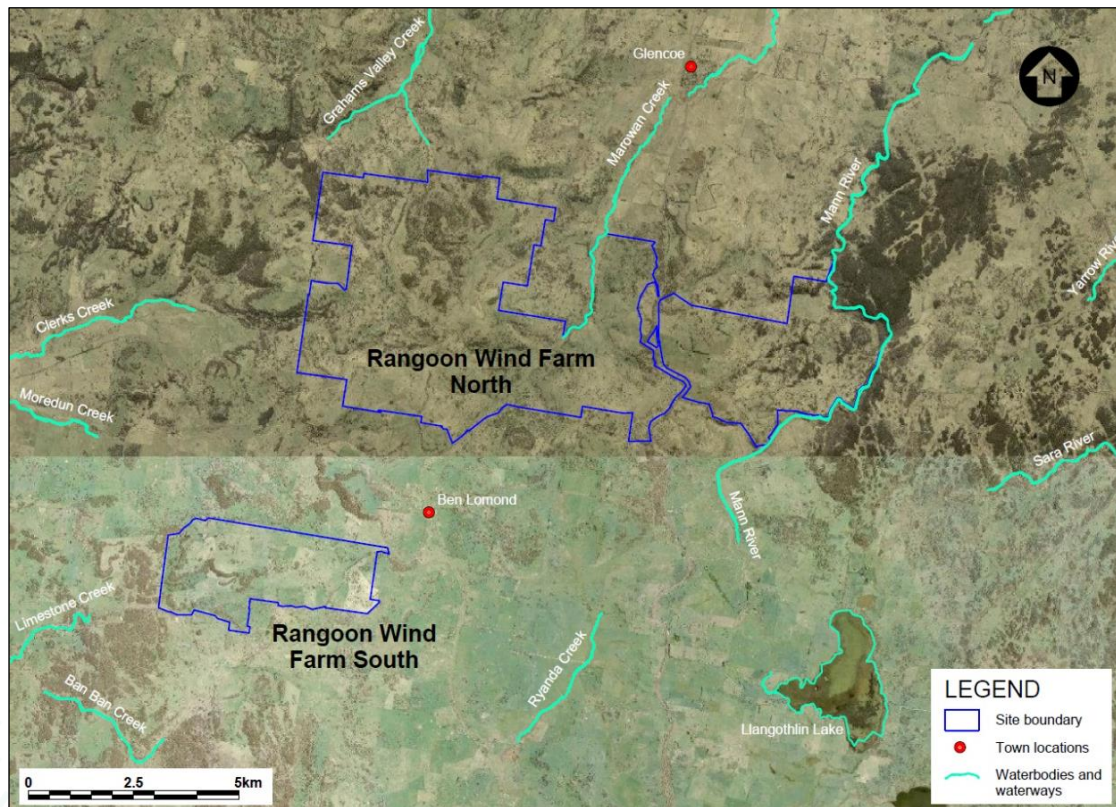


Figure 8-4: Key Waterbodies and Waterways

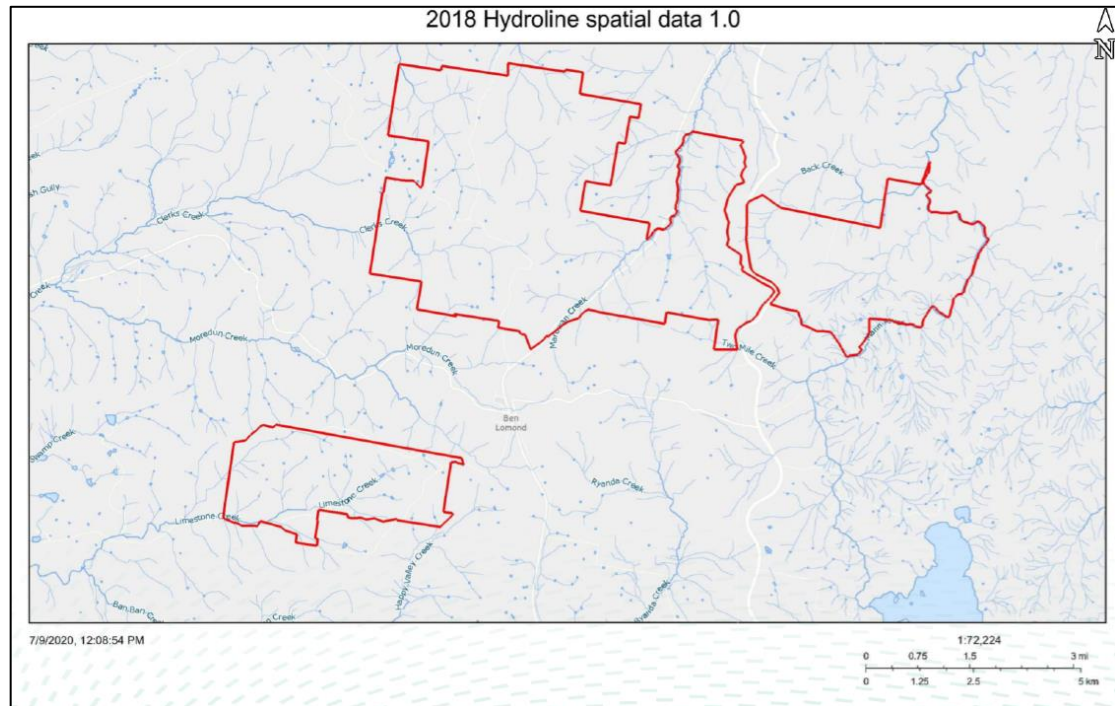


Figure 8-5: Stream Order Plan

A water impact 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. This will include identification of any Projects impacts within 40 metres of the high bank of “waterfront land” and conduct a relevant assessment.

The water impact assessment 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).

8.2.4. 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.

8.2.5. Hazards and Safety

A preliminary review showed no aerodromes and significant aircraft landing areas within 30km of the Project area. Several local landing ground airstrips for agricultural work exist within and around the Project area. Further assessment of the impacts of operations associated with these strips will be undertaken as part of the EIS.

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

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.

A Bushfire assessment will be undertaken in accordance with the Rural Fire Service (RFS) 'Guide for Bush Fire Prone Land Mapping', vegetation based on vegetation type and potential risk. Relevant management and mitigation will be identified where required.

8.2.6. Waste

This assessment will quantify and classify the likely waste streams to be generated during construction, operation and decommissioning and describe measures to manage, reuse, recycle and dispose of this waste in accordance with 'Waste Classification Guidelines' (EPA, 2014).

8.2.7. Other Issues

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

- Dust management – in accordance with relevant NSW guidelines in relation to construction;
- The potential for any health impacts (including infrasound and Electromagnetic fields (EMF); and
- Decommissioning.

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
CSIRO	Commonwealth Scientific and Industrial Research Organisation
dba	A-weighted decibels
DCP	Development Control Plan
DoAW&E	Department of Agriculture Water and the Environment
DoEE	Department of the Environment and Energy
DPI&E	Department of Planning Industry and Environment
DPE	Department of Planning and the Environment
DPI	Department of Primary Industry
DRG	Division of Resources and Geoscience
EEAP	Energy Efficiency Action Plan
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>
ESD	Ecologically Sustainable Development
ESOO	Electricity Statement of Opportunities
FTE	Full Time Equivalent
GDE	Groundwater Dependent Ecosystems
GILEP	<i>Glen Innes Severn Local Environmental Plan 2012</i>
GLEP	<i>Guyra Local Environmental Plan 2012</i>
GWh	Gigawatt-hour
HHIA	Historic Heritage Impact Assessment
IBRA	Interim Biogeographic Regionalisation for Australia

ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICS	International Commission on Stratigraphy
IPCC	Intergovernmental Panel on Climate Change
ISP	Integrated System Plan
IUGS	International Union of Geological Sciences
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
PNIA	Preliminary Noise Impact Assessment
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
REA NSW	Renewable Energy Action Plan
RFS	Rural Fire Service
RMS	Roads and Maritime Service
RTA	Roads and Traffic Authority
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

REFERENCES

- AEMO (2019). *NEM Electricity Statement of Opportunities*.
<https://www.aemo.com.au/Electricity/NationalElectricity-Market-NEM/Planning-and-forecasting/NEM-Electricity-Statement-of-Opportunities>
- AGL (2017). *AGL Announces plans for Liddell Power Station*.
- AGS (No Date). *Landslide Risk Management Guidelines*.
<https://landsliderisk.org/resources/guidelines/>
- Australian Sustainable Finance Initiative (2020). *Sustainable finance*.
<https://www.sustainablefinance.org.au/>.
- 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*.
- Centre for policy development (2019) - Noel Hutley SC and Sebastian Hartford Davis *Climate change and Directors Duties*.
- Climate Action Tracker (2019). Summary of Australia's progress to meet Paris Agreement commitments: <https://climateactiontracker.org/countries/australia/>.
- Commonwealth (2006). *Significant Impact Guidelines. EPBC Act Policy Statement 1.1. Matters of National Environmental Significance*.
- Corrs Chambers Westgarth (2019) *A new era of climate change litigation in Australia*.
- Clean Energy Council (CEC) (2018). *Clean Energy Australia Report 2018*.
- CSIRO (2018). *GenCost 2018. Updated projections of electricity generation technology costs*.
- 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*.
- Deputy Governor Guy Debelle, (March 2019) '*Climate Change and the Economy*' (Speech, Centre for Policy Development, Sydney).
- Department of Infrastructure, Regional Development and Cities (DIRDC) (2012). *National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft*.
- DPI&E (2013). *NSW Wind Farms*.

- DPI&E (2016a). *Wind Energy Guideline for State significant wind energy development.*
- DPI&E (2016b). *Wind Energy Visual Assessment Bulletin for State significant wind energy development.*
- DPI&E (2016c). *Wind Energy Noise Assessment Bulletin for State significant wind energy development.*
- DPI&E (2017) *New England North West Regional Plan 2036.*
- DPI&E (2019). *Community Consultative Committee Guideline. State Significant Projects.*
- DPI&E (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.*
- 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.*
- IPCC (2018) *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.*
- IPCC (2019) *Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.*
- ISP (2018a). *Integrated Systems Plan.*
- ISP (2018b). *Integrated System Plan Appendix F.*
- Landcom (2004). *Managing Urban Stormwater; Soils & Construction.*
- Law Society Journal April 2020. *IBA releases model statute for climate change litigation.*
- NAB transition to a low carbon economy. <https://www.nab.com.au/about-us/social-impact/environment/climate-change>.
- 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*.

Robert White (Barrister) and Natasha Hammond (Barrister) (2020) *Climate Litigation: Recent Cases and Looking Forward*.

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

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

APPENDIX 1

Preliminary Landscape and Visual Impact Assessment

APPENDIX 2

Preliminary Noise Impact Assessment