Paling Yards Wind Farm

ENVIRONMENTAL IMPACT STATEMENT

State Significant Development Application

Prepared for Global Power Generation Australia Pty Ltd and Paling Yards Development Pty Ltd

Tract

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Quality Assurance

Paling Yards Wind Farm
ENVIRONMENTAL IMPACT STATEMENT
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Project Number
220-0052-00

Revisions

Issue	Date	Description	Prepared By	Reviewed By	Project Principal
00	05/08/2022	Internal Draft	K Picard	L Slabbert	K Murphy
01	11/10/2022	Updated Draft for Review	K Picard	L Slabbert	K Murphy
02	18/11/2022	Draft for Client Review	K Picard	L Slabbert	K Murphy
03	19/12/2022	Final for Comment	K Picard	L Slabbert	K Murphy
04	15/02/2023	REAP Review	L Slabbert	A Coburn	K Murphy
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07	24/07/2023	Final for DPE Review	L Slabbert	A Coburn	K Murphy
08	31/08/2023	Final for Issue	L Slabbert	A Coburn	K Murphy

Registered Environmental Assessment Practitioners (REAP) Certification

Project details	
Project name	Paling Yards Wind Farm
Application number	SSD-29064077
Location	Abercrombie Road, Paling Yards, 60 km north of Goulburn in the Oberon Local Government Area
Proponent details	
Proponent name	Global Power Generation Australia Pty Ltd
ABN	ABN 74 130 542 03
Proponent address	Suite 4, Level 3, 24 Marcus Clarke Street, Canberra ACT 2600
Declaration by registered environmental practitioner	
Name	Adam Coburn State Director NSW, Mecone Group Pty Limited
Registration number	10163
Organisation registered with	Planning Institute of Australia
Declaration	The undersigned declares that this EIS: • has been prepared in accordance with the Environmental Planning and Assessment Regulation 2021; • contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EIS relates; • does not contain information that is false or misleading; • addresses the Planning Secretary's environmental assessment requirements (SEARs) for the project; • identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments; • has been prepared having regard to the Department's State Significant Development Guidelines - Preparing an Environmental Impact Statement; • contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development; • contains a consolidated description of the project in a single chapter of the EIS; • contains an accurate summary of the findings of any community engagement; and • contains an accurate summary of the detailed technical assessment of the impacts of the project as a whole.
Signature	
Date	24 July 2023

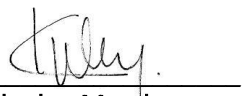
Author Certification

Certification

I / we certify that the contents of this Environmental Impact Statement:

- are in accordance with Part 8, Division 5, Section 192 of the Environmental Planning and Assessment Regulations 2021;
- contains all available information that is relevant to the environmental assessment of the development;
- contains all the information required under the Registered Environmental Assessment Practitioners Guidelines;
- does not contain information that is false or misleading;
- addresses the Planning Secretary's Environmental Assessment Requirements (SEARs) for the project;
- identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments;
- has been prepared having regard to the Department's State Significant Development Guidelines – Preparing an Environmental Impact Statement;
- contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development;
- contains a consolidated description of the project in a single chapter of the EIS;
- contains an accurate summary of the findings of any community engagement; and
- contains an accurate summary of the detailed technical assessment of the impacts of the project as a whole.

Katherine Murphy and Leonard Slabbert of Tract Consultants are the primary authors of this document. The report draws on the work of a number of specialists engaged as part of the project team. The information contained in this document is neither false nor misleading.



Katherine Murphy
Senior Principal Town Planner

Leonard Slabbert MPIA
Principal Town Planner

Date: 31 August 2023

Tract Consultants Pty Ltd
Level 8, 80 Mount Street
North Sydney
NSW 2060

Acknowledgment of Country

We pay our respects to the Traditional Custodians of Country throughout Australia, their Elders and ancestors, recognising their rich heritage and enduring connection to Country and acknowledging the ongoing sovereignty of all Aboriginal and Torres Strait Islander Nations.

We recognise the profound connection to land, waters, sky and community of the First Nations peoples, with continuing cultures that are among the oldest in human history. We recognise that they are skilled land shapers and place makers, with a deep and rich knowledge of this land which they have cared for, protected and balanced for millennia.

Proposed Development

The Paling Yards Wind Farm (PYWF) project includes the construction, operation and decommissioning of a wind farm comprising up to 47 Wind Turbine Generators (WTGs) and associated ancillary infrastructure and facilities, including a high voltage transmission line, a collector substation, a switching substation, and grid interface works.

Land to be Developed

The wind farm and associated infrastructure will be located across the land parcels described below. The parts of those parcels being used for construction of the PYWF and its operation is referred to throughout as the "Project Area".

Lot	Deposit Plan
1	DP 753019
2	DP 753019
3	DP 753019
4	DP 753019
30	DP 753019
31	DP 753019
32	DP 753019
1	DP 753037
2	DP 753037
5	DP 753037
6	DP 753037
7	DP 753037
11	DP 753037
13	DP 753037
14	DP 753037
15	DP 753037
16	DP 753037
17	DP 753037

Lot	Deposit Plan
18	DP 753037
19	DP 753037
20	DP 753037
21	DP 753037
22	DP 753037
23	DP 753037
24	DP 753037
25	DP 753037
26	DP 753037
27	DP 753037
28	DP 753037
31	DP 753037
34	DP 753037
35	DP 753037
39	DP 753037
40	DP 753037
41	DP 753037
42	DP 753037

Lot	Deposit Plan
43	DP 753037
44	DP 753037
45	DP 753037
48	DP 753037
49	DP 753037
50	DP 753037
51	DP 753037
53	DP 753037
56	DP 753037

Lot	Deposit Plan
61	DP 753037
2	DP 753064
6	DP 753064
41	DP 753064
56	DP 753064
67	DP 753064
41	DP 1025920
51	DP 621232

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Glossary

ACT	Australian Capital Territory
ACMA	Australian Communication and Media Authority
AEMO	Australian Energy Market Operator
AEP	Annual Exceedance Probability
AGL	Above Ground Level
AHD	Australian Height Datum
AHL	Aviation Hazard Lighting
ALA	Aircraft Landing Area
AHIMS	Aboriginal Heritage Information Management System
AIA	Aviation Impact Assessment
APZ	Asset Protection Zones
AMS	Archaeological Method Statement
AMSL	Above Mean Sea Level
AOBV	Areas of Outstanding Biodiversity Value
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
AsA	Airservices Australia
BAL	Bushfire Attack Level
BAM	Biodiversity Assessment Method 2020
BBAMP	Bird and Bat Adaptive Management Program
BBUS	Bird and Bat Utilisation Survey
BC Act	*Biodiversity Conservation Act 2016*
BCS	Biodiversity, Conservation and Science
BDAR	Biodiversity Development Assessment Report
BFMC	Bush Fire Management Committee
BLR	Basic Landholder Rights
BoM	Bureau of Meteorology
BRA	Bushfire Risk Assessment

BRMP	Biosecurity Risk Management Plan
BTA	Blade Throw Assessment
CASA	Civil Aviation Safety Authority
CCC	Community Consultative Committee
CEC	Clean Energy Council
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
CHMP	Cultural Heritage Management Plan
CIA	Cumulative Impact Assessment
CIV	Capital Investment Value
CL Management Act	*Crown Land Management Act 2016 (NSW)*
CO2	Carbon Dioxide
CSE	Community & Stakeholder Engagement
CTMP	Construction Traffic Management Plan
DA	Development Application
DAFF	Department of Agriculture, Fisheries and Forestry
DAWE	Department of Agriculture, Water and Environment
dBA	Decibels A (or A-weighted decibels)
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCP	Development Control Plan
DEM	Digital Elevation Model
DNV	DNV Energy Systems
DPE	Department of Planning and Environment
DPIE	Department of Planning, Industry and Environment
DTV	Digital Television
EAR	Environmental Assessment Requirements
EES	Environment, Energy and Science Group
EIS	Environmental Impact Statement
EMF	Electric and magnetic Fields
EMI	Electromagnetic Interference Report
EPA	NSW Environmental Protection Authority
EP&A Act	*Environmental Planning and Assessment Act 1979 (NSW)*
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021 (NSW)*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999 (Cth)*
ERM	Environmental Resource Management Australia Pty Ltd
ESCP	Erosion Sediment Control Plan

ESD	Ecologically Sustainable Development
EWMS	Environmental Work Method Statement
FAQ	Frequently Asked Questions
FFMP	Flora and Fauna Management Plan
FMD	Foot and Mouth Disease
FPL	Flood Planning Level
FRNSW	Fire and rescue NSW
G	Gauss
GE	General Electric
GW	Gigawatts
GPGA	Global Power Generation Australia Pty Ltd
Ha	Hectare
HHDDA	Historic Heritage Due Diligence Assessment
HMZ	Heritage Management Zones
Hz	Hertz
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEA	International Energy Agency
IPCC	International Panel for Climate Change
ISP	Integrated System Plan
km	Kilometres
kV	Kilovolt
LCU	Landscape Character Units
LEP	Local Environmental Plan
LGA	Local Government Area
LSPS	Local Strategic Planning Statement
LUCRA	Land Use Conflict Risk Assessment
LVIA	Landscape and Visual Impact Assessment
MNES	Matters of National Environmental Significance
Moir	Moir Landscape Architecture Pty Ltd
MW	Megawatt
MWh	Megawatt hour
NASF	National Airports Safeguarding Framework
NDC	Nationally Determined Contribution
NHMCR	National Health and Medical Research Council
NHVR	National Heavy Vehicles Regulator
NIA	Noise Impact Assessment

NML	Noise Management Levels
NMM	Noise Management Mode
NPW Act	*National Parks and Wildlife Act 1974* (NSW)
NPWS	National Parks & Wildlife Services
NREL	United States Renewable Energy Laboratory
NSW	New South Wales
NSW RFS	NSW Regional Fire Services
NSW Telco Authority	NSW Government Telecommunications Authority
NT Act	*Native Title Act 1993 (Cth)*
O&M	Operations and Management
ODCP	Oberon Development Control Plan 2001
OECC	NSW Treasury Office of Energy and Climate Change
OEMP	Operational Environmental Management Plan
OLEP	Oberon Local Environmental Plan 2013
OLS	Obstacle Limitation Surface
OSOM	Oversize and / or Overmass
Paris Agreement	Paris Agreement under the United Nations Framework Convention on Climate Change
PCTs	Plant Community Types
PMF	Probable Maximum Flood
POEO Act	*Protection of the Environment Operations Act 1997 (NSW)*
PV	Peak Velocity
PYWF	Paling Yards Wind Farm
RAAF	Royal Australian Air Force
RAP	Registered Aboriginal Parties
RE Act	*Renewable Energy (Electricity) Act 2000 (Cth)*
REZ	Renewable Energy Zone
RF Act	*Rural Fires Act 1997 (NSW)*
RFDS	Royal Flying Doctor Service
RFS	Rural Fire Service
RJA	Rex J. Andrews Engineered Transportation
RMS	Roads and Maritime Services
RQD	Rock Quality Designation
RRL	Register of Radiocommunications Licenses
RSA	Rotor Sweep Area
SAII	Serious and Irreversible Impact
SCADA	Supervisory Control and Data Acquisitioning

SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SFAZ	Strategic Fire Advantage Zones
SIA	Social Impact Assessment
SISD	Safe Intersection Sight Distance
SLR	SLR Consulting Australia Pty Ltd
SPV	Special Purpose Vehicle
SSD	State Significant Development
SWMP	Soil and Water Management Plan
T	Tesla
TEC	Threatened Ecological Communities
TfNSW	Transport for New South Wales
TIA	Traffic Impact Assessment
TMP	Traffic Management Plan
TO	Traditional Owners
UNFCCC	United Nations Framework Convention on Climate Change
VI	Vegetation Integrity
VIC	Victoria
VIZ	Visual Influence Zones
VZs	Vegetation Zones
WAL	Water Access License
WARR Act	*Waste Avoidance and Resource Recovery Act 2001 (NSW)*
WHO	World Health Organization
WM Act	Water Management Act 200 (NSW)
WMP	Waste Management Plan
WMT	Wind Monitoring Towers
WSP	Water Sharing Plan
WTG	Wind Turbine Generators

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Project Summary

Summary

Introduction

Tract Consultants Pty Ltd (Tract) has prepared this Environmental Impact Statement (EIS) on behalf of the proponent Global Power Generation Australia Pty Ltd and its wholly owned subsidiary Paling Yards Development Pty Ltd (GPGA and PYDPL respectively or 'the Proponent') in support of the state significant development (SSD) application (DA) for the proposed Paling Yards Wind Farm project (PYWF or 'the Project').

The DA for the PYWF supports the installation, operation and maintenance of a wind farm development that will comprise of up to forty-seven (47) Wind Turbine Generators (WTGs) and associated ancillary infrastructure and facilities within the Central Tablelands of NSW, approximately 60km south of Oberon and 75km north of Goulburn.

The Proponent

GPGA was set up by Gas Natural Fenosa and KIA (through its subsidiary Wren House Infrastructure) as a vehicle to channel its international power generation investment activity. The Parent Group of GPGA is Naturgy Energy Group S.A. (Naturgy). Through Naturgy, GPGA is backed by experience with more than one thousand renewable energy projects in over thirty countries.

GPGA is the Australian subsidiary of Global Power Generation (GPG). It was established in Canberra to develop, construct, and operate renewable assets in Australia to advance investment within the international renewable energy sector.

GPGA is committed to developing and managing modern power generation assets with a global focus on renewable energy through hydro and wind power technologies. Wind power through WTGs is identified as one of the world's most widely used renewable technologies and the opportunity for wind farm developments as a clean, inexhaustible, and environmentally friendly energy source plays a major part of GPGA's commitment to the renewable energy future of NSW and across the National Energy Market (NEM).

With a demonstrated track record, GPGA is currently one of the top five independent renewable energy operators in Australia. GPGA has two existing wind farm facilities in operation – the Crookwell 2 Wind Farm (91MW) near Goulburn in New South Wales (NSW) and the Berrybank Wind Farm (180MW) in south-western Victoria (VIC). GPGA also has four projects that are under construction or construction ready.

GPGA has set up Paling Yards Development Pty Ltd to act as subsidiary and manage the wind farm's construction, finances and ongoing operation.

Figure 1 provides a summary of all the GPGA operational sites and projects under construction across Australia.

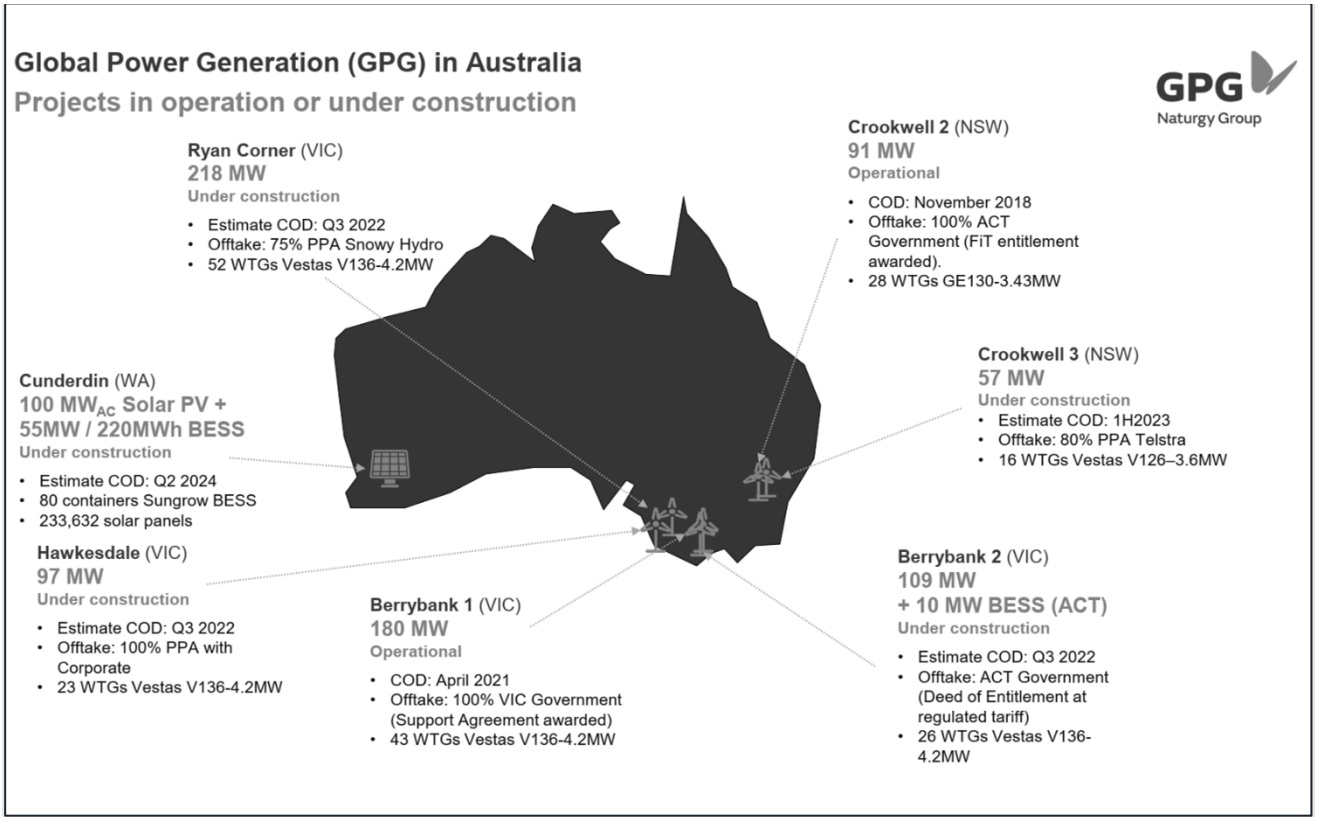

Figure 1. GPGA Projects in Operation or Under Construction (Source: GPGA, 2022)

Project Overview

Once constructed the Project will provide renewable energy to the Central Tablelands region. It will consist of up to forty-seven (47) wind turbines, capable of generating up to 6.1MW per turbine, with a total generation capacity of up to 287 megawatt (MW), enough to power 100,000 average households per year. The PYWF will see clean electricity generated and dispatched into the existing 500kV Mt. Piper – Bannaby overhead line, which will result in a reduction of greenhouse gas emissions of approximately 900,000 tonnes of CO2 equivalent annually.

In 2021 Naturgy, through GPGA, signed a power purchase agreement with Telstra for the 58MW Crookwell 3 wind farm located near Goulburn in NSW. Under the agreement, Telstra has committed to procure 80% of the energy generated by the wind farm. To date, Telstra has signed long-term renewable energy agreements that enable the telecommunications company to achieve approximately two thirds of its renewable energy goal set for 2025. Telstra recently confirmed that it would be looking to sign additional agreements before 2025. The PYWF project already has an offtake agreement in place with a reputable but confidential off taker.

The Project will comprise the following:

- Up to forty-seven (47) WTGs inclusive of tower, blades and components required for the generation of electricity through the use of wind power:
  - Overall WTG maximum blade tip height of up to 240m, with a total of three (3) blades per turbine; and
  - Up to three (3) wind monitoring masts fitted with various instruments such as anemometers, wind vanes, temperature gauges and potentially other electrical equipment.
- Ancillary infrastructure:
  - Switchgear and associated control systems within the wind turbine towers.
  - An on-site 33/132kV collector substation, including control room, maintenance building, switchgear and associated control systems.
  - Approximately 7km of 132kV overhead powerline (with a total easement measuring 40-45m to connect the collector substation to the switching substation (including control room and other associated grid connection facilities).

- An on-site 132 / 500kV switching substation to connect to the existing TransGrid's 500kV Mount Piper to Bannaby transmission line (including control room and other associated grid connection facilities).
- Cut-in works on the 500kV Mt Piper-Bannaby transmission line to connect it to the switching substation, resulting on a section of approximately 1km of 500kV transmission line (with a total easement width of 70m).

· Roads and local infrastructure:

- Upgrades to local road infrastructure including several access points from Abercrombie Road and internal unsealed tracks for vehicle access to turbines and infrastructure.

· Temporary facilities:

- Establishment of a laydown area during the construction period;
- A demountable site office and site store to be within the identified laydown area; and
- A temporary batching plant to supply concrete.

Figure 2 below provides an aerial view of the site, with the proposed turbine locations and site boundary added for context. Relevant associated and non-associated dwellings have also been included.

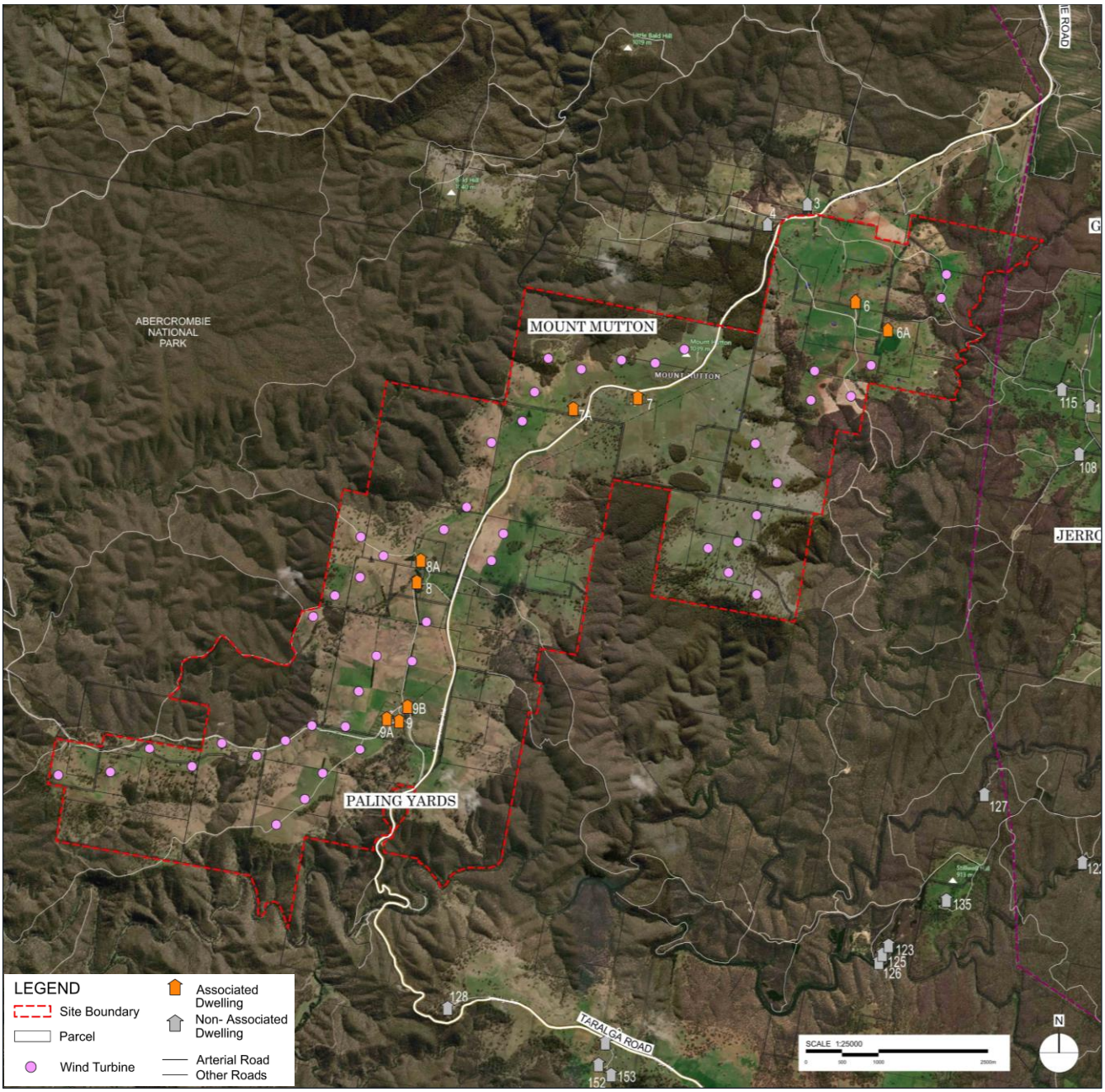

Figure 2. Aerial View of the Application Site (Source: Tract, 2023)

Micro-siting

The proposal will include the provisions to allow for the micro-siting of turbines, ancillary infrastructure and temporary facilities post development consent during the optimisation and detailed design phase.

Micro-siting allows for flexibility to relocate turbines to within a 100m radius of its original location as a result of unforeseen circumstances or issued encountered during optimisation, detailed design and construction phase programming. It also allows for the flexibility to relocate ancillary infrastructure, such as internal roads, transmission equipment and substation, including temporary facilities such as laydown areas, to within a 50m wide corridor.

This helps mitigate impacts after consent for the Project has been issued, but before construction commences.

The relevant specialist assessments have therefore considered the100m wide radius for the turbines and 50m wide corridor for ancillary equipment as part of the micro-siting approach.

Any micro-sited facilities would not result in any non-compliance with the Development Consent once granted.

Project Benefits

The Project provides local, regional and broader economic and environmental benefits, including:

- A total capital investment of approximately $600 million;
- An estimated 152 full time employment positions during construction, up to four (4) full time ongoing positions during the operation of the wind farm, and up to six (6) additional full-time roles, which includes maintenance staff;
- Stimulation of the economy in the Oberon Council area as a result of greater income generation for host landowners and PYWY employees and subsequent expenditure in the region;
- Flow-on economic benefits in terms of employment and commercial opportunities from the economic investment;
- Up-skilling of the local workforce within a growing energy market;
- The use of a significant portion of locally sourced materials and employment;
- Supporting the local tourism industry, and in turn, increased expenditure on local services such as accommodation and retail in the Oberon Local Council area;
- Generation of up to 900,000 MWh of clean renewable energy per annum, powering up to 100,000 homes per year; and
- Renewable energy contributions to reduce the dangerous impacts of climate change, such as droughts, floods, extreme weather events and sea level rise by displacing up to 900,000 tonnes of greenhouse gases per annum.

Project Justification

The Project's primary objective is to produce clean renewable energy in line with Federal, State and Local Government commitments of transitioning to a low carbon future, reducing greenhouse emissions and addressing the adverse impacts of climate change.

Australia has committed to international agreements to reduce greenhouse gas emissions, including the 2015 'Paris Agreement' that came into force in 2016. The Paris Agreement seeks to reduce global impacts brought about by climate change by limiting the increase in global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit temperature increases to 1.5°C.

Australia's 2022 Nationally Determined Contributions (NDC) commits to an economy-wide target of greenhouse gas emissions reductions of 43% below 2005 levels by 2030[1] [2]. Wind energy in Australia is one of the primary sources of renewable energy, generating 7.1% of the nation's total electricity demand[3]. Wind energy is seen as one of the lowest-cost sources for new electricity supply combined with solar photovoltaic technology.

The quarterly update of Australia's National Greenhouse Gas Inventory for December 2022 noted that estimates of Australia's total Greenhouse Gas emissions for the year to December 2022 have decreased by 0.4% compared to the

[1] *Australian Government, Department of Industry, Science and Resources (2022), Australia submits new emission target to UNFCCC, https://www.industry.gov.au/news/australia-submits-new-emissions-target-to-unfccc*

[2] *The Hon Chris Bowen MP (2022), Stronger action on climate change, https://www.minister.industry.gov.au/ministers/bowen/media-releases/stronger-action-climate-change*

[3] *Australian Renewable Energy Agency (2022), Wind Energy, https://arena.gov.au/renewable-energy/wind/*

previous year[4]. Further commitments of the NDC include the transition to support renewable energy by investing in the transmission and storage needed to balance the grid, which will contribute to lower energy prices and support economic growth. This will help to generate an additional 604,000 jobs mainly to be focused within rural regions. This will help boost local economies and provide Australia with renewable energy sources and therefore cleaner energy[5].

The Clean Energy Council's 2022 Skilling the Energy Transition report highlights that as renewable energy generation capacity and projects across Australia grow exponentially in coming decades, an estimated 50,000 jobs will need to be created to ensure the timely delivery of a decarbonised electricity grid[6].

At the recently concluded Sharm El-Sheikh Climate Change Conference (COP 27) held in Egypt, countries came together to act towards achieving the world's collective climate goals. COP 27 reaffirmed their commitment to limit global temperature rise to 1.5 degrees Celsius and prompted countries to cut greenhouse gas emissions and adapt to the inevitable impacts of climate change. It was noted that a global transformation to a low-carbon economy is expected to require investment of at least $4-6 Trillion (US) a year. There is a lot of pressure on developed countries, like Australia, to mobilise climate finance, transition to a low-carbon economy and effectively deliver climate action at scale.

The Australian Government established the new Net Zero Economy Agency on 1 July 2023. The Net Zero Economy Agency is responsible for promoting orderly and positive economic transformation as the world decarbonises, to ensure Australia, its regions and workers realise and share the benefits of the net zero economy. The work of the Net Zero Economy Agency is a precursor to the establishment of a legislated Net Zero Authority. This will occur following established Parliamentary processes[7].

The Net Zero Economy Agency is one of several measures announced by the Federal Government as part of the Federal Budget in May 2023. In total, approximately $4 billion worth of new funding commitments have been allocated towards Australia's clean energy future[8].

NSW is emerging as a state leader in renewable energy with approximately 13,500 megawatts (MW) of renewable energy generation capacity, which is around 53% of total generation capacity in NSW (NSW DEIT, 2023)[9]. The NSW Government established the 'NSW Renewable Energy Action Plan' in 2013 and the follow up 'NSW Renewable Energy Action Plan Completion Report' in 2018.

The NSW Government's plan seeks to implement twenty-four actions in support of renewable energy (including through wind and solar photovoltaic generation) under the three following goals:

- Goal 1: Attract renewable energy investment and projects;
- Goal 2: Built community support; and
- Goal 3: Attract and grow renewable energy expertise.

The NSW Renewable Energy Action Plan aims to ensure that NSW has a diverse, affordable, modern energy system, with wind energy forming a vital part of the State's energy mix. It was identified that NSW has world-class wind resources available throughout the state. The Renewable energy resources map of NSW[10] produced by the Department of Planning, Industry and Environment in 2019 shows that areas with the highest wind energy potential are within the higher exposed parts of the Great Dividing Range and other areas in New England and the Southern Highlands.

The Project is located in the Oberon Local Government Area (LGA), in the southeast of the Central West and Orana region. It is in alignment with the NSW Government's *'Central West and Orana Regional Plan 2036'* and the Oberon Council's *Local Strategic Planning Statement* (LSPS). Specifically, the Project supports Direction 9 of the *Central West and Orana Regional Plan* through its intent to develop a modern generation wind farm in a manner that creates

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[4] Commonwealth of Australia 2023, Australian Government Department of Climate Change, Energy, the Environment and Water, Quarterly Update of Australia's National Greenhouse Gas Inventory: December 2022, Reviewed 24 July 2023 (https://www.dcceew.gov.au/sites/default/files/documents/nggi-quarterly-update-dec-2022.pdf)

[5] The Hon Chris Bowen MP, op. cit.

[6] Clean Energy Council, Skilling the Energy Transition 2022, Reviewed 24 July 2023 (https://assets.cleanenergycouncil.org.au/documents/CEC_Skilling-the-Energy-Transition-2022.pdf)

[7] Commonwealth of Australia 2023, Department of the Prime Minister and Cabinet, Net Zero Economy Agency, Reviewed 24 July 2023 (https://www.pmc.gov.au/netzero)

[8] Clean Energy Council, Federal Budget Kick-Starts Clean Energy Superpower Masterplan with $4 Billion New Funding, 9 May 2023 (https://www.cleanenergycouncil.org.au/news/federal-budget-kick-starts-clean-energy-superpower-masterplan-with-4-billion-new-funding)

[9] NSW Department of Enterprise, Investment and Trade, 2023, NSW's Clean Economy, NSW Government, Reviewed 25 July 2023 (https://www.investment.nsw.gov.au/priority-sectors/clean-economy/)

[10] Carter P.J. & Gammidge L.C. (compilers) 2019. Renewable energy map of New South Wales (3rd edition). Geological Survey of New South Wales, Maitland

economic opportunity, ensures the protection and conservation of the environment, and promotes community engagement and benefits.

The Project supports "*Infrastructure*" and "*Environment*" planning priorities and renewable energy generation investment within the Oberon LGA. The Project seeks approval for a wind farm that features modern wind turbine generation technology and will be implemented in consultation with the Oberon Council and the local community.

The "*Infrastructure*" planning priority gives effect to the Regional Plan directions, specifically *"Direction 21: Coordinate utility infrastructure investment"*. It outlines that the capability of the existing electricity network constrains the provision of electricity to future growth and development areas. Council has identified that planned investments in utility infrastructure in the towns and villages will drive opportunities for economic and housing growth. The Project will support residents in towns and villages though supporting jobs, employment and maximising private infrastructure investment within the Oberon LGA.

The "*Environment*" planning priority within the LSPS gives effect to the Regional Plan directions, specifically *"Direction 9: Increase renewable energy generation"*. In recognition of the high wind speeds within the area, the LSPS states that alternative energy sources like wind farms are identified as a potential future opportunity for the LGA.

As part of the scoping and development phases of the project, the Proponent, Tract, and the technical consultant team have taken steps to consult with local authorities, the community, and the NSW Government to ensure that impacts and disruptions are minimised. The Proponent has sought to be proactive in communicating information about the Project to the community including Oberon Council and interested community members within the LGA. The wind farm layout has considered all relevant environmental, economic and community concerns, and has provided appropriate mitigation measures to reduce risks and impacts as identified within this EIS.

Statutory Requirements

As an electricity generating development with a Capital Investment Value (CIV) of over $30 million, the Project is declared to be a State Significant Development (SSD) for the purpose of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act), pursuant to clause 2.6 and Schedule 1, clause 20 of *State Environmental Planning Policy (Planning Systems) 2021*.

The Project area is located within the Oberon LGA, and the site is subject to the *Oberon Local Environmental Plan 2013* (OLEP). The OLEP sets the provisions for land-use planning and development permissibility within the Oberon LGA subject to the operation of other environmental planning instruments.

The Project site is to be located on land zoned as RU1 Primary Production under the OLEP. Electricity generating works are prohibited in the RU1 Zone. However, *State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP)* overrides the OLEP to the extent of any inconsistency. Clause 2.36(1)(b) of the *Transport and Infrastructure SEPP* operates to permit development for the purpose of "*electricity generating works or solar energy systems*" to be carried out by any person on any land in a prescribed rural, industrial, or special use zone with the necessary development consent. Consequently, as electricity generating works, the Project is permissible within the zone, subject to development consent.

A detailed assessment of the Project against each of the relevant objectives of the RU1 Primary Production Zone as well as clause 2.46 of the Transport and Infrastructure SEPP is set out in section 4.1 of this EIS. Other relevant federal, state and local requirements considered in assessing the impacts of the Project in this EIS includes:

- EP&A Act
- *Biodiversity Conservation Act 2016* (NSW)
- *National Parks and Wildlife Act 1974* (NSW)
- *Rural Fires Act 1997* (NSW)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Civil Aviation Safety Regulations 1998*.

The consent authority is the NSW Minister for Planning. This EIS has been prepared based upon the key guideline documentation prepared by the Department of Planning and Environment (DPE), including:

- 'Wind Energy Guideline' 2016 (Wind Guideline)
- Wind Energy: Visual Assessment Bulletin (2016) (Visual Bulletin)

- Wind Energy: Noise Assessment Bulletin (2016) (Noise Bulletin)
- State Significant Development Guidelines, October 2022.

This EIS was prepared in accordance with the requirements of Division 4.7 of the EP&A Act, Schedule 2 of the EP&A Regulation and the Secretary's Environmental Assessment Requirements issued on 9 March 2022 (SEARs). It complies with the SSD Guidelines.

Community Consultation Overview

Previous community and stakeholder engagement had been undertaken in 2014 as part of an original application for the Paling Yards Wind Farm (SSD-6699) for 59 Wind Turbines at the same location. The number of turbines was later reduced to 55, following environmental considerations identified as part of the application process.

Following detailed discussions between the Proponent and DPE (previously referred to as Department of Planning Industry and Environment), application was withdrawn in 2020. It was agreed that a new SSD Application be prepared and submitted to DPE for consideration and assessment.

Since restarting the application process, the number of wind turbines has been further reduced to 47 and now includes wind turbines with a maximum blade tip height of up to 240m. While the project site boundary has increased slightly, the number of turbines and overall density of the turbines has been reduced.

Since 2020, the Project team has undertaken extensive community consultation and stakeholder engagement. During the scoping phase of the project, Environmental Resources Management Australia Pty Ltd (ERM) prepared a *'Community and Stakeholder Engagement Plan'*, which set out to inform and support the Project's community engagement process. The plan set out to:

- Provide a guide for the planning and implementation of communications and stakeholder engagement in support of approval for the Project;
- Provide an indication of the intended communications and engagement activities to be undertaken during the planning phase;
- Identify and classify stakeholders with an interest in the Project;
- Develop and implement a clear action plan for future engagement approaches across all stakeholder groups;
- Outline communication tools, channels and a timeline for implementation;
- Provide clear, consistent and compelling messaging about the benefits of the Project;
- Identify opportunities for stakeholders and the community to raise concerns and provide feedback;
- Identify opportunities to build positive sentiment across local media, residents and stakeholders;
- Identify opportunities to reduce or mitigate the risk of community resistance to the Project; and
- Provide ongoing opportunities for Project representatives to engage with stakeholders.

Table 1 below provides an overview of the community consultation and stakeholder engagement activities undertaken as part of the application.

Table 1. Project Consultation Activities (Source: ERM, 2022)

Engagement Tools	Description
Stakeholder database	A stakeholder database has been established and is being maintained by GPGA to capture stakeholder feedback, concerns, and enquiries as well as responses and commitments made.
Community consultation and stakeholder engagement	· Community consultation and stakeholder engagement has occurred with the following parties: · Aboriginal community · Local community · Local Government · Infrastructure agency · State Government

Engagement Tools	Description
	· Other agencies
Project website	A Project website has been established to provide up-to-date information: https://palingyardswindfarm.globalpower-generation.com.au/ The Project website is in place providing information for stakeholders, including: · General project information · A map of the project site · Contact information · Fact sheets · Project updates · Construction updates · Media releases · High quality images and visuals of the Project · Additional relevant project documentation · Details about upcoming events such as information sessions.
Project email address	A Project email address has been established to provide to stakeholders and the community during the life of the Project: palingyardswindfarm@globalpower-generation.com.au · The email has an auto-response acknowledging receipt of the email and advising a response time. Enquiries are responded to within two business days.
Project phone line	A Project information phone line has been established and available to stakeholders and the community during the life of the Project: 1800 457 181 · The phone line is available during regular business hours. · Outside of business hours, a recorded message and voicemail facility are available so callers can leave a message and be responded to accordingly.
Project postal address	A Project postal address has been established and is available to stakeholders and the community during the life of the Project: Suite A Level 3, 73 Northbourne Avenue Canberra ACT 2601.
Frequently Asked Questions	A Frequently Asked Questions (FAQ) document has been provided to answer common stakeholder questions about the Project. The FAQ document is available on the Project website: https://palingyardswindfarm.globalpower-generation.com.au/faqs/
Image library	A collection of high-resolution Project images and maps has been developed and kept on file for use on the Project website and to provide to relevant media outlets.
Fact sheets	Relevant fact sheets have been prepared for distribution at community engagement activities to provide tailored Project information on various topics. The following fact sheets are published on the Project website - https://palingyardswindfarm.globalpower-generation.com.au/faqs/ : · Generic wind energy fact sheet · Wind farms and renewable energy · Wind farms and the electricity grid · Wind farm visual and noise impacts · Wind farm health and safety · Wind farm construction.
Letters	Letters are being used for formal engagement with directly affected stakeholders. Letters include relevant updates on the Project and key details such as event/meeting timing and contact details. Letters are sent out by email and/or via ordinary mail.

Engagement Tools	Description
Newsletters	Newsletters have been sent out to provide relevant updates on the Project, community benefits and upcoming engagement activities. Moving forward, newsletters will be published every six months initially and then quarterly during the construction phase.
Media releases	Media releases were issued to communicate key Project messages, milestones and announcements. This will continue as the project evolves and copies will be provided to relevant media outlets and key stakeholders.
Face-to-face meetings	Face-to-face meetings have been undertaken, including door knocks, public information sessions, stakeholder briefings and site visits.
Community information events	Local community information sessions commenced during the scoping phase and included two sessions at the Black Springs community hall. An additional pop-up information session was held at the recent Oberon Farmers Market early November 2022. Further additional information sessions are being considered moving forward. Ongoing community feedback is actively sought by means of presentations, face-to-face conversations and surveys.
Project boards	A range of Project information boards were prepared and displayed at the community information sessions to help inform the community.
Construction updates	During the construction phase, regular and as-required construction updates and notifications will be provided via the website and to directly affected stakeholders.
Advertising	Advertising will be used to promote major Project events, milestones and announcements. The Proponent will consider advertising in local newspapers and on radio.
Social media monitoring	Monitoring of social media channels will be undertaken to understand the sentiment and key areas of interest about the Project within the local community.
Community Consultative Committee (CCC)	DPE will decide whether a CCC should be established for a state significant project. If DPE decides a CCC is warranted, it will require the Proponent to establish the committee either: · Early in the assessment process through the Secretary's Environmental Assessment Requirements (SEARs) for the Project; or · Following approval through the conditions of approval for the Project.

The Project has recently completed the following key community consultation and stakeholder engagement milestones:

- Early engagement with DPIE – September 2020;
- Initial engagement meeting with DPIE – December 2020;
- Site meetings and general engagement with certain involved landowners – January 2021;
- General correspondence and notice of intent to landowners within a 5km radius of the site – January 2021;
- Letter drops to dwellings within a 5km radius of the site – February 2021;
- GPGA engagement with neighbouring property owners to discuss neighbour agreements – August 2021;
- Early engagement with Aboriginal communities and representatives – September 2021;
- Community feedback survey was completed – September 2021;
- Scoping Report submitted to DPE – December 2021;
- SEARs issued outlining DPE consultation requirements – March 2022;
- Amendments to layout based upon consultation feedback and stakeholder advice –ongoing October 2022;
- Phone calls and letter drops to landowners within 5km inform about the visual assessment being undertaken. This included postage of the September 2021 newsletter on request – May 2022;
- PYWF hotline and website launched – 11 July 2022;
- Newsletters, letter drops, newspaper notifications, and radio advertisements – 13 July 2022;
- Local paper advertisement and online community survey – Oberon review – 14 & 21 July 2022;

- Local Radio advertisement – 2BS Radio Live Read – 20 July 2022;
- Stakeholder letters distributed – 21 July 2022;
- Local online advertisement – Crookwell Gazette – 24 July 2022;
- Presentation to the Local Council officials and members – 26 July 2022;
- Face-to-face community information sessions – 28 & 29 July 2022;
- Pop-up information session at the Oberon Farmers Market on 5 November 2022;
- Ongoing engagement with community via the formal communication channels listed in Table 1 – Q4 2022 and Q1 2023;
- Additional engagement with adjacent property owners to discuss neighbour agreements – Q2 2023;
- Engagement with Local Councils and TfNSW regarding the proposed transport route – June / July 2023;
- Exhibition and community engagement – expected to take place in Q3 of 2023; and
- Ongoing consultation activities following the exhibition period– expected to be ongoing from Q3 & Q4 of 2023.

Section 5 of the EIS provided more details information on the community and stakeholder engagement that has been undertaken.

Environmental Assessment

Assessments have been undertaken and detailed reports and plans have been prepared as part of this application. Some key findings and a summary of each have been provided below to help inform the reader. Note that section 5 and section 6 of this EIS provide a more detailed review of each.

Landscape and Visual Assessment

Moir Landscape Architecture (Moir) has prepared a Landscape and Visual Impact Assessment (LVIA) to assess the visual impacts of all components of the Project (Appendix G to this EIS). The assessment considers impacts on local residents, landscape values of the Abercrombie National Park, scenic and significant vistas, and road corridors.

The LVIA demonstrates that with mitigation measures, the visual impacts of the Project are acceptable.

The LVIA has incorporated a quantitative study in line with the guidelines of the *NSW Wind Energy: Visual Assessment Bulletin* (Visual Bulletin) and other relevant literature relating to large scale infrastructure projects. In accordance with the Bulletin, the visual assessment includes:

- a baseline study that includes analysis of the landscape character, scenic quality and visibility from viewpoints of different sensitivity levels;
- established visual influence zones from viewpoints using data collected in the baseline study;
- assessment of the proposed layout against visual performance objectives; and
- justification for the final proposed layout and identification of mitigation and management measures.

Moir undertook a Visual Baseline Study to establish the existing landscape and visual conditions through descriptions, mapping and photographic representations. The Visual Baseline Study inputs includes:

- Landscape character type.
- Sensitive land use designations.
- Key landscape features.
- Landscape character unit classification.
- Viewpoint inventory and sensitive levels.
- Visibility distance zones.

In accordance with the Bulletin, sensitive receptors have been identified through the use of the preliminary assessment tools. Two preliminary assessment tools were utilised to determine potential visual impact: Visual Magnitude and Multiple Wind Turbine Tool. The dwellings that were identified through the preliminary assessment tools have been assessed as part of the LVIA.

The visual impact assessment found a total of seven (7) non-involved dwellings within 3,200m of the closest WTG and three (3) non-involved dwellings within 3,200m - 4,750m from the nearest WTG. These were informed based on a worst-case scenario for WTG located near dwellings and key public viewpoints.

Of the seven (7) non-involved dwellings within 3,200m the assessment found:

- Two (2) non-involved dwellings were assessed as having a negligible or nil visual impact rating.
- Three (3) non-involved dwellings were assessed as having a low visual impact rating.
- One (1) non-involved dwelling has the potential for a moderate visual impact.
- One (1) non-involved dwelling has the potential for a high visual impact.

Of the three (3) non-involved dwellings between 3,200 - 4,750m the assessment found:

- Two (2) were assessed as having nil or negligible visual impact rating.
- One (1) was assesses as having a high visual impact rating.

No non-involved dwellings with the potential to view turbines in three (3) or more 60-degree sectors beyond a distance of 4,750m from the nearest WTG were identified.

The Multiple Wind Turbine Tool provides an indication of potential cumulative impacts arising from the Project. It assesses the degree to which dwellings or key public viewpoints may be impacted by multiple wind turbines, based on the number of 60-degree sectors visible from each of the dwellings identified within 8km. Two (2) non-involved dwellings have been identified as having up to three (3) 60-degree sectors visible. However, the visual impact of the turbines on the two dwellings are likely to be reduced following a detailed assessment of intervening vegetation and following the implementation of vegetation planning and screening.

The LVIA found that the visual impact can be adequately addressed through mitigation measures. Recommended mitigation measures to reduce perceived visual impacts on nearby dwellings include residence screen tree planting and residence supplementary planting. More information is provided under section 6.1of this assessment.

Public viewpoints have also been assessed in accordance with the Bulletin. A total of twenty (20) viewpoints were taken from the public locations during field work. An additional four (4) public viewpoints within the Abercrombie River National Park were assessed by desktop due to limited access at the time of field work. These selected viewpoints have been carefully selected to be representative of the range of views within the study area and was assessed utilising available topographic and aerial information to ensure accuracy. Below a summary of the public viewpoint analysis:

- Five (5) public viewpoints were rated as Visual Influence Zone (VIZ) 1 and found that the surrounding natural elements will remain the dominant feature of the visual catchment.
- Five (5) public viewpoints were assessed as being VIZ 2 and found that the turbines will not dominate the existing visual catchment and / or be screened by topography.
- Fourteen (14) viewpoint locations were rated as VIZ 3 and require no further performance objectives.

The LVIA also includes:

- Photomontages and wire frame diagrams;
- An assessment of potential night lighting of the Project;
- An assessment of potential cumulative landscape and visual effects and impacts;
- An overview of the potential visual impact resulting from associated infrastructure and Project components;
- Overview of impact on the landscape character;
- Mitigation measures and recommendations; and
- An evaluation of visual performance objectives.

With mitigation measures implemented as specified in the LVIA, Moir's assessment finds that the Project is compliant with the performance objectives as per the Visual Assessment Bulletin. A more detailed review of the assessment is provided in section 6.1 of this report.

Shadow Flicker Assessment

A *Shadow Flicker and Blade Glint Assessment* was undertaken by DNV. Shadow flicker relates to the potential flickering effect caused by moving shadows cast by the sun passing behind the rotating blades of a WTG. Various conditions

determine the extent of shadow flicker including geographical position and time of day. As per the requirements of the Visual Bulletin, DNV undertook an assessment to determine the potential impact of the Project on nearby dwellings.

The Shadow Flicker Assessment considers the 13 dwelling locations in the vicinity of the site (including nine involved dwellings). Dwellings situated around 10 rotor diameters from the wind farm are considered unlikely to be impacted by shadow flicker.

The assessment found that none of the non-involved dwellings will experience any high intensity shadow flicker from the Project. However, nine involved dwellings are predicted to experience some high intensity shadow flicker as certain periods during the year.

The Bulletin recommends a shadow flicker limit of 30 hours per year at dwellings in the vicinity of the Site. Similarly, the *Draft National Wind Farm Development Guidelines* recommend limits of 30 hours per year on the theoretical shadow flicker duration and 10 hours per year on the actual shadow flicker duration.

Mitigation measures recommended to reduce impact on the involved dwellings include:

- Installation of screening structures or planting of trees to block shadows cast by the turbines;
- Relocation of turbines; and
- Using turbine control strategies to shut down turbines when shadow flicker is likely to occur.

The Shadow Flicker Assessment also considers blade glint, noting that there is no potential adverse amenity impact anticipated by blade glint as the blades would have a non-reflective finish.

More detail on the shadow flicker assessment is provided under section 6.2 of this report.

Noise Assessment

Noise and vibration levels have been assessed by SLR Consulting Australia Pty Ltd (SLR) in accordance with the NSW Government Guideline *Wind Energy: Noise Assessment Bulletin for State Significant Wind Energy Development (December 2016).*

A three-dimensional SoundPLAN computer noise model was used to predict noise levels from all WTGs at all surrounding residential dwellings within a 10km radius of a proposed turbine.

The report provides mitigation measures to ensure acceptable noise levels for nearby properties and sensitive locations, acknowledging the unique characteristics of wind turbine noise generation. It is based on the standard operational mode of the General Electric Cypress 158 – 6.1MW turbine model operating at a maximum sound power level of 107 decibels-A (dBA). The base layout presented in the report is a 47 WTG layout with a hub height of 151m.

The minimum noise criteria used as part of the assessment is:

- 35 dBA at relevant non-involved receivers in localities which are primarily intended for 'rural living' e.g., rural–residential 'lifestyle' area; and
- The World Health Organization Guidelines (WHO) for Community Noise recommendation is used, which translates to an external limit of 45 dBA for involved landowners.

The predicted noise levels at all residential receptors for the Project are detailed in section 6.3 of this assessment. The modelling found with WTGs operating at 107dBA mode, ten noise receptors exceeded the relevant acceptable minimum noise criteria, as follows:

- Marginal exceedances of the WHO 45dBA criteria at eight (8) involved dwellings, and
- Minor exceedance of the SA EPA Guidelines 35dBA criteria at two (2) non-involved dwellings.

Noise levels for the National Park Campgrounds have been assessed with noise curtailment measures set out within the noise report. Noise levels are not expected to exceed the guidelines at these locations and therefore complies with the minimum criteria.

The WTG models chosen for this assessment[11] offer noise reduced operation modes to a minimum of 100dBA. By operating the identified eleven (11) WTGs at 104dBA mode, the modelling satisfied the noise criteria at each receptor.

The report assesses potential noise levels from substation noise (including all three the proposed substation locations), project construction noise and vibration, and traffic noise levels. All noise levels were assessed on "worst case" scenario and were found to be acceptable.

Construction noise, including construction traffic noise, has been predicted and assessed. In order to ensure all appropriate measures are being taken to manage construction noise, a more detailed construction management plan should be developed.

Vibration impacts from key construction activities have been assessed and the 'worst case' scenarios modelled were found to be acceptable.

More details of from the noise assessment is under section 6.3 of this report.

Geotechnical Report

SLR was commissioned by GPGA to conduct a geotechnical investigation to inform the design of the proposed wind farm and associated transmission line. SLR prepared Interim Interpretive Geotechnical Reports for both the transmission line and the turbine locations. The reports have drawn on a previous assessment by URS (now AECOM) in 2011 for an alternative wind farm proposal at the same site. The report is included under Appendix R.

The comprehensive URS geotechnical investigation referenced above included a previous layout that was similar, but not identical, to the current iteration. The new report is based on the site's latest layout. While not yet finalised due to weather delays, the investigation's findings already mirror observations from the initial study. It is therefore not expected to differ in conclusion.

The objectives of the investigation were to:

- Assess ground conditions to inform geotechnical design parameters for turbine footings, site specific geology, subgrade conditions and parameters for pavement design.
- Assess ground conditions to inform geotechnical design parameters for transmission tower footings and electrical resistivity survey for the substation site.
- Review the seismic design parameters.
- Material reusability.
- Recommendations and commentary on the geotechnical aspects of the wind farm and transmission line.

To assist with assessment of the geotechnical conditions and reusability of materials, laboratory testing was performed on selected undisturbed, disturbed and remoulded samples. Details on these assessments, laboratory testing, and locations of where testing has been conducted are included under section 6.4 of this report. Full borehole logs are included under the attached Appendixes. The assessments include:

- Site observations and investigation findings and results.
- Geotechnical modelling, which shows that the majority of the site is underlain by shallow alluvial and residual soil trending to weathered rock.
- Geotechnical laboratory results (done for soil and rock).
- Geotechnical engineering assessments, which includes parameters, trafficability, earthworks, site classification, foundation recommendations, earthquake actions and classifications, pavements, retaining walls and construction considerations.

The key findings of the assessment include:

- The trafficability of the site is acceptable as the site has a generally level topography.

[11] *Noting other WTG models within the same dimensional envelope may be considered by the proponent in the future before a final decision on the supplier is made. Such additional models would generally emit lower noise levels / frequencies that the model chosen for the Noise Assessment, so the results present are conservative.*

- Earthworks were not considered as part of the investigation, however it is anticipated that minor cut and fill will be required.
- Certain subgrade preparation procedures should be followed and excavations would be expected to comprise bulk cuts and trenching.
- While the topsoil material is not suitable for reuse in construction, the natural soils could be reconditioned to bring the soil to optimum for usage as structural fill.
- Engineering supervision of the earthworks operation is recommended.

Considering the ground conditions encountered at the site, a combination of gravity and anchored footings could be constructed to support the WTGs.

Further details into the findings of the Geotechnical report are outlined in section 6.4 of this report.

Biodiversity Development Assessment Report

A Biodiversity Development Assessment Report (BDAR) has been prepared by Hunter Ecology, in conjunction with ERM, and in accordance with the DPE *Biodiversity Assessment Method 2020* (BAM) established under the *NSW Biodiversity Conservation Act 2016* (BC Act). The BDAR focusses on the portion of land affected by the proposal, and a 50-metre buffer around the proposed alignment. The purpose of the report was to assess biodiversity values and determine likely impacts related to the Proposal and associated works.

The report found that the Site is located within the South-eastern Highlands Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and the Crookwell IBRA subregion. Importantly:

- 50% of the assessment area is covered in native vegetation.
- There are no wetlands of international importance within 10km of the Site.
- There are no specific corridors of native vegetation within the Site, although there are large tracks of forested land surrounding the Site, which includes:
    - Abercrombie River National Park to the west and north.
    - Blue Mountains National Park to the east.
    - Kanangra-Boyd National Park to the south.
- No karst, caves, crevices, cliffs or areas of geological significance exist within the Site or assessment area.
- No areas of Outstanding Biodiversity Value occur within the assessment area.
- No predictable or habitual migratory and nomadic bird and bat species flight paths were able to be mapped within the Site or Assessment Area.
- Ecosystem credits and species credits are required to offset the project. As summary of all credits are provided under section 6.5 of this EIS.
- Six plant community types were identified in the survey area, which require ecosystem credits to offset the project.
- One species that requires offset was confirmed on site.

Direct impacts on biodiversity occurring at the construction phase are anticipated to be permanent and generally involve:

- 31.7 ha of native vegetation clearing resulting in loss of potential sheltering, foraging and breeding habitat.
- Removal of 185 hollow-bearing trees within the proposed footprint, resulting in potential increased competition between hollow-dependent fauna.
- Removal of 31.7 ha of habitat containing scattered coarse woody debris and bush rocks, resulting in loss of potential breeding, foraging and refuge habitat.
- Undetermined physical harm to native fauna during removal of vegetation.

In addition to the direct impacts, indirect impacts to native vegetation and fauna habitat may occur during construction and operational phases. This could include:

- Reduced viability of adjacent habitat due to edge effects and also noise, dust or light spill.
- Transport of weeds and pathogens from the site to adjacent vegetation.

In accordance with the BAM, the proponent must identify meaures to mitigate and manage impacts in accordance with the guidelines for mitigating and managing impacts on biodiversity values. Adjustments to the layout of the Project have been adopted in response to the findings of the BDAR to avoid and mitigate direct impacts:

- Moving the overhead transmission line to avoid removal or modification of remnant native vegetation.
- Relocation of various WTGs from Box Gum Woodland environmental stewardship area.
- Relocation of WTGs from within remnant native woodland to reduce the need of removal of native vegetation.
- Relocation of various WTGs located within remnant red stringybark woodland and broad-leaved peppermint woodland to the edge of these areas.
- Preparation of a Flora and Fauna Management Plan to be implemented as part of the Construction Environmental Management Plan.

In addition to the above, a key component of the project's adaptive management measures includes the development and implementation of a Bird and Bat Adaptive Management Plan (BBAMP) to address uncertainties around the ongoing impact of collision and barotrauma related mortalities. The plan will outline monitoring measures, key thresholds for determining permissible impacts and corrective actions required.

- An impact summary has been prepared as part of the BDAR and is discussed in section 6.5 of this EIS.
- Section 6.5 of this EIS and section 8 of the BDAR (Appendix M) outlines the measure proposed to mitigate and manage impacts under the EPBC Act.
- The Commonwealth EPBC Act required approval for actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES). There are seven MNES that are triggers for Commonwealth assessment and approval.
- The MNES relevant to this project include:
    - World Heritage Areas – The subject site is near the Greater Blue Mountains World Heritage Area. The bushland to the eastern side of the Site connects with listed national parks but is unlikely to be impacted by the proposal in any significant way.
    - National Heritage Places – The subject site is near the Greater Blue Mountains Heritage Area. The bushland to the eastern side of the Site connects with listed national parks, but overall is unlikely to be impacted by the proposal in any significant way.
    - Wetlands of International Importance – Four Wetlands of International Importance occur within 10km of the Site. However, the Project would have minor hydrological impacts and is not expected to impact on these wetlands.
    - Listed Threatened Species and Ecological Communities – The Site contains one threatened ecological community listed under the EPBC Act and potential habitat for several threatened species. Impact assessments were undertaken, and it was concluded that the proposal would not have a significant impact on the assessed species.
    - Listed Migratory Species – Six listed migratory species have the potential to occur within the Site. Impact assessment undertaken concluded that the proposal would not have a significant impact on the assessed species.
- The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is not necessary.
- The BDAR includes an Addendum Biodiversity Scoping Report, prepared for the proposed transportation route road upgrades.

The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is not necessary. A previous decision issued by the Commonwealth Department of Environment in 2005 confirmed that the Proposal is "not a controlled action". Notwithstanding this, the Proponent is prepared to lodge a new EPBC Referral to ascertain this and also in consideration of the dimensional envelope change for the proposed turbines. The new EPBC Referral is expected to be lodged with DAWE shortly after submission of this application to DPE.

Note that that BAM Credit Report was recently finalised as per section 6.15 of the Biodiversity Conservation Act 2016. The latest report was submitted on 09 August 2023. Refer to section 6.5 of this EIS for more information and Section of the BDAR for a copy of the Biodiversity Credit Report.

Bird and Bat Adaptive Management Program

As part of the BDAR, a Bird and Bat Utilisation Survey (BBUS) was undertaken by Hunter Ecology to determine baseline data for the utilisation of the Site by birds and bats over time during the operation phase of the Project. The BBUS would also be used to facilitate the development of a Bird and Bat Adaptive Management Program (BBAMP), should the Proposal receive consent.

The objectives of the BBUS are to document diversity and abundance of bird and bat species within the Site and directly adjacent lands. The BBUS provides estimated annual fatality rates from collision into WTGs for birds and Microchiroptera bat species. It also provides rates of the most dominant species observed on site. The BBUS recognises that birds generally avoid flying through wind turbine areas in Australia, further minimising risk of collision but potentially also resulting in habitat fragmentation.

More information on the BBUS is included under section 6.6 of this report and the full survey is attached as part of the BDAR within the Appendixes.

An additional Collision Risk Assessment for Bird and Bat Strike has also recently been prepared. The assessment builds upon data collected and assessments undertaken as part of the BDAR and BBUS and has been expanded to include a risk assessment of each species of concern. The assessment determined the species risk and turbine risk ratings to be either negligible, low or moderate.

More information on the collision risk assessment is included under section 6.6 of this report and the full addendum report is attached as part of the BDAR within the Appendixes.

Biosecurity Risk Management Plan

The Biosecurity Risk Management Plan (BRMP) prepared by ERM identifies and assesses the existing and potential biosecurity risks, providing recommendations on measures to prevent, minimise and / or eliminate biosecurity risks. Biosecurity risks refer to risks such spread of weed and pest animal species, caused by site disturbance. Weed seeds can be transported via clothes, vehicle wheels and vehicle undercarriages.

Several weeds of National Significance were identified on the Site, including the African Boxthorn, fallow deer, wild dogs, rats and Common Myna. Biosecurity management strategies recommended in the management plan include:

- Awareness and training, including access procedure;
- Signage; vehicle hygiene and record keeping;
- Targeted weed management and weed management techniques; and
- Pest animal management.

ERM recommends that a detailed weed and pest assessment be undertaken prior to construction to establish a baseline dataset and detailed mapping forming part of a monitoring program. These measures are outlined in section 6.7 of this report.

Traffic and Transport Assessment

A Traffic Impact Assessment (TIA) was prepared by SLR Consulting Australia Pty Ltd (SLR) to determine the construction, operational and decommissioning traffic impacts of the Proposal. It provides a summary of the existing traffic conditions, traffic volumes, impacts on the road network, assessment of cumulative impacts, and offers mitigation and management measures.

A key part of the TIA was assessing the haulage route and access arrangements for the transportation of the Over-size Over-mass (OSOM) materials, inclusive of the 65.4m long turbine blades (sections). SLR's assessment was informed by a route study conducted by Rex J Andrews, OSOM transportation specialists. In their report (attached as Appendix AA), Rex J Andrews assessed various pinch points along the route to ensure that the road geometry could accommodate the transportation of all OSOM materials required.

SLR undertook an additional assessment of potential road upgrades required along the transport route and also undertook additional consultation with local councils who could potentially be impacted.

A summary of all upgrades are provided in a consolidated table under section 6.8 and includes:

- Schedule of work upgrades;
- Detailed swept path analysis at the identified pinch points;
- Location of works and lot descriptions; and
- Impact on public and private properties, if any (including landowner details where applicable).

The full TIA is attached as Appendix L. The summary of required works done as part of the route assessment is also included under Appendix L as an Addendum: Appendix K.

The data from this assessment helped inform the additional ERM environmental assessment which considered potential impacts on vegetation as a result of the upgrade works associated with the road upgrades, particularly on private property. This is discussed in more detail under section 6.5.

The TIA anticipates minimal traffic impacts during the operational phase of the Project. During the 22-month construction period, approximately 85/86 additional vehicle trips per day will be made.

The access locations satisfy the sight distance requirements of the relevant guidelines and can accommodate the transportation of the required Oversize and Over Mass materials. The TIA recommends that all access locations are designed to 'Basic Right Turn' and 'Basic Left Turn' standards. The proposed locations can accommodate the transportation of the required materials.

The TIA recommends the implementation of a Construction Traffic Management Plan to minimise impacts during the construction phase, including soft strategies such as moving workforce via bus and hard strategies such as roadworks at access points. Existing crash data should be used to brief the construction workforce on existing areas of risk. A more detailed summary of the assessment is provided at part of section 6.8 of this report.

Blade Transport Route Study

Rex J Andrews (RJA) prepared a Route Study to assess the transport impacts and road network capacity to accommodate equipment transport routes from the Port of Newcastle to the site. The report should be read in conjunction with the TIA prepared by SLR.

The study initially provided recommendations for three (3) potential route options to include the transportation of Oversized and Over mass (OSOM) materials., based on different load sizes for various turbine components and route constraints.

As stated earlier in this report, SLR (informed by the RJA Report) included the haulage route and access arrangements for the transportation of OSOM materials in their assessment. RJA included that the most viable route from port of Newcastle to the subject site is:

- A 654km long route from Newcastle to Paling Yards (via Tarro, through Belford, Jerry Plains, Elderton and Wybong, through Sandy Hollow, through Dunedoo, Mudgee, Wallerwang, Bathurst via Kelso, and through Oberon which connects to Abercrombie Road) for loads up to 5.9m height.

The Route Study identifies a range of modifications required to various components along each route, including:

- Bridge works and assessments;
- Assessment of overhead structures and infrastructure;
- Vegetation assessment to confirm pruning and/or removal requirements;
- Pavement checks and assessments;
- Upgrades or modifications to existing roads, particularly around tight bends and corners;
- Works relating to traffic control and signalling;
- In its current condition the selected route option will require a moderate number of upgrades before it could be deemed suitable for transporting the proposed components.

More information has been provided within section 6.9 of this report and is included under Appendix AA. As mentioned earlier, additional information on the required scope of works along the route is also included under section 6.8 and also Appendix L.

The following additional assessments have also been completed for the proposed transport route:

- Addendum Biodiversity Scoping Report, which is included as part of the BDAR.
- Heritage Due Diligence Assessment, considering both Aboriginal Cultural Heritage and other statutory / non-statutory listings.

Blade Throw Assessment

A Blade Throw Assessment was prepared by DNV to assess the potential risk of blade throw on sensitive locations within vicinity of the Site, including: dwellings, schools, childcare facilities, roads and other neighbouring properties. Using the *Dutch Wind Turbine Risk Zoning Handbook 200*4 for guidance and applying the United States Renewable Energy Laboratory classification of blade throw, the assessment evaluated the following risks:

- The frequency of a blade or blade fragment detaching and being thrown form a turbine and the circumstances under which this happens;
- The probability of the blade or blade fragment landing on or near a given location; and
- The probability of a blade or blade fragment landing causing injury or death to a person, or damage to property or infrastructure.

This assessment considered the following site-specific risks from blade throw:

- At dwellings and other sensitive locations such as schools and childcare facilities;
- At neighbouring properties; and
- For road users on nearby roads, particularly on Abercrombie Road.

Wind turbine blade throw incidents are relatively rare events. The layout, parameters and specifications of the proposed development would have a "very low" risk of injury or property damage associated with blade throw, having a potential risk of at least 71 times less than those considered acceptable in other jurisdictions. A more detailed assessment has been provided at section 6.10 of this report.

Aviation Assessment

Potential aviation impacts resulting from the Project have been assessed by Aviation Projects in accordance with the matters raised in the SEARs. Flightpaths to and from Bathurst Airport and Goulburn Airport have been considered in the Aviation Impact Assessment (AIA). The AIA concludes:

- The blade tip of the highest wind turbine would not exceed 240m above ground level (AGL), and:
  - Will not penetrate any obstacle limitation surface (OLS).
  - Will not penetrate any aircraft operations surfaces.
  - Will not have any impact on nearby designated air routes.
  - Will not have an impact on the grid lowest safe altitude.
  - Will not have an impact on prescribed airspace.
  - Is outside of the clearance zones associated with aviation navigation aids and communication facilities.
- Details of wind turbines and wind monitoring tower coordinates and elevations have been provided to Airservices Australia. Airservices confirmed that the proposal would not have an impact on any Airservices designed instrument procedures, facilities or operations at any airports.
- A copy of the AIA was submitted to NSW Rural Fire Service (RFS) for their assessment. RFS confirmed that they have no further comments on the PYWF and that the project would be treated like any other potential hazard to aircraft operations.
- Royal Flying Doctor Services (RFDS) confirmed that their flight operations and safety teams found no issues arising that would impact RFDS operations.
- Oberon Council confirmed that, from an aviation impact perspective, Council will only be able to assess the proposal as part of the EIS, once submitted to DPE.
- Department of Defence has been consulted to confirm if there are any modifications required to the scale and height of development and comments from the Department are pending.
- The AIA provides the following additional recommendations:

- Local and regional aircraft operators should be provided details of the Project.
- Rotor blades, nacelle and supporting masts should be painted white.
- Obstacle lighting would not be required for the Project.
- Wind monitoring towers should be marked.

A detailed assessment of this has been provided in section 6.11of this report.

Resilience and Hazards Assessment

In line with *State Environmental Planning Policy Resilience and Hazards 2021* (SEPP-RH), SwitchCo prepared a screening assessment of the hazards associated with the storage of dangerous goods on the Site. The assessment, which has been further explored within section 6.12 of this report, was based on the proposed maximum generational capacity of up to 287 MW and investigated the permissible quantities as stipulated in the relevant guidelines.

The assessment was based on the *State Environmental Planning Policy 33 - Hazardous and Offensive Development Application Guide* (SEPP 33 Guidelines) to read in accordance with the new SEPP-RH.

The report evaluated the following project development phases:

- Construction, including early investigative works and commissioning; and
- Operation.

The assessment found that thresholds would not be exceeded by the proposal, and the risks associated with the storage and transportation of hazardous materials are unlikely to pose any risk to public safety. Wind farms are recognised in the Resilience and Hazards guidelines as not being a *Potentially Hazardous Industry* and therefore no preliminary hazard analysis is required.

Considering the result of the environmental impact statement report, type of material stored, and distance from nearby land users, it was concluded that there will be no potentially offensive impacts associated with the Project.

Nevertheless, the assessment recommends that the following documents be prepared to mitigate risks associated with hazardous materials:

- A Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP) to demonstrate that the Project will not exceed the SEPP screening limits.
- A Safe Work Method Statement is prepared in accordance with the *Work Health and Safety Act 2011*, the Storage and Handling of Dangerous Goods Code of Practice (SafeWork NSW) and SEPP requirements to ensure proper storage and handling of dangerous goods.

Bushfire Assessment

ERM has prepared a Bushfire Risk Assessment (BRA) in accordance with the management and mitigation measures of the NSW Rural Fire Service (RFS) guidelines *Planning for Bushfire Protection 2019*. The purpose of the BRA is to identify potential hazards and risks associated with bushfire prone land, potential impacts on Abercrombie National Park, risks of wind farms causing bushfire, and impacts on aerial firefighting.

The BRA highlights the risk associated with the landscape condition surrounding the Site, particularly with respect to nearby inaccessible areas of National Parks / Nature Reserves (i.e., Abercrombie National Park, Wiarborough Nature Reserve, and the Blue Mountains National Park). These conditions are conducive to high intensity and high rate of spread of bushfire. Identified risk factors include:

- Loss of life risk to populated areas, aerial fire fighters, firefighters, and workers and visitors.
- Damage to infrastructure within the Project area, extensive and widespread loss of infrastructure.
- Damage to surrounding properties, extensive and widespread loss of infrastructure and / or property.
- Damage to ecological values / assets including threatened species and ecological communities.

Key bushfire risk mitigation strategies include:

- Asset Protection Zone.
  - Establishing appropriate Asset Protection Zones (APZs) around monitoring masts, substations, switching stations and Operation & Maintenance building, accounting for steep slopes.

- Ensuring APZs do not extend beyond the property boundary or rely on actions taken by adjacent landowners.
- Ensuring vegetation fuels within the wind farm are maintained.
- Mounting WTGs on concrete foundations, in cleared hardstand areas.

· Wind Farm construction.
- Ensuring that site access points are constructed as part of the first stage of development and maintained appropriately throughout the life of the project.
- Appropriate bunding in areas where there is potential for flammable fuels and oils to leak.
- Adherence to Fire Danger Period requirements and restrictions on Total Fire Ban or high fire danger days.
- The carrying of fire extinguishers or firefighting equipment in vehicles, including emergency communication equipment.
- Restricting smoking to prescribed areas.
- Ensuring plant, vehicles and earth moving machinery is cleaned of any accumulated flammable material.

· Emergency Management and Operations Plan.

  An Emergency Management and Operations Plan is to be prepared and implemented to outline the shutdown protocols and procedures for wind turbines, agreed roles and responsibilities of onsite personnel, work health safety risks and procedures, minimum levels of respiratory protection, evacuation zone distances, and any other risk control measures required to be followed by firefighters.

· Access Roads and Road Network.
- Site access points are to be maintained for the life of the Project.
- Provision of all-weather access for heavy fire fighting vehicles including upgrading all access roads, as required.

· Water Storage.
- Maintaining a minimum combined water storage of 50,000L (final requirement to be confirmed by NSW RFS).

· A further assessment of the BRA has been provided in section 6.13 of this report.

Electric and Magnetic Fields (EMF)

The available evidence suggests that Electric and Magnetic Fields (EMF) associated with wind farms are not a likely causative agent for negative health impacts. An EMF assessment has been prepared by ERM with regard to the latest advice available to determine the potential hazards and risks associated with the proposal.

Exposure scenarios prepared in the EMF assessment were found to be well within the acceptable levels. The significant distances between dwellings and publicly accessible locations and any of the proposed WTGs, substations or transmission lines further reduces the potential health impact of EMF generated by the Project.

The Project has been designed with consideration of threshold distances, incorporating setbacks and easements, to further minimise the risk of potential exposure to EMF. This has been further discussed within section 6.14 of this report.

Telecommunication Assessment (EMI)

In order to determine potential effects on telecommunications systems within vicinity of the Site, an Electromagnetic Interference Report (EMI) has been prepared by DNV. The assessment has been based on the Australian Communication and Media Authority (ACMA) Register of Radiocommunications Licences database and in line with the Draft *National Wind Farm Development Guidelines 2010*, the NSW Wind Energy Guidelines and project received SEARs.

'Radiocommunications' is a broad term encompassing all services relying on microwave or radio frequency electromagnetic waves to transfer information. This includes:

· Fixed point-to-point links and point-to-multipoint links;

· Radiocommunication assets belonging to emergency services;

· Meteorological radars;

· Trigonometrical stations;

- Citizen's band radio and mobile phones;
- Wireless internet;
- Satellite television; and
- Broadcast radio and television.

In consultation with relevant licence holders and asset managers, DNV provides some recommendations on minimising EMI caused by the project, including removal of turbines from clearance areas around existing communication towers. In its current configuration, the Project has the potential to interfere with several point-to-point links crossing the proposed Project boundary and point-to-area style communications hosted by radiocommunication towers located within 2km of the turbine locations.

As a result, the NSW Government Telecommunications Authority (NSW Telco Authority) has asked that four turbines be relocated to outside the 1km radius around the tower hosting their services. Similarly, the NSW Police Force also raised concerns about the potential for impact to their operations and requested five turbines (which includes the four turbines identified by the NSW Telco Authority) to be relocated to be outside a 1km radius around the relevant tower and a 1km clear zone on either side of the link path for their point-to-point crossing the Project boundary.

The EMI report recommended that a further two turbines be relocated in order to avoid potential impact to a NSW Rural Fire Service (RFS) point-to-point link. Initial engagement with Telstra indicated that one turbine be relocated by at least 50m from its current location. Consultation with Telstra and the NSW RFS is however still ongoing.

The Bureau of Meteorology (BoM) indicated that there is a possibility that the turbines might impact on the operation of their Wollongong radar facility and associated weather monitoring and prediction services. While the BoM have made some recommendations, further engagement with the Proponent is required.

A full summary of the EMI assessment results for the Project is included under Table 74.

Incorporating the mitigation measures as outlined in the EMI Assessment would ensure that the proposed wind turbines do not unreasonably interfere or cause disruption to the range of radiocommunication assets assessed. Continued consultation with affected stakeholders would help to further minimise potential for high interference. Further discussions with the relevant Agencies are underway.

A further assessment is provided in section 6.15 of the report.

Aboriginal Cultural Heritage Assessment

The Oberon LGA is situated along the border of the traditional lands of the Gundungurra and Wiradjuri peoples. The Project area, which is within the southern portion of the Oberon Council, sits predominantly within Gundungurra lands.

An *Aboriginal Cultural Heritage Assessment Report* (ACHAR) was prepared to examine Aboriginal heritage values within the Project Site. The report considered previous assessments that were undertaken during 2005 and 2013. Additional field surveys were undertaken during 2021 and 2022 to identify additional Aboriginal archaeological material that may be present on site.

Key findings are summarised below:

- A total of 28 sites are located within the project boundary and have been assessed as part of the ACHAR.
- 13 of the 28 sites have been assessed to be subject to direct or indirect impacts as part of the Project.
- 6 surface artifact sites have been assessed to contain associated areas of artefact deposit.

Recommendations have been provided as part of the ACHAR to assist in ongoing management of identified sites. They are discussed in more detail in section 6.16, and the full assessment is available as Appendix Q.

Historic Heritage Assessment

With regards to non-Aboriginal Heritage, a *Historic Heritage Due Diligence Report* (HHDD) was prepared, with associated surveys undertaken across the Project area between 30 March and 01 April 2021. The survey aimed to ground truth previously recorded historic heritage sites in the Project area and identify any unknown sites that may be impacted by project. While no listed heritage items are located within the Project boundary, previous assessments across the Project area have identified five unlisted heritage sites.

Additional field surveys were undertaken between 27 July 2022 and 28 July 2022. The field survey supported the desktop assessment that the five previously identified historic heritage sites and / or historic features are outside the proposed development footprint of the wind farm. No new heritage items were identified during the surveys.

The HHDD concluded that there are four sites of local heritage significance and one historic feature which does not meet the threshold for local significance within the PYWF Project area. All five identified historic heritage sites / features are outside the proposed development footprint and will not be subject to direct impacts from the proposed works. Visual impacts have been assessed as nil to negligible. Mitigation measures will be included to protect the listed items.

A further assessment has been provided within section 6.16 of the report and the full report is included as Appendix Q.

Hydrology Assessment

The Hydrology Assessment identifies that the Project will require an estimated 40 ML of water during the construction phase. There are water supply options available to meet the needs of the construction phase of the project, including:

- Council water supply, in agreement with the relevant Council(s) (i.e., Oberon Local Council and / or Upper Lachlan Shire Council;
- Extraction of water collected from existing (or new) dams using landowner harvestable rights or from an existing nearby landowner bore, in agreement to use their allocation;
- Extraction from a new groundwater bore, which will require a Water Access License (WAL) in consultation with Water NSW; and
- Extraction from a surface water source (e.g., Abercrombie River), which will require a WAL in consultation with Water NSW.

There is a low erosion hazard identified for the majority of the Site. With implementation of appropriate mitigation measures to address potential soil and water impacts, the Project will have relatively minor risk of soil erosion. Standard erosion and sediment control measures are recommended to be adopted in most areas, with particular attention paid to steeper parts of the site.

Additionally, the Hydrology Assessment recommends the preparation of a *Soil and Water Management Plan* (SWMP) including the preparation of progressive *Erosion Sediment Control Plans* (ESCPs) for individual work sites and incorporating the recommendations of the Hydrology Assessment report.

More information is provided in section 6.17 of this EIS.

Flood Assessment

The Flood Assessment was prepared in response to the SEARs and DPE requirements. It models and assesses the impacts of large and extreme flood events within the Project area. The Flood Assessment quantifies flood risk, informing the overall design of the Project, mitigation, risk and emergency management measures. It also determines the social and economic costs of possible flooding.

The topography of the Project area is characterised by undulating hilly terrain, with sharply incised valleys and hilltops rolling off to steep gradients. Surface water flows were noted to quickly concentrate to form watercourses and creeks.

The results of the assessment indicate that potential impact to the Project is not anticipated. Concentrated flows are identified as being limited to valleys within the Project area, with flow being contracted prior to reaching the valley in some areas due to the large surface area of hilltops.

WTGs have been located on ridgelines to avoid potential impacts to flows along valleys. Any high hazard zones identified within vicinity of the Site were remote from the intended WTG placement, resulting in a limited risk.

A detailed review of the hydrology and flood assessment can be located at section 6.17of this report.

Waste Management Plan

The Waste Management Plan (WMP) outlines procedures and guidelines in relation to the Site's waste disposal strategies, rehabilitation, and decommissioning in accordance with the NSW Environment Protection Authority (NSW EPA). The report proposes the use of a waste minimisation hierarchy which aims to avoid / reduce / reuse / recycle / dispose of waste where possible.

The WMP highlights key waste-producing contributors and proposes mitigation and management measures to be applied during construction, operation and decommissioning of the Project to minimise environmental impacts and protect environmental and biodiversity values of the site. These include:

- Continuous monitoring, review and improvement of waste management strategies.
- Record-keeping of activities.

Further details of the WMP are provided in section 6.18. A full copy of the report is available as Appendix X.

Social Impact Assessment

The Social Impact Assessment (SIA) provides a detailed overview of the Project's potential social impacts. Paling Yards is located within a rural landscape with the communities of the area predominantly participating in agricultural farming. The demographic profile of the area indicates a median age population, strong indigenous representation, and a high percentage of unoccupied dwellings.

Given the extent of the proposed works the SIA highlights a number of impact categories which include:

- Way of life;
- Community;
- Accessibility;
- Health and Wellbeing; and
- Culture.

The SIA includes a review of key stakeholder feedback gathered from community and stakeholder engagement. The assessment identifies management and mitigation measure to assist with ensuring any changes to the surrounding community can be appropriately managed.

The SIA concludes that ongoing monitoring and regular audits of social impacts be undertaken. The audits should be conducted throughout the construction and operation phases of the Project and will be further informed by the outcomes of the EIS process and DPIE's conditions of approval. A more detailed summary of the SIA is provided at section 6.19.

Economic Assessment

The assessment included an economic assessment of the PYWF by Gillespie Economics. The Project will stimulate the regional economy of Oberon, Upper Lachlan, and Goulburn Mulwaree Local Government Areas, during both the construction and operational phases.

The Project's economic impacts include:[12]

- $70M in annual direct and indirect output.
- $32M in annual direct and indirect value added.
- $19M in annual direct and indirect household income.
- Up to 152 direct and indirect jobs.

The construction and operation of the Project will have net positive impacts on the level of economic activity in the regional and NSW economy. The Proponent proposes to work in partnership with the Oberon Council and the local community so that, as far as possible, the benefits of the projected economic growth in the region are maximised and impacts minimised. A range of general economic management measures are proposed, which include:

- Employment of regional residents as far as possible.
- Participating, as appropriate, in business group meetings, events or programs in the regional community.
- Locally sourcing non-labour inputs to production where local producers can be cost and quality competitive.
- A neighbouring property benefit scheme so the eligible properties neighbouring the wind farm site can directly benefit from the project.

[12] *Note that Output is not reported for the operation phase for reasons of commercial confidentiality.*

- Provision of community grants through various initiatives and programs within the local community.

GPGA is offering a Voluntary Planning Agreements (VPAs) generally in accordance with section 7.4 of the EP&A Act (VPA) to Oberon Council. The VPA is a monetary contribution to be administered by the Oberon Council and disbursed entirely at their discretion (or in accordance with the Community Consultative Committee, when constituted) for local infrastructure projects. A further assessment is provided at section 6.20 of this report.

Capital Investment Report

A Capital Investment Report (CIV) has been prepared by a qualified Quantity Surveyor to determine the CIV of the project. The report includes a cost summary containing the following:

- Project contractors
- Consultant fees
- Wind turbine generators
- Wind farm civil works and infrastructure works
- Wind farm reticulation system
- Substation structures and control and communication system
- Escalation allowance and mitigation costs
- The projected CIV of the PYWF Project is expected to amount to $599,667,000 (excluding GST). The report provides some general assumptions, inclusions and exclusions as part of the CIV calculations.

A detailed assessment of the CIV is provided in section 6.21of this report.

Health Impact

In preparing the health assessment, the NSW Wind Energy Guidelines for State Significant Wind Energy Development (December 2016) has been considered. The following impacts have been assessed as part of the Health Impact Statement (HIS):

- Noise impacts
- Shadow Flicker
- Blade Glint
- Electric and Magnet Fields
- Bushfire
- Blade Throw
- Biosecurity
- Employment.

In addition to the guidelines, the National Health and Medical Research Council of Australia (NHMRC) statement: *Evidence on Wind Farms and Human Health* was also considered. This statement is based on the findings of comprehensive independent assessment of the scientific evidence on wind farms and human health.

The assessment found that through evidence gathered, assessment of the supporting documents, and compliance with the recommendations, the potential impacts from noise, EMF, shadow flicker and blade glint associated with the proposed wind farm would not give rise to any adverse human health impacts. The level of risk to human life posed by blade throw and bushfire associated with the Project is considered to be very low.

Subject to upholding the recommendations set out in the health assessment report and subsequent health monitoring, it is not considered that the Project would give rise to any unacceptable human health impacts.

A detail review of the Health Assessment is provided in section 6.22 of this EIS report.

Land Use Conflict Risk Assessment

A Land Use Conflict Risk Assessment (LUCRA) has been undertaken for the site and has been attached as Appendix F. A LUCRA report assists landholders, developers and regulators in providing additional knowledge of a site to avoid and manage any land conflicts which may arise as a result of development.

The primary focus of the LUCRA is on conflicts which could affect the existing or future of agricultural uses and activities and identify potential land use conflicts for neighbouring properties as outlined in the *NSW Land Use Conflict Risk Assessment Guide*. The LUCRA for Paling Yards identifies a number of risks which are associated with the proposed development of the wind farm these include:

- Construction
- Traffic / Transport and Access
- Visual Amenity
- Noise Amenity
- Shadow Flicker
- Biodiversity
- Heritage
- Social Impact
- Economic Impact.

The assessment identifies initial risk levels for each of the identified conflicts and provides a risk rating for each which is assessed based on probability and consequence. Mitigation measures that seek to reduce the impact of the development on the surrounding land are then considered.

The LUCRA prepared for Paling Yards provides mitigation and management measures which have been suggested through various consultant inputs, overall lowering the risk of land use conflict which may result as a part of the PYWF. The LUCRA Assessment is further detailed in section 6.23 of this report.

Mitigation Measures

The EIS found that the Project would have a range of positive and negative impacts on the Project area and region. However, it was found that the benefits of the wind farm outweigh the undesirable impacts.

The key matters for assessment in this EIS in relation to the potential positive and negative impacts of the Project include:

- Landscape and visual impacts
- Shadow flicker impacts
- Noise impacts
- Geotechnical impacts
- Flora and fauna impacts
- Transport impacts
- Blade throw impacts
- Aeronautical impacts
- Fire hazard impacts
- Electromagnetic interference impacts
- Heritage impacts
- Hydrology impacts
- Community and socio-economic impacts
- Health impacts
- Cumulative impacts

The above matters are addressed in the EIS under individual sections. Mitigation strategies have been developed and incorporated in the planning and design of the Project and are set out under section 7of this EIS. The impacts of the Project would be minimised by the extensive range of management plans that would be prepared before construction and through ongoing monitoring of the compliance of the wind farm post-construction.

No impacts were identified which, after these mitigation strategies and measures have been implemented, are considered inacceptable.

Conclusion

The Project has been designed and refined based on inputs from a range of specialist consultants, community members, agencies, local and state government, and involved landowners.

The EIS found that, if approved, the wind farm will:

- Deliver an investment of approximately $600 million to the local economy;
- Provide over 152 full time employment positions during construction, up to four (4) full time ongoing positions during the operation of the wind farm, and up to six (6) additional full-time roles, which includes maintenance staff;
- Generate up to 900,000 MWh of clean renewable energy per annum;
- Deliver renewable energy contributions to reduce the dangerous impacts of climate change, such as droughts, floods, extreme weather events and sea level rise by displacing up to 900,000 tonnes of greenhouse per annum; and
- Make an important contribution to reduce the dangerous impacts of climate change.

The EIS found that the Project is compatible with the existing land uses of the area and complies with relevant planning and environmental controls applicable to the site.

As a result, this environmental assessment regards that, the Project is in the public interest.

Project Overview

1 Introduction

1.1 Context

Our dependency on fossil fuels and the associated industrial processes are contributing to climate change and are drastically increasing global warming. Global policies and agreements have been signed and implemented to encourage the adoption of more renewable energy to help reduce the impacts of climate change. Wind power is one of the least greenhouse gas intense energy sources and has become one of the fastest growing energy generating sources world-wide. Wind farms present a cost effective, reliable and an efficient alternative to other energy generating activities.

The NSW Government is committed to transitioning to a diverse, affordable, modern energy system (Climate Council 2021). As such, wind energy comprises a key part of the state's alternative energy solutions and is supported under the '*Renewable Energy Action Plan*' (NSW Government 2020). The east coast and regions along the higher exposed parts of the Great Dividing Range have been identified as some of Australia's best locations for the installation of wind turbine technology. These areas are characterised by consistently and high average wind speeds and are often close to existing transmission infrastructure.

Accordingly, Paling Yards is subject to high wind speeds given its geographic location within the central table lands. The addition of this wind farm would supplement the Crookwell wind farms which are located about 40km to the south. The PYWF would provide the surrounding rural areas with a more reliable and stable energy source.

Being 'zero-fuel' in nature, the PYWF will directly contribute to the NSW Government's renewable energy 2030 target. It will improve Australia's energy security and will reduce reliance on fuel-dependent energy sources that may be directly impacted by international commodity markets. The Project, through medium to long-term power-purchase agreements, will be able to offer the assurance of a fixed price to electricity off takers over a contracted tenure.

Being a renewable energy project, the offered pricing will also be substantially lower than typical pricing for more conventional energy sources (coal and gas).

The Project will make use of an existing high voltage, high-capacity electricity transmission corridor (500kV Mt Piper-Bannaby transmission line) which crosses the north-eastern corner of the site. This will minimise the need for new and lengthy connection assets. Furthermore, the electrical proximity of the proposed connection point to large demand centres (Sydney, South Coast, Central Coast, Hunter and Newcastle), make this project ideal in terms of grid balance and supply to the backbone of the NSW Electricity Transmission Network.

1.2 Purpose of this document

This Environmental Impact Statement (EIS) has been prepared for GPGA to support a state significant development application (DA) to build and operate the Paling Yards Wind Farm. The Project is proposed to be located within the Oberon LGA approximately 60km south of Oberon, 75km north of Goulburn and approximately 140km west of Sydney.

The Project has a CIV of approximately $600 million. Under the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP), electricity generating works (including wind power) that have a capital investment value of more than $30 million are classified as state significant development (SSD) and require approval under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) through the preparation of an EIS.

This EIS has been prepared under Division 4.7 Part 4 of the EP&A Act, in accordance with the Secretary's Environmental Assessment Requirements (SEARs) dated 09/03/2022 (Appendix A), and the requirements of Schedule 2 of the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation).

This EIS has further been prepared having regard to the NSW *State Significant Development Guidelines (October 2022)* and *State Significant Development Guidelines – Preparing an Environmental Impact Statement* (Appendix B to the SSD Guidelines) July 2022.

The main purpose of this EIS is to assess the environmental and socio-economic impacts of the Project. It further provides the community, stakeholders and local and state government to understand the Project and its impacts. Following the preparation of this EIS, all interested and affected parties will be granted the opportunity to make submissions before a decision is made in relation to the Project.

1.3 Project History

The Project was initially commenced in 2002. At that time, the primary considerations guiding the project were resource availability, environmental constraints, evacuation capacity and the participation of willing landowners. Early consultation was undertaken with local landowners and a measurement campaign was launched to validate desktop assessments of on-site wind potential. A pre-feasibility assessment was commissioned to establish the overall viability of the site and planned project.

The Project's layout, footprint and components have all been adjusted in response to findings from ongoing consultation, studies and market trends. For instance, the initial footprint was about 3,900ha, with a higher turbine density (up to 59 turbines). The site area has now grown to 4,600ha with only 47 turbines being proposed.

Access tracks and the project connection scheme / point have also changed due to heritage recommendations and landowner feedback respectively.

The proposed turbine model has also changed to reflect market trends for improved efficiency. The proposed turbine has a reduced footprint and a lower noise output as some turbine components that were previously external are now housed within the turbine tower itself.

Following detailed discussions between the Proponent and DPE the previous SSD Application was withdrawn in 2020. It was agreed that a new SSD Application be prepared and submitted to DPE for consideration and assessment. This would give the Proponent the opportunity to re-engage with the community and stakeholders to discuss the proposal.

Since restarting the application process, the number of wind turbines has been further reduced to 47 and now includes wind turbines with a maximum blade tip height of 240m. The turbines are now spaced further away from each other, with several turbines originally proposed on the southern portion of the project site, east of Abercrombie Road, being relocated to land previously only intended for transmission infrastructure, in the north-east of the Site.

1.4 Site Selection

Due to the passage of time, it is not possible to ascertain precisely what the original proponent's site selection process was in 2002. However, GPG would typically follow the following methodology when undertaking pre-feasibility for new developments:

- Choice of general area with optimal wind resource (desktop).
- Choice of area in close proximity to existing electrical evacuation infrastructure.

- High-level engagement with willing landowners.
- Consideration of environmental constraints.
- Ranking of identified options-based resource, evacuation and environmental / planning constraints.
- Commissioning of more detailed Pre-Feasibility Assessment(s) for highest-ranked option(s).
- Commencement of formal development application processes.

The chosen turbine layout and ancillary infrastructure is proposed to be located and designed to maximise the use of existing disturbed areas to avoid and minimise impacts to cultural heritage values. Similarly, the Project layout aims to avoids impacts to the biodiversity values within the site as far as possible.

The Project is further located within a rural setting and in an area of low population density. The proposed wind farm layout provides suitable separation distances to non-associated dwellings and this will minimise noise impacts associated with the construction and operation of the Project.

As the above attributes combine to form a site that is highly suitable for the proposed wind farm, no alternative locations were considered by GPGA for the Project.

1.5 Project Overview and Objectives

GPGA is committed to developing and managing modern power generation assets with a global focus on renewable energy through hydro and wind power technologies. Wind power generated through wind turbines is one of the world's most widely used renewable technologies and uses wind's kinetic energy to generate electricity. Wind energy generation forms a major part of GPGA's commitment towards the renewable energy future of NSW and Australia.

GPGA is one of the top five independent renewable energy operators in Australia. GPGA currently has two operating wind farm facilities – the Crookwell 2 Wind Farm (91MW) near Goulburn in New South Wales (NSW) and the Berrybank Wind Farm (180MW) in south-western Victoria (VIC). The recently approved Crookwell 3 Wind Farm (58MW) in NSW will soon to be added to their portfolio.

The PYWF Project aims to contribute towards reducing the dangerous impacts of climate change and will also contribute capital investment into the local economy.

The Project consists of the installation, operation, maintenance, and decommissioning of WTGs, construction of wind monitoring masts, onsite electrical substations, control room, maintenance building, switchgear and associated control systems and road works to upgrade local road infrastructure.

The Project is designed to accommodate contemporary WTGs of up to a height of 240m in height, with a capacity of approximately 6.1MW per turbine. Once complete it is expected that the Project will have an approximate energy generating capacity of up to 287 MW, which will be distributed into the grid through existing overhead transmission lines.

In addition to the wind farm, this application also includes the necessary transmission infrastructure and new connection to the adjacent 500kV Mount Piper to Bannaby transmission line, inclusive of a high voltage transmission line, a collector substation, a switching substation, and grid interface works.

The Project will comprise the following:

- Up to forty-seven (47) WTGs inclusive of tower, blades and components required for the generation of electricity through the use of wind power:
  - Overall WTG maximum blade tip height of up to 240m, with a total of three (3) blades per turbine; and
  - Up to three (3) wind monitoring masts fitted with various instruments such as anemometers, wind vanes, temperature gauges and potentially other electrical equipment.
- Each of the 47 WTGs will comprise of the following components:
  - Epoxy-fibre glass / balsa / foam hybrid blades, consisting of two blade components each;
  - Between six to eight steel tower sections;
  - One nacelle;
  - One steel hub; and
  - Steel and concrete hybrid foundations.

- Ancillary infrastructure:
  - Switchgear and associated control systems within the wind turbine towers;
  - An on-site 33/132kV collector substation, including control room, maintenance building, switchgear and associated control systems;
  - Approximately 7km of 132kV overhead powerline (with a total easement measuring 40-45m to connect the collector substation to the switching substation (including control room and other associated grid connection facilities).
  - An on-site 132/500kV switching substation to connect to the existing TransGrid's 500kV Mount Piper to Bannaby transmission line (including control room and other associated grid connection facilities).
  - Cut-in works on the 500kV Mt Piper-Bannaby transmission line to connect it to the switching substation, resulting on a section of approximately 1km of 500kV transmission line (with a total easement width of 70m).
- Roads and local infrastructure:
  - Upgrades to local road infrastructure including several access points from Abercrombie Road and internal unsealed tracks for vehicle access to turbines and infrastructure.
  - Internal roads of approximately 32km to be installed and constructed.
- Temporary facilities:
  - Establishment of a laydown area during the construction period;
  - A demountable site office and site store to be within the identified laydown area; and
  - Temporary batching plant to supply concrete, including:
    - Material weighting system;
    - Material conveying system;
    - Cement silo;
    - Water tank(s);
    - Concrete mixer;
    - Operation station; and
    - Cold bin(s).
- Micro-siting:
  - The proposal includes provision for the micro-siting of turbines, ancillary infrastructure and temporary facilities following attainment of development consent and during the 'optimisation and detailed design' phase;
  - Micro-siting allows for flexibility to relocate turbines to within a 100m radius of its original location as a result of unforeseen circumstances or because of issues encountered during optimisation, detailed design and construction phase programming;
  - It further allows for the flexibility to relocate ancillary infrastructure, such as internal roads, transmission equipment and substation, including temporary facilities such as laydown areas, to within a 50m wide corridor;
  - This helps mitigate impacts after consent for the Project has been issued, but before construction commences;
  - Specialist technical assessments have therefore considered the100m wide radius for the turbines and 50m wide corridor for ancillary equipment as part of the micro-siting approach; and
  - Any micro-sited facilities would not result in any non-compliance with the development consent once granted.
- Development Approval is also sought for the installation and operation of the associated transmission infrastructure, including a high voltage transmission line, a collector substation, a switching substation, and grid interface works, which includes linking the on-site transmission equipment to the directly adjacent 500kV Mount Piper to Bannaby transmission line.

In 2021 Naturgy, through GPGA, signed a power purchase agreement with Telstra for the 58MW Crookwell 3 wind farm located near Goulburn in NSW. Under the agreement, Telstra has committed to procure 80% of the energy generated by the wind farm. To date, Telstra has signed long-term renewable energy agreements that enable the telecommunications company to achieve approximately two thirds of its renewable energy goal set for 2025. Telstra

recently confirmed that it would be looking to sign additional agreements before 2025. The PYWF project already has an offtake agreement in place with a reputable but confidential offtaker.

In accordance with section 192(1)(b) of the EP&A Act, the key objectives of the project are to:

- Provide renewable energy to the Central Tablelands region, with a total generation capacity of up to 287 MW, enough to power 100,000 average households per year.
- Result in a reduction of greenhouse gas emissions of approximately 900,000 tonnes of CO2 equivalent annually.
- Contribute towards reducing the dangerous impacts of climate change and will also contribute capital investment into the local economy.
- Provide a wind farm that is connected to the transmission grid that will contribute to the delivery of affordable, sustainable and reliable electricity in NSW.
- Avoid and / or minimise environmental impacts where possible, through the design and implementation of environmental management and mitigation measures.

1.6 Project Setting

The Project is located within the Oberon LGA approximately 60km South of Oberon, 75km North of Goulburn and approximately 140km west of Sydney (Figure 3). To the south-west, the site adjoins the Abercrombie National Park and to the east is the Wiabarough Nature Reserve and Blue Mountains National Park. The closest towns to the site are Porters Retreat and Curraweela, which have township populations of approximately 64 (down from 259 in 2011) and 67 (down from 263 in 2011) respectively according to the 2021 Census data.

The Project site is heavily undulating with moderate slopes and topography ranging from between 900m to 1,065m above sea level. The site includes four separate landholdings over approximately 4,600 hectares referred to as 'Mingary Park', 'Paling Yards', 'Middle Station' and 'Hilltop'. Most of the site has been cleared of native vegetation, although trees are scattered within the site and thicker vegetation exists near the site's boundaries. It contains several ephemeral creeks and drainage lines which cross the site and effectively drains into the Abercrombie River along the southern boundary of the site.

The Project site is approximately 40km to the north-east of the existing Crookwell 1 and Crookwell 2 wind farms and the recently approved Crookwell 3 wind farm. Taralga Wind Farm is to be located about 25km to the south of the Project site.

Figure 3 below provides context on the site location in relation to the nearby towns, the Crookwell wind farms and Taralga Wind Farm.

The WTGs and associated infrastructure will be developed within the boundaries of the Project Site outlined in Error! Reference source not found..

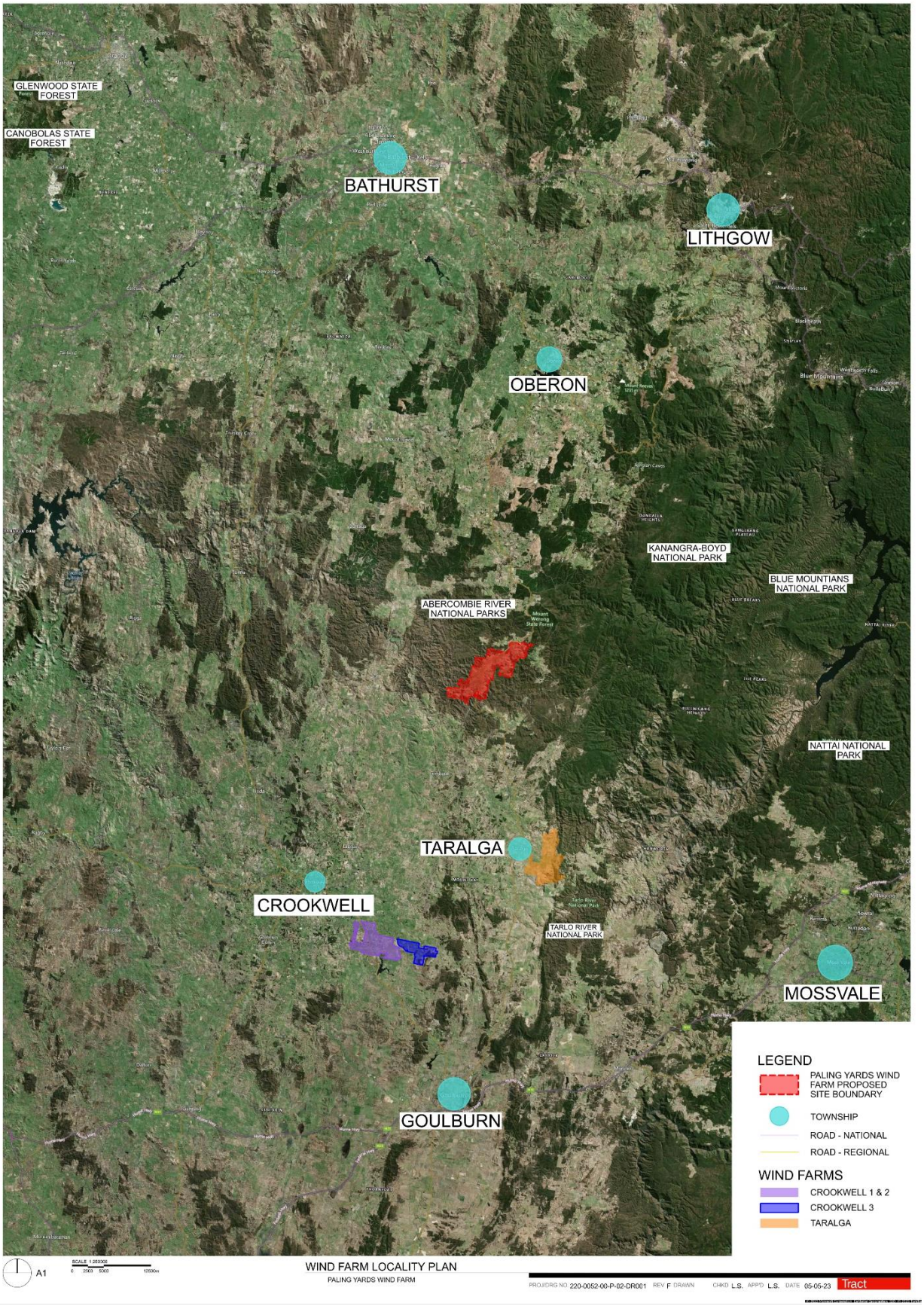


Figure 3. Locality Plan (Source: Tract 2023)

1.6.1 Zoning and Land use

The site is in the Oberon Local Government Area (LGA) which directly adjoins the Lachlan LGA. The EP&A Act allows for the preparation of local planning instruments to direct development within LGAs. This includes Local Environment Plans (LEPs), which are administered by local government and determine land use and the process for development applications.

According to the *Oberon Local Environmental Plan 2013* (OLEP), the site is currently zoned as RU1 Primary Production.

The objectives of the RU1 Primary Production Zone are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To enable other forms of development associated with primary production activities, which may require an isolated location or which support tourism or recreational activities.

Other relevant planning overlays and constraints to be assessed include:

- Bushfire Prone Land: Vegetation Category 1.
- Environmental Sensitive Lands: Riparian Lands and Watercourses.
- The Local Aboriginal Land Council for the area is Pejar Local Aboriginal Council and Wiradjuri Regional Aboriginal Council.

The site is currently primarily used for agricultural purposes. The largest source of land use disturbance through the Project area to date is attributed to farming practices, having resulted in land clearances, construction of buildings (homesteads and sheds), installation of fences, construction of dams and irrigation systems, and intensive stock grazing.

Several localised access tracks traverse the site, some of which have involved considerable construction activities. Some of the surrounding land is zoned as C1: National Parks and Nature Reserves.

Error! Reference source not found. below provides the context of the site in relation to the surrounding properties and l and uses. It is evident from the aerial photograph below that the majority of the site has been cleared of native vegetation.

Figure Provides an overview of the existing zoning of the site (RU1 Primary Production) and the surrounding properties.

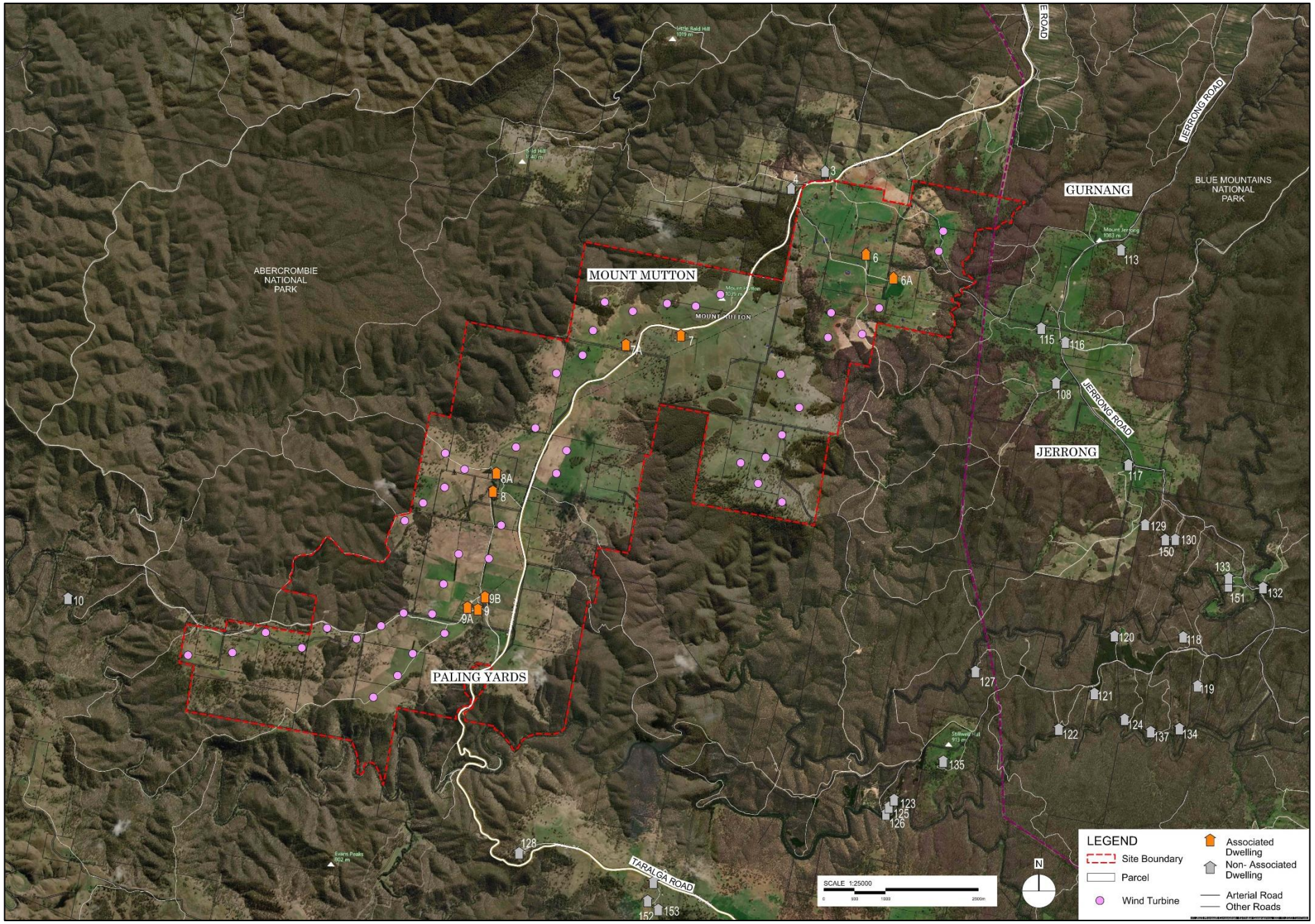


Figure 4. Site Context (Source: Tract 2022)

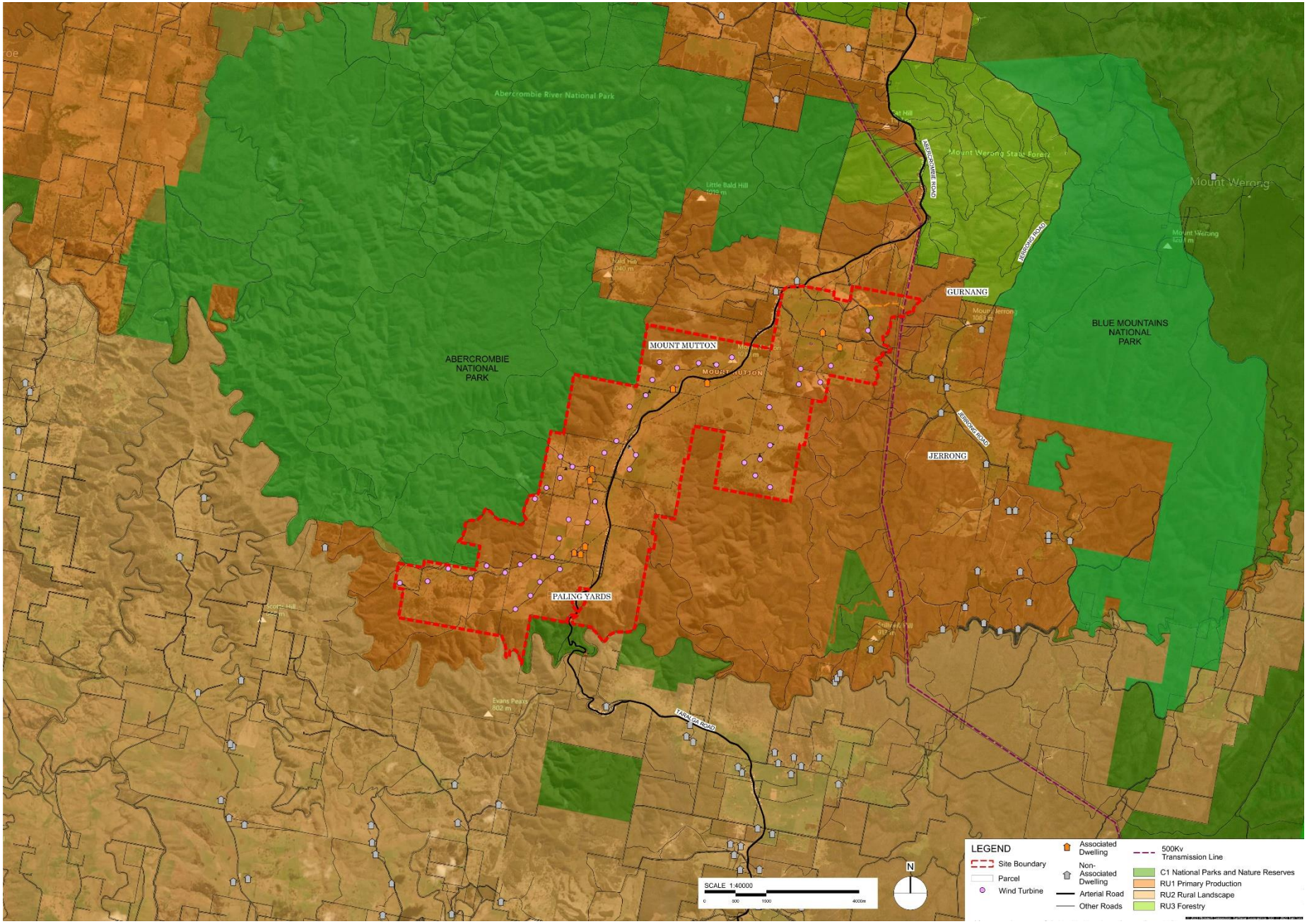


Figure 6. Site Zoning (Source: Tract 2023)

1.6.2 Landownership

Landowners within the Project site area have entered into Agreements for Lease with GPGA. The involved lots associated within the Project Area (for WTG and ancillary components) are listed within the table below.

Involved Lots Associated with the Project

Table 2. Involved Lots for the Project - WTG and Ancillary Developments (NSW Planning Portal, 2021)

Site Address	Lot / DP	Lot Involvement
7056 Abercrombie Road Paling Yards 2580	Lot 1 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 2 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 3 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 4 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 30 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 31 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 32 / DP 753019	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 1 / DP 753037	· WTG and ancillary
6466 Abercrombie Road Paling Yards 2580	Lot 2 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 5 / DP 753037	· WTG and ancillary
6335 Abercrombie Road Paling Yards 2580	Lot 6 / DP 753037	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 7 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 11 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 13 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 14 / DP 753037	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 15 / DP 753037	· WTG and ancillary
6335 Abercrombie Road Paling Yards 2580	Lot 16 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 17 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 18 / DP 753037	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 19 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 20 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 21 / DP 753037	· WTG and ancillary
6335 Abercrombie Road Paling Yards 2580	Lot 22 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 23 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 24 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 25 / DP 753037	· WTG and ancillary

Site Address	Lot / DP	Lot Involvement
6335 Abercrombie Road Paling Yards 2580	Lot 26 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 27 / DP 753037	· WTG and ancillary
6335 Abercrombie Road Paling Yards 2580	Lot 28 / DP 753037	· WTG and ancillary
6790 Abercrombie Road Paling Yards 2580	Lot 31 / DP 753037	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 34 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 35 / DP 753037	· WTG and ancillary
6790 Abercrombie Road Paling Yards 2580	Lot 39 / DP 753037	· WTG and ancillary
6335 Abercrombie Road Paling Yards 2580	Lot 40 / DP 753037	· WTG and ancillary
6466 Abercrombie Road Paling Yards 2580	Lot 41 / DP 753037	· WTG and ancillary
6466 Abercrombie Road Paling Yards 2580	Lot 42 / DP 753037	· WTG and ancillary
6790 Abercrombie Road Paling Yards 2580	Lot 43 / DP 753037	· WTG and ancillary
6335 Abercrombie Road Paling Yards 2580	Lot 44 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 45 / DP 753037	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 48 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 49 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 50 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 51 / DP 753037	· WTG and ancillary
6650 Abercrombie Road Paling Yards 2580	Lot 53 / DP 753037	· WTG and ancillary
6790 Abercrombie Road Paling Yards 2580	Lot 56 / DP 753037	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 61 / DP 753037	· WTG and ancillary
6057 Abercrombie Road Paling Yards 2580	Lot 2 / DP 753064	· WTG and ancillary
6057 Abercrombie Road Paling Yards 2580	Lot 6 / DP 753064	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 41 / DP 753064	· WTG and ancillary
6055 Abercrombie Road Paling Yards 2580	Lot 56 / DP 753064	· WTG and ancillary
6057 Abercrombie Road Paling Yards 2580	Lot 67 / DP 753064	· WTG and ancillary
7056 Abercrombie Road Paling Yards 2580	Lot 41 / DP 1025920	· WTG and ancillary
6790 Abercrombie Road Paling Yards 2580	Lot 51 / DP 621232	· WTG and ancillary

Note that the following lots previously included in the project involved lots list have been removed as they will no longer be impact by the proposal development and / or any ancillary installations or services:

- Lot 7001 / DP 94508 – Crown Lands
- Lot 7002 / DP 1068142 – Crown Lands
- Lot 7005 / DP 1068141 – Crown Lands
- Lot 42 / DP 1025920 – Leased by Telstra Corporation Pty Ltd.

Involved Lots Associated with the Transmission Line

The involved lots associated with the transmission line as part of the Project are listed within the table below:

Table 3. Involved Lots for the Project - Transmission Line (NSW Planning Portal, 2021)

Site Address	Lot / DP	Lot Involvement
6466 Abercrombie Road Paling Yards 2580	Lot 2 / DP 753037	· Transmission Line
6335 Abercrombie Road Paling Yards 2580	Lot 16 / DP 753037	· Transmission Line
6335 Abercrombie Road Paling Yards 2580	Lot 40 / DP 753037	· Transmission Line
6055 Abercrombie Road Paling Yards 2580	Lot 56 / DP 753064	· Transmission Line
6057 Abercrombie Road Paling Yards 2580	Lot 67 / DP 753064	· Transmission Line

Figure identifies the involved lots that will form part of the wind farm.

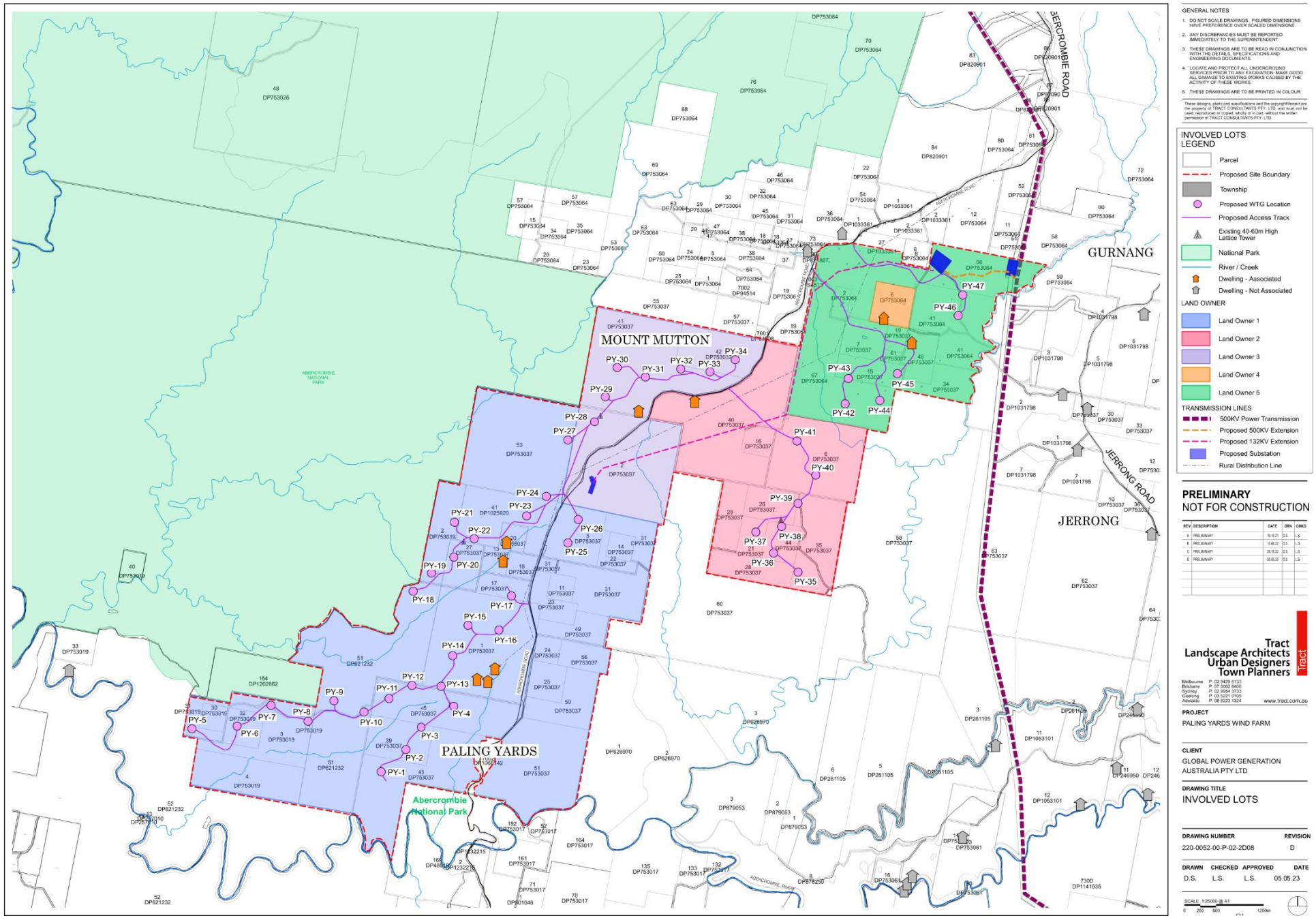


Figure 6. Involved Lots (Source: Tract 2023)

Planning certificates for each involved property, issued under Section 10.7 of the EP&A Act by Oberon Council, are attached as Appendix E.

A summary of title particulars for each involved lot is provided in Table 4.

Table 4. Involved Lot Titles and Easements

Lot / DP	Schedule	Additional notes
Lot 1 and Lot 4 / DP 753019 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see memorandum S700000A. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 2 / DP 753019 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grants. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 3 / DP 753019 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grants. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd.	-
Lot 30 / DP 753019 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see memorandum. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 31 / DP 753019 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see memorandum. · U760317 Right of Carriageway 20 wide appurtenant to the land above described affecting the land in plan with U760317. · AQ500733 Caveat by NSW Rural Assistance Authority.	-

Lot / DP	Schedule	Additional notes
	· AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	
Lot 32 / DP 753019 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grant(s). · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 1 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Reservations and conditions in the Crown Grant(s)s. · Limited Title. Limitation pursuant to section 28T(4) of the Real Property Act, 1900. The boundaries of the land comprised herein have not been investigated by the Registrar General. · Land excludes the road(s). · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	Note: The easement (road) will not be negatively impacted by the proposed development.
Lot 2 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Reservations and conditions in the Crown Grant(s). · Limited Title (limitation pursuant to section 28T(4) of the Real Property Act, 1900. · AK511564 Caveat by Union Fenosa Wind Energy Australia Pty Ltd. · AP258218 Caveat by Global Power Generation Pty Ltd.	-
Lots 11, 13, 14, 17, 18, 20, 22, 23, and 27 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Reservations and conditions in the Crown Grant(s). · Land excludes minerals within lots 5, 11, 14, 17, 18, 20, 22, 23 and 27 by Crown Grants. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 6 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s) · AP253929 Caveat by Global Power Generation Australia Pty Ltd	-

Lot / DP	Schedule	Additional notes
Lot 7 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s)	-
Lot 15 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s)	-
Lot 16 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Reservations and conditions in the Crown Grant(s). · Excepting the Road 20.115 metres wide shown in the title diagram. · AP253929 Caveat by Global Power Generation Pty Ltd.	Note: Lot is subject to a 20.115m wide road easement. The easement will not be negatively impacted by the proposed development.
Lot 19 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Reservations and conditions in the Crown Grant(s) · Qualified title. Caution pursuant to Section 28J(1) and 28J(1A) of the Real Property Act, 1900. · Limited title. Limitation pursuant to Section 28T(4) of the Real Property Act, 1900. The boundaries of the land comprised herein have not been investigate by the Registrar General.	-
Lot 21 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AP253929 Caveat by Global Power Generation Pty Ltd.	-
Lot 24 and 25 / DP 753037 Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 26 and Lot 28 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AP253929 Caveat by Global Power Generation Pty Ltd.	-
Lot 31 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · U760317 Right of carriageway 20 wide appurtenant to the land above described affecting the land shown in plan with U760317. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd.	Note: Lot is subject to a 20m wide road easement. The easement will not be negatively impacted by the proposed development.

Lot / DP	Schedule	Additional notes
	· AQ547763 Caveat by NSW Rural Assistance Authority.	
Lot 34 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s)	-
Lot 35 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s) · Land excludes the road(s) shown in the title diagram · AP253929 Caveat by Global Power Generation Australia Pty Ltd	Note: The easement (road) will not be negatively impacted by the proposed development.
Lot 39 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AJ969968 Caveat by New South Wales Rural Assistance Authority. · AK962860 Caveat by New South Wales Rural Assistance Authority. · AP928571 Caveat by Global Power Generation Pty Ltd. · AQ457532 Caveat by NSW Rural Assistance Authority.	-
Lot 40 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AP253929 Caveat by Global Power Generation Pty Ltd.	-
Lot 41 and 42 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AK5115691 Caveat by Union Fenosa Wind Australia Pty Ltd · AP258218 Caveat by Global Power Generation Pty Ltd.	-
Lot 43 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AJ969968 Caveat by New South Wales Rural Assistance Authority. · AK962860 Caveat by New South Wales Rural Assistance Authority. · AP928571 Caveat by Global Power Generation Australia Pty Ltd. · AP997789 Biodiversity Stewardship Agreement. · AQ457532 Caveat by NSW Rural Assistance Authority.	Note: Lot 7005 / DP1068141 in registered in favour of Crown Land but will not be impacted by this proposal.

Lot / DP	Schedule	Additional notes
Lot 44 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AP253929 Caveat by Global Power Generation Australia Pty Ltd.	-
Lot 45 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 48 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · Land excludes the road(s) shown in the title diagram.	-
Lot 49 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	-
Lot 50 and Lot 51 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AJ6969968 Caveat by the New South Wales Rural Assistance Authority (AP997789 Caveator consented) · AK962860 caveat by New South Wales Rural Assistance Authority (AP997789 Caveator consented) · AP928571 Caveat by Global Power Generation Australia Pty Ltd (AP997789 Caveator consented) · AP997789 Biodiversity Stewardship Agreement · AQ457532 Caveat by NSW Rural Assistance Authority	Note: Lot 7002 / DP1068141 is registered in favour of Crown Land but will not be impacted by this proposal.
Lot 53 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · AP928571 Caveat by Global Power Generation Australia Pty Ltd (AP997789 / AS362202 Caveator consented)	-

Lot / DP	Schedule	Additional notes
	· AP997789 Biodiversity Stewardship Agreement	
Lot 56 / DP 753037 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · DP1125370 Right of carriageway 15 metre(s) wide affecting the part(s) shown so burdened in DP1125370. · AQ500733 Caveat by NSW Rural Assistance Authority. · AQ500734 Caveat by Global Power Generation Australia Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	Note: Lot is subject to a 15m wide road easement. The easement will not be negatively impacted by the proposed development.
Lot 61 / DP 753037 (Parish of Jerrong, County of Georgiana	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – See Crown Grant(s). · Land excludes the road(s) shown in the title diagram as regards Potion 67.	-
Lot 2 / DP 753064 (Parish of Wyndham, County of Georgiana)	· Reservations and conditions in the Crown Grant(s). · Limited Title (limitation pursuant to section 28T(4) of the Real Property Act, 1900.	-
Lot 6 / DP 753064 (Parish of Wyndham, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grant(s).	-
Lot 41 and Lot 56 / DP 753064 (Parish of Wyndham, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grant(s). · Land excludes the road(s) shown in the title diagrams. · Note – this land may be associated with Crown Tenure.	-
Lot 67 / DP 753064 (Parish of Wyndham, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grant(s). · Land excludes the road(s) shown in the title diagram as regards Potion 67.	-
Lot 41 / DP 1025920 (Parish of Jerrong, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grant(s). · DP1025920 Right of carriageway 10 wide affecting the part(s) shown so burdened in the title diagram. · DP1025920 Easement for Electricity cable variable width affecting the part(s) shown so burdened in the title diagram. · AQ500733 Caveat by NSW Rural Assistance Authority.	Note: DP1025920 for 10m wide carriageway and associated electrical cable in favour of Lot 42 / DP 1025920 will not be affected by the proposal. The easement will not be negatively impacted by the proposed development.

Lot / DP	Schedule	Additional notes
	· AQ500734 Caveat by Global Power Generation Pty Ltd. · AQ547763 Caveat by NSW Rural Assistance Authority.	
Lot 51 / DP 621232 (Parish of Bummaroo, County of Georgiana)	· Land excludes minerals and is subject to reservations and conditions in favour of the Crown – see Crown Grant(s). · AJ969968 Caveat by New South Wales Rural Assistance Authority. · AK962860 Caveat by Global Power Generation Pty Ltd. · AP928571 Caveat by NSW Rural Assistance Authority. · AQ457532 Biodiversity Stewardship Agreement.	Note: Lot is subject to a 20.115m wide road easement in favour of Lot 3 / DP621232. The easement will not be negatively impacted by the proposed development.

All relevant landowners have provided consent for the proposed development in accordance with Regulation 23(1)(b) of the *Environmental Planning and Assessment Regulation 2021* (NSW). Please refer to the attached Appendix D for the landowner summary table and associated consent letter.

Note that no Crown Lands or Crown Reserves will be impacted by the proposal. Should the design change or detailed design necessitate the involvement of or the encroachment onto Crown Land, a construction licence will be applied for while the exact location of the easement is finalised. Once the infrastructure location is finalised, an easement application can be made. The above process was confirmed (in writing) by Crown Lands on 03 March 2022 and again on 30 March 2023.

1.7 The Proponent

The proponent is Global Power Generation Australia (GPGA). GPGA has established operations in Canberra to develop, construct and operate renewable assets in Australia to advance investment within the international renewable energy sector.

GPGA is committed to developing and managing modern power generation assets with a global focus on renewable energy through hydro and wind power technologies. Wind power through wind turbines is one of the most widely used renewable technologies and uses wind's kinetic energy to generate electricity. Wind energy generation forms a major part of GPGA's commitment towards the renewable energy future of NSW.

Table 5. Applicant Detail Summary

Applicant Details	Description	
Company	Global Power Generation Australia Pty Ltd (GPGA)	Paling Yards Development Pty Ltd
ABN / CAN	ABN 74 130 542 03 (ACN: 130 542 031)	ABN: 25 653 388 473
Address	Suite A, Level 3, 73 Northbourne Avenue – Canberra, ACT 2601	
Phone	+61 2 6274 3200	

1.8 Structure of the EIS

This EIS has been prepared in accordance with the EP&A Act, EP&A Regulation, the SEARs (outlined in Appendix A), and the NSW SSD Guidelines (2021).

The purpose of this EIS is to:

- Provide an assessment of the economic, environmental and social impacts of the Project; and
- Provide the community, Council, government authorities, and the consent authority with a better understanding of the Project and its impacts as to help make an informed decision.

Numerous technical studies have been undertaken to inform this EIS. A summary of the technical consultants and the relevant assessments completed is provided in Table 6 and is discussed in more detail under section 5 and section 6.

Table 6. Summary of Consultant Team and Technical Inputs

Technical Assessment	Technical Consultant
Aboriginal Cultural Heritage Assessment	Environmental Resource Management Australia Pty Ltd (ERM)
Access, Route and Traffic Assessment	SLR Consulting Australia Pty Ltd (SLR)
Aviation Impact Assessment	Aviation Projects Pty Ltd
Biodiversity Development Assessment Report	Hunter Ecology Pty Ltd, in conjunction with ERM
Biosecurity Risk Management Plan	Environmental Resource Management Australia Pty Ltd (ERM)
Bird and Bat Utilisation Survey	Hunter Ecology Pty Ltd, in conjunction with ERM
Blade Throw Assessment	DNV Australia Pty Ltd (DNV)
Blade Transport Assessment	Rex J. Andrews Engineered Transportation (RJA)
Bushfire Assessment	Environmental Resources Management Australia Pty Ltd (ERM)
Community Engagement Plan and Outcomes Report	Environmental Resource Management Australia Pty Ltd (ERM)
Cumulative Impact Assessment	Tract Consultants Pty Ltd (Tract)
Electric and Magnetic Fields Assessment	Environmental Resource Management Australia Pty Ltd (ERM)
Electromagnetic Interference Assessment	DNV Australia Pty Ltd (DNV)
Geotechnical Assessment	SLR Consulting Australia Pty Ltd (SLR)
Hazards & Risk Assessment	SwitchCo Australia
Historic Heritage Assessment	Environmental Resource Management Australia Pty Ltd (ERM)
Health Assessment	Tract Consultants Pty Ltd (Tract)
Hydrology Assessment	Environmental Resource Management Australia Pty Ltd (ERM)
Land Use Conflict Risk Assessment	Tract Consultants Pty Ltd (Tract)
Landscape and Visual Impact Assessment	Moir Landscape Architecture Pty Ltd (Moir)
Noise and Vibration Report	SLR Consulting Australia Pty Ltd (SLR)
Quantity Surveyor CIV Report	Wilde and Woollard Australia Pty Ltd (W&W)
Rehabilitation and Decommissioning Plan	WSP Australia Pty Ltd (WSP)
Shadow Flicker Assessment	DNV Australia Pty Ltd (DNV)
Social Impact Assessment	Environmental Resource Management Australia Pty Ltd (ERM)
Economic Assessment	Gillespie Economics

The structure of the EIS is Outlined in Table 7.

Table 7. EIS Structure

Section	Section Name	Content
0	Summary	Provides a summary of the findings of this EIS in a way that is logical and easy to read and understand by the general public.
1	Introduction	Provides a detailed assessment of the Project including specifying details of the proposed works.
2	Strategic Context	Identifies the key strategic issues that are relevant to the assessment of the project. This section identifies any government strategies, policies or plans that provide strategic support for the Project.
3	Project Description	Provides a comprehensive description of the Project that the applicant is seeking development consent for.
4	Statutory Context	Identifies the relevant statutory requirements which are relevant to the justification and evaluation of the project. The Project must have regard to the following: · EP&A Act. · Other relevant legislation. · Relevant planning instruments. · Relevant approvals.
5	Engagement	Provides a summary of the key findings of the community engagement that has been carried out in relation to the Proposal.
6	Assessment of Impacts	Provides a detailed summary of the results of the assessment of the potential impacts of the Project.
7	Environmental Management and Mitigation Measures	Provides a summary of the environmental management strategy, including requirements during construction, operation and decommissioning of the wind farm. A mitigation measure summary table is provided.
8	Justification of the Project	Provides a justification and evaluation for the Project as a whole, having regard to the principles of ecologically sustainable development.
9	References	References used throughout this assessment.

1.9 Response to SEARs

The Structure of this EIS was prepared in accordance with the State Significant Development Guidelines – Preparing an Environmental Impact Statement, and addresses the requirements set out in the SEARs.

Where the relevant matters have been addressed in this EIS, a SEARs requirement table has been provided as Appendix B.

Strategic Considerations

2 Strategic Context

This section outlines the strategic justification for the Project in the context of the relevant Commonwealth, State and local government policies and international directives.

2.1 Global Strategic Context

2.1.1 Paris Agreement Under the United Nations Framework Convention on Climate Change

The '*Paris Agreement under the United Nations Framework Convention on Climate Change*' (Paris Agreement) was ratified on the 4 November 2016. Negotiated by 196 state parties as a global response to mitigate global warming and combat climate change, the Paris Agreement requires signatory countries to put forward their intended "nationally determined contributions" towards reducing greenhouse gas emissions.

Australia as a signatory is committed to a reductions target of 43% below 2005 levels by 2030. This is a 15% increase on Australia's previous 2030 target. The Australian Government has designed a policy framework that includes the development of a low emissions technology roadmap (Technology Investment Roadmap: First Low Emissions Technology Statement – 2020) to fulfill its Paris obligations and achieve lower greenhouse gas emissions.

The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for assessing climate change globally. The IPCC is a crucial source of scientific information and technical guidance to the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, and the Paris Agreement. The IPCC provides governments at all levels with the scientific information they can use to develop climate policies to address climate change.

The 2018 IPCC Special Report '*Global Warming of 1.5°C, 2018*' states:

> "*Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels, with a likely range of 0.8°C to 1.2°C. Global warming is likely to reach 1.5° C between 2030 and 2052 if it continues to increase at the current rate. (High confidence)*" (IPCC, 2018).

And:

> "*The estimated increase in Global Mean Surface Temperature (GMST) averaged over a 30-year period, or for the 30-year period centred on a particular year or decade, expressed relative to pre-industrial levels unless otherwise specified. For 30-year periods that span past and future years, the current multi-decadal warming trend is assumed to continue.*"

Projected environmental impacts to arise from global warming include increasing temperatures, rising sea levels, a loss of biodiversity and species extinction, and impacts to terrestrial, freshwater and coastal ecosystems. Specific human-orientated climate change impacts include those linked with the health of nation's population, livelihoods, food security,

water supply, human security, and economic growth. Each of the above population impacts is projected to cause significant negative factors, and these are expected to increase should global warming continue to rise upwards to 2°C.

To reduce global impacts because of global warming and climate change, the IPCC has identified a need for countries to make a rapid transition towards sustainable emissions in energy generation, land, urban and infrastructure (including transport and buildings), and industrial systems. Within its report, the IPCC identifies that multiple mitigation pathways are likely to limit warming to below 1.5°C relative to pre-industrial levels. For energy, the technical feasibility of solar energy, wind energy, and electricity storage technologies have markedly improved during the past few years.

The IPCC identifies that there is now the potential for countries to transition towards sustainable low emissions systems to enable emissions reductions across each sector generally, and particularly in the electricity generation sector. To implement this transition on a large scale, the IPCC recognises that deployment is limited by economic, financial, human capacity and institutional constraints in specific contexts and characteristics of large-scale industrial installations. Therefore, it is noted that there is an obligation to utilise a portfolio of mitigation options to reduce impacts of global warming by 2050 through significantly investing across these options, including renewable electricity generation via solar, wind and battery technologies.

The Project aims to reduce greenhouse gas emissions impacts as raised within the IPCC report. The Project involves the development of a new wind farm development within Paling Yards to generate renewable electricity via wind to replace energy generation created using fossil fuels and gas. The Project proposes to utilise new and more efficient wind turbine technology that captures more energy per turbine and operates more intelligently to ensure the effectiveness and feasibility of the wind farm.

2.1.2 Sharm El-Sheik Climate Change Conference – November 2022

At the recently concluded Sharm El-Sheikh Climate Change Conference (COP27) held in Egypt, countries came together to take action towards achieving the world's collective climate goals. COP27 reaffirmed their commitment to limit global temperature rise to 1.5 degrees Celsius and prompted countries to cut greenhouse gas emissions and adapt to the inevitable impacts of climate change[13].

COP27 resolved on breakthrough agreements to provide 'loss or damage' funding for countries who are vulnerable and severely affected by climate disasters. This meant that all countries involved in COP27 reaffirmed their commitments to take on climate change and make available funding to do so.

It was noted that a global transformation to a low-carbon economy is expected to require investment of at least $4-6 Trillion (US) a year. There be a lot of pressure on developed countries, like Australia, to mobilise climate finance, transition to a low-carbon economy and effectively deliver climate action at scale. The Project would be in line with Australia's commitment and contribute to the country's low-carbon investment.

2.1.3 International Energy Agency - Net Zero by 2050: A Roadmap for the Global Energy Sector

The special report '*Net Zero by 2050: A Roadmap for the Global Energy Sector*' released by the International Energy Agency (IEA) in May 2021has identified that the energy sector is a source of approximately three-quarters of global greenhouse gas emissions[14]. The report details the global pathway and the essential conditions required to achieve net-zero emissions by 2050 for both the global energy sector and governments.

Specifically, the IEA requires the immediate and comprehensive deployment of all available clean and efficient energy technologies, scaling up renewable energy developments within this decade to achieve generation of an additional 630 gigawatts (GW) of energy via solar photovoltaics (PV) and 390 GW of wind energy by 2030[15]. Currently, solar photovoltaics and wind energy accounts for almost 10% of the total global electricity generation.

The IEA highlights that in the transition to net zero emissions, the energy sector is to be largely based on renewable energy, with two-thirds of the total energy supply in 2050 (Figure 7) to be provided by wind, solar, bioenergy, geothermal, and hydro energy[16]. The report finds that in the pathway to net-zero emissions by 2050, solar photovoltaics

[13] *UN Climate Change News (20 November 2022), COP27 Reached Breakthrough Agreement on New "Loss and Damage" Fund for Vulnerable Countries, https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries*

[14] *International Energy Agency, (2021), Net Zero by 2050: A roadmap for the Global Energy Sector, October 2021, 4th Edition, Reviewed 4 August 2022, https://www.iea.org/reports/net-zero-by-2050*

[15] *ibid.*

[16] *ibid.*

and wind will represent the leading sources of electricity globally before 2030. The IEA expects that solar PV and wind will be responsible for nearly 70% of global generation in 2050.

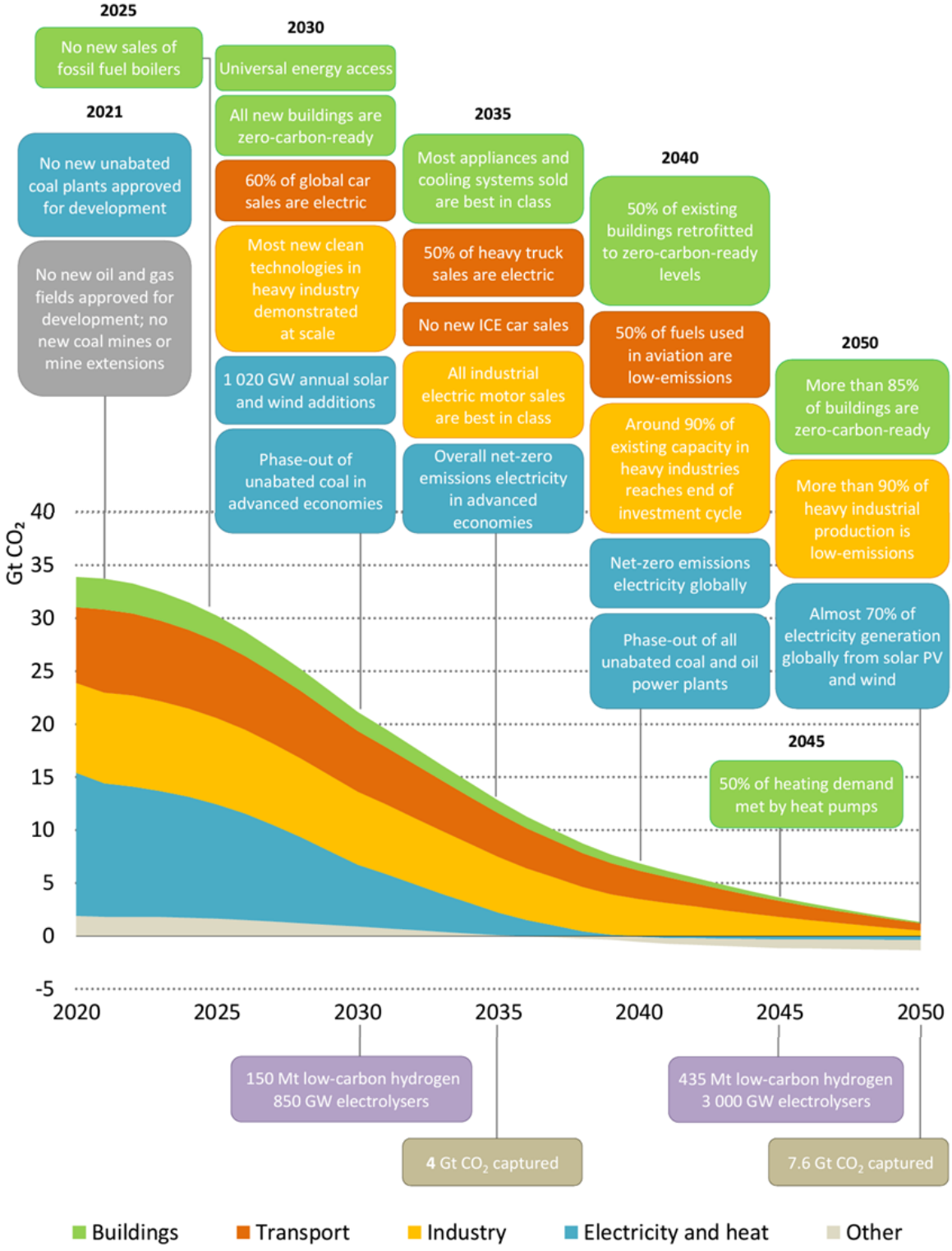
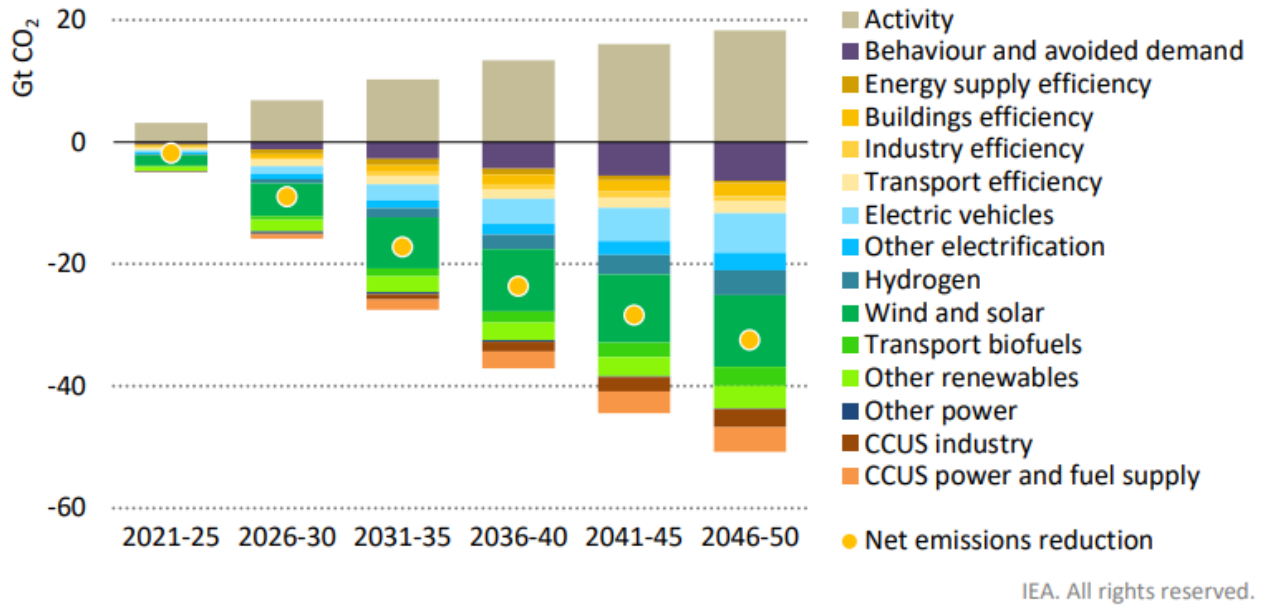


Figure 7. Key Milestones in the Pathway to Net-Zero (Source: IEA, 2021)[17]

[17] *International Energy Agency op. cit.*

The rapid deployment of energy-efficient technologies, the electrification of end-uses, and the implementation of policies that support the growth of renewables will allow for the required reduction of emissions to be achieved across all sectors in the net-zero emissions scenario (Figure 8).



Renewables and electrification make the largest contribution to emissions reductions, but a wide range of measures and technologies are needed to achieve net-zero emissions

Notes: Activity = changes in energy service demand from economic and population growth. Behaviour = change in energy service demand from user decisions, e.g. changing heating temperatures. Avoided demand = change in energy service demand from technology developments, e.g. digitalisation.

Figure 8. Average Annual CO2 Reductions from 2020 in the Net-Zero Emissions Scenario (Source: IEA, 2021)[18]

The IEA outlines that the electricity sector will be the first to achieve net-zero emissions due to the lower-cost of existing technologies, widespread policy support, and in particular, the existing maturity of renewable energy technologies such as solar PV and wind generation (Figure 9).

Onshore wind generation is seen by the IEA as a market-ready, low-cost technology with the ability to be scaled up quickly to rival to solar photovoltaics in terms of cost where conditions are good. It is recognised however that onshore wind generation projects often face public opposition and complex permitting and licensing processes.

[18] *International Energy Agency op. cit.*

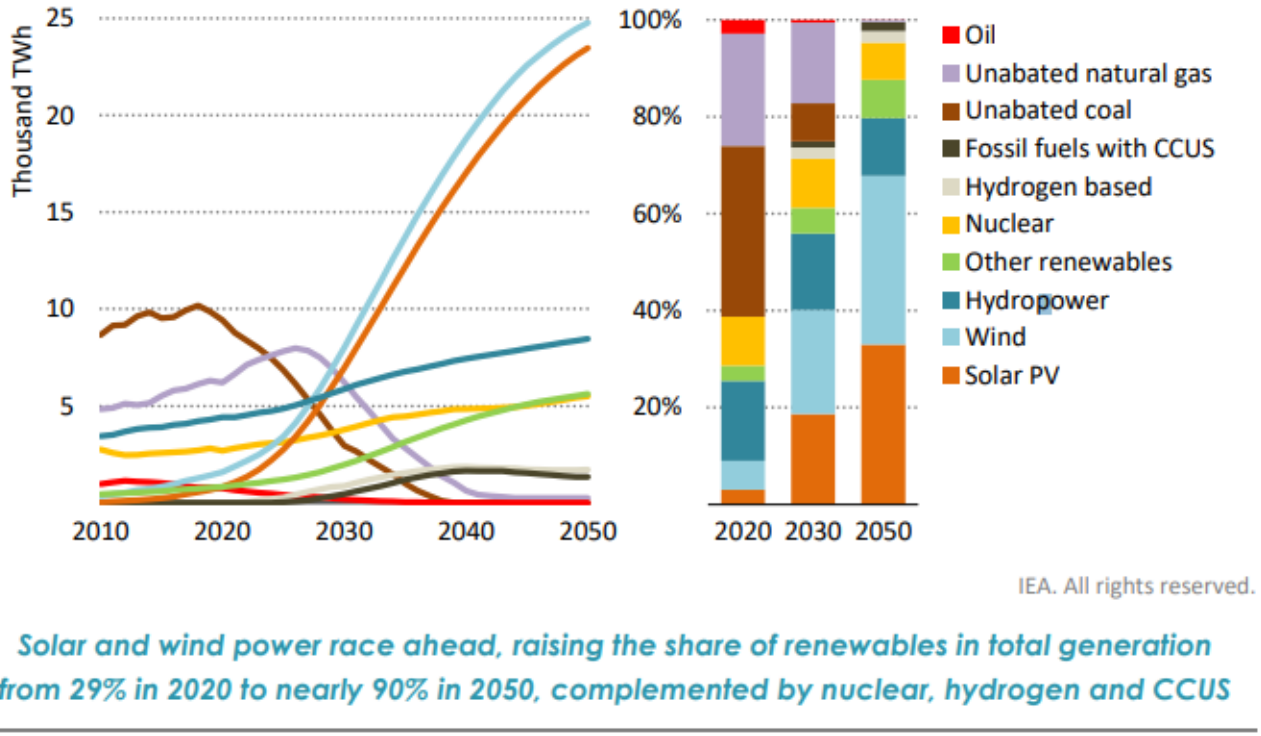


Figure 9. Global Electricity Generation by Source in the NZE (Source: EIA, 2021)[19]

Investment in renewable electricity generation, electricity networks, and other low emissions technologies will allow nations to create new employment opportunities. The IEA expects that global jobs in solar and wind to more than quadruple in their net-zero emissions scenario in comparison with current 2020 levels. It is estimated that approximately two-thirds of workers working within the solar PV and wind sectors in by 2030 will be highly skilled.

The IEA anticipates that new jobs created in the net-zero emissions scenario will be geographically flexible with 40% of jobs expected to be located close to where the work is being undertaken e.g., wind turbine installation.

In line with the above requirements of the IEA, the Project sets out to:

- provide immediate and comprehensive deployment of available clean and efficient energy technologies, scaling up renewable energy developments in NSW;
- assist the energy sector to achieve net-zero emissions;
- create new employment opportunities.

2.2 National Strategic Context

2.2.1 Australia's Emissions Projections 2022

As a party to the United Nations Framework Convention on Climate Change, the Kyoto Protocol and the Paris Agreement, Australia has made commitments to reduce greenhouse gas emissions, including tracking the progress of the nation towards its commitments and reporting each year on Australia's current greenhouse gas emissions data.

In its report '*Australia's Emissions Projections 2022*' the Australian Government's Department of Climate Change, Energy, the Environment and Water (DCCEEW) states that under the baseline scenario, Australia is projected to achieve a 32% reduction on 2005 levels in 2030. However, it is important to note that in June 2022, Australia increased its

[19] *International Energy Agency op. cit.*

emission reduction ambition and committed to reducing its greenhouse gas emissions by 43% below 2005 levels by 2030 and achieving net zero emissions by 2050 (DCCEEW, 2022).

As part of the Australian Government's report, technology is seen as a key lever to achieve the projected reductions in emissions, including those involved in the development and deployment of low emissions energy technologies within the energy sector. Growth in renewables was stated as outstripping previous emission projection forecasts and is predicted to increase to become a larger share of Australia's energy generation mix.

As detailed in Figure 10 the percentage of renewable energy generation within the electricity sector in NSW and the ACT is predicted to increase from 47% in 2025 to 97% by 2035. Wind energy generation capacity in Australia is expected to increase from 7% in 2020 to 32% in 2035.

Grid	2020	2025	2030	2035
National Electricity Market		52	76	82
Queensland		45	58	75[25]
New South Wales/ACT		47	87	97
Victoria		47	70	72
South Australia		76	98	86[26]
Tasmania		100	100	100[27]
Western Australia Wholesale Electricity Market		44	60	64
On-grid (NEM, WEM, NWIS, DKIS)		50	73	80
Off-grid[28]		7	11	16
Whole sector	**23**[29]	**47**	**68**	**75**

Figure 10. Australia's Renewable Share of Generation - Australia's emissions projections 2022 (Source: Australian Government, 2022)

Figure 11 illustrates the installed renewable capacity in Australia, as calculated in 2022.

Technology	2020	2025	2030	2035
Coal	25	22	13	4
Gas	19	20	19	19
Hydro	7	7	7	7
Wind	7	19	27	32
Large-scale solar	3	10	15	24
Rooftop PV	12	27	38	47
Other	4	6	6	6
Pumped hydro	1	1	6	15
Battery storage	<1	3	10	22
Total	**79**	**115**	**142**	**175**

Figure 11. Australia's Installed Capacity by Technology (Source: Australian Government, 2022)

The proposed Project by GPGA supports Australia's 2030 greenhouse gas emissions target and the move towards renewable energy technologies as part of the National Electricity Market.

It will directly contribute to the NSW Government's renewable energy 2030 target, and as a 'zero-fuel' form of energy, will further improve Australia's energy security by reducing reliance on fuel-dependent energy sources that may be directly impacted by international commodity markets.

Through medium to long-term power-purchase agreements, the Project is able to offer the assurance of a fixed price to off takers over the contracted tenure. Being a renewable energy project, the offered pricing is also many times less than typical pricing for more conventional energy sources (coal and gas).

The Project will make use of an existing high voltage, high-capacity electricity transmission corridor (500kV Mt Piper-Bannaby transmission line) which crosses the north-eastern corner of the site. This will minimise the need for new and

lengthy connection assets. Furthermore, the proximity of the proposed connection point to large demand centres (Sydney, South Coast, Central Coast, Hunter and Newcastle) makes this project ideal in terms of grid balance and supply to the backbone of the NSW Electricity Transmission Network.

2.2.2 Technology Investment Roadmap: First Emissions Technology Statement – 2020

The Commonwealth Department of Industry, Science, Energy and Resources released the '*Technology Investment Roadmap: First Low Emissions Technology Statement – 2020* (Technology Investment Roadmap) on 22 September 2020. The Technology Investment Roadmap outlines the importance of proven renewable technologies like solar and wind in securing Australia's energy future and reducing greenhouse gas emissions.

The Government will provide additional investment to support new and innovative renewable energy, energy storage and energy efficiency technologies that will be combined with existing mature renewable technologies. GPGA's private investment in the Project as a mature renewable technology supports the strategic intent and transformation objectives outlined within the Technology Investment Roadmap.

The Project will contribute to emissions reductions, the creation of jobs within a regional area, and increasing Australia's renewable energy supply.

2.2.3 2020 Integrated System Plan (ISP)

The Australian Energy Market Operator's (AEMO) *Integrated System Plan* (ISP) is described as a "*whole-of-system plan available for supplying affordable and reliable electricity to homes and businesses in the eastern and south-eastern states, while supporting Australia's net zero ambitions*"[20]. AEMO released the 2022 ISP on 30 June 2022.

The objective of the plan is to design a low cost and reliable energy system with the capability of meeting the emissions trajectory as determined by Australian policy makers. The AEMO 2022 ISP provides an actionable roadmap for eastern Australia's power system.

The plan identifies the least cost investments for Australia's future energy system as being:

- Distributed energy resources (rooftop PV, batteries and other customer level resources): "Distributed energy generation capacity must triple its overall generation and storage capacity if it is to meet the economy's electricity needs".
- Variable renewable energy (solar, wind and other variable renewable energy utility - level resources): "Over 26 GW of new grid-scale renewables is needed".
- Supporting dispatchable resources:
    - "63 GW of firm dispatchable capacity and additional power system security services will be needed by 2050."
    - Power system services: "Power system services are critical to the secure operation of the power system."

Significant market and regulatory reforms were identified as being required to bring the right resources into the system in a timely fashion. GPGA is able to collaborate and work with both AMEO and the NSW Government to ensure that the Project is compatible with the ISP and makes a valuable contribution towards the future energy system of NSW.

The Project is consistent with the ISP and will provide an additional renewable wind energy asset that provides a new source of renewable electricity generation for NSW.

2.2.4 Nationally Determined Contributions 2022

The Australian Government has lodged updated Nationally Determined Contributions (NDCs) with the United Nations Framework Convention on Climate Change (UNFCCC) secretariat. Within the Paris Agreement, NDCs are long term

[20] *Australia Energy Marketing Operator (2022), 2022 Integrated System Plan (ISP), June 2022, Reviewed 10 August 2022, https://aemo.com.au/energy-systems/major-publications/integrated-system-plan-isp/2022-integrated-system-plan-isp*

goals which are essential to ensuring the reduction of emissions is achieved[21]. NDCs embody efforts made by each country to reduce national emissions and adapt to the impacts of climate change.

The Australian Government in 2022 reviewed its obligations under the Paris Agreement and updated the NDCs to include:

- A re-evaluation of Australia's 2030 target and a revised aim to greenhouse gas emissions by 43% below 2005 levels by 2030;
- Reaffirmation of Australia's commitment to net zero emissions by 2050;
- Commitments to providing an annual statement to parliament on progress towards these targets;
- Restoration of Australia's Climate Change Authority as a source of independent policy advice; and
- The Project would assist the Federal Government in achieving their NDCs in accordance with the Paris Agreement.

2.2.5 National Net Zero Authority and Net Zero Economy Agency

The Australian Government established the new Net Zero Economy Agency on 1 July 2023. The Net Zero Economy Agency is responsible for promoting orderly and positive economic transformation as the world decarbonises, to ensure Australia, its regions and workers realise and share the benefits of the net zero economy (DPMC, 2023).

The Net Zero Economy Agency is engaging with a variety of stakeholders to support a positive transition to a net zero economy, including:

- Communities
- Regional Bodies
- Industry
- Investors
- First Nations

The work of the Net Zero Economy Agency is a precursor to the establishment of a legislated Net Zero Authority. This will occur following established Parliamentary processes (DPMC, 2023).

2.3 NSW Government Response

2.3.1 NSW Context

The NSW Government is committed to addressing climate change impacts that are expected to affect the natural, social and economic welfare across the state. Rising temperatures and sea levels, climate-induced changes in bushfire seasons, water quality and ocean chemistry are all expected to impact the biodiversity of NSW. Impacts include the intensification of habitat loss, increasing weed germination and pest animals, longer periods of drought and increased flooding events. The NSW Government recognises that climate change will see the frequency and intensity of extreme rainfall events and extreme heatwaves become more likely, with impacts ranging from increased flooding and storm damage to bushfires and urban heat island effect.

Additional impacts will affect human health, with the NSW Government and the IPCC concerned about climate change's role in increasing heat-related and extreme weather mortality and morbidity. Based on scientific and technological research, the NSW Government suggests that the following mitigation measures are to be investigated to reduce the amount of greenhouse gases:

- Cleaner energy and electricity generation from renewable sources;

[21] *UNFCCC (2022), 'Nationally Determined Contributions (NDCs), Reviewed 8 August 2022, https://unfccc.int/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs/nationally-determined-contributions-ndcs*

- Automotive biofuels;
- Energy utilisation to be more efficient to avoid burning fossil fuels;
- Developing more efficient transport methods;
- Improved crop and livestock management;
- Improved waste management; and
- Reducing vegetation clearing and deforestation.

The Project would form part of the shift towards cleaner energy and electricity generation from renewable wind sources. The identified mitigation measures have been addressed throughout this EIS and the relevant supporting studies.

2.3.2 NSW Climate Change Policy Framework

The NSW Government released the *NSW Climate Change Policy Framework* in 2016 which outlined the NSW Government's long-term objectives in achieving net-zero emissions by 2050 to reduce climate change impacts. A key part of the framework implementation was in the development of an advanced energy action plan and a new energy efficiency plan for NSW to expand clean energy investment within the state. This Project supports the mentioned framework to help achieve the set targets by 2050.

2.3.3 NSW Climate Change Fund

The NSW Climate Change Fund was set up in 2007 under Part 6A of the *Energy and Utilities Administration Act 1987* (NSW) [22]. The fund was administered by DPE and included the following key programs:

- Delivering energy savings and reduced emissions.
- Delivering reliable, clean and affordable energy.
- Increasing resilience to a changing climate.

The fund facilitated $1.231 billion of investment in climate change initiatives by the NSW Government between 2017 and 2022 across its programs. The Climate Change Fund drove the Government's investment in climate change initiatives, including programs that reduce emissions under the Net Zero Plan and deliver clean energy through the Electricity Infrastructure Roadmap.

The Annual Report 2021-2022 was released in December 2022 and highlights some key achievements by the fund, which, among others, included:

- Supported 94,806 households save over $24.1 million on annual energy bills and nearly 107,590 megawatt hours (MWh) in energy savings through energy efficient upgrades and energy efficient appliances.
- Identification of more than 400 small NSW schools that could benefit from installing solar panels (photovoltaic) with potential savings of $640,000 annually and a 15% reduction in energy consumption.
- Supported NSW local government and government agencies deliver 1,255 efficiency projects across government agencies, saving an estimated $115 million and 661 million kilowatt hours (kWh) in energy.
- Supported businesses to understand climate mitigation options for cropping systems at 650 sites across regional NSW, to help farmers prepare for various climate change scenarios.

While not a direct investment from the NSW Climate Change Fund, the Project will assist the NSW Government to help deliver clean energy, reduce emissions, deliver energy saving and increase resilience to a changing climate in line with the charter of the fund.

[22] *Office of Energy and Climate Change 2022, NSW Climate Change Fund: Annual Report 2021 – 2022, NSW Treasury, reviewed 25 July 2023 (https://www.energy.nsw.gov.au/sites/default/files/2022-12/2022-NSW-Climate-Change-Fund-AnnualReport2021-22.pdf)*

2.3.4 Net Zero Plan Stage 1: 2020 – 2030

The *Net Zero Plan Stage 1: 2020-2030* (Net Zero Plan) is the primary plan for NSW in tackling climate change and establishes a goal for net zero emissions by 2050. The Net Zero Plan intends to achieve this goal through stimulating a range of initiatives focused on generating electricity via renewables and promoting energy efficiency, electric vehicles, hydrogen, primary industries, coal innovation, organic waste management and carbon financing.

These initiatives are focused on growing the economy, creating jobs and reducing greenhouse gas emissions over the next decade. The State's objective is to reduce emissions by 70% by 2035, compared to 2005 levels. The Net Zero Plan, together with the NSW Electricity Infrastructure Roadmap (discussed below), will ultimately result in more than 13,000 jobs, up to $39 billion in private investment, and help transform the state's electricity system into one that is cheap, clean and reliable.

In the recent *Net Zero Plan Implementation Update 2022*, it was confirmed that:

> *"Since the 2021 Implementation Update, the NSW Government has introduced several new policies and programs that will contribute to reducing emissions and support our economy. Taking these into account, the Plan and related policies are projected to deliver emissions reductions in NSW of 55.2 million tonnes of carbon dioxide equivalent by 2035. This means that the State is projected to reduce its emissions by 70% below 2005 levels by 2035" (NSW Treasury OECC Net Zero Plan Implementation Update, 2022)*[23].

The Project is consistent with the *Net Zero Plan* objectives and is expected to assist the NSW Government in its target of promoting new energy generation through renewable low-emissions technologies and lowering greenhouse gas emissions. The Project has the potential to reduce greenhouse gas emissions by an estimated 900,000 tonnes per annum. It provides an additional renewable wind energy asset that provides a new source of renewable electricity generation for NSW that would help meet the targets identified in the *Net Zero Plan*.

2.3.5 NSW Electricity Infrastructure Roadmap (November 2020)

The *NSW Electricity Infrastructure Roadmap* (The Roadmap) is the State Government's plan to transform the electricity system / network into one that is cheap, clean and reliable. The Roadmap is enabled by the following objectives of the *Electricity Infrastructure Investment Act 2020*:

- to improve the affordability, reliability, security and sustainability of electricity supply;
- to coordinate and encourage investment in new generation, network and related infrastructure;
- to foster local community support for investment in new generation, network and related infrastructure; and
- to support economic development and manufacturing through the promotion of local industry, manufacturing and employment.

The Roadmap, together with the NSW Government's Electricity Strategy (discussed below) sets out a plan to deliver the state's first five Renewable Energy Zones (REZs), which includes part of the Central-West Orana region located to the north of the Project Area and the recently determined Illawarra REZ, located mainly around the Wollongong and Shellharbour area. While the Site is not located within one of these determined REZs, the area (currently consisting of 4 already approved wind farms) functions as a renewable energy zone in itself. The region is rich in natural wind resources (as shown by the number of wind farms located within 70km radius from the Site).

2.3.6 NSW Electricity Strategy

The *NSW Electricity Strategy* is the NSW Government's plan for a reliable, affordable and sustainable electricity system. The 'NSW Electricity Strategy' has identified key challenges and risks within the current energy system, including ageing power stations at the end of their technical life, reliability risks, congestion in the transmission system, environmental protection and the high cost of electricity.

[23] *Office of Energy and Climate Change, Net Zero Plan Implementation Update 2022, NSW Treasury, Reviewed 25 July 2023 (https://www.energy.nsw.gov.au/sites/default/files/2022-12/NSW-Net-Zero-Plan-Implementation-Update-2022.pdf)*

The *NSW Electricity Strategy* supports a three-tiered approach towards future energy and economic challenges for which the Project must be consistent, as summarised below:

- Improving the efficiency and competitiveness of the NSW electricity market; and reducing risk and costly process-driven delays by ensuring investment in new energy generation technologies that are demand-responsive.
- Taking action to address capacity gaps and protecting taxpayers and consumers from the impacts of market participants delaying potential investments by setting an Energy Security Target (of sufficient capacity to satisfy a one in ten-year peak demand with a buffer equal to the capacity of the State's two largest generating units).
- Appropriately empowering the State Government to ensure that it can deal with future electricity emergencies.

The Project supports the *NSW Electricity Strategy* approach as a private investment in renewable wind energy generation. It supports additional 287 MW generation capacity within the state, creates additional work opportunities, and includes a total CIV of approximately $600million, much of which will be invested in regional NSW.

2.4 Regional Context

2.4.1 Central West and Orana Regional Plan 2036

The *Central West and Organa Regional Plan 2036* (Regional Plan) released by the NSW Government in 2017 is a regional strategy for guiding future land use priorities and decisions for the region over the next 20 years. The Regional Plan is the regional strategy for the 19 LGAs of Bathurst Regional, Blayney, Bogan, Cabonne, Coonamble, Cowra, Dubbo Regional, Forbes, Gilgandra, Lachlan, Lithgow, Mid-Western Regional, Narromine, Oberon, Orange, Parkes, Warren, Warrumbungle and Weddin.

The Regional Plan has established the following four goals (including relevant directions and actions) with which Oberon Council's local plans and strategies must be consistent:

- Goal 1 - The most diverse regional economy in NSW
  - Direction 9: Increase renewable energy generation
    - *Action 9.1 - The Regional Plan identifies that wind generation opportunities are focused around the tablelands and slopes of the Central West including areas within Blayney, Oberon and Wellington which all have access to the existing electricity network.*
    - *Action 9.3 – Outlines that best-practice community engagement approaches should be utilised to ensure that the community benefits from all utility-scale renewable energy projects.*
- Goal 2 - A stronger, healthier environment and diverse heritage
  - Direction 13: Protect and manage environmental assets
    - *Action 13.2 – Outlines that potential impacts arising from development in areas of high environmental value are to be minimised, with offsets or other mitigation mechanisms considered for unavoidable impacts.*
  - Direction 14: Manage and conserve water resources for the environment
    - *Action 14.2 – Outlines that the location, design, construction and management of new developments are to minimise impacts on water catchments, including downstream areas and groundwater sources.*
- Goal 3 - Quality freight, transport and infrastructure networks
  - Direction 21: Coordinate utility infrastructure investment
    - *Action 21.3 – Outlines that developments should be monitored to ensure that infrastructure is responsive to investment opportunities.*
- Goal 4 - Dynamic, vibrant and healthy communities.

The Project supports Direction 9, Direction 13 and Direction 14 of the Regional Plan through its proposal to develop a modern generation wind farm in a manner that creates economic opportunities, ensures the protection and conservation of the environment, and promotes community engagement and benefits. It also supports Direction 21 as it will be contributing to infrastructure development, in coordination with the manager and operator of the high voltage electricity transmission network in NSW and the ACT, TransGrid.

2.5 Local Context

2.5.1 Oberon Local Strategic Planning Statement 2040 – Oberon – More Than You Imagine

The Oberon Council's *Local Strategic Planning Statement 2040 - More Than You Imagine* (LSPS) sets out the 20-year vision for a land use planning framework to address Oberon's economic, social and environmental needs. It highlights the strategic planning outcomes and development issues for the LGA and sets out a range of planning priorities and actions to guide planning and support the community of Oberon for the next 20 years.

The following five planning priorities were identified as being the focus for future strategic planning:

- Growth
- Community well-being
- Infrastructure
- Environment
- Leadership

The "*Infrastructure*" planning priority gives effect to the Regional Plan directions – specifically "*Direction 21: Coordinate utility infrastructure investment*". It outlines that the capacity of the existing electricity network constrains the provision of electricity to future growth and development areas. Council has identified that it will capitalise on planned investments in utility infrastructure in the towns and villages to drive opportunities for economic and housing growth. The Project will support residents in towns and villages though supporting jobs, employment and maximising private infrastructure investment within the Oberon LGA.

The "*Environment*" planning priority within the LSPS gives effect to the Regional Plan directions, specifically *"Direction 9: Increase renewable energy generation"*. The LSPS explains through the NSW Wind Atlas that the Oberon LGA has a high wind speed. The LSPS identifies alternative energy sources like wind farms as a potential future opportunity for the LGA. This would further contribute to the "*Community well-being*" through the generation of clean renewable energy and the reduction of greenhouse gases.

The Project supports the general planning priorities and supports renewable energy generation investment within the Oberon LGA through:

- Contributing to the local economic growth of the LGA.
- Contribute to the overall wellbeing of the community through the generation of clean and renewable energy, resulting in a reduction of greenhouse gases.
- Provide additional capacity to the electrical network and will ensure electricity to future growth and development in the LGA.
- Considers the environment throughout the project by undertaking environmental sensitive design and ensuring the Project will have minimal impact on the environment.

The Project seeks approval for a wind farm that features modern wind turbine generation technology and will be implemented in consultation with the Oberon Council and the local community.

2.6 Key Strategic Features

As part of the assessment, certain key features of the site and its surrounds have been identified that have potential to be impacted by the Project. Below is a summary of the key potential areas of impact.

2.6.1 Community

The context of the site in relation to the local and regional community, which includes the involved and non-involved landowners, has been considered through the development of the Project. Community engagement has played a key role since project inception back in 2002.

Table 8 below provides a summary of the main considerations given in a relation to potential impacts on the community.

Table 8. Key considerations relation to impacts on the Community.

Stakeholder Group	Consideration
Involved Landowners	· Noise levels and mitigation measures to involved dwellings
	· Contractual agreements and other economic considerations
	· Environmental sensitive design and project sustainability
	· Construction activities and impacts
	· Ongoing operational matters
Non-involved landowners	· Noise levels and mitigation measures to non-involved dwellings
	· Visual impact on non-involved dwellings and sensitive uses
	· Shadow flicker impact on surrounding dwellings
	· Increase in localised traffic during construction and operation
	· Environmental sensitive design and project sustainability
	· Environmental concerns due to sitting of turbines and substation
	· Neighbour agreements and other economic considerations
Wider Community	· Visual impact on rural views, including the installation of night markings (aviation lights)
	· Cumulative visual impact from wind farm and other similar developments
	· Aeronautical concerns relating to flight paths and aviation safety
	· Social impacts and potential risks, including health impacts
	· Environmental sensitive design and project sustainability
	· Communication tools and involvement throughout the application process
	· Access to information and transparency
	· Economic benefits and the project's contribution to the local and regional economy

2.6.2 Natural and Built Environment

The key natural and built environment features to be considered as part of the proposal are listed in Table 9 below.

Table 9. Key Natural and Built Features to consider.

Details	Feature	Description
National Parks	· Abercrombie National Park · Wiarborough Nature Reserve · Blue Mountains National Park	· Abercrombie National Park borders the site to the west and south. · To the east of the site is the Wiarborough Nature Reserve and Blue Mountains National Park. · The Project considers all potential visual and other impacts for any surrounding lands zoned C1: National Parks and Nature Reserves. · Further consideration and assessment of any potential impacts on surrounding National Park lands and reserves are provided later in this EIS. · The Landscape Visual Impact Assessment is included as the attached Appendix F. · Refer to sections 6.1, 6.3, 6.5, 6.13, 6.16 of this EIS for more information.
Scenic Landscapes	· Mingary Park · Paling Yards · Middle Station · Hilltop	· The Project site includes separate landholdings over approximately 4,600 hectares referred to as 'Mingary Park', 'Paling Yards', 'Middle Station' and 'Hilltop'. These landholdings are classified as scenic within the Scenic Quality Ratings. The ratings are used to define Visual Influence Zones that are assessed against objectives outlined in the Wind Energy: Visual Assessment Bulletin 'The Bulletin'. has been developed to guide appropriate location of wind energy development in NSW and establishes an assessment framework for when assessing visual impacts. · Most of the site has been cleared of native vegetation, although scattered trees are common within the site and denser vegetation exists around the periphery of the site. · A Landscape Visual Impact Assessment has been prepared as part of this EIS to assess the visual impact of the project on the site and surrounds. It found that the impacts of the development can be managed via mitigation measures identified in Appendix F. · The assessment includes mitigation measures for the proposed works to help limit the visual impact of the Project on its surrounds. This includes both primary and secondary mitigation measures. · As mentioned above, further consideration and assessment of any potential impacts on surrounding National Park lands and reserves are provided later in this EIS. · Refer to section 6.1of this EIS for more information.
Waterways / Rivers	· Several ephemeral creeks and drainage lines that cross the site, which drains into the Abercrombie River	· Several watercourses traverse the area, including the Abercrombie River, which flows into the Lachlan River. · The Abercrombie River forms the southern boundary of the site. · ERM has also prepared a Hydrology Assessment identifying the existing soils and water environment of the Project area, identifying impacts, describing mitigation measures to be implemented, quantifying the required water supply and detailing available water supply solutions. · An assessment of the potential impacts of the Project on waterways and rivers has been undertaken by ERM and found that the Project is not expected to significantly impact upon any waterway or natural river system.

Details	Feature	Description
		· Potential soil and water impacts resulting from construction of the Project are minor due to the low erosion hazard over much of the Site. · A detailed Soil and Water Management Plan will be prepared for the Project prior to construction commencing. The Soil and Water Management Plan would incorporate the mitigation measures identified within the Hydrology Assessment. · Refer to sections 2.6.3, 2.7, 6.17of this EIS for more information.
Infrastructure	· Telecommunication and Electromagnetic Interference	· Potential impacts to communication and broadcast signals due to the turbine locations, size and operation. · A telecommunications assessment has been prepared as part of this EIS process to assess the potential impacts. · The EMI Assessment, prepared by DNV, investigated broadcast towers and transmission paths around the Project area which may be impacted by interference as a result of the wind turbines. · Refer to section 6.15 of this EIS.
	· Traffic and Roads	· Potential impacts include increased traffic on local and regional road networks due to mainly the construction of the wind farm. · Construction traffic will also impact on the road surface. · Impacts of oversized equipment (blade and equipment) transport to the site on the local and regional road network have been assessed. · Impacts associated with the additional access points to the site to Abercrombie Road have been assessed. · A traffic impact assessment has been prepared as part of this EIS process to assess the potential impacts. · The TIA assessed the following: o Traffic during the construction phase o Traffic generated by Haulage o Operational traffic demands o Decommissioning o Safe intersection sigh distances and turning lane requirements. · The TIA recommends that a Construction Traffic Management Plan (CTMP) or equivalent document be prepared prior to the substantial commencement of construction activities but following approval of the EIS. · Refer to section 6.8and section 6.9 of the EIS for more information.
	· Transmission Line	· Transmission infrastructure to include a high voltage transmission line, a collector substation, a switching substation, and grid interface works. · The existing 500kV Mount Piper to Bannaby transmission line will be retained. · A new connection point to the 500kV line to the north-east of the site is proposed to connect to the electrical grid. · The NSW Transmission Network Services Provider has confirmed that the proposed connection point and generation capacity is

Details	Feature	Description
		suitable at that location, and no issues related to grid capacity, stability or curtailment have been identified. · The Project and TransGrid have entered into a Connection Process Agreement as well as a Preliminary Works Undertaking Agreement, which have facilitated increased early-stage input from TransGrid into plant design and interconnection configuration. The signing of the actual connection agreement is still ongoing.

2.6.3 Risks and Hazards

The below table provides a summary of risks and hazards identified in association with the Project.

Table 10. Identified Risks and Hazards

Risk / Hazard	Description
Bushfire	· Potential bushfire risk from various sources. Chifley Bush Fire Management Committee (BFMC) region reported average of 150 bush or grass fires per year. Main sources of bushfires within Chifley BFMC region are: o Lightning activity; o Illegal / careless burning activities; o Escaped fires from legal burning; o Campfires; and o Farm Machinery. · Bushfire risks relating to vegetation cover: The Project Site is surrounded by steep, vegetated and inaccessible areas – particularly within the surrounding National Parks / Nature Reserves including Abercrombie National Park, Wiarborough Nature Reserve and the Blue Mountains National Park. · Undesirable fire weather and the potential for a fire to spread from adjacent properties and the rugged National Parks Estates towards farm assets. · Seasonal risk: Damaging fires are most likely to occur during Spring. Summer fires have a higher intensity and damage potential. · Topography: A fire under the influence of wind may travel upslope very fast, reaching assets before firefighters can attend the scene. This is an existing hazard and not influenced by the Proposal. · Access risks: limited access in rural areas can contribute to bushfire risk. However, the access improvements as a result of the proposed upgrades to internal road network and new internal access routes will reduce risk by facilitating firefighting and providing an effective firebreak.
Storage of Dangerous Goods (Resilience and Hazards SEPP)	· Inappropriate waste disposal which could contribute to the contamination of land, contamination of water courses or groundwater, degraded water quality, aquatic ecosystems adversely affected, potential loss of economic value of water. · Dust and other air emissions which could result in harm to surrounding residents and impact nearby farms or assets. · Personal injury or property damage caused by a flash or pool fire created through the ignition of spilt hazardous chemicals. · Note: A Resilience and Hazards Assessment has been prepared as part of this EIS within section 6.12 of this EIS.
Electric Magnetic Fields (EMF)	· Potential adverse health effects caused by long term exposure to EMF. Note, ongoing research in relation to the health impacts from EMF is not conclusive. · Transmission Lines, Substations and Switching Stations which can contribute to magnetic fields.

	· Extremely Low Frequency EMF exposure. · Note: An EMF assessment has been undertaken as part of this EIS section 6.14 provides additional information on the EMF Assessment and addresses a range of mitigation measures.
Electric Magnetic Interference (EMI)	· Radiocommunications impacts: The surrounding areas existing radiocommunications and services may be impacted because of interference due to the placement of turbine infrastructure. · Telecommunications impacts: The Project could impact on adjacent telecommunication towers, broadcasting equipment and signals. · Services impacts: Services may be impacted based on the placement of individual turbines · Note: An EMF assessment has been undertaken as part of this EIS, to provide and assessment of mitigation measures. Refer to section 6.15 for more information on the EMI assessment and related risks.
Water and Waterways	· Water availability and potential pollution impacts to watercourses during construction. · The potential impacts on and alteration of waterways through the construction and operation of the wind farm. · Erosion, noting that: · There is a very low risk of run-on or run-off of concentrated stormwater flows, and construction sites generally present a low erosion hazard. The Site landscape presents a relatively stable structure with no significant areas of erosion. · Works are generally remote from drainage catchments and located on low gradient lands. · Flood hazard categorisation concludes that creeks draining the hilltops show a low hazard rating due to the relatively gentle slopes associated with the top of ridges, resulting in low water velocities. · Note: A Hydrology Assessment and Flood Assessment has been prepared as part of the EIS process and is discussed in more detail under section 6.17.
Aviation	· Potential to penetrate Procedures for Air Navigation Services – Aircraft Operations or obstacle limitation surfaces. · Impacts due to the locations of some WTGs in proximity to two identified aviation facilities (Radio Transmitters). · Wake turbulence from WTGs which can disturb aviation flight paths and impact on nearby designated air routes. · Note: An Aviation Impact Assessment (AIA) for the Project has been prepared as part of this EIS. A review of the assessment has been undertaken under section 6.11.
Blade Throw	· Blade detachment (either a small fragment or a large portion of the blade). Causes for wind turbine blade failure may include physical damage to the blade caused by external factors (i.e. erosion, lightening, etc) that cause the loads on the turbine to exceed the maximum threshold it was designed to withstand. Potential risks of blade throw incidents is determined by the frequency of a blade / blade fragment detaching, the probability of it landing at a given location, and the probability of it causing injury or death. · Note: Risks relating to possible blade throw events occurring have been assessed and included under section 6.10 of this EIS.
Noise	· Noise impacts: A Noise Impact Assessment (NIA) was prepared in terms of the South Australia Environmental Protection Authority (SA EPA) Environment Noise Guidelines for Wind Farms (2003), World health Organisation (WHO) limits and Interim Construction Noise Guideline, NSW Noise Policy for Industry and the NSW Road Noise Policy. The predicted noise levels of the base layout where all the WTG's operated at full noise emission level indicated that there was a risk of some marginal exceedances for two (2) non-involved receptors and eight (8) involved dwellings. The assessment included the risk for potential noise exceedances for the transformer substation location options, construction noise and construction traffic noise. All assessments were undertaken based on a 'worst case' maximum noise scenario.

	· Note: The detailed noise assessment is discussed in more detail under section 6.3.
Biosecurity	· Potential for the introduction and spread of weeds and facilitate pest animal incursions via: o Movement of vehicles to, from and throughout the site; o Ground disturbance (track work); o Vegetation clearing; o Delivery of materials; and o Ongoing site management. · Foot and Mouth Disease: While Foot and Mouth Disease (FMD) has not been identified in Australia, it has recently been identified in May 2022 in Indonesia, an incursion of the virus would have severe consequences for Australia's animal health and trade. · A Biosecurity Risk Management Plan (BRMP) has been prepared and is discussed in more detail under section 6.7of this EIS.

2.7 Cumulative Impacts

Consistent with the project SEARs, the requirements in Part 8, Division 5 of the EP&A Regulation and the *NSW Wind Energy Guidelines for State Significant Wind Energy Development* (2016) a detailed project-level Cumulative Impact Assessment (CIA) has been prepared as part of the EIS.

The full CIA is contained within Appendix V of the EIS. The following section highlights some of the key findings of the CIA.

The CIA provides an assessment of environmental, social, economic and other impacts which may result from the Project when added to other past, present and reasonably foreseeable future projects. It has been prepared in accordance with the NSW DPIE *Cumulative Impact Assessment Guidelines for State Significant Projects October 2022* (CIA Guidelines).

The CIA considered the following categories:

- Access and Transport
- Air
- Aviation
- Noise
- Shadow Flicker
- Visual impact
- Biodiversity
- Hazards and risks
- Bushfire
- Heritage
- Socio-economic
- Geotechnical and soils
- Hydrology

The CIA has not identified any cumulative impacts as a result of the Project.

Assessment Strategy

Cumulative impacts can be assessed at both a strategic-level and a site-specific level. Strategic-level CIA supports planning and development decisions at regional and local scales and is inter-related with project-level CIA. Project-level CIA builds on the findings of the Environmental Impact Assessment. The CIA Guidelines recognise that many cumulative impact matters are addressed through strategic planning, assessment and management. As such, project-level CIA can

be tailored to focus on the impacts that may arise due to the interactions between the Project and relevant future projects in the same area and over a similar timeframe.

The preparation of the CIA should be established in the context of an existing baseline condition, which includes the consideration of the specific impacts of the Project on the area. This should include assessing the impacts of other relevant projects (current or planned). Refer to Table 12 for more information on the relevant assessment undertaken.

As part of the assessment, the CIA Guidelines provide four types of assessment approaches to consider, as detailed in Table 11 below.

Table 11. CIA Guidelines Assessment Approaches

Type of assessment	
Incremental types	
1	Incremental assessment: This involves adding the incremental impacts of the project to the baseline condition of each relevant matter
2	Combined incremental assessment: This is the combined effect of the different impacts of the project, normally on a sensitive area or receiver
Cumulative Types	
3	Issue-specific CIA: The cumulative impacts of the project on key matters with other relevant future projects
4	Combined CIA: The combined effect of the different cumulative impacts of the project on key matters, sensitive receptors, or important features with other relevant future projects

During the scoping stage of the Project an initial CIA was undertaken. It was found that other similar existing, current or future projects in the area would not lead to an unacceptable cumulative (or combined) impact on the Project area and locality.

An assessment of the nearby Crookwell 1, 2 and 3 wind farms and Taralga wind farm revealed that these projects would not impact on the planned PYWF. It was confirmed that the standard 'incremental assessment approach' could be used in this instance, which will:

- Assess the existing baseline condition for the site.
- Add the incremental impacts of the proposed project to the existing baseline.
- Consider other projects and highlight changes in the baseline condition of each matter as a result of the project.

As highlighted in the CIA guidelines, the incremental assessment approach is standard practice for the assessment of all State significant projects.

In preparing this CIA, the cumulative impacts of the Project were assessed against each of the assessment categories as described throughout the EIS. Table 12 below summarises each of the relevant cumulative impact considerations.

Existing and Planned Projects

The Project, in assessing cumulative impact, has considered existing and planned projects within vicinity of the Site, as detailed in Table 12 below.

Table 12. Existing and planned Wind Farm projects in vicinity of the Site.

Project	Approximate Distance (from Site)	Status	Key Project Details
Taralga Wind Farm	25km south	Approved / Operational	· 51 wind turbines

Crookwell 1, 2 & 3 Wind Farms	37km south	Approved / Operational (Crookwell 1 & 2)	· 8 wind turbines (Crookwell 1) · 28 wind turbines (Crookwell 2) · 16 wind turbines (Crookwell 3)
Gullen Range Wind Farm	50km south	Approved / Operational	· 73 wind turbines
Collector Wind Farm	75km south-west	Approved	· 55 wind turbines · Underground cabling
Cullerin Wind Farm	74km south-west	Approved	· 15 wind turbines

NB: The data above has been collected from the NSW Planning Portal for State Significant Development.

The cumulative impacts summary shown at Table 13 highlights the levels of assessment required for the proposal to ensure that the environmental, social and economic impacts have been considered:

Table 13. Cumulative Impacts Summary

Assessment Category	Description of Risk Assessment Undertaken	Level of Assessment Required	Cumulative Impact Identified
Access & Transport	· SEARs requirement for 'a cumulative impact assessment of traffic from nearby developments including Crookwell 3 Wind Farm.'	· Detailed · Access and transport required detailed investigations to be carried out by technical specialists. · Both studies included: - Data collection and route assessments (both internal and external) - Mitigation measures or suitable offsets - Criteria for evaluation impacts. · Refer to the attached Appendix L for the detailed assessment that was prepared by SLR. · Also refer to Appendix AA for a copy of the Blade Transport Study prepared by Rex J Anders.	· GPGA's Crookwell 3 wind farm commenced construction in the second half of 2022 and continue into the first half of 2023. The construction of Paling Yards Wind Farm would not commence until the second half of 2023 at the latest. · No overlap in construction time is anticipated.
Air (Aviation Impact Assessment)	· This matter required an Aviation Impact Assessment to be prepared as part of the project. · The potential impacts are well-understood and have been considered (along with the	· Standard · Refer to the attached Appendix I.	· Moderate long-term cumulative effect anticipated from obstacle lighting. · Risk is specific to visibility conditions.

Assessment Category	Description of Risk Assessment Undertaken	Level of Assessment Required	Cumulative Impact Identified
	relevant standard performance measures) as part of the proposal.		· Not likely to be a decision-making issue, with design and mitigation measures able to ameliorate some effect.
Amenity (Noise)	· A detailed noise assessment was carried out by technical specialist. The assessment included: o Data collection o Assessment of sensitive receivers o Mitigation measures or suitable offsets o Criteria for evaluation impacts. o Wind Farm Noise o Substation Noise o Traffic Noise o Construction Noise and Vibration	· Detailed · Refer to the attached Appendix K.	· No assessment of dwellings further than 10km from a turbine is required. · No other wind farms are located closer than 25km from the site and will therefore not result in any cumulative noise impacts due to wind turbine operations. · Noise levels due to construction and ongoing operation of the wind farm is expected to comply with the NSW RNP requirements. · No cumulative traffic or construction noise from other nearby wind farms with the Project is expected.
Amenity (Shadow Flicker)	· This matter required a Shadow Flicker Assessment to be prepared as part of the project. · The potential impacts are well-understood and have been considered (along with the relevant standard performance measures) as part of the proposal.	· Standard · Refer to the attached Appendix M.	· No cumulative impacts exist (or is expected) for shadow flicker.
Amenity (Visual)	· A detailed visual impact assessment was by a technical specialist. The assessment includes: o Data collection o Assessment of sensitive receivers o Mitigation measures or suitable offsets o Criteria for evaluation impacts.	· Detailed · Refer to the attached Appendix G.	· A Cumulative Zone of Visual Influence has been prepared to illustrate the potential to view Taralga Wind Farm, Crookwell 1,2 & 3 Wind Farms and Paling Yards Wind Farm. · There are limited areas where all the identified wind farms would be visible (refer Figure 28 of LVIA).

Assessment Category	Description of Risk Assessment Undertaken	Level of Assessment Required	Cumulative Impact Identified
	· The cumulative visual impact assessment considers: o The impact of the wind farm, when added to the combined impacts of all other existing developments and environmental characteristics of the area. o The impact of the development in the context of the potential for development of wind energy developments in the local, regional and national context. o The impact of developments which are ancillary to or otherwise associated with the proposed wind farm, for example the development of transmission lines. o The potential for future development of wind farms in the region		· It is likely that cumulative visual (amenity) impacts of medium significance might occur due to the additional renewable energy projects in the region. · Refer to Section 6.1 of the EIS for more information.
Biodiversity	· Assessing the potential for cumulative biodiversity impacts required technical studies to be carried out by a specialist. This included: o Biodiversity Development Assessment Report o Detailed MNES o Targeted seasonal fauna and flora surveys. · The assessment included: o Data collection o Assessment of sensitive receivers o Mitigation measures or suitable offsets o Criteria for evaluation impacts.	· Detailed · Refer to the attached Appendix N.	· No cumulative impacts on biodiversity have been identified.
Hazard & Risk (storage)	· This matter required a Resilience and Hazards Assessment to be prepared as part of the project.	· Standard · Refer to the attached Appendix H.	· No cumulative impacts exist (or is expected) for storage hazards and risks.

Assessment Category	Description of Risk Assessment Undertaken	Level of Assessment Required	Cumulative Impact Identified
	· The potential impacts are well-understood and have been considered (along with the relevant standard performance measures) as part of the proposal. · The assessment included: o Risk screening o Hazard Identification o Construction and Operations o Mitigation measures or suitable offsets o Criteria for evaluation impacts.		
Bushfire	· This matter required a Bushfire Assessment to be prepared as part of the project. · The potential impacts are well understood and have been considered (along with the relevant standard performance measures) as part of the proposal.	· Standard · Refer to the attached Appendix P.	· No cumulative impact identified.
Heritage	· An assessment was required to be carried out by a specialist heritage advisor to review potential heritage impacts. This included: · Aboriginal Heritage · Non-Aboriginal (Historic) Heritage · The assessment included: · Data collection · Assessment of sensitive sites and RAP Consultation · Mitigation measures or suitable offsets · Criteria for evaluation impacts.	· Detailed · Refer to the attached Appendix Q.	· No potential cumulative impacts are expected.
Geotechnical / Soil	· Soil surveys and a Geotechnical assessment were required to be prepared as part of the project. · The potential impacts are well understood and have been considered (along with the relevant standard performance measures) as part of the	· Minor · Refer to the attached Appendix R. · Appendix U includes the Hydrology and flooding Assessments, which contains the soil survey results.	· No potential cumulative impacts are expected.

Assessment Category	Description of Risk Assessment Undertaken	Level of Assessment Required	Cumulative Impact Identified
	proposal. Any impacts arising from the Project are likely to be minor.		
Social and Economic Impact	· A Social Impact Assessment was prepared as part of the project. · The potential impacts are well-understood and have been considered (along with the relevant standard performance measures) as part of the proposal. · The assessment includes: · Social impacts · Economic Impacts	· Standard · Refer to the attached Appendix S and Appendix DD.	· It is possible that cumulative socio-economic impacts of medium significance might occur due to an additional renewable energy project in the region.
Hydrology	· A hydrology assessment was undertaken as part of the Project. · A flood assessment was undertaken as part of the Project · The potential impacts are well understood and have been considered (along with the relevant standard performance measures) as part of the proposal.	· Standard · Refer to the attached Appendix U.	· No hydrological or flooding cumulative impact identified.

It is therefore evident that, other than some minor visual impacts identified above, the Project is not expected to result in any significant cumulative impacts due the project proceeding.

A full copy of the CIA is included under Appendix V.

2.8 Voluntary Planning Agreement

The Proponent will enter into a voluntary planning agreement (VPA) with Oberon Council in accordance with the provisions of Part 7 Division 7.1 Subdivision 2 of the EP&A Act.

In accordance with Section 7.4 of the EP&A Act:

*(1) A planning agreement is a voluntary agreement or other arrangement under this Division between a planning authority (or 2 or more planning authorities) and a person (the **developer**)—*

(a) who has sought a change to an environmental planning instrument, or

(b) who has made, or proposes to make, a development application or application for a complying development certificate, or

(c) who has entered into an agreement with, or is otherwise associated with, a person to whom paragraph (a) or (b)applies,

under which the developer is required to dedicate land free of cost, pay a monetary contribution, or provide any other material public benefit, or any combination of them, to be used for or applied towards a public purpose.

The VPA a monetary contribution to be administered by the Oberon Council and disbursed entirely at their discretion (or that of the Community Consultative Committee, when constituted) for local infrastructure projects of their selection.

The VPA is made up of two sets of payments: a Monetary Contribution and an 'Additional Contribution'. The monetary contribution is a pre-agreed annual dollar value to be paid per operating turbine. In a bid to maximise the benefits to the host community, GPG has proposed an additional contribution under the VPA as a function of any unpaid balances of the Project's Total Annual Voluntary Contribution.

The Proponent will agree to pay monetary contributions in relation to the Project to the Council's Community Enhancement Fund under agreed terms of the VPA. The Proponent's offer to enter into a VPA and make monetary contributions to the Community Enhancement Fund is on the following terms:

- The Council must invest all agreed contributions paid by the Proponent under the VPA into an interest-bearing account held in the name of the Council for the purpose of the Community Enhancement Fund.
- The Council will be the custodian of the monetary contributions paid by the Proponent into the Community Enhancement Fund and will distribute and expend the funds in the Community Enhancement Fund in accordance with the VPA.
- The Council must publicly advertise the availability of funds in the Community Enhancement Fund and call for applications to be made to the Committee.
- The Committee must make recommendations to the Council as to which of the funding applications the Committee recommends be funded from the Community Enhancement Fund and must pay funds from the Community Enhancement Fund to each approved project.
- Public recognition should be made.
- The use of the Proponent's contributions into the Community Enhancement Fund should be audited each year.
- The VPA excludes the application of contributions under Division 7.1 of the EP&A Act 1979 in so far as they would otherwise relate to the PYWF.
- The VPA will not be registered on the titles contained within the Project Area.
- Prior to the Proponent disposing of any part of its interest in the development to any third party, the Proponent must procure entry by that third party into a deed with the Council on substantially the same terms and conditions as the VPA.
- Nothing in the VPA shall be construed as requiring the Council to do anything that would cause it to be in breach of any of its obligations at law, and without limitation, nothing shall be construed as limiting or fettering in any way the exercise of any statutory discretion or duty.
- The VPA is to include general provisions relating to dispute resolution.
- Operation of the VPA:
    - The parties agree that the VPA will not operate or bind the parties unless and until the last of the following occurs:
        - Development consent is granted for the PYWF by the relevant consent authority; and
        - the Proponent obtains a Construction Certificate for substantive development of the PYWF (that is, not only preliminary or early works).
        - Commencement of operations of the wind farm.
    - The parties agree that the total annual contribution amount will be reviewed on 1 July of each year.

Further general terms and conditions will be included in the VPA as necessary.

In addition to the VPA, GPG is consulting with the Oberon Council (and relevant road authorities) during the consultation phase for the Traffic Management Plan to consider reasonable safety upgrades to be implemented prior to commencing construction.

- While not forming part of the VPA, the Proponent will consider the following additional terms or contributions:
  - the Proponent is offering to enter into a Neighbour Benefit Sharing Agreement with relevant neighbouring landholders;
  - under the terms of the proposed Neighbour Benefit Sharing Agreement, the Proponent will agree to pay each relevant neighbouring landholder a voluntary annual payment;
  - if each of the relevant neighbouring landholders accept the Proponent's offer to enter into a Neighbour Benefit Sharing Agreement, then the total voluntary annual payments which the Proponent will be liable to pay under the Exchanged Neighbour Benefit Sharing Agreement will equal the total annual VPA amount contribution amount;
  - it is possible that one or more relevant neighbouring landholders will not accept the Company's offer to enter into a Neighbour Benefit Sharing Agreement (or may not initially accept this offer); and
  - if so, then the total voluntary annual payments which the Company will be liable to pay under each of the Exchanged Neighbour Benefit Sharing Agreement as at the date of this deed will be less than the total annual VPA contribution amount by the unpaid balance amount.

It is understood that some neighbour agreements have already been signed and the terms agreed.

Project Description

3 The Paling Yards Wind Farm

3.1 Project Overview

The Project will consist of up to forty-seven (47) WTGs, each of which allows for a maximum capacity of up to 6.1MW per turbine, providing a total generation capacity of up to 287MW or the equivalent to powering up to 100,000 average households per year. Each turbine will have an overall maximum blade height of up to 240m and a total of three blades per turbine.

GPGA reviewed the qualities and attributes of a range of commercially available turbine models before identifying a model that was the most appropriate for the Project. The selected turbine model is likely to consist of the following parameters:

- Up to 240m blade tip height
- Up to 151m hub height
- Up to 158m rotor diameter
- Up to 6.1MW generating capacity per turbine[24]
- Tubular steel towers (or generally similar).

Table 14 provides a summary of the key components of the PYWF, including its objectives, site specific information and location.

Table 14. Project Summary – Paling Yards Wind Farm

Project Details	Description
The Project	· The Paling Yards Wind Farm (The Project or PYWF)
Project Objectives	· GPGA is committed to developing and managing modern power generation assets with a global focus on renewable energy through hydro and wind power technologies. Wind power through wind turbines is one of the world's most widely used renewable

[24] *Rotor diameter (m) and unit capacity per turbine (MW) may vary as a consequence of the wind turbine models available in the market at the time a decision is made regarding the turbine supplier for this project.*

Project Details	Description
	technologies and uses wind's kinetic energy to generate electricity. Wind energy generation forms a major part of GPGA's commitment towards the renewable energy future of NSW. · GPGA is one of the top five independent renewable energy operators in Australia. GPGA currently has two operating wind farm facilities – the Crookwell 2 Wind Farm (91MW) near Goulburn in New South Wales (NSW) and the Berrybank Wind Farm (180MW) in south-western Victoria (VIC). The recently approved Crookwell 3 Wind Farm (58MW) in NSW will soon to be added to their portfolio. · Through the efficiency of wind power generation, GPGA is committed to investing in and contributing towards the renewable energy future of NSW and State Government efforts to reduce carbon emissions and achieve net-zero emissions by 2050. · The Project aims to contribute towards reducing the dangerous impacts of climate change. · The Project will also contribute capital investment into the local economy.
Site Plan	· Figure below provides an overview of the site layout and turbine locations. The plan has also been attached as part of Appendix W. · The plan illustrates the locations of the 47 wind turbines, including transmission line, substation locations, internal road network and main access point onto Abercrombie Road.
Number of Wind Turbine Generators (WTG)	· Up to 47 (forty-seven) WTGs.
Maximum Total Height (Blade Tip)	· Up to a maximum of 240 metres
Individual WTG Capacity	· Up to 6.1MW per turbine[25]
Total Expected Capacity	· 287MW
Additional Project Components	· Each of the 47 WTGs will comprise of the following components: o Epoxy-fibre glass / balsa / foam hybrid blades, consisting of two blade components each); o Between six to eight steel tower sections; o One nacelle; o One steel hub; and o Steel and concrete hybrid foundations. · Up to three (3) wind monitoring masts fitted with various instruments such as anemometers, wind vanes, temperature gauges and potentially other electrical equipment. · Ancillary infrastructure: o Switchgear and associated control systems within the wind turbine towers; o An on-site 33 / 132kV collector substation, including control room, maintenance building, switchgear and associated control systems;

[25] *Rotor diameter (m) and unit capacity per turbine (MW), may vary as a consequence of the wind turbine models available in the market at the time a decision is made regarding the turbine supplier for this project.*

Project Details	Description
	○ Approximately 7km of 132kV overhead powerline (with a total easement measuring 40-45m to connect the collector substation to the switching substation (including control room and other associated grid connection facilities). ○ An on-site 132/500kV switching substation to connect to the existing TransGrid's 500kV Mount Piper to Bannaby transmission line (including control room and other associated grid connection facilities). ○ Cut-in works on the 500kV Mt Piper-Bannaby transmission line to connect it to the switching substation, resulting on a section of approximately 1km of 500kV transmission line (with a total easement width of 70m). · Roads and local infrastructure: ○ Upgrades to local road infrastructure including several access points from Abercrombie Road and internal unsealed tracks for vehicle access to turbines and infrastructure. · Temporary facilities: ○ Establishment of a laydown area during the construction period; ○ A demountable site office and site store to be within the identified laydown area; and ○ Temporary batching plant to supply concrete, including: – Material weighting system – Material conveying system – Cement silo – Water tank(s) – Concrete mixer – Operation station – Cold bin(s).
Micro-siting	· The proposal includes provision for the micro-siting of turbines, ancillary infrastructure and temporary facilities following attainment of development consent and during the 'optimisation and detailed design' phase. · Refer to section 3.4 of this EIS for more information.
Total Project Area	· 4,600 hectares (ha).
Project Approvals	· State Significant Development (SSD) Approval Pathway.
Construction	· Construction is targeted to commence in early 2024.
Operation	· It is expected that the wind farm will be operational between for up to 30 years (between 2025-2055). · Hours of operation will be 24 hours per day, 7 days per week.
Employment	· Over 152 full time positions during construction, up to 4 full time ongoing operations and management positions during the operation of the wind farm, and up to 6 additional full-time roles, for maintenance activities.
Capital Investment Value (CIV)	· $600million.
Project Benefits	· A total capital investment of approximately $600 million; · Up to 152 full-time positions during construction;

Project Details	Description
	· Up to 10 full time positions during operation of the wind farm; · Stimulation of the economy in the Oberon Council including greater income generation and subsequent expenditure in the region; · Additional employment and commercial opportunities from the economic investment; · Up-skilling of the local workforce within a growing energy market; · The use of locally sourced materials and labour; · Increases in the local tourism industry for workers and visitors to the site; · Power generation via a clean, renewable energy source of up to 287MW; · The equivalent to powering up to 100,000 average households per year; and · Contributions towards reducing the dangerous impacts of climate change through the displacement of up to 900,000 tonnes of greenhouse gases per year.

Table 15 below includes a list of all involved lots that comprise the Project site.

Table 15. Involved Lots

Lot	Deposit Plan
1	DP 753019
2	DP 753019
3	DP 753019
4	DP 753019
30	DP 753019
31	DP 753019
32	DP 753019
1	DP 753037
2	DP 753037
5	DP 753037
6	DP 753037
7	DP 753037
11	DP 753037
25	DP 753037

Lot	Deposit Plan
13	DP 753037
14	DP 753037
15	DP 753037
16	DP 753037
17	DP 753037
18	DP 753037
19	DP 753037
20	DP 753037
21	DP 753037
22	DP 753037
23	DP 753037
24	DP 753037
53	DP 753037
56	DP 753037

Lot	Deposit Plan
26	DP 753037
27	DP 753037
28	DP 753037
31	DP 753037
35	DP 753037
39	DP 753037
40	DP 753037
41	DP 753037
42	DP 753037
43	DP 753037
44	DP 753037
45	DP 753037
48	DP 753037

Lot	Deposit Plan
61	DP 753037
2	DP 753064
6	DP 753064
34	DP 753037
49	DP 753037
50	DP 753037
51	DP 753037
41	DP 753064
56	DP 753064
67	DP 753064
41	DP 1025920
51	DP 621232

No additional land would be required as buffer area(s).

Figure below illustrates the site boundary and provides and indicative layout for the key components of the wind farm.

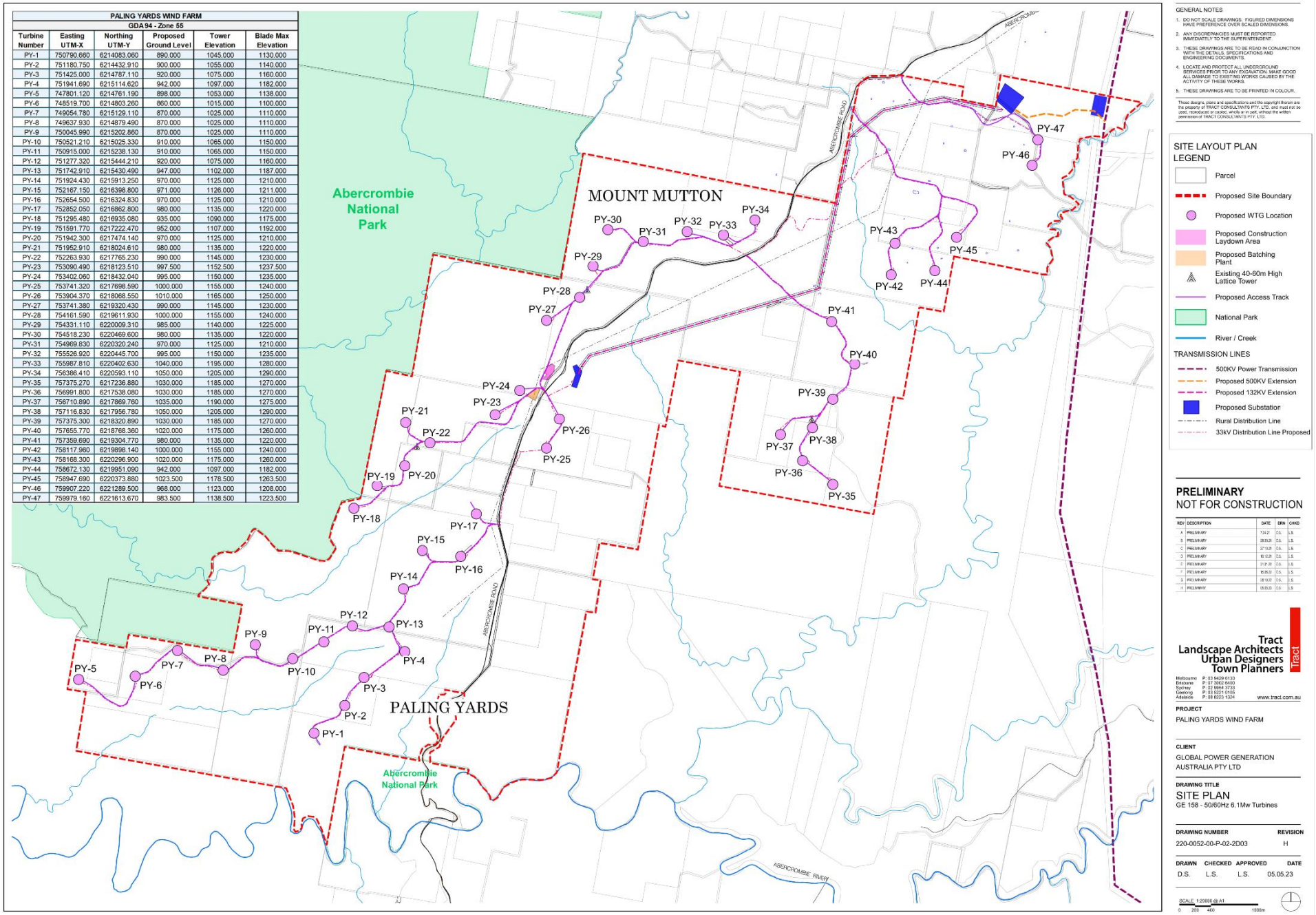


Figure 12. Indicative Site Layout (Source: Tract 2023)

3.2 Environmental and Heritage Constraints

The construction footprint (as indicated in Figure above) encompasses the proposed turbines and associated infrastructure. It is estimated that an overall area of approximately 235.8 ha of land will be impacted by the construction footprint. Within this area, it is estimated that 31.7 ha of native vegetation will be directly impacted.

The overall native vegetation extent within the Project Area was assessed and verified during site visits by the appointed environmental consultant.

Figure to Figure are taken from the BDAR and show the extent of the projected impacts of the proposed development on native vegetation within the survey area of the site. The mapping set includes the following:

- PYWF development footprint.
- Transmission equipment footprint.
- Access Roads.
- Indirect impacts to native vegetation / habitat not requiring offset.
- Direct impacts to native vegetation / habitat requiring offset.
- Other impacts not requiring offset.

Detailed plant community and vegetation mapping is provided as part of the BDAR (Figure 3.2 – Maps A-G, and Figure 4.1 – Maps A-G) under Appendix M. Refer to section 6.5 and section 7.4 of this EIS for more information and a summary of the identified mitigation measures to be applied.

ERM undertook a Historic Heritage Due Diligence Assessment and an Aboriginal Cultural Heritage Assessment to assess both non-Aboriginal and Aboriginal Heritage values within the Project Site.

Figure and Figure provide an overview of the Aboriginal cultural heritage items located within the site boundary. It is not expected that the building footprint would impact on any non-Aboriginal heritage items.

A summary of all environmental constraints and the identified mitigation measures is set out in the Statement of Commitments under section 7.4 of this EIS.

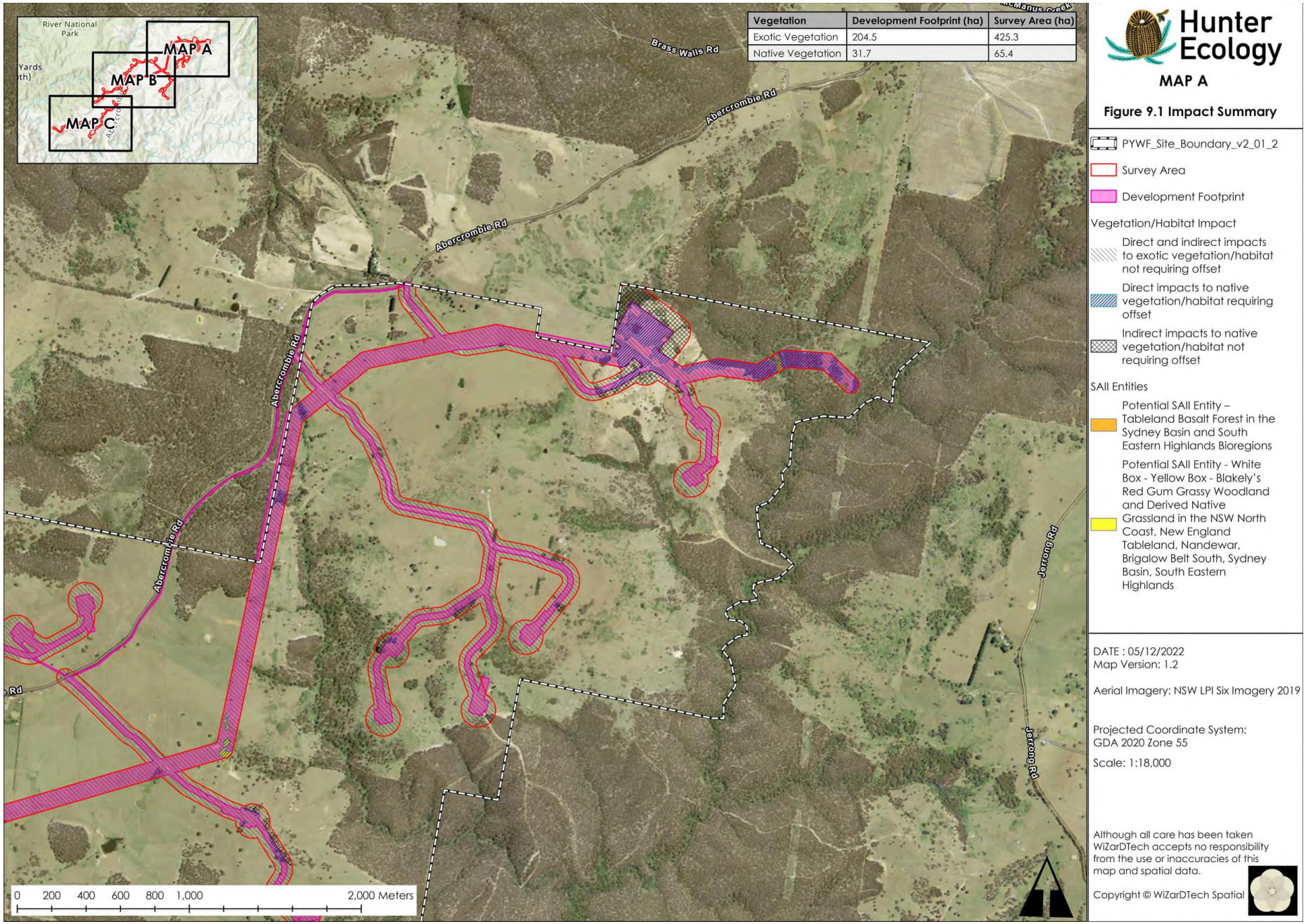


Figure 13. Development Footprint Impact Summary - Map A (Source: Hunter Ecology, 2022)

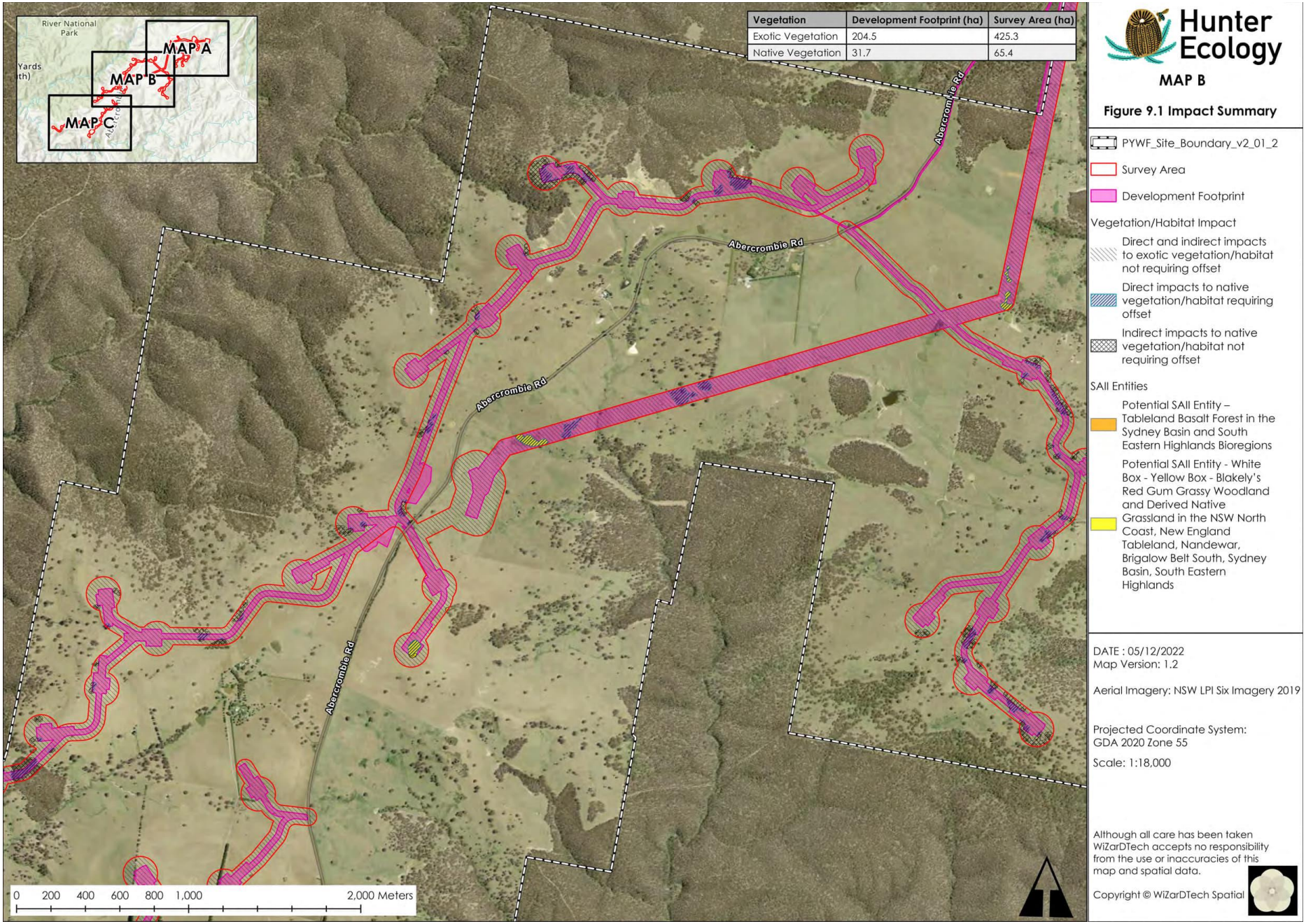


Figure 14. Development Footprint Impact Summary - Map B (Source: Hunger Ecology, 2022)

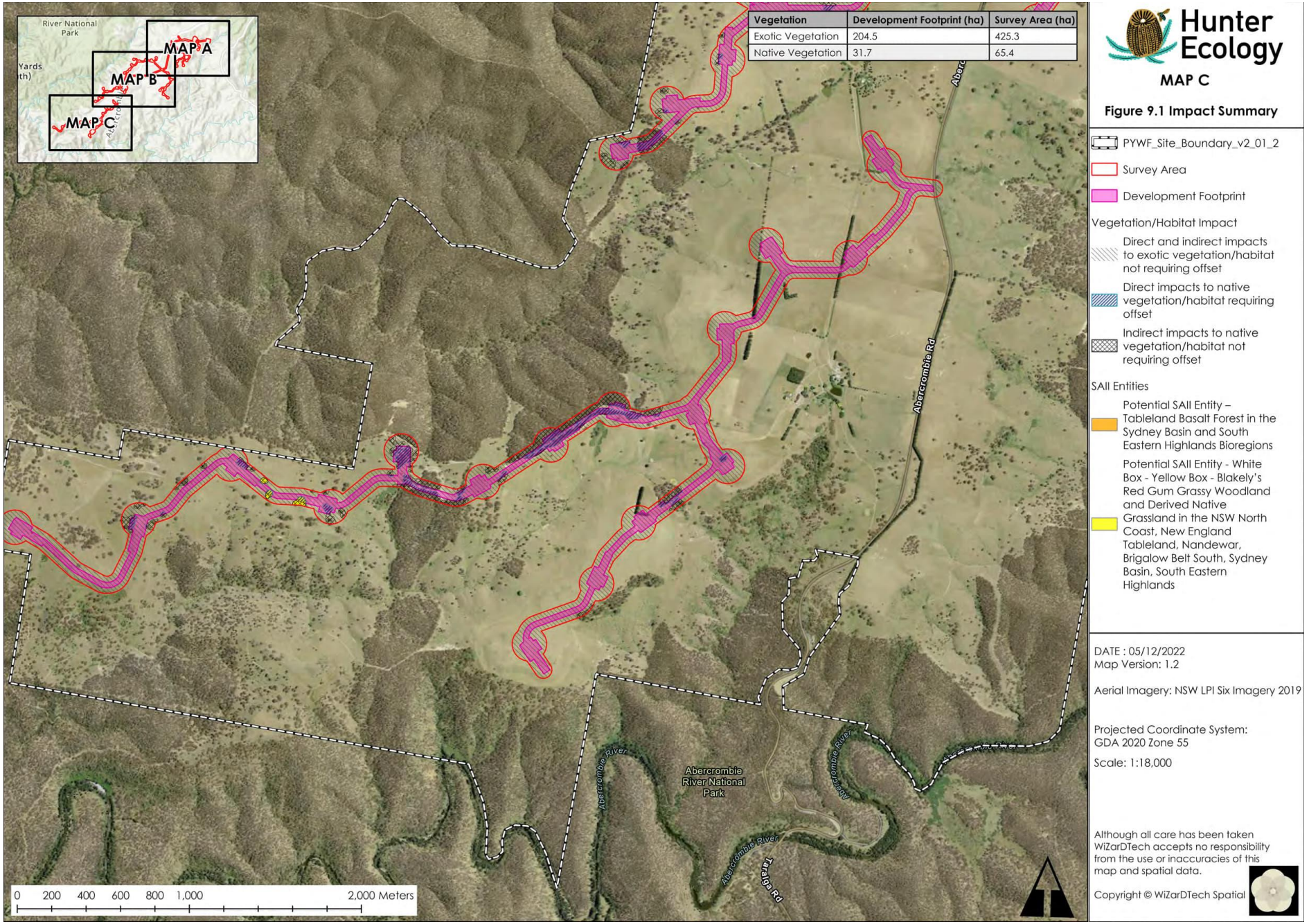


Figure 15. Development Footprint Impact Summary - Map C (Source: Hunter Ecology, 2022)

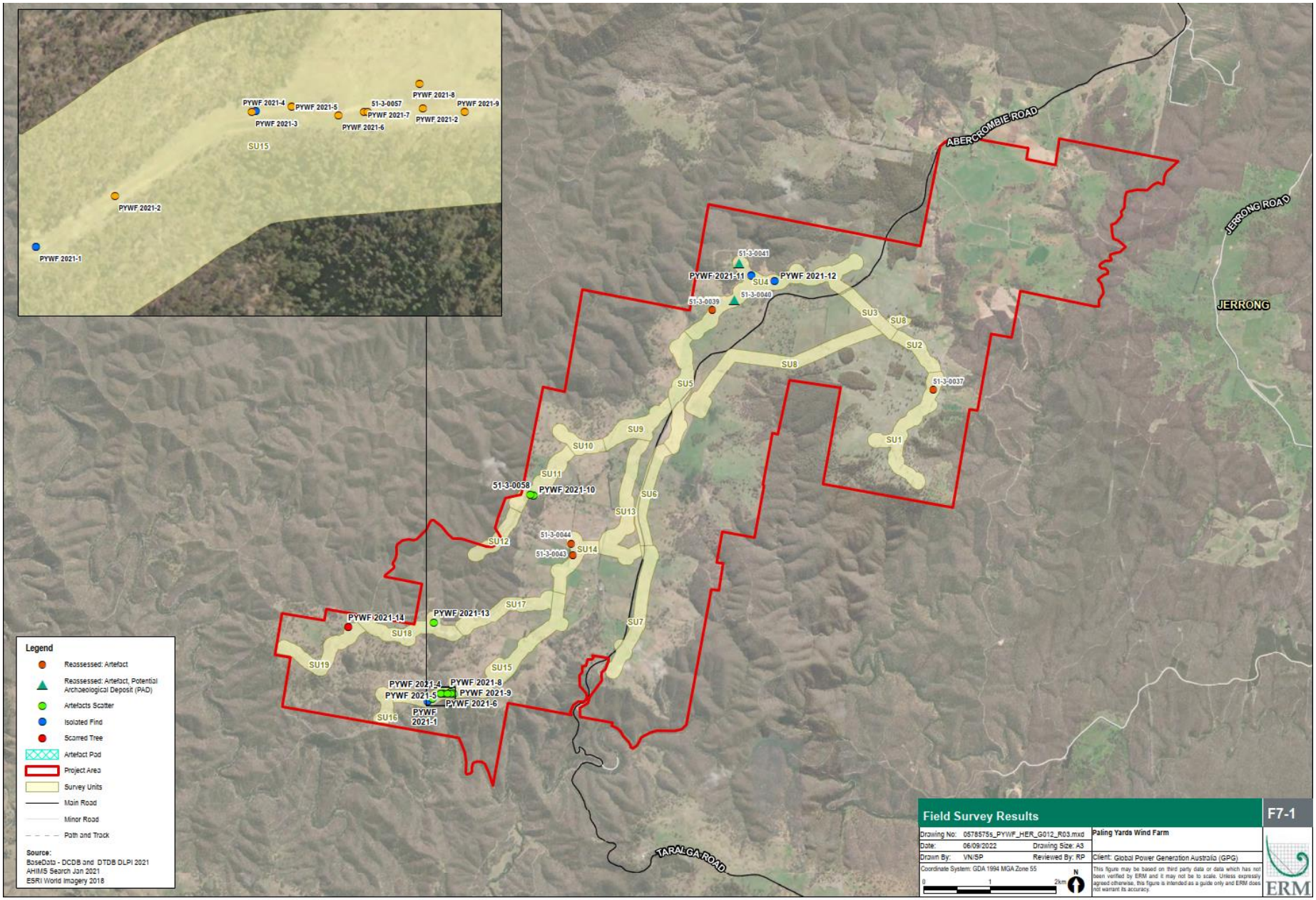


Figure 16. ACHAR Field Survey Results – Southern Portion (Source: ERM, 2022)

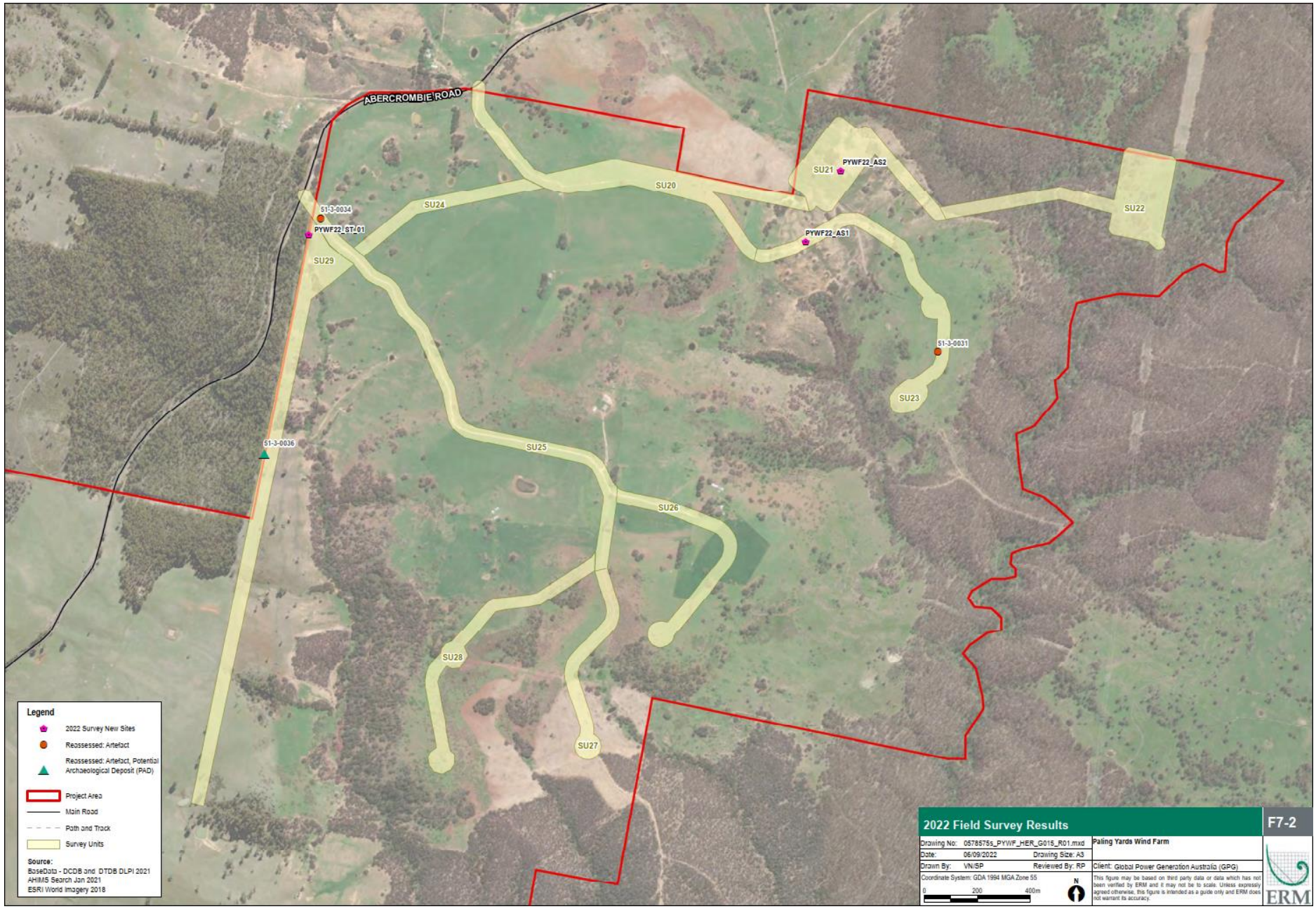


Figure 17. ACHAR Field Survey Results - Northern Portion (Source: ERM, 2022)

3.3 Project Elements

A detailed description of each Project element is provided in the tables below. An outline of the construction and operational phases of the Project and a timeframe detailing the proposed stages of activities is provided.

Table 16. Wind Turbine Particulars (Source: GPGA 2022)

Wind Turbine Specifications	
Turbine Model	General Electric – Cypress 158-6.1MW (50-60Hz) (Tubular steel tower)
Maximum output	6.1MW per turbine (amounting to 287MW for the PYWF)
Number of Turbines	Up to 47
Maximum blade tip height	240m
Hub height (above Natural Ground Level)	151m
Blade details	Three blades – 77.4m each
Rotor Diameter	158m
Maximum Cord	4.0m
Swept Area	19,607m²

Figure 18 provides an overview of the WTG dimensions.

The table below provides a summary of additional and ancillary infrastructure to be associated with the wind farm.

Table 17. Project components and approximate dimensions (Source: GPGA 2022)

Ancillary Infrastructure	Approximate Dimensions	Quantity
One on-site 33 / 132kV collector substation	69m x 100m (0.68ha)	1
One on-site 500kV switching station (currently two potential locations proposed)	180m x 240m (4.35ha)	1
Internal 132kV transmission line	Easement 45m wide expanding to 60-70m for the final km	For approx. 7.0 km of new transmission line
Internal 500kV transmission line, with connection via the existing Mt Piper-Bannaby 500kV transmission line	Easement 70m wide	For approx. 1.0km of new transmission line
Internal Roads, trenches, and cabling	5m wide	Estimate length:32.0km
Operations & Maintenance (O&M) building	Area: 16m x 9m Height: single storey (3m)	1
Maintenance and Workshop Shed	Area: 20m x 15m Height: 6m	1
Wind Monitoring masts and associated instruments	Up to 150m high	3

Note: The above dimensions do not include any laydown area or area required to ensure an appropriate APZ. Refer to the indicative Construction Plan, which is included under Appendix W as part of the drawing set.

As mentioned earlier, the project also includes other project elements, such as:

- Ancillary infrastructure:

- Switchgear and associated control systems within the wind turbine towers;
- An on-site 33/132kV collector substation, including control room, maintenance building, switchgear and associated control systems;
- Approximately 7km of 132kV overhead powerline (with a total easement measuring 40-45m to connect the collector substation to the switching substation (including control room and other associated grid connection facilities).
- An on-site 132/500kV switching substation to connect to the existing TransGrid's 500kV Mount Piper to Bannaby transmission line (including control room and other associated grid connection facilities).
- Cut-in works on the 500kV Mt Piper-Bannaby transmission line to connect it to the switching substation, resulting on a section of approximately 1km of 500kV transmission line (with a total easement width of 70m).

· Roads and local infrastructure:
  - Upgrades to local road infrastructure including several access points from Abercrombie Road and internal unsealed tracks for vehicle access to turbines and infrastructure.

· Temporary facilities:
  - Establishment of a laydown area during the construction period;
  - A demountable site office and site store to be within the identified laydown area; and
  - Temporary batching plant to supply concrete, including:
    - Material weighting system
    - Material conveying system
    - Cement silo
    - Water tank(s)
    - Concrete mixer
    - Operation station
    - Cold bin(s)

3.4 Micro-siting

The proposal will include the provisions to allow for the micro-siting of turbines, ancillary infrastructure and temporary facilities post development consent during the optimisation and detailed design phase.

Micro-siting allows for flexibility to relocate turbines to within a 100m radius of its original location as a result of unforeseen circumstances or issued encountered during optimisation, detailed design and construction phase programming.

It allows for the flexibility to relocate ancillary infrastructure, such as internal roads, transmission equipment and substation, including temporary facilities such as laydown areas, to within a 50m wide corridor.

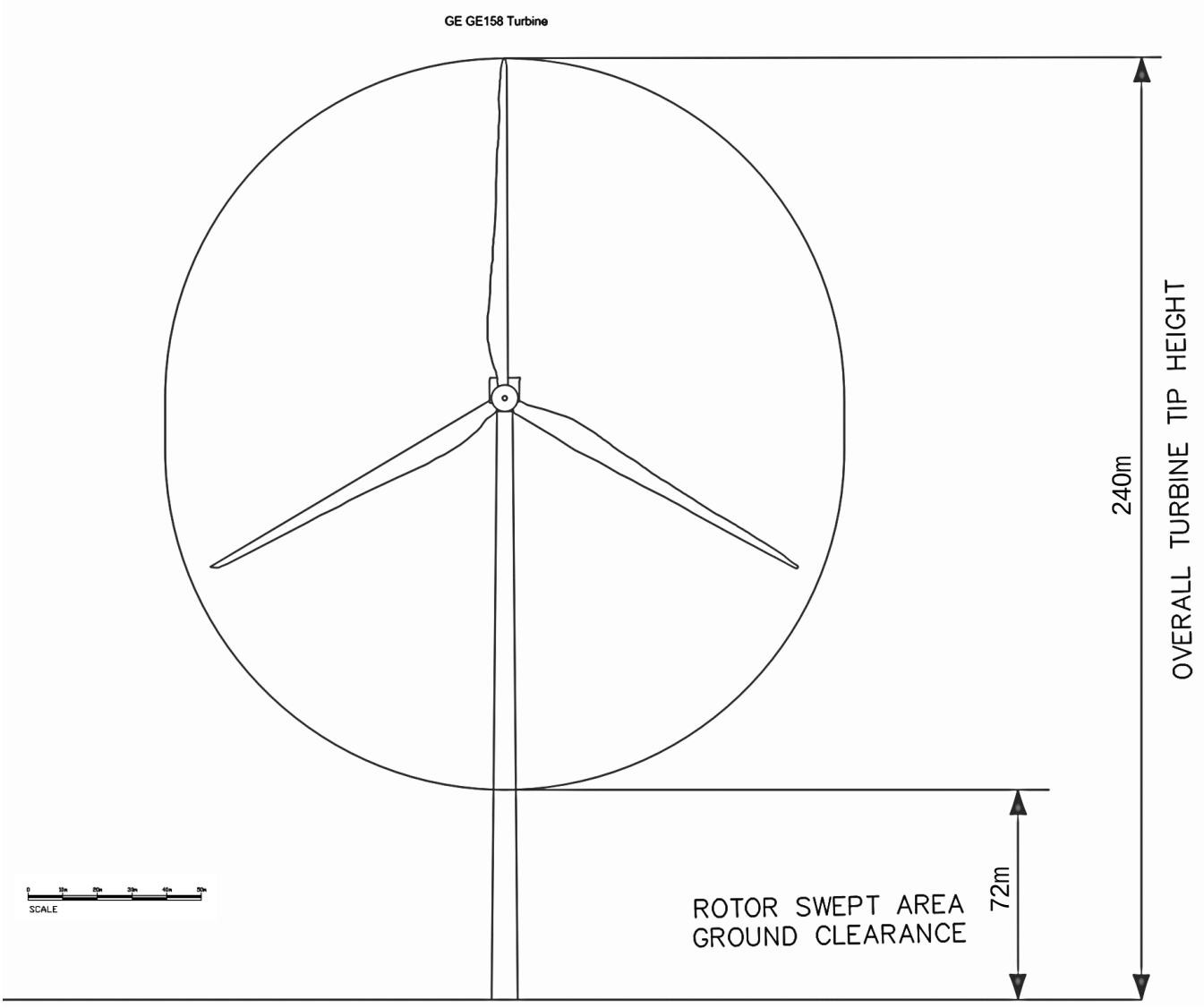
The relevant specialist assessments have therefore considered the100m wide radius for the turbines and 50m wide corridor for ancillary equipment as part of the micro-siting approach.

Any micro-sited facilities will not result in any non-compliance with the Development Consent once granted.

3.5 Proposed Buildings and Structures

The following section provides additional information regarding the proposed buildings and structures to be installed as part of the project.

3.5.1 Indicative Wind Turbine



Colour for Nacelle, Hub, Blades and Tower to be Off–white / light grey and non reflective

The tower and nacelle will be made from steel and the blades will be of carbon fibre material

LAYOUT	NUMBER OF TURBINES	OVERALL TURBINE TIP HEIGHT (m)	ROTOR SWEPT AREA GROUND CLEARANCE (m)	TOWER HEIGHT (m)	ROTOR DIAMETER (m)
GE GE158 6.1MW	47	240	72	151	158

Figure 18. Indicative WTG Dimensions (Source: GPGA 2022)

3.5.2 Substations

The project layout plan includes an indicative location for the central 33 / 132kV collector substation, including control room, maintenance building, switchgear and associated controls. It also includes two indicative locations for the proposed 132 / 500kV switching substation, to connect to the existing TransGrid 500kV high voltage transmission Mount Piper to Bannaby overhead line.

An example of a typical substation layout is shown below in Figure 19.

Figure 19. Example of typical substation layout (Source: GPGA, 2022)

Substation Compound Details

For illustration purposes, the following components are usually included within the substation compound area:

Figure 20. Image showing transformer, circuit breakers, gateways and surge arresters (Source: GPGA, 2022)

Table 18 below provides a summary of the Transmission materials and components. The listed wind farm elements are indicative and may change during the detailed design of the Project.

Table 18. Substation and Transmission Line Components (Source: GPGA 2022)

Substation and Transmission Components	
500 / 132kV Substation	
1.	500 / 132kV Power Transformer – 1
2.	500kV Circuit breakers – 3
3.	500kV Disconnectors – 11
4.	500kV Surge Arrester – 4
5.	500kV Capacitive Voltage Transformer – 3
6.	500kV Line Traps – 4
7.	500kV Current Transformer – 3
8.	500KV PVT – 1
9.	132kV Surge Arrester – 2
10.	132kv Circuit breakers – 2
11.	132kv Disconnectors – 4
12.	132kV Voltage Transformers – 3
13.	Substation equipment Steel and gantry steel structures
14.	Light poles and lightning masts
15.	Civil materials such as concrete, reo steel, quarry material
16.	Palisade Fencing material
17.	Auxiliary Services building (Transportable building)
18.	Earthing tapes and earthing material
19.	Aluminium Busbar, conductors and accessories
20.	CCTV cameras and control cables
132 / 33kV Substation	
1.	132 / 33kV Power Transformers – 2
2.	132kV Circuit breakers – 2
3.	132kV Disconnectors – 2
4.	132kV Surge Arrester – 4
5.	132kV Capacitive Voltage Transformer – 2
6.	33kV Voltage Transformers – 2
7.	Substation equipment Steel
8.	Landing poles

9.	Light poles and lightning masts
10.	Civil materials such as concrete, reo steel, quarry material
11.	Palisade Fencing material
12.	Auxiliary Services building (Transportable building)
13.	Earthing tapes and earthing material
14.	Aluminium Busbar, conductors and accessories
15.	CCTV cameras and control cables
Transmission Line	
1.	Steel poles
2.	Conductors and Optical Power Ground Wires
3.	Insulators and accessories

3.5.3 Operations and Maintenance

The substation will include an Operations and maintenance Room (O&M). The Operations and Maintenance Facility will be a permanent structure to the substation site and incorporate a building which can facilitate on-site administrative duties, hold meetings and provide on-site staff with necessary amenities. A typical O&M building usually consists of:

- Internal
  - Supervisor Area;
  - Meeting Room;
  - Climate Room;
  - Kitchen;
  - Water Closet.
- External
  - Indoor and outdoor lighting;
  - Hvac System;
  - Fire Protection System;
  - Anti-Intruder and CCTV systems;
  - Communication Systems.
- Dimensions
  - 10.4m wide x 6.3m deep x 3.4m high (total footprint 67m²)
  - Note – above dimensions are preliminary and subject to final design.

Below includes a 3D image of a typical O&M, which provides some context and scale to the building:

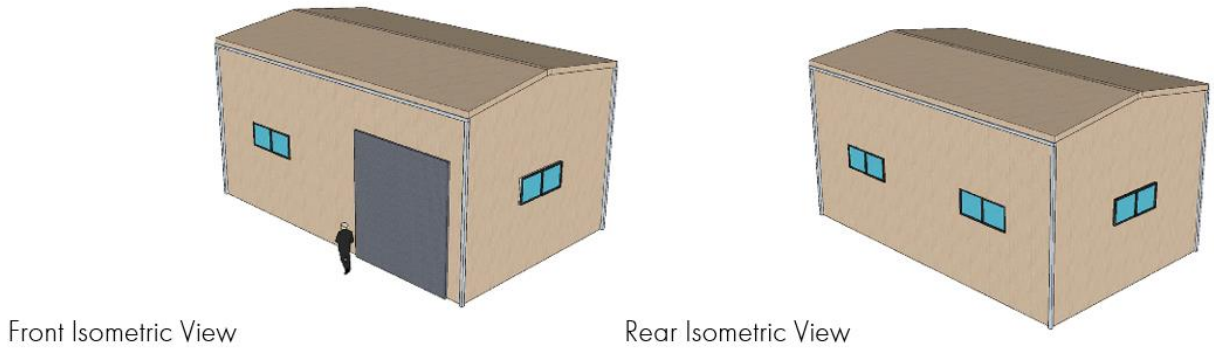


Figure 21. Typical O&M 3D Model (Source: GPGA, 2022)

3.5.4 Warehouse Building

The Warehouse Building (WB) will be a permanent structure located on-site within the substation area and provide additional storage for equipment and spare parts if required.

The WB building will consist of:

- Internal
  - Fire protection and detection system in accordance with relevant codes and applicable law.
  - Operated electric roller doors of a suitable width and height to allow access via mobile equipment such as cranes and fork trucks (minimum height 4.5 metres and a minimum width 4 metres.).
  - Toilet and wash basin.
  - Large was trough suitable for handwashing.
  - Nominal warehouse height 6 metres.
  - An airconditioned / climate controlled dry room (approx. 2.5 metres by 3 metres with standard ceiling height) in one corner of the workshop to store temperature sensitive parts.
  - Portable gravity-fed emergency eye wash station.
  - Concrete slab design in accordance with loading specified in AS1170.
  - Power supply for the warehouse.
  - High bay Lighting compliant and standard building lighting.
- External
  - Sealed (hot mix, concrete or equivalent to prevent mud or dust ingress to the facility) yard area with 16ft axle loading) for delivery trucks and loading / unloading with forklift or similar.
  - Ventilation in the roof of the warehouse.
  - Securely bunded and lockable oil / chemical storage facility.
- Dimensions
  - 12.2m wide x 7.7m deep x 6.7m high (total footprint 90m²).
  - Note – above dimensions are preliminary and subject to final design.

Figure 22 below includes a 3D image of a typical WB:

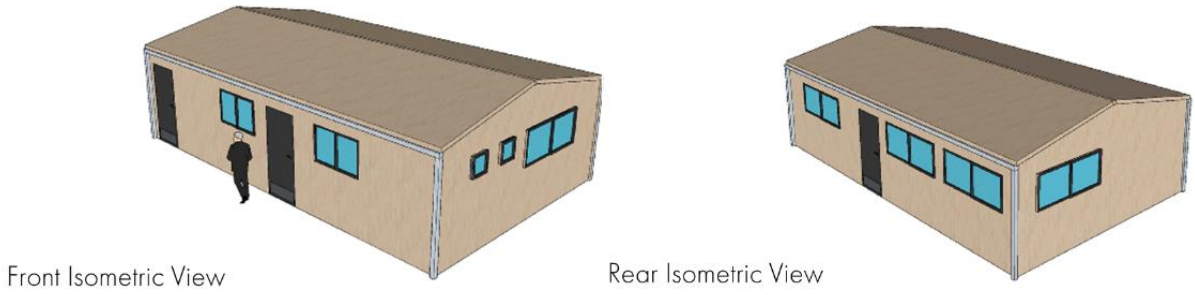


Figure 22. Typical WD 3D Model (Source: GPGA, 2022)

3.5.5 Reactive Plant Building

The substation compound will make provision for a potential Reactive Plant Building (RPB), which will be a building separated into four separate rooms, each would consist of the following:

- Internal
  - 4 rooms separated by internal walls, each room proposed to be occupied by:
    - Filter tray
    - 100 Ohm Resistor and 300 Ohm Resistor
    - 5 Mvar Capacitor Bank
  - Ducted Exhaust Fan.
- External
  - Double Door access via the front Elevation
  - Single Doors on Rear Elevation
  - Platforms and Stairs
- Dimensions
  - 6.2m wide x 6.7m deep x 4.7m high (total footprint 41m²)
  - Note – above dimensions are preliminary and subject to final design.

The figure below includes a 3D image of a typical RPB.

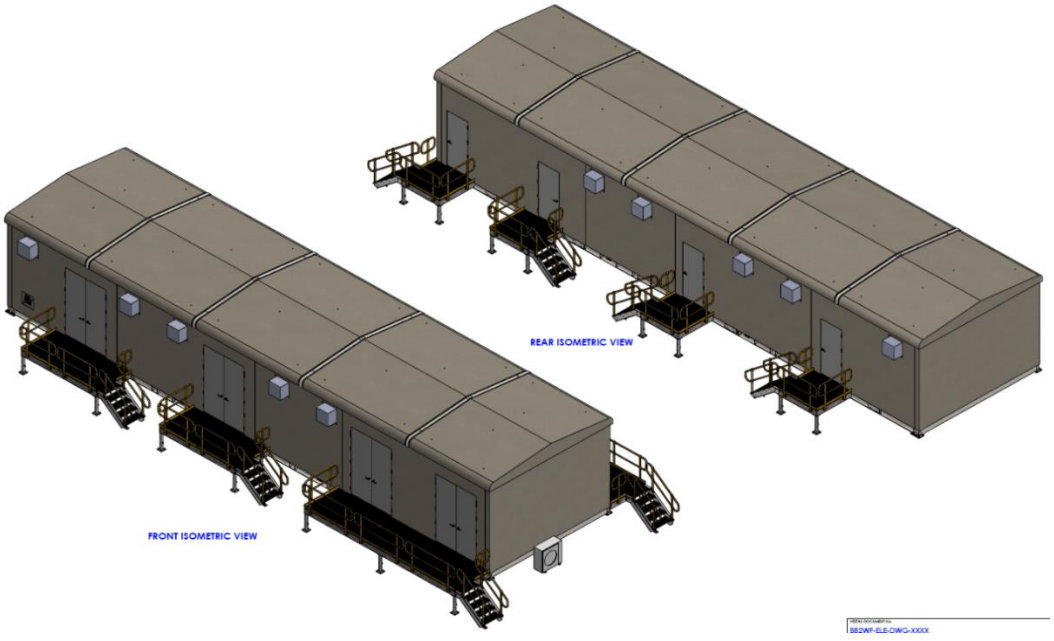


Figure 23. 3D Image of a Typical RPB (Source: GPGA, 2022

3.5.6 Electrical Components

Table 19 below provides a summary of the electrical materials and to be included and installed.

Table 19. Electrical Components (Source: GPGA 2022)

PYWF Electrical Components	
Wind Farm Reticulation System	
1.1	Electrical cables and optic fibre cables
1.2	Grounding system, including grounding cable, connections and earthing system
1.3	Cable splicing and cable terminations
1.4	Cable trenches and cable installation, including supplement of cable trench in case of major road crossings (subject to Council approval)
1.5	Meteorological (Met) Monitoring Masts, cables and optic fibre installation
Substation Structures	
2.1	Wind Farm control and switchgear building
2.2	33kV switchgear
2.3	Earthing network
2.4	Associated cables
2.5	Secondary systems, including transformers, switchboards, emergency diesel generator, cable installations and connections, unit for control, protection and measuring panels.
Substation Control and Communication System	
3.1	33kV control system
3.2	33kV server cabinet, including switches
3.3	System metering panels, feeders and reactive plan feeders, communication links.

3.5.7 Civil Works

Table 20 below provides a summary of the civil works associated with the wind farm.

Table 20. Civil Works (Source: GPGA 2022)

PYWF Civil Works		
1.	Preliminary works	· Traffic management · Site establishment and maintenance · Temporary site office, including associated civil works · Provision of utilities, including water and power · Maintenance of local roads · Detailed design and geotechnical works, including other management and safety plans required for preliminary works.
2.	Site clearance and demolition	· Removal of trees and shrubs as necessary · Clearing land, removal of fences, gates, etc as required

3.	Excavation and subsoil treatment	· Topsoil excavation and removal of material · Removal of other soils, including stockpiling for further use · Sub-grade preparation
4.	Haulage and Transportation of Equipment	· Some minor works along the transport route, including additional concrete and kerb lowering at identified pinch points or hardstands at identified corners. · Modifications or cut back to embankments along O'Connell Road Range as per swept path assessment.
5.	Roads and mounting platforms	· Earthworks relating to roads · Material testing · Road maintenance
6.	Drainage works	· Supply and installation of reinforced concrete · Repair and widening of existing drainage in existing roads
7.	Fencing, gates and restorations	· Supply and installation of stock fencing · Temporary signage for works · Marking of heritage locations · Environmental restoration
8.	Foundations	· Over site topsoil excavation · Excavation of WTG foundations · Installation of corrugated steel bars · Structural concrete – supply and placement of mass concrete · Discharge, assembling and levelling of anchor cage · Supply and installation of conduits.
9.	Meteorological monitoring mast foundations and trench	· Over site topsoil excavation · Excavation puts and open walls · Supply and placement of concrete · Installation of corrugated steel bars · Supply and install cable trench from mast to cable trenches network
10.	Substation area (grading, urbanisation, O&M building, maintenance shed)	· Site excavation, clearance, grading and drainage in substation area. · Unit for O&M Building (factory assembled, fully equipped, pre-wired and tested) · Maintenance and workshop shed (height to be adapted to wind farm elements and requirements) · Confirmation of development areas (Control room building, Maintenance Shed location, gates, carparks, etc.).

3.6 Project Area

3.6.1 Site Locality

The Project Area covers approximately 4,600 ha and is situated in the Oberon LGA. It is located at the western extent of the Great Dividing Range in NSW, 60km south of Oberon, 75km north of Goulburn and approximately 140km west of

Sydney. The site is bordered by Abercrombie National Park to the west and south and densely vegetated land to the south-east. To the east of the site is Wiarborough Nature Reserve and Blue Mountains National Park. The site is approximately 40km north-east of the existing Crookwell 1 and Crookwell 2 Wind Farms and the recently approved Crookwell 3 Wind Farm. Taralga Wind Farm is operational and located approximately 25km to the south of the site.

Other features of the Project Area include:

- The site elevation ranges from between 900m and 1,065m above sea level, with significant slopes in many areas.
- The site is currently used primarily for agricultural purposes such as sheep and cattle grazing.
- The area is heavily undulating with some steep slopes.
- The site is bisected by Abercrombie Road, which links the towns of Oberon and Taralga.
- The closest towns are Porters Retreat and Curraweela which have township populations of approximately 64 (down from 259 in 2011) and 67 (down from 263 in 2011) respectively according to the 2021 Census data.
- The site includes several ephemeral creeks and drainage lines cross the site, which drain into the Abercrombie River.
- The Abercrombie River forms the southern boundary of the site and flows into the Lachlan River.

3.7 Uses and Activities

This section provides an overview of the site usage and proposed activities which are involved.

3.7.1 Existing Land Use

The site includes nine involved residential dwellings. It is primarily used for agricultural purposes and includes associated rural dwellings and associated outbuildings. A further estimated 25 dwellings are located within a 5km radius of the site boundary.

The current rural residential and farming uses will not cease as a result of the proposed wind farm.

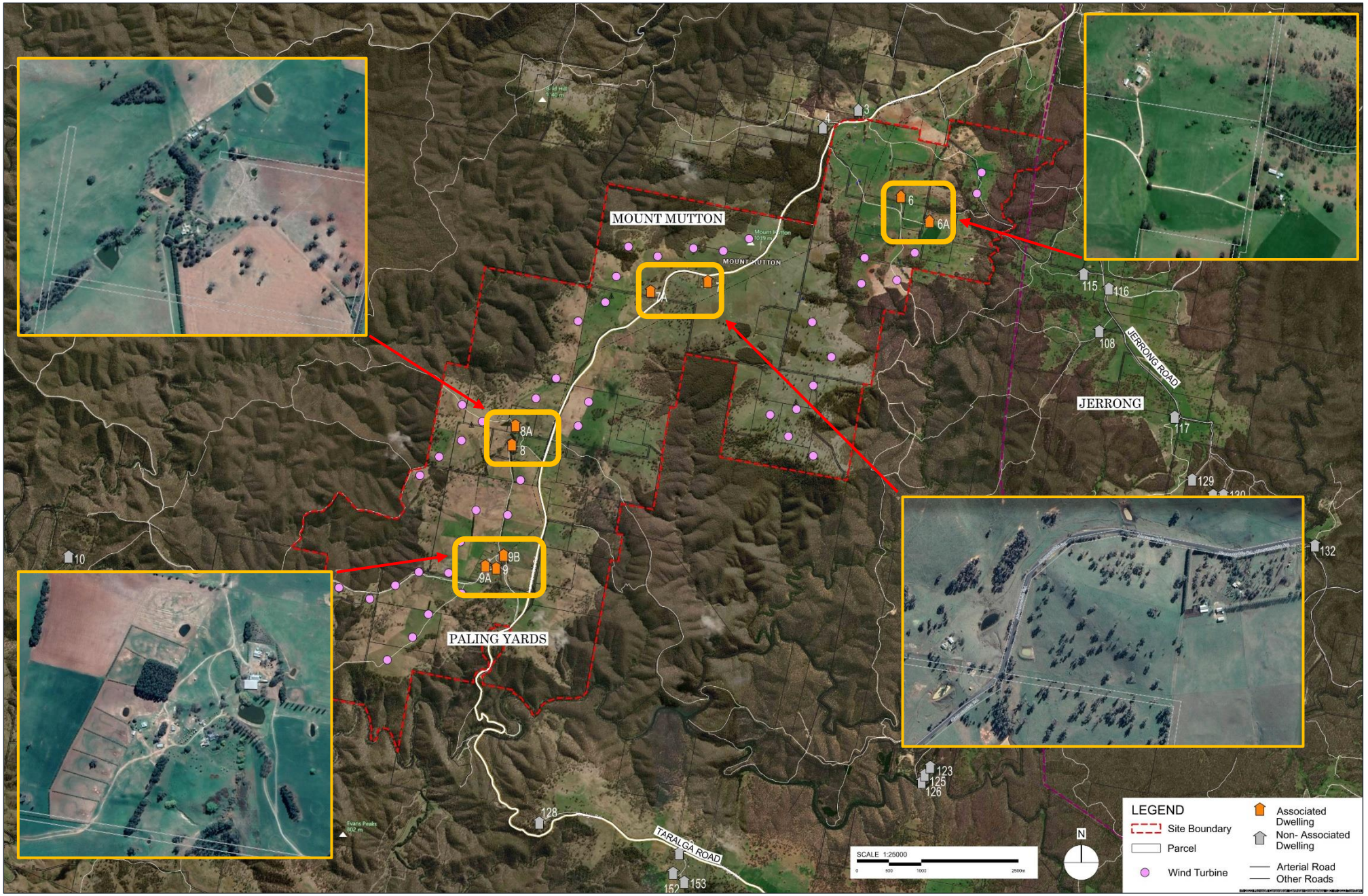


Figure 24. Project Involved Dwellings Aerial View (Source: Tract 2023)

3.7.2 Activities to be carried out on site

Activities will vary depending upon the Project stage. The diagram below provides a summary of the key activities to be undertaken.

Table 21. Summary of Construction Related Activities

Scope	Proposed Works
Site Preparation	· Preparation of the site for installation of the 47 WTGs including construction of internal access. · Site clearance and preparation for each WTG site. · Ensure external roads are appropriate assessed / prepared for increased traffic and large tracks.
Waste Disposal	· Disposal of waste produced from excavation and construction materials. · Ensure waste is disposed of as per the provisions of the attached Waste Management Plan (Appendix X).
Site Parking	· Provision of on-site car parking for construction workers.
Installation of Temporary Buildings	· Temporary buildings to be installed to allow for construction management and storage of materials.
Storage and Handling of Materials	· Store materials noting that any materials need to be in a secure location and are appropriately secured / stored.

3.7.3 Scale and intensity of these activities

- The Project is proposed to be operational between 2025-2055.
- Hours of operation of the site will be 24-hours per day, 7 days a week.
- Expected generation capacity of the wind farm is as follows:
  - Individual WTG – 6.1 MW
  - Total Expected Capacity – up to 287 MW.

3.7.4 Transportation to and from the site

- Main access to the site is via Abercrombie Road:
  - Lower-order internal roads will be constructed prior to WTG site establishment to allow access to and from site in a safe manner.
  - The Proponent will ensure the existing roads are suitable for increased use and traffic.
- Materials:
  - Large materials will be transported via dual cab trucks from Newcastle via Mudgee to the site.
- Employee transportation to site.
- During the construction phase, the anticipated approximately 152 construction workers will access the site using private vehicles. Carpooling will be encouraged.
- When operational, transport to and from the site for the anticipated 10 employees is expected to be via private vehicles.
- Waste:
  - A Waste Management Plan has been prepared for the Project. It establishes appropriate waste disposal practices for the Project during and after construction. See attached Appendix X.

- A Decommissioning and Rehabilitation Plan has been prepared to ensure that at the time of decommissioning all materials are disposed of appropriately and equipment is removed from the site. See attached Appendix X.

3.8 Project Timeline and Staging

3.8.1 Development Approach

An overview of the approvals process and sequence prepared by GPGA is presented in Figure 25. It provides a summary of the planned milestone dates:

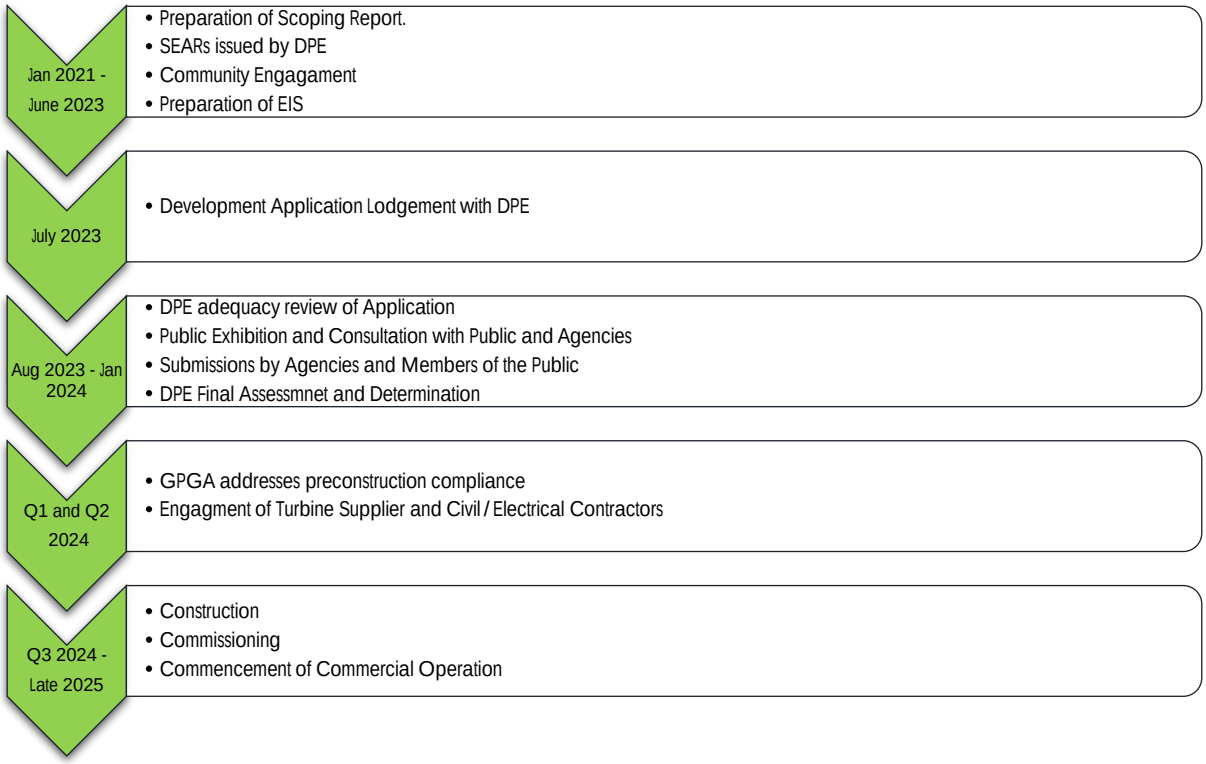


Figure 25. Anticipated Project Timeframe (Source: GPGA 2022)

3.8.2 Construction Timeframe

The duration of the construction phase is anticipated to be approximately 22 months subject to weather conditions and other unforeseen circumstances. The construction phase of the Project (subject to planning approval) would likely commence during early-mid 2024.

Table 22. Expected Project Timing and Staging

Stage	Activity	Construction Works Involved
Stage 1 – Site preparation Commence: Q2 2024	Site Establishment	· Clearing of work areas, levelling and compaction, installation of portable buildings and installation / connection of utility services. · Site survey.
	Internal Road Works	· Removal of topsoil, levelling, sub-base compaction, gravel, drainage.
	External Road Works	· Upgrade existing roads where required. · Provide new access roads to the site.

Stage	Activity	Construction Works Involved
	Foundations	· Removal of topsoil, excavation, screed concrete, reinforcement steel bottom, installation of foundation ring, reinforcement steel top, concreting, concrete ring and conduits, backfilling.
Stage 2 – Building Site Establishment Commence: Q3 2024	Crane Pad Establishment	· Removal of topsoil, base compaction, rock / gravel compaction.
	Trenches and Cable Laying	· Excavation, sand infill, cable laying with protective covering, backfilling and compacting, installation of cable route markers.
	Substation Civil Works	· Site survey, site clearing, levelling / compaction. · Building foundations including excavation, formwork and concrete. Installation of columns, walls, roof, gutters, doors, floors. Installation of building services including plumbing, electrical, fire protection, security.
	Control Buildings	· Foundation works including excavation, formwork, reinforcement, concreting. Installation of columns, walls, carpentry, roof, floors, doors. · Installation of services including plumbing, electrical, fire protection, air conditioning, security.
	Switchyard Works	· Site survey, site clearing, levelling / compaction. · Equipment foundations including excavation, formwork, reinforcement steel, concrete, grouting. · Oil containment and separation system including excavation, formwork, concrete, ladders, hatches, pipes and bund walls. · Security Fencing.
	Electrical Works	· Control building switchboards, communications, 'Supervisory Control and Data Acquisition' (SCADA) systems. Installation of cabling, switchgear, turbine control panels.
Stage 3 -Wind Turbine and Substation construction Commence: Q3 2024	Turbine Supply	· Transport of towers, nacelles, hubs and blades to site.
	Turbine Erection	· Erection of towers, nacelle, blades, installation of cabling.
	Substation Electrical Works	· Installation of steel structures, busbars, transformers, equipment, earthing system, metering system.
	Transmission Line Works	· Surveying, Site establishment, clearing, installation of foundations, poles / towers, conductors and fittings.
	Electricity Grid Cut in	· Site establishment, clearing, levelling / compaction. · Installation of foundations, poles / towers, connections to the High voltage transmission line.
Stage 4 – Commissioning Commence: Q4 2025	Wind Farm Commissioning	· Pre-commissioning of turbines, SCADA, cables testing, optical fibre. Testing and commissioning of turbines, switchgear, SCADA.
	Substation Commissioning	· Testing and commissioning of transformers, equipment, earthing, cabling and wiring checks, protection relays, SCADA, communications and security systems.

Stage	Activity	Construction Works Involved
Stage 5 - Clean-up and Re-vegetation Commence: Q4 2025	Construction Closure	· Site clean-up, revegetation, landscaping · Removal of any temporary structures constructed as part of construction works.

Statutory Context

4 Statutory Context

This section addresses compliance requirements under both State and Commonwealth legislative regimes as well as local environmental plans.

The below table provides an overview of the statutory context applicable to the proposal.

Table 23. Statutory context overview

	Legislation	Description
Commonwealth	*Environmental Protection and Biodiversity Conservation Act 1999*	Provides a legal framework to protect and manage important flora and fauna ecological communities and heritage places.
	Native Title Act 1993	Recognises the rights and interests for Aboriginal and Torres Strait Islander people in property matters relating to land and waters according to their traditional laws and customs.
	Civil Aviation Safety Regulations 1998	Establishes standards and legislative requirements for the quality and integrity of data and information used for aviation navigation.
	National Airports Safeguarding Framework 2012	Developed by the National Airports Safeguarding Advisory Group (NASAG) it establishes a framework to improve safety outcomes by ensuring aviation safety requirements are recognised in land use planning decisions through guidelines being adopted by jurisdictions on various safety-related issues.
	Renewable Energy (Electricity) Act 2000 (Cth)	Identifies wind energy as a renewable energy source eligible under the Commonwealth Government's Renewable Energy Target (RET).
	Radio Communications Act 1992	Requires the conduction of an Electromagnetic Interference Assessment (EMI) assessment as part of a wind farm project.
State	*Environmental Planning and Assessment Act 1979 (EP&A Act)*	As the principal environmental planning legislation within NSW, institutes a system of environmental planning and assessment for the state and serves

Legislation	Description
	as the planning framework when assessing the environmental and planning merits of any development proposal.
Environmental Planning and Assessment Regulation 2021 (EP&A Regulation)	Provides the overarching regulatory framework for NSW planning systems.
State Environmental Planning Policy (Planning Systems) 2021	Identifies development that is State significant and outlines the criteria (Clause 20 of schedule 1) for electricity generating works.
State Environmental Planning Policy (Transport and Infrastructure) 2021	Incorporates provisions for development related to infrastructure, educational establishments and childcare facilities, major infrastructure corridors, and the three NSW Ports.
State Environmental Planning Policy (Resilience and Hazards) 2021	Provides a legislative framework for the assessment of proposals that are identified as being 'potentially hazardous' and 'potentially offensive development' for the purpose of industry or storage. The policy requires the assessment of the proposal's safety and pollution control performance.
State Environmental Planning Policy (Biodiversity and Conservation) 2021	Incorporates provisions relating to vegetation in non-rural areas and contains planning rules and controls from the Vegetation SEPP relating to the clearing of native vegetation in NSW on land zoned for urban and environmental purposes that is not linked to a development application.
Biodiversity Conservation Act 2016	Provides protection for biodiversity, particularly threatened species and threatened ecological communities.
Biodiversity Conservation Regulations 2018	Provides the regulatory framework to protect biodiversity, particularly threatened species and threatened ecological communities.
Water Management Act 2000	Seeks to ensure sustainable and integrated management of the State's water for the benefit of both present and future generations.
Local Land Services Act 2013	Facilitates the establishment of better management and delivery of local land services in the social, economic and environmental interests of the State in accordance with any State priorities for local land services.
National Parks and Wildlife Act 1974	Governs the establishment, preservation and management of national parks, historic sites, and certain other areas. The NPW Act also provides the basis for the legal protection and management of threatened native flora and fauna and Aboriginal sites within NSW.
Heritage Act 1977	Aims to protect and preserve items of non-Indigenous heritage significance. The Act provides for the protection of items of local, regional, and state heritage significance, such as historic relics, buildings, structures, and features.
Roads Act 1993	Makes provisions for the public roads of NSW. Section 138 of the Roads Act 1993 (NSW) (Roads Act) prohibits a number of activities, such as conducting work in, on or over a public road unless consent has been obtained from the appropriate roads authority.

	Legislation	Description
	Rural Fires Act 1997	Provides for the preparation and mitigation of bush and other fires in local government areas and the protection of infrastructure and environmental assets (including economic, cultural, agricultural and community assets) from damage.
	Planning for Bushfires Protection 2019	Links responsible planning and development control with the protection of life, property, and the environment.
	Protection of the Environment Operations Act 1997	Provides principal environmental protection legislation for NSW and establishes other instruments to guide environmental management.
	Protection of the Environment Operations (Waste) Regulation 2014	Provides a platform to allow the NSW Environment protection Authority (EPA) to protect human health and the environment from waste related impacts.
	Waste Avoidance and Resource Recovery Act 2001	Promotes waste reduction and better use of resources in NSW. It includes provisions for waste strategies and programs, and for industry actions to reduce waste.
	Fisheries Management Act 1994 No 38	An Act relating to the management of fishery resources.
	Crown Land Management Act 2016	Governs how Crown land is used and managed for the benefit of the community in NSW.
Local	*Oberon Local Environmental Plan 2013*	Sets the provisions for land-use planning and development permissibility within the Oberon LGA.
	Oberon Shire Council Development Control Plan – Part O Wind Power Generation 2005	Provides the community and developers with guidelines for future wind farm developments. It sits alongside the Oberon Shire Council's existing development control plans and applies to development relating to commercial wind power generation in the Oberon LGA.

A statutory compliance table has been included as Appendix C.

4.1 Statutory Requirements

As per the requirements of section 3.5 of Appendix B to the *State significant development guidelines – preparing an environmental impact statement*, below a table of the statutory requirements for the project.

Table 24. Statutory Requirements

Category	Action required
Power to grant approval	Development consent is required under Part 4 of the EP&A Act for any project that is considered SSD by a SEPP. The project is therefore subject to assessment under Part 4, Division 4.1 of the EP&A Act. Under Section 4.38 of the EP&A Act, the NSW Minister for Planning is the consent authority. However, pursuant to Section 2.4 of the EP&A Act, the Minister may delegate the consent authority function to the Office of the Independent Planning Commission (OIPC), the Secretary or to any other public authority.

	In accordance with the Wind Guideline, the OIPC is the consent authority for SSD in the following circumstances: · 25 or more people have objected to the application · the local council has objected to the application · the applicant has disclosed a reportable political donation in connection with the application or a previous related application. Pursuant to Division 4.16 of the EP&A Act, a consent authority is to determine a DA by either: a) granting consent to the application, either unconditionally or subject to conditions b) refusing consent to the application. As provided by Clause 113 of the EP&A Regulation, the consent authority has 90 days to determine a DA for SSD. If the DA is refused, an applicant may appeal to the Land and Environment Court against the determination, pursuant to Division 8.7 of the EP&A Act.
Permissibility	The site is located in the Oberon LGA, which adjoins the Lachlan Shire LGA. The EP&A Act allows for the preparation of local planning instruments to direct development within LGAs. This includes Local Environment Plans (LEPs), which are administered by local government and determine land use and the process for development applications. The Project Area is zoned RU1 Primary Production under the OLEP. As discussed earlier in this EIS, wind farms are prohibited in the RU1 Zone. However, despite this prohibition and as pursuant to clause 2.36(1b) of the *Transport and Infrastructure SEPP*, a development for the purpose of *"electricity generating works"* may be carried out by any person with consent on any land in a prescribed rural, industrial, or special use zone. The Project has a capital investment value of approximately $600 million. Under the Planning Systems SEPP, electricity generating works (including wind power) that have a capital investment value of more than $30 million are declared to be SSD and require development consent under Part 4 of the EP&A Act. The impacts of the development are assessed through the preparation of an EIS.
Other approvals	In addition to development consent under the NSW EP&A Act, the additional approvals and licenses that may be required as part of this Project prior to construction include:
	Protection of the Environment Operation Act 1997 (NSW) (POEO Act) The operation of a wind farm requires an environment protection licence under the POEO Act. Under Section 48 Licensing requirement – scheduled activities (premises-based), activity that is declared to be a scheduled activity is taken to be an activity for which A licence is required for the premises at which it is carried out. Schedule 1 of the POEO Act confirms that electricity works (e.g. wind farms) are declared to be a scheduled activity if approval is required under the EP&A Act and when application is made as SSD. However, a referral for a wind farm development across the Project Area was submitted to the Commonwealth Department of Environment and Heritage in February 2005. In March 2005, the Minister declared that the action was not a controlled action and approval under Part 9 of the EPBC Act was not required. It should be noted that since the original referral, the project has evolved with minor adjustments to of number of proposed WTGs, site footprint and turbine height. A previous decision issued by the Commonwealth Department of Environment in 2005 confirmed that the Proposal is "not a controlled action". The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is most likely not required. However, in accordance with Appendix H of the BDAR and if required, the Project could be referred to the Department of Agriculture, Fisheries and Forestry (DAFF) (previously DAWE) for comment and additional determination The Proponent is therefore prepared to lodge a new EPBC Referral to ascertain this and also in consideration of the dimensional envelope change for the proposed turbines.
	Roads Act 1993 NSW

	Consent under Section 138 of the *Roads Act 1993* is required to undertake any works or activities in a public reserve, public road or footpath. As the site will require new and / or upgraded access points onto Abercrombie Road, the proposal is likely to require consent from the Oberon Council and the Roads and Maritime Service.
	Crown Land Management Act 2016 (NSW) (CL Management Act) The Proponent will apply for licences over Crown Lands and roads as required under Part 5, Division 5.6 of the *Crown Land Management Act,* if required.
	Water Management Act 2000 (NSW) (WM Act) Section 4.41 of the EP&A Act negates the requirements for relevant approvals otherwise obtained through the WM Act, including a 'Water Use Approval' under section 89, a 'Water Management Work Approval' under section 90, or an 'Activity approval' under section 91 of the WM Act. Confirmation of the proposed water source will be determined following detailed design, but extraction from a surface water source will require a Water Access License in consultation with WaterNSW.
	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) The Commonwealth EPBC Act requires approval for actions that are likely to have a significant impact on MNES. · The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is not necessary. - The assessment of this Proposal concluded that: - National heritage places and world heritage places are unlikely to be impacted by the proposal in any significant way. - the Project will have minor hydrological impacts and is not expected to impact on these wetlands. - Impact assessment undertaken concluded that the proposal will not have a significant impact on the assessed species. A previous decision issued by the Commonwealth Department of Environment in 2005 confirmed that the Proposal is "not a controlled action". While it is our understanding that this has not changed, it is understood that DPE might request a review from the Department of Environment. Notwithstanding this, the Proponent is prepared to lodge a new EPBC Referral to ascertain this and also in consideration of the dimensional envelope change for the proposed turbines.
	Electricity Supply Act 1995 (NSW) The Proponent will not require a licence to supply electricity under this Act. The project formally commenced the Grid Connection process by lodging a Connection Enquiry with TransGrid. The NSW Transmission Network Services Provider has confirmed in their response that the proposed connection point and generation capacity is suitable at that location, and no issues related to grid capacity, stability or curtailment have been identified. The Project and TransGrid have entered into a Connection Process Agreement as well as a Preliminary Works Undertaking Agreement, which have facilitated increased early-stage input from TransGrid into plant design and interconnection configuration. As TransGrid is a licence holder under the Act, an application will be made to TransGrid for a new connection to the 500kV Mount Piper to Bannaby Line.
	Heavy Vehicles National Law and Requirements Permits and consent under the Heavy Vehicle National Law (NSW) for the use of OSOM vehicles will be sought by the relevant constriction contractor.
Pre-conditions	Information in relation to any other approvals of conditions required must include the information prescribed in Schedule 4 Clause 5 (a) (b) (c) and (d) of the EPBC Regulations 2000. Refer to Section 6.5 and Appendix N.

	Several mitigation and environmental management measures will need to be implemented prior to the commencement of construction. Refer to Section 7 of this EIS.	
Mandatory matters for consideration	When assessing a DA for SSD, the consent authority is required to take into consideration the matters outlined in Section 4.15 of the EP&A Act. This includes: *(1) **Matters for consideration—general*** *In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application -*	Section where addressed:
	(a) the provisions of—	Section 4.2 Section 4.3 Section 4.4.1
	(i) any environmental planning instrument that apply to the land to which the development application relates, and	
	(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and	Section 4.2 Section 4.3 Section 4.4.1
	(iii) any development control plan that apply to the land to which the development application relates, and	Section 4.4.2
	(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and	Section 2.8 Section 5.8
	(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph), *that apply to the land to which the development application relates,*	Section 2 – Section 8
	(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,	Section 3 – Section 8
	(c) the suitability of the site for the development,	Section 8.2
	(d) any submissions made in accordance with this Act or the regulations,	Tbc following exhibition of the EIS
	(e) the public interest	Section 5

4.2 Environmental Planning and Assessment Act 1979

The principal environmental planning legislation within NSW is the EP&A Act. The EP&A Act serves as the planning framework when assessing the environmental and planning merits of any development proposal.

Under Division 4.7, Section 4.36 of the EP&A Act, the NSW Government identifies certain types of development that are of state significance ('State Significant Development' or SSD). This includes developments such as those proposed for large-scale renewable energy generating facilities.

The Project triggers the criteria in Clause 20 of Schedule 1 of the *State Environmental Planning Policy (State and Regional Development) 2011* as it is development for the purpose of electricity generating works with a CIV of more than $30 million.

Under the provisions within Division 4.3, Section 4.15 of the EP&A Act, the consent authority must consider, among other things:

- How the Project will encourage the proper usage of natural resources;
- The promotion and coordination of the orderly and economic use of development land associated with the Project;
- How ecologically sustainable development is to be encouraged for the Project; and
- How the Project will comply with the necessary consultation requirements with respect to government agencies, local government, the community and other affected parties.

Table 24 addresses the matters for consideration under Section 4.15 of the EP&A Act.

All SSD projects must comply with the relevant Plans and Policies as indicated by the associated SEARs. Each of these matters are expected to be identified and assessed in detail during the preparation of the EIS.

Section 4.41 of the EP&A Act lists the authorisations that are <u>not</u> required for SSD. This includes:

- A permit under sections 201, 205, and 219 of the *Fisheries Management Act1994*, which is not applicable for this application.
- Approval under Part 4 'Effect of interim heritage orders and listings on the State Heritage Register', or an excavation permit under section 139, of the *Heritage Act 1997*, which is not applicable for this application.
- An Aboriginal heritage impact permit under section 90 of the *National Parks and Wildlife Act 1974*, which means that the need for this permit is extinguished and not applicable.
- A bushfire safety authority under section 100b of the Rural Fires Act 1997, which is applicable to 'Integrated Development' only.
- A 'Water Use Approval' under section 89, a 'Water Management Work Approval' under section 90 or an 'Activity Approval' under section 81 of the *Water Management Act 2000*, is not applicable in this instance.
- Section 4.41 also states that Division 8 of Part 6 of the *Heritage Act 1977* does not apply to prevent or interfere with the carrying out of an SSD that is authorised by a development consent granted after the commencement of the Division.
- An SSD is further authorised by a development consent that includes a reference to any investigative or other activities that are required to be carried out for the purpose of complying with any environmental assessment requirements under this part in connection with a development application for any such development.

Section 4.42 of the EP&A Act lists the authorisations that cannot be refused if it is necessary for the carrying out of SSD that is authorised by a development consent and must be applied consistently. Authorisations of the following kind cannot be refused if they are necessary for carrying out an SSD that is authorised by a development consent under this Division and is substantially consistent with the consent:

- An aquaculture permit under section 144 of the *Fisheries Management Act 1994*, not applicable in this instance.
- An approval under section 15 of the *Mine Subsidence Compensation Act 1961*, not applicable in this instance.
- A mining lease under the *Mining Act 1992*, not applicable in this instance.
- A production lease under the *Petroleum (Onshore) Act 1991*, not applicable.
- An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any of the purposes referred to in section 43 of that Act).
- A consent under section 138 of the *Roads Act 1993*, which will be required prior to construction commencing.
- A licence under the *Pipelines Act 1967*, not applicable.

4.3 State Environmental Planning Policy

4.3.1 State Environmental Planning Policy (Planning Systems) 2021

The Planning Systems SEPP incorporates provisions of state and regional development, Aboriginal land and concurrences and consents.

Part 2.2 of the Planning Systems SEPP identifies development which can be classified as SSD. Section 2.6 Declaration of state significant development, subsection (1)(b) states that development is declared to be state significant development for the purposes of the Act if—

> *(b) the development is specified in Schedule 1 or 2.*

Schedule 1 Subclause 20 of the Planning Systems SEPP states:

> *20 Electricity generating works and heat or co-generation*
> *Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that—*
>
> > *(a) has a capital investment value of more than $30 million, or*
> >
> > *(b) has a capital investment value of more than $10 million and is located in an environmentally sensitive area of State significance.*

As the Project is for the purpose of electricity generating works and will have a capital investment value of more than $30 million, it is classified as SSD.

The Planning Systems SEPP also clearly sets out at Clause 2.10(a) that Development Control Plans do not apply to SSD, regardless of the timing of commencement. Refer to section 4.4.2 for more information.

4.3.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The Transport and Infrastructure SEPP incorporates provisions for development related to infrastructure, educational establishments and childcare facilities, major infrastructure corridors, and the three NSW Ports.

It further identifies certain electricity generating works that are permissible in rural, industrial, or special use zones with consent.

The Project is located on land currently zoned as RU1 Primary Production which is defined as a 'prescribed rural zone' according to the SEPP. Section 2.36 (1)(b) of the SEPP prescribes that 'electricity generating works' on any land prescribed as rural, may be undertaken with consent.

In accordance with the Oberon LEP 2013, land zoned for RU1 Primary Production is a prescribed rural zone pursuant to the Transport and Infrastructure SEPP, therefore the Project is deemed permissible with consent.

Section 2.41 (3) of the SEPP prescribes that development for the purpose of a wind monitoring tower used in connection with the investigation or determination of the feasibility of a wind farm that has a generation capacity of more than 1 MW is exempt development, provided is complies with the provisions of section 2.41 (3)(a-d).

The SEPP further provides guidelines on development works relating to transmission equipment and substations that are deemed exempt development or permitted without consent. All transmission infrastructure, including transmission lines, the collector substation and switching station, will form part of this SSD application.

4.3.3 State Environmental Planning Policy (Resilience and Hazards) 2021

The *State Environmental Planning Policy (Resilience and Hazards) 2021* replaced the following SEPPs on 1 March 2022, which were consolidated and repealed on the same day:

- State Environmental Planning Policy (Coastal Management) 2018;
- State Environmental Planning Policy No 33—Hazardous and Offensive Development; and
- State Environmental Planning Policy No 55—Remediation of Land.

This Resilience and Hazards SEPP contains state-wide planning provisions to:

- guide land use planning within the coastal zone, in a manner consistent with the objects of the *Coastal Management Act 2016*;
- manage hazardous and offensive development; and
- guide the remediation of contaminated land and to minimise the risk of harm.

The *Resilience and Hazards SEPP* (Chapter 3) provides a legislative framework for the assessment of proposals that are identified as being 'potentially hazardous' and 'potentially offensive development' for the purpose of industry or storage. The policy requires the assessment of the proposals safety and pollution control performance.

A screening assessment of the hazards associated with the storage of dangerous goods on the site in accordance with the *Resilience and Hazards SEPP* has been prepared and is attached as Appendix H. The report evaluated the construction and operations phases of the Project. The report has investigated the permissible quantities of dangerous goods and materials as stipulated in the SEPP. As the thresholds are not exceeded, the risks associated with storage and transportation of hazardous materials are unlikely to be significant or pose any risk to public safety. Consequently, the Project is not considered to be of a hazardous category. The guidelines also state that wind farms are not considered to be a potentially hazardous industry.

Considering the results of environmental impact statement report, type of the material stored, proposed mitigation measures for the Project, distance from nearby land users, there will be no potentially offensive impacts associated with the Project. Accordingly, a Preliminary Hazard Analysis is not required for this project.

The *Resilience and Hazards SEPP* (Chapter 4) provides a legislative framework for the assessment of proposals that are identified as involving remediation of land. It contains planning provisions from SEPP 55, which provides a state-wide planning framework for the remediation of contaminated land to minimise the risk of harm.

In particular, Chapter 4 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment:

- by specifying when consent is required, and when it is not required, for a remediation work,
- by specifying certain considerations that are relevant in rezoning land and in determining development applications in general and development applications for consent to carry out a remediation work, and
- by requiring that a remediation work meet certain standards and notification requirements.

A review of the site did not reveal any areas of contamination within the Project Area.

4.4 Local Planning Instruments

4.4.1 Oberon Local Environmental Plan 2013

The subject site is located within the Oberon LGA and the site is subject to the *Oberon Local Environmental Plan 2013* (OLEP). The OLEP sets the provisions for land-use planning and development permissibility within the Oberon LGA.

The Project site is zoned as RU1 Primary Production under the OLEP. Energy generating works are not listed as uses permitted or permitted with consent on the land and as such are prohibited. However, the proposal complies with the objectives of the RU1 zone as it will:

- enhance primary industry through the generation of clean renewable energy and therefore maintaining and enhancing the natural resource base
- enhance the diversity in the primary industry in the area by establishing a new compatible land use (wind farm) on the land that will not interfere or be in conflict with the existing use of the land (agriculture)
- not result in the fragmentation and alienation of resources lands as the proposed wind farm will be operated in conjunction with the existing land uses
- not be in conflict with existing agricultural land uses, which will continue to operate in conjunction with the wind farm
- contribute significantly to the local economic growth through job creation, upskilling of workers and directly contributing to the regional economy.

Located to the north-west, west and south-west of the Project Area, the Abercrombie River National Park, is zoned C1 National Parks and Nature Reserves. To the north of the proposed transmission line are several lots which are also zoned for RU3 Forestry, and other southern located lots that are zoned RU2 Rural Landscape. These lands will not be negatively impacted by the Proposal.

The proposed PYWF Project, classified as 'electricity generating works'; under the State and Regional Development SEPP 2011 and Infrastructure SEPP 2007, is permissible within the zone subject to development consent.

4.4.2 Oberon Shire Council Development Control Plan – Part O Wind Power Generation 2005

The Oberon Council's ***Development Control Plan (ODCP)*** *– Part O 'Wind Power Generation' 2005* (Part O) has been prepared and adopted by Oberon Shire Council to provide the community and developers with guidelines for future wind farm developments. This ODCP sits alongside the Council's existing ODCPs and applies to development relating to commercial wind power generation in the Oberon LGA.

Part O was adopted by Council on 13 September 2005 and was further amended on 11 September 2007. Key objectives of the DCP include:

- Restrict power generation facilities to the Rural 1(a) (or RU1) zone only;
- Provide for well-considered development that is environmentally and economically sustainable; and
- Promote sustainable energy.

The *SEPP (Planning Systems) 2021* clearly sets out at Clause 2.10(a) that Development Control Plans do not apply to SSD, regardless of the timing of commencement. As such, the ODCP does not apply to the PYWF. However, for completeness, the ODCP – Part O has been considered.

Council policy seeks to ensure that wind power generation facilities and development in the Rural 1(a) zone is carried out in a way that protects and promotes agricultural activities and meets the objectives of the *Oberon Local Environmental Plan*. A further Council objective is to ensure development achieves maximum benefit for both the developer and the community. While there will be new land use introduced within the Project Area, the primary use will remain "primary production" for grazing and associated agricultural activities. As such, the PYWF will continue to promote agricultural activities on this land. In addition, the PYWF will facilitate various community benefit initiatives, including neighbouring property benefit schemes and community grants. It will prioritise the employment of regional residents (where they have the required skills and experience) and will locally source non-labour inputs wherever possible.

Part O provides general policies to ensure appropriate planning and environmental outcomes are considered.:

- Locate development to minimise the adverse impacts on agricultural land;
- Site development so that it minimises any adverse effects on adjoining land;
- Development should not result in any added costs to ratepayers within the Shire;
- The development must result in local employment opportunities; and
- Development should not be located on land characterised as having high scenic value and should not negatively impact on vistas.

The PYWF has been carefully designed to minimise any potential adverse impact on agricultural land and adjoining land, and as set out above, the primary use of the Project land will remain for grazing and associated agricultural activities. The Project will not result in any added costs to ratepayers of the Shire. As set out above, the Project will take a preferential approach to employing regional residents (subject to relevant skills and experience), and in addition, will focus on sourcing non-labour inputs locally. The PYWF is not located on land characterised as having high scenic value, and as detailed within the LVIA, the Project, including recommended mitigation measures will not negatively impact on any vistas.

For the reasons outlined above, the Project is expected to fully comply with the requirements of the ODCP – Part O.

4.5 Other Statutory Requirements

A summary of the other relevant Commonwealth and State legislation that is applicable to the project is provided below in Table 25 below.

Table 25. Other Applicable Commonwealth & State Legislation

Legislation	Comment	Section Addressed
Environmental Protection and Biodiversity Conservation Act 1999	The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires that the Commonwealth Government assess and approve any development proposal that may impact upon matters of national environmental significance (MNES). The MNES relevant to this project include: · World Heritage Areas – The subject site is near the Greater Blue Mountains World Heritage Area. The bushland to the eastern side of the Site connects with listed national parks but is unlikely to be impacted by the proposal in any significant way. · National Heritage Places – The subject site is near the Greater Blue Mountains Heritage Area. The bushland to the eastern side of the Site connects with listed national parks, but overall is unlikely to be impacted by the proposal in any significant way. · Wetlands of International Importance – Four Wetlands of International Importance occur within 10km of the Site. However, the Project would have minor hydrological impacts and is not expected to impact on these wetlands. · Listed Threatened Species and Ecological Communities – The Site contains one threatened ecological community listed under the EPBC Act and potential habitat for several threatened species. Impact assessments were undertaken, and it was concluded that the proposal would not have a significant impact on the assessed species. · Listed Migratory Species – Six listed migratory species have the potential to occur within the Site. Impact assessment undertaken concluded that the proposal would not have a significant impact on the assessed species. The Project is not within either a Commonwealth marine area or the Great Barrier Reef Marine Park; and the proposal does not involve a nuclear action, coal seam gas, or coal mining. No critically endangered plants, birds, mammals, herpetofauna or invertebrates have been recorded within 10km of the site. The assessment done as part of the BDAR concluded that no additional matters of significance have been identified and that no MNES would be significantly impacted. Therefore, the primary nationally environmental significant matters to be considered for this Project are any listed threatened species, ecological communities, and migratory species. As of November 2013, the Commonwealth Government and the NSW Government (DPE) signed a bilateral agreement to allow the NSW planning system to undertake the singular environmental assessment process for projects that are to be considered under the EBPC Act. A referral for a wind farm development across the Project Area was submitted to the Commonwealth Department of Environment and Heritage in February 2005. In March 2005, the Minister declared that the action was not a controlled action and approval under Part 9 of the EPBC Act was not required. It should be noted that since the original referral, the project has evolved with minor adjustments to of number of proposed WTGs, site footprint and turbine height. A previous decision issued by the Commonwealth Department of Environment in 2005 confirmed that the Proposal is "not a controlled action". The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is most likely not required. However, in accordance with Appendix H of the BDAR and if required, the Project could be referred to the Department of Agriculture, Fisheries and Forestry (DAFF) (previously DAWE) for comment and additional determination	Section 6.5 Appendix M

	The Proponent is therefore prepared to lodge a new EPBC Referral to ascertain this and also in consideration of the dimensional envelope change for the proposed turbines. The new EPBC Referral is expected to be lodged with DAWE later in 2023.	
Native Title Act 1993	The *Native Title Act 1993* (NT Act) recognises the rights and interests for Aboriginal and Torres Strait Islander people in property matters relating to land and waters. Under this Act, a claim can be made to the Federal Court for a determination of native title. A recent review of the NSW Sharing and Enabling Environmental Data (SEED) online mapping tool and the geospatial database of the National Native Title Tribunal indicated that there are no Native Title claims over the Project site at this time. The Proponent has further engaged with Crown Land to initiate discussions around potential impacts of the wind farm on any land owned by Crown. These discussions are still at a very early stage as the project is still in the concept design phase. As mentioned earlier, it is not expected that the proposal would impact any Crown Land or Reserves. If so required, formal agreements with Crown will be made later on during the detailed design phase.	Section 5.4.2 Section 6.16
Civil Aviation Safety Regulations 1998	The *Civil Aviation Safety Regulations 1998* (made under the *Civil Aviation Act 1988 (Cth)*) require that the Civil Aviation Safety Authority (CASA) be informed of any proposal to build a structure greater than 110m above the Australian Height Datum (AHD). The *Civil Aviation Safety Regulations 1998* contain mandatory requirements in relation to the airworthiness, operations, licensing of aircraft and associated enforcement matters. Aviation impacts are assessed in more detail under section 6.11 this EIS.	Section 5.4.2 Section 6.11
National Airports Safeguarding Framework 2012	The National Airports Safeguarding Advisory Group (NASAG) was established by the Commonwealth Department of Infrastructure and Transport to develop a national land use planning framework called the *National Airports Safeguarding Framework* (NASF). *NASF Guideline D: Managing the Risk to Aviation Safety of Wind Turbine Installations (Wind Farms) / Wind Monitoring Towers*, provides guidance to state, territory and local government decision makers, airport operators and developers of wind farms to jointly address the risk to civil aviation arising from the development, presence and use of wind farms and meteorological monitoring masts. The framework enhances the current and future safety, viability, and growth of aviation operations at Australian airports. The assessment of potential aviation impacts arising from the Project have been assessed against the guidelines as part of the Aviation Impact Assessment.	Section 6.11
Renewable Energy (Electricity) Act 2000	The Commonwealth *Renewable Energy (Electricity)* (RE Act) aims to encourage the additional generation of electricity from renewable sources, reduce emissions of greenhouse gases in the electricity sector, and ensure that renewable energy sources are ecologically sustainable. These objectives are achieved through the issue of 'large scale renewable energy certificates' for the generation of electricity using eligible renewable energy sources. The RE Act identifies wind amongst a number of other renewable energy sources as eligible under the Commonwealth Government's Renewable Energy Target (RET). Certain purchasers (called liable entities) are required to surrender a specified number of certificates for the electricity that they acquire during a year. Where a liable entity does not have enough certificates to surrender, the liable entity will have to pay renewable energy shortfall charge. The Project will need to	Appendix GG

	be accredited as a Renewable Energy Generator to create Renewable Energy Certificates (large scale).	
Radio Communications Act 1992	The Australian Communications and Media Authority (ACMA) issue apparatus licences under the *Radio Communications Act 1992 (Cth)*. The ACMA is the federal government authority responsible for regulation and management of the radio communications spectrum. To conduct (and assess) an Electromagnetic Interference Assessment (EMI) assessment as part of a wind farm project, information regarding radiocommunications licences in the vicinity of the Project must be obtained from the ACMA Register of Radiocommunications License (RRL) database. A full review of the database has been undertaken as part of this assessment.	Section 6.15
Environmental Planning and Assessment Regulation 2021 (EP&A Regulation)	The EP&A Regulations provides the overarching framework for regulating the NSW planning systems. The regulations provide key operational provisions which guide and outline planning and development applications. Specifically, Part 8 Division 2 of the regulations applies to this development and the application must comply with the State Significant Guidelines. Appendix B of this EIS consists of a table that assesses the general requirements of the SEARs and the regulation on the compliance off this EIS with them.	Throughout this EIS Appendix B
Biodiversity Conservation Act 2016	The *Biodiversity Conservation Act 2016* (NSW) (BC Act) and the *Biodiversity Conservation Regulations 2018* provide greater protection for biodiversity, particularly threatened species and threatened ecological communities. Consistent with the issued SEARs, the relevant biodiversity impacts of the project are to be assessed in accordance with the BC Act, the BAM and the BDAR. This includes a detailed description of the proposed regime for avoiding, minimising, managing and reporting on the biodiversity impacts of the development over time, and a strategy to offset any residual impacts of the development in accordance with the BC Act. The proposal requires an assessment in accordance with the BC Act to identify and describe biodiversity values within the Project Area. It requires preliminary recommendations in terms of avoidance, mitigation and / or additional assessment for biodiversity values. The BDAR provides a summary on the threatened species, as listed in the BC Act, that have either been recorded within 10km of the survey area or are predicted to occur within the 10km of the site. Several endangered and vulnerable listed threatened species have been recorded within 10km of the site. The BDAR focusses on the portion of land affected by the proposal, a 50-metre buffer around the site's transmission lines and 100m buffer around the proposed WTGs. The purpose of the report was to assess biodiversity values and determine likely impacts related to the Proposal and associated works. The project has assessed key areas of concern and considered the following: · Site and landscape features · Assessment of native vegetation, exotic vegetation and threatened species · Impacts on threatened and protected species · Avoidance and minimisations of impacts Recommendations and identification of mitigation measures.	Section 6.5 Appendix N
Water Management Act 2000	The objective of the *Water Management Act 2000* (NSW) (WM Act) is the sustainable and integrated management of the State's water for the benefit of both present and future generations. A controlled activity approval under the WM Act is required for certain types of developments and activities that are conducted in or near a river, lake or estuary.	Section 6.17

	Under section 4.41 of the EP&A Act, approved SSDs are exempt from the approval requirements of sections 89 (water use), 90 (water management work) or 91(2) (controlled activity of the WM Act. The Project, as an SSD, is exempt from a controlled activity approval and does not require the application of the *Guidelines for controlled activities on waterfront land*. Two Water Sharing Plans (WSPs) intersect with the Site: · Water Sharing Plan for the Lachlan Unregulated and Alluvial Water Sources 2012; and · NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020. The site is within a harvestable rights area established under Part 1 (section 53) of the WM Act. The Project Area comprises over 4,600 hectares resulting in a harvestable right for rainfall runoff of 368ML per year without requiring a licence. Extraction from a surface water supply outside of the harvestable rights capacity or from an unregulated water source would require a water access licence (WAL) under Section 56 of the WM Act. If one or more new groundwater production bores are to be installed, a WAL would also be required in accordance with the annual extraction limits and access rules of the relevant WSP. Impacts on aquifers are not anticipated in this proposal because the construction activities are defined as having minimal impact on water dependent assets (in accordance with the NSW Aquifer Interference Policy 2012).	
Local Land Services Act 2013	The *Local Land Services Act 2013* (NSW) facilitates the establishment of better management and delivery of local land services in the social, economic and environmental interests of the State in accordance with any State priorities for local land services. This SSD application, including potential required vegetation clearing, is being assessed under Part 4 of the EP&A Act.	Section 6.5 Section 6.19 Section 6.20
National Parks and Wildlife Act 1974	The *National Parks and Wildlife Act 1974* (NSW) (NPW Act) governs the establishment, preservation and management of national parks, historic sites, and other specified areas. The NPW Act also provides the basis for the legal protection and management of threatened native flora and fauna and Aboriginal sites within NSW. Part 6 of the NPW Act provides protection for Aboriginal objects and places by making it an offence to destroy, deface, damage, or move them from the land. All Aboriginal objects within NSW are protected. In most instances an Aboriginal Heritage Impact Permit is required to be obtained for any impact to an Aboriginal object or place. However, after assessing the Project as an SSD, the need for a permit under section 90 of the NPW Act is extinguished. All cultural heritage matters should still be managed according to the relevant statutory provisions and requirements, as captured in the SEARs. To ensure accordance with the relevant parts of the NPW Act, the Proponent has conducted Biodiversity Assessment included under Appendix N with an overview provided in section 6.5 of this EIS. The Proponent has further conducted an Aboriginal Cultural Heritage Assessment and Historic Heritage Due Diligence report included under Appendix Q and discussed in more detail in section 6.16 of this EIS.	Section 5.4 Section 6.16 Section 6.17 Appendix N Appendix Q
Heritage Act 1977	The *Heritage Act 1977* (NSW) aims to protect and preserve items of non-Indigenous heritage significance. The Act provides for the protection of items of local, regional and state heritage significance, such as historic relics, buildings, structures and features. The Heritage Act defines 'environmental heritage' as those places, buildings, works, relics, moveable objects and precincts of Local or State significance.	Section 6.16 Section 6.19

	The Act also requires onsite personnel to be aware of the archaeological provisions of the Act through preparing environmental management plans, such as an Environmental Management Strategy and Environmental Work Method Statement. The implications of this Act on the Project have been assessed as part of the EIS.	
Roads Act 1993	Section 138 of the *Roads Act 1993* (NSW) (Roads Act) prohibits a number of activities, such as conducting work in, on or over a public road unless consent has been obtained from the appropriate roads authority. The site will primarily be accessed from Abercrombie Road, and approval will be required to connect to this public road. It is therefore likely that consent will be needed under this Act for the temporary closure of roads in order to construct and formalise the new access points. Road upgrades might also be required. Formal applications for road upgrades under section 138 will be undertaken following post approval of this EIS. The traffic and access assessment, including the transport route analysis, have been assessed as part of this EIS.	Section 6.8 Section 6.9
Rural Fires Act 1997	The *Rural Fires Act 1997* (NSW) (RF Act) provides for the preparation and mitigation of bush and other fires in local government areas and the protection of infrastructure and environmental assets (including economic, cultural, agricultural and community assets) from damage. The need for an assessment of bushfire risk was identified within the SEARs. The RF Act imposes obligations on land occupiers to take all practicable steps to prevent the occurrence and spread of wildfire to adjoining lands from lands under their care and management. The Bushfire Risk Assessment identifies potential bushfire hazards associated with the use of bushfire prone land and demonstrates that the proposed wind farm can be designed, constructed and operated to provide for asset protection consistent with *NSW Rural Fire Service's guideline Planning for Bush Fire Protection 2019*. The Site contains pockets of Bushfire Prone Land. However, the Project is not a subdivision for residential or rural residential purposes nor is it for a special fire protection purpose, hence issue of a bush fire safety authority under section 100B of the RF Act is not required. The Bushfire Risk Assessment included as Appendix P considers the potential risks of associated with the spread of bushfires from the Project to the surrounds and provides measures to minimise the risk.	Section 6.13 Appendix P
Planning for Bushfires Protection 2019	NSW Rural Fire Service (RFS) *Planning for Bush Fire Protection 2019* is a planning document to link responsible planning and development control with the protection of life, property and the environment. *Planning for Bush Fire Protection 2019* applies to all development applications on land that is classified as bushfire prone land, which includes the Project site. Consideration has been given to the following overall aims and objectives of *Planning for Bush Fire Protection 2019:* · afford buildings and their occupants protection from exposure to a bushfire; · provide for a defendable space to be located around buildings; · provide appropriate separation between a hazard and buildings which, in combination with other measures, minimises material ignition; · ensure that appropriate operational access and egress for emergency service personnel and residents is available; · provide for ongoing management and maintenance of bushfire protection measures; and · ensure that utility services are adequate to meet the needs of firefighters.	Section 2.6 Appendix P

Coastal Management Act 2016	The *Coastal Management Act 2016* provides a framework for the long-term strategy for the co-ordinated management of land within coastal zones. Part 3 Coastal management programs and manual provides specific requirements and applies to land identified as being within a coastal zone. In particular, the *Coastal Management Act 2016* objectives are to manage the coastal environment of New South Wales in a manner which is consistent with the principles of ecologically sustainable development for the social, cultural and economic wellbeing of the people of the State. We note that the proposed works of the Wind farm are not being undertaken on land which is identified as a prescribed coastal zone as per the Lachlan Shire Council. As such, the provision and objectives of the *Coastal Management Act 2016* are not relevant to the proposed development and windfarm.	-
Protection of the Environment Operations Act 1997	The *Protection of the Environment Operations Act 1997* (NSW) (POEO Act) is the principal environmental protection legislation for NSW. The POEO Act establishes the NSW environmental regulatory framework and includes a licensing requirement for certain activities. Environment protection licences are a central means to control the localised, cumulative and acute impacts of pollution in NSW[26]. The POEO Act establishes other instruments to guide environmental management, such as the *Protection of the Environment Policies*, and the *Protection of the Environment Operations (Waste) Regulation 2014*. The operation of the PYWF will require an environment protection licence under the POEO Act. Section 48 *Licensing requirement – scheduled activities (premises-based),* states that an activity that is declared to be a scheduled activity within in Schedule 1 of the POEO Act requires a license for the activity to be undertaken on the specified premises. Schedule 1 of the POEO Act confirms that electricity works (e.g., a wind farm) is declared to be a scheduled activity if approval is required under the EP&A Act and when application is made as SSD.	Section 6.18 Section 6.24
Protection of the Environment Operations (Waste) Regulation 2014	The *Protection of the Environment Operations (Waste) Regulation 2014* (Waste Regulation) provides a platform to allow the NSW Environment Protection Authority (EPA) to protect human health and the environment from waste related impacts. Waste minimisation and management is considered this EIS. Refer to Appendix X for a full copy of the Waste Management Plan.	Section 6.18 Appendix X
Waste Avoidance and Resource Recovery Act 2001	The *Waste Avoidance and Resource Recovery Act 2001* (NSW) (WARR Act) promotes waste reduction and better use of resources in NSW. It includes provisions for waste strategies and programs, and for industry actions to reduce waste. The WARR Act provides for the development of state-wide Waste Strategies to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecological sustainable development and waste management. Waste minimisation and management is considered in more detail in this EIS. Refer to Appendix X for a full copy of the Waste Management Plan.	Section 6.18 Appendix X

[26] *Licensing under the POEO Act: https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/licensing-under-poeo-act-1997*

Crown Land Management Act 2016	The *Crown Land Management Act 2016* (NSW) (Crown Land Management Act) governs how Crown land is used and managed for the benefit of the community in NSW. Crown land includes Crown reserves, state parks, land that is leased or licensed, minor ports, river entrances, caravan parks, places of cultural and community significance, certain submerged land of public waterways and Crown roads. *These objectives and principles are applied to all aspects of the management and use of Crown land, including every tenure dealing and activity, and by all decision-makers.*[27] It is an offence to erect a structure, clear, dig up or enclose public land without lawful authority. The land must be assessed to consider capacities and suitable uses prior to any allocation action of Crown land including lease, sale, reservation, dedication, licence or permit. There is a network of public roads in the area that are located on Crown land. In the event that the final cable network requires electrical cables to be installed under or over Crown public road(s) to connect the turbines to the substations, Crown Lands would be consulted in order to determine the best means of gaining consent to install such underground cable crossings. The Proponent will obtain the necessary licences for these works as required under Part 5 of the *Crown Land Management Act,* if required.	Section 5.4 Section 6.8

A more detailed review of the relevant statutory requirements applicable to the site is provided under Appendix GG.

[27] *Investment NSW 2022, Welcome to Investment NSW: Working Together to Grow, NSW Government, Reviewed 22 July 2022 (https://invest.nsw.gov.au/sector-opportunities/renewable-energy)*

Engagement

5 Stakeholder and Community Consultation

This section describes the community and stakeholder engagement undertaken for the Project to date. It provides an overview of the consultation objectives, outcomes and further actions following the approval of the Project.

5.1 Our Commitment

The Proponent has consulted with the local community since the Project's inception in 2002. The Project design has been modified since initial community engagement commenced as a response to stakeholder feedback and due to technology improvements. Community and stakeholder engagement will remain an ongoing priority for the Project throughout the approvals phase and beyond.

The Proponent remains committed to an open and transparent process that maximises public goodwill and identifies opportunities to minimise negative impacts or unnecessary burdens on the community.

Community awareness and input are fundamental to responsible and sustainable development. GPGA understands the importance of effective and broad community consultation and will continue to genuinely engage with all stakeholders interested in or impacted by the Project.

This section summarises the approach to consultation that has been undertaken during the development timeline from the initial Project to date, including:

- The general principles and approach to consultation developed and adopted (including its consistency with the objectives of the NSW Government's Undertaking Engagement Guide: Guidance for State Significant Projects (DPIE, Nov 2021).
- The guideline for Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010.
- The process of stakeholder identification.
- Descriptions of what actions were undertaken to keep the community informed, obtain feedback and engage with stakeholders.
- Confirmation that the engagement was consistent with the Guidelines and requirements of the SEARs.

It also describes what further community engagement will be carried out if the Project is approved, having regard to the findings of the community engagement sessions during the initial scoping and preparation of this EIS.

A copy of the ERM Community and Stakeholder Engagement Plan is attached as Appendix FF. The Community and Stakeholder Engagement Report, which includes the findings and outcomes of consultation undertaken, is also attached as Appendix FF.

5.2 Consultation Principles

GPGA recognises that meaningful and timely community engagements is an essential component in the successful delivery of the PYWF. Community engagement can be described as:

> *a planned process with a specific purpose of working with an identified community whether they be connected by geographic location, special interests, or affiliation to discuss issues which affect or may affect their well-being. It encompasses people working collaboratively to create and realise visions for a common future*[28].

ERM prepared a *Community and Stakeholder Engagement Plan* (CSE Plan) to inform and support the Project's community engagement process.

The objectives of the CSE Plan included to:

- Provide a guide for the planning and implementation of communications and stakeholder engagement associated with the Project;
- Indicate the intended communications and engagement activities to be undertaken during the planning phase;
- Identify and classify stakeholders with interest in the Project;
- Develop and implement a clear action plan for future engagement approaches across all stakeholder groups;
- Outline communication tools, channels and a timeline for implementation;
- Provide clear, consistent and compelling messaging about the benefits of the Project;
- Identify opportunities for stakeholders and the community to raise concerns and provide feedback;
- Identify opportunities to build positive sentiment across local media, residents and stakeholders; and
- Identify opportunities to reduce or mitigate the risk of community opposition to the Project.

Community engagement has played a key role since Project inception in 2002 and has been based on an approach that has considered the broad site context inclusive of the local and regional community, involved and non-involved landowners.

5.2.1 Primary Stakeholder Groups

Table 26 below provides an overview of identified primary stakeholders and required engagement.

Table 26. Primary Stakeholder Groups

Stakeholder and IAP2 engagement level	Specific parties	Form of consultation Potential Interests / Concerns
Host landowners - *IAP2 engagement level: Consult*	· Landowners with the potential to host infrastructure or have already agreed to host infrastructure.	Individual consultation. Access to private land, noise and other operational impacts including impacts on livestock, visual amenity, health and safety, security, construction disruption, remuneration, land value.
Immediate neighbours - *IAP2 engagement level: Consult*	· Neighbouring dwellings within 5km of the Project Area and along the transmission corridor.	Individual consultation. Access to private land, local character, noise and other operational impacts including impacts on visual amenity, property values, health and safety, security and privacy, construction disruption, impacts of construction traffic.
Surrounding communities	· Community members who live outside of a 5km radius of the Project site and the	Community consultation.

[28] *Moore. T., McDonald. M., McHugh-Dillon. H. & West. S., 2016, Community Engagement A key for improving outcomes for Australian families, CFCA Paper No.39, accessed 3/3/2022*

Stakeholder and IAP2 engagement level	Specific parties	Form of consultation Potential Interests / Concerns
IAP2 engagement level: Consult	transmission corridor, including Porters Retreat and Curraweela and surrounds.	Community wellbeing, economic benefits / impacts, impacts from construction traffic, impacts on visual amenity, health and safety, property values.
Aboriginal communities *IAP2 engagement level: Consult*	· Traditional Owners (TO's), Registered Aboriginal Parties (RAPs), Aboriginal groups and Land Councils · Aboriginal Affairs NSW, AbSec	Targeted community consultation Project approval, ongoing management of cultural values, potential for impacts to cultural heritage values.
Approving authority *IAP2 engagement level: Consult*	· Department of Planning, Industry and Environment	Community feedback. Environmental impacts, project approval, regulatory compliance.
Local Council *IAP2 engagement level: Consult*	· Oberon Council: o Cr Mark Kellam (Mayor) o Gary Wallace (General Manager) · Elected Councillors · Planning division · Upper Lachlan Shire Council (adjacent LGA) o Pam Kensit (Mayor) o Colleen Worthy (General Manager) · Elected Councillors · Planning division · Note NSW Local Elections were recently held and the list of representatives and / or officials may be subject to change.	Community consultation Jobs, economic impacts / benefits, opportunities for tourism and other industry benefits, community wellbeing, impact on local residents and businesses, impact on local roads and infrastructure.

5.2.2 Secondary Stakeholder Groups

The CSE Plan identified the following parties as part of the "Secondary Stakeholder Groups":

Table 27. Secondary Stakeholder Groups (Source: ERM, 2021)

Stakeholder and IAP2 engagement level	Specific parties	Form of consultation Potential Interests / Concerns
Local community organisations and businesses *IAP2 engagement level: inform*	· Local business (especially tourism or agriculture), Country Women's Associations, Lions and Rotary Clubs, local action groups, tourism organisations, Central West Orana and Far West NSW Business Chamber.	· Targeted community consultation · Community wellbeing, business opportunities, social and economic impacts, environmental impacts, local Indigenous and European heritage objects and values.
State and Federal elected members *IAP2 engagement level: engage*	· Federal: o Hon Andrew Gee MP (NAT), Member for Calare o Hon Chris Bowen MP (ALP) Minister for Climate Change and Energy	· Targeted community consultation · Economic impacts / benefits on region, job creation, training opportunities, community sentiment, community wellbeing, impact on local residents and

Stakeholder and IAP2 engagement level	Specific parties	Form of consultation Potential Interests / Concerns
	o Hon Tanya Plibersek MP (ALP), Minister for the Environment and Water o Hon Catherine King MP (ALP), Minister for Infrastructure, Transport, Regional Development and Local Government · State: o The Hon Paul Toole MP (NAT), Member for Bathurst, Minister for Regional Transport and Roads o The Hon Rob Stokes (LIB), Minister for Infrastructure and Cities o Hon Anthony Roberts (LIB) Minister for Planning o The Hon Matthew Kean MP (LIB), Minister for Energy and Environment o The Hon Stuart Ayres MP (LIB), Minister for Jobs, Investment, Tourism and Western Sydney	businesses, impacts on local roads and infrastructure.
State and Federal representatives and agencies *IAP2 engagement level: engage and inform*	· Federal: o Dept. of Agriculture, Water and the Environment o Dept. of Industry, Science, Energy and Resources o Dept. of the Prime Minister and Cabinet o Dept. of Infrastructure, Transport, Regional Development and Communications o Dept. of Defence o Civil Aviation and Safety Authority (CASA) o Airservices Australia o Australian Energy Market Operator (AEMO) o Australian Energy Infrastructure Commissioner o Environment, Energy and Science Group (EES): o NSW Environment Protection Authority (EPA) o Energy, Climate Change and Sustainability o Biodiversity Conservation Division o National Parks and Wildlife Service (Abercrombie National Park) · State: o Crown Lands	· Targeted community consultation · Project approval, regulatory compliance, environmental impact.

Stakeholder and IAP2 engagement level	Specific parties	Form of consultation Potential Interests / Concerns
	o DPE Water o Water NSW o NSW Telco Authority o Natural Resources Access Regulator o Transport for NSW (TfNSW) o Destination NSW o NSW Dept of Industry – Resources and Energy o NSW Rural Fire Service o Local Land Services – Central Tablelands o Regional NSW o Jobs NSW	
Local media outlets IAP2 engagement level: inform	· Newspapers (also online): Oberon Review, Goulburn Post, The Post Weekly, Town and Country, Western Advocate · Radio: ABC Central West, hit105.9 Central West, Triple M 105.1 Central West, 100.7 SBS National · Social media: Facebook – Visit Oberon, Oberon NSW 2787 Community Page, Oberon, Bathurst, Lithgow and Surrounds, Oberon Community Page, Goulburn Community Noticeboard, What's on in Goulburn NSW	· Community involvement and events · Community wellbeing, local employment, project updates.

5.2.3 Tertiary Stakeholder Group

The CSE Plan also identified the following "Tertiary Stakeholder Groups":

Table 28. Tertiary Stakeholder Groups (ERM, 2021)

Stakeholder and IAP2 engagement level	Specific parties	Form of consultation Potential Interests / Concerns
Local schools, religious organisations, clubs *IAP2 engagement level: inform*	Schools and religious organisations in the local area that are likely to be impacted, have an interest in the Project or could offer a community partnership opportunity	Targeted community consultation. Community wellbeing. Impact on local residents and businesses. Economic impacts / benefits. Impacts on local roads and infrastructure.
State and national media *IAP2 engagement level: inform*	National and state newspapers, radio and television	Community Consultation. Community discontent / protests, safety concerns, environment or heritage impacts, project milestones.

5.3 Engagement Carried Out

Section 3 of CSE Plan summarises the community consultation and stakeholder engagement work completed between the initial Project kick-off from mid-2002 to the withdrawal from the previous SSD application in June 2020.
During this period, the top five critical areas of interest expressed by the community and stakeholders in response to the 2014 wind farm application related to:

- Noise and vibration
- Landscape and visual impacts
- Property values
- Traffic and roadworks
- Environmental concerns.

Ongoing consultation with all stakeholders occurred up to the withdrawal of the original application in 2020. A new round of engagement commenced in January 2021 to inform the community about the new PYWF Project.

Notice of intent to proceed with the wind farm at the current location was issued by GPGA. In January-February 2021 GPGA undertook a doorknock of and mail-out to all properties within 5kms of the site. The initial engagement aimed to notify the local community of GPGA's intent to proceed with the new SSD application at Paling Yards. In addition to this, several landowners were contacted and informed of the new proposal for PYWF.

The Scoping Report was submitted in September 2021, and SEARs was issued in March 2022. In May 2022, following the receipt of SEARs, GPGA re-engaged with the landowners within 5km of the site. The focus of this re-engagement related to visual impacts. GPGA also re-engaged with Oberon Council through an online meeting with councillors on 25 July 2022.

In-person community engagement sessions were undertaken within the Oberon Local Government Area and generated most interest and participation from community members residing within a 5km geographic distance from the Project Area.

The community was notified of the Project through:

- local advertising via traditional printed media (Oberon Review);
- online publication the Crookwell Gazette; and
- radio advertising on 2BS.

The messaging encouraged the community to attend two community information sessions and visit the website to complete an on-line survey.

The two community information sessions were staffed by GPGA, and subject matter experts from Tract, ERM, TransGrid and SLR were present to respond to any noise related enquiries. There were 22 local community members who attended the community information sessions and 12 surveys completed.

The broader community was encouraged to participate in consultation throughout July and into August 2022. As previously noted, advertisements of the Project were undertaken via a number of platforms including on radio, in local newspaper / online publications, in person information sessions, attendance at a market and via GPGA's website which has ensured the wider community has the opportunity to participate.

There has been ongoing engagement with interested community members since September 2022. Various means of communication, such as the project website, email address and telephone number have been maintained while some ongoing negotiations with involved and non-involved landowners have been underway. It is considered that the interested parties are well aware of the status of this application and expect public exhibition to commence shortly.

Below is a summary of the extent community engagement carried out within the past 12 months which has helped to inform the design process of the wind farm.

Table 29. Engagement type and approximate distance from Project site.

Approximate distance from Project Site	Engagement Type
110km +	· 2BS radio station (Broadcasts to the Central Tablelands consisting of the major towns of Bathurst, Blayney, Cowra, Lithgow, Molong, Mudgee, Oberon, and Orange) · Online publication (Crookwell Gazette) · GPGA Website
30km - 50km	· Community market (held at Oberon Showground) · Online publication the Crookwell Gazette · GPGA Website
10km – 30km	· In person community sessions · Online publication (Crookwell Gazette) · GPGA Website

Table 30 provides a breakdown of the key milestones and consultation undertaken up to lodgement of this EIS.

Table 30. Consultation breakdown

Type	Date Commenced	Duration	Undertaken by
Previous Application:			
Initial Consultation	May-Jun 2011	14 days	Union Fenosa
Community Consultative Committee	Nov 2012	14 days	Union Fenosa
Community Engagement	May-Jun 2014	28 days	Union Fenosa
Current Application:			
Early engagement with DPE	Sept 2020	N / A	GPGA
Initial engagement meeting with DPE	Dec 2020	N / A	GPGA / Tract
Notice of Intent to owners within 5km radius, including: · Letter drops, door knocks · Emails and phone calls · Newsletter · Site meetings	Jan 2021	N / A	GPGA
Additional information provided to dwellings within a 5km radius, including: · Letter drops, door knocks · Emails and phone calls · Newsletter · Community survey · Discussions around neighbour agreements	Feb 2021	N / A	GPGA
Site visits and discussions with all involved landowners, including: · Letter drops · Emails and phone calls · Site meeting and face to face discussions · Discussions around agreements.	July 2021	N / A	GPGA
GPGA engaged with neighbours to discuss neighbour agreements: · Letter drops, door knocks	Aug 2021	N / A	GPGA

Type	Date Commenced	Duration	Undertaken by
· Emails and phone calls · Face to face meetings			
Initial consultation as per CSE Plan – Newsletter circulated to all owners within 5km radius (including Oberon Council and Upper Lachlan Shire Council).	Aug 2021	28 days	GPGA / ERM
Early engagement with Aboriginal communities and representatives as part of the cultural and heritage assessment	Sept 2021	28 days	ERM
Project update sent to Oberon City Council and Upper Lachlan Council	Sept 2021	N / A	GPGA
A community feedback survey was undertaken.	Sept 2021	28 days	ERM
Notification and registration to Aboriginal representatives for heritage field survey	Sept 2021	N / A	ERM
Aviation Impact Assessment circulated to relevant stakeholders for comments (Airservices Aus, CASA, Dept Defence, NSW Rural Fire Services, Oberon Council, Royal Flying Doctor Services)	Sept 2021	28 days	Aviation Projects
Newsletters and emails to Oberon Council and Upper Lachlan Shire Council General Managers	Oct 2021	N / A	GPGA / ERM
Scoping Report submitted to DPE	Dec 2021	N / A	Tract
Engagement with Fire & Rescue NSW and NSW Rural Fire Service	Feb 2022	N / A	ERM
SEARs issued	March 2022	N / A	DPE
Amendments to layout based on consultation feedback and stakeholder advice	April 2022	N / A	GPGA
Phone calls and letter drops to landowners within a 5km radius to inform about the visual assessment to be undertaken	May 2022	N / A	GPGA / Moir
Project website updated and hotline setup	June 2022	Ongoing	GPGA
Notice of public information session issued to community via newsletters, letter drops, local newspaper notifications and local radio advertisements.	July 2022	14 days	GPGA / ERM
Draft EMI Assessment circulated to relevant stakeholders (Bureau of Meteorology, NSW Telco Authority, NSW Police Force, NBN Co, Telstra Corporation)	July 2022	28 days	GPGA / DNV
Online community survey	July 2022	28 days	ERM
Presentation to Local Council Officials	25 July 2022	N / A	GPGA
Community information sessions	28+29 July 2022	2 days	GPGA / ERM / Tract
Issue of consultation and finding report	06 Sept 2022	N / A	ERM
Further engagement with Local Aboriginal Community	Sept 2022	28 days	ERM
Pop-up session at Oberon Farmers Market	5 Nov 2022	1 day	GPGA
Ongoing engagement with community via the formal communication channels listed in Table 1	Q4 2022 – Q2 2023	Ongoing	GPGA
Engagement with Local Councils along proposed transport route	Q2 2023	Ongoing	SLR / GPG
Exhibition and community engagement	Expected Q3 2023	Tbc	DPE
Ongoing consultation activities following the exhibition period	Expected Q4 2023	Tbc	GPGA / ERM / Tract

Notes: Community engagement between July – November 2021was limited by the COVID-19 regulations and measures across NSW. The team was unable to undertake any face-to-face information sessions and doorknocks during this time. A detailed breakdown with the relevant Agencies engaged and comments provided in section 5.

Figure 26 and Figure 27 show the key areas of interest that the community expressed within surveys undertaken during engagement.

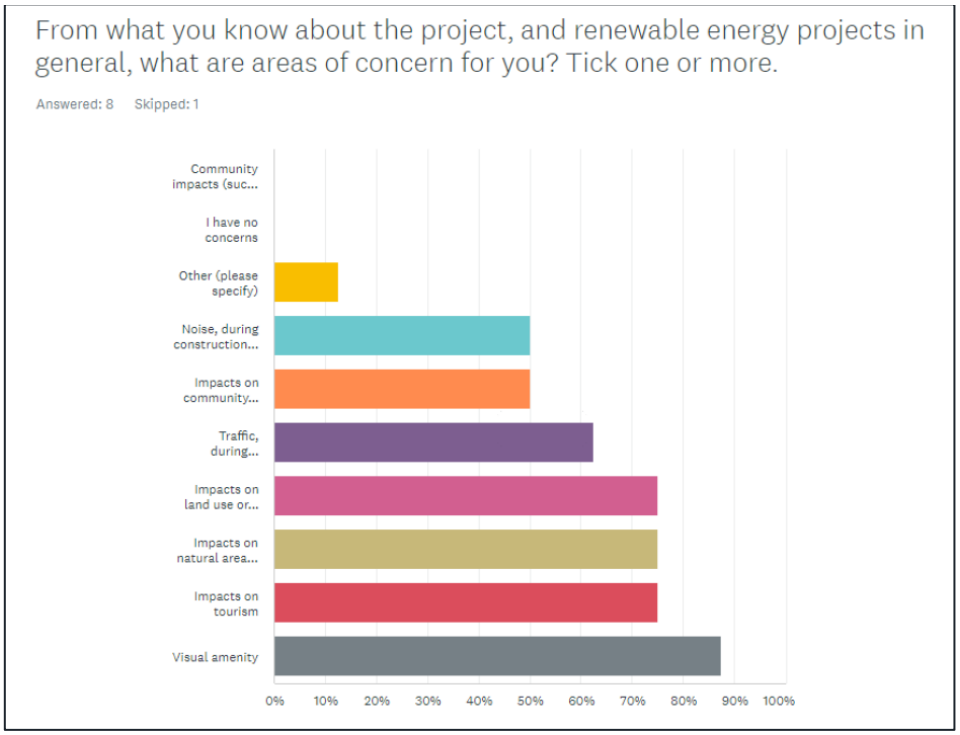


Figure 26. Community feedback September 2022 (Source: ERM 2022)

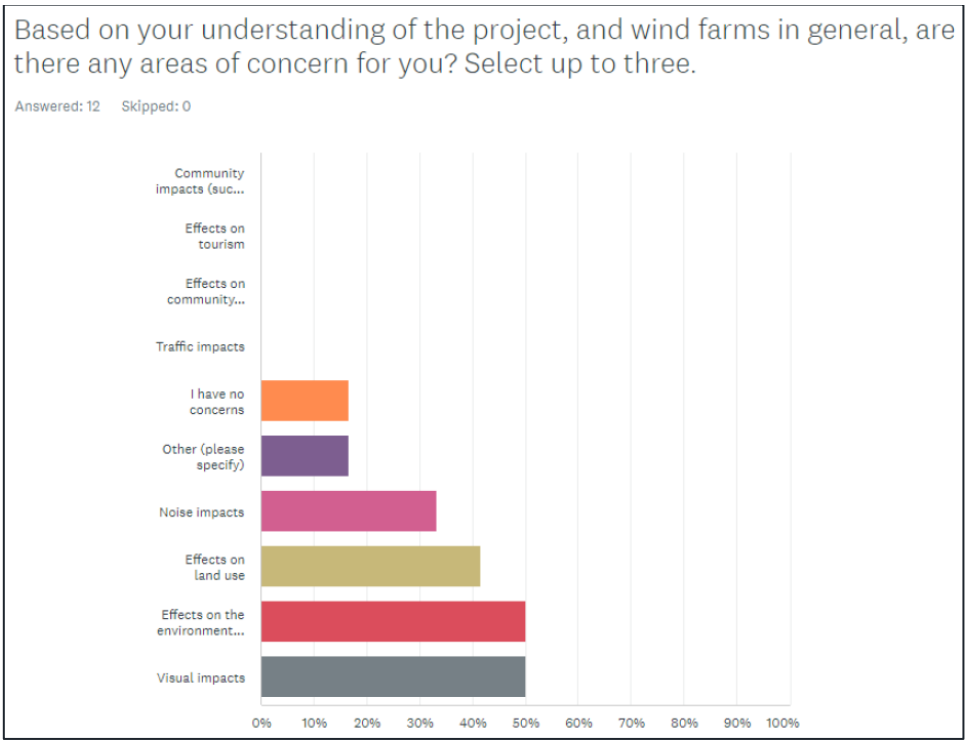


Figure 27. Community feedback Survey Results July 2022 (Source: ERM 2022)

The areas of concern identified by the community in June 2022 were collated with the feedback received in January 2021 and were further reviewed to better understand community sentiment. Key concerns within each topic were identified This analysis is presented in Table 31.

Table 31. Key Issues and Comments (Source: Tract, 2021)

Topic / Concern	Feedback Received
Visual Impact	· Landscape and visual impact concerns due to the height of turbine blades and impacts on public and private views. · Protection of the natural landscape is important. · Loss of business (tourism) due to the visual impact of the wind farm
Noise	· Possible noise exceedances due to the large turbine rotors and blades. · Potential noise impacts during construction and other operations. · Increased noise from traffic during construction and operation.
Approval Process	· Interest from the community to better understand the approval process and timeframes for determination · Access to information and application updates was considered important. · Access to information through the online NSW major projects portal.
Economic and social impacts	· The general support for the proposed project based on the economic opportunities for the local area. · Interest in the additional jobs that would be created as a result of the Project. · Loss of business during construction of the wind farm · Understanding the operation life of the wind farm. · Concerns regarding community benefit derived from the project (how it will be managed and by whom).
Traffic and transport	· Traffic concerns during construction of the wind farm – increase in localised traffic · Questions about traffic impacts and potential road damage · Concerns regarding the delivery of the blades due to the bends in the access roads and the width of roads along the route · Questions regarding truck impacts and moving livestock to other paddocks
Environment	· Concerns regarding the potential impact of the wind farm on existing flora and fauna.
Climate change	· Support for clean energy and the overall contribution to the reduction in emissions caused by fossil fuels · Contributing to the State's net zero emissions target.
Electricity Prices	· Concern that the proposal will result in the continued increase in energy prices.
Biosecurity	· Biosecurity concerns due to the influx if people, vehicles, and equipment into the region. · Particular concerns regarding Foot and Mouth Disease (FMD) and the impacts it would have on livestock in the region. · Comment around the need to preserve the pristine habitat of local animals, particularly the protection of animals during the construction phase
Shadow Flicker	· Potential of shadow flicker to nearby non-involved dwellings, particularly to the east of the site.
Health Concerns	· Electromagnetic concerns as a result of electrical infrastructure · General health concerns relating to the wind turbines (proximity, noise, shadow flicker, visual).

Topic / Concern	Feedback Received
Electromagnetic Interference	· Impacts on broadcasting and television signals. · Impacts on telecommunication signals and infrastructure.
Community Engagement Process	· Insufficient community engagement during the early stages of the Project.
Project Design and Location	· Opinion that the proposed wind farm will have very little or no benefit to some local residents. · Scepticism about the efficiency of the NSW Government's intention to make state-owned forestry land available for wind farms. · Suggestion that the wind farm should be offshore where the demand for electricity is present and has the least impacts on the environment and wildlife, and where transmission facilities and substations are already in place. · Project team to consider the long-term expansion in the design of the project.

The above comments were received from community members and stakeholders within a 5km radius of the site.

5.4 Summary of Community Consultation

5.4.1 Community

A number of engagement approaches were used to inform and engage with the community. The broader community was encouraged to participate in ongoing consultation throughout July and August 2022. Local advertising via a range of formats was used to encourage feedback and inform the community. Information sessions were staffed by GPGA, Tract, ERM, TransGrid and SLR to respond to any enquiries raised by the community. A total of 22 community members were recorded as attending the information sessions and 18 surveys were completed over the same period.

In addition to the issues raised in Table 31, the community also contributed additional comments which are outlined in Table 32 below.

Ongoing community engagement is to continue during the EIS exhibition and assessment phases. This engagement will include:

- Ongoing meetings with Oberon Council;
- Maintaining the Project website and keeping content relevant and informative;
- Continuation of consultation with community and regulatory stakeholders via various forums;
- Ongoing monitoring of 1800 phone and designated project emails; and
- Regular monitoring, review and adaption of the Community and Stakeholder Engagement Plan to ensure it remains effective and encourages community participation.

Table 32. Summary of Community Views and Opinions (Source: ERM 2022)

Theme / Topic	Comment Raised	Response to feedback
Strategic Context	National Parks · Impact on natural area, including National Parks	· No project amendments needed in response. · An assessment of the potential impacts on National Parks have been undertaken and is included under section 6.1(landscape and visual) and section 6.3(noise).
	Agriculture	· No project amendments needed in response. · Impacts on agricultural activities and other potential land use conflicts have

Theme / Topic	Comment Raised	Response to feedback
	· Importance of grazing to the region, with this forming a major source of income and employment in the area.	been assesses as part of this EIS and is included in section 6.23.
	Benefit · Concern that the proposed wind farm will have no benefit to many within the local community, as farms use little electricity. · Scepticism about the efficiency of NSW Government's plan to open state forests for wind and solar farms.	· No project amendments needed in response. · A Community Benefit Scheme Framework will be developed to consolidate the various community benefit initiatives. · Refer to section 3.8 and section 8.7 for more information.
Project Design	· Suggestion that the wind farm should be located offshore on the east coast where there is an electricity demand and will have least impact to the native wildlife. · Suggested GPGA find an alternative site with a preference near the coast where it is assumed the wind is higher. · The Project team should consider long-term expansion in the design of the Project.	· No project amendments needed in response. · Project justification is sufficiently addressed in section 8.1.
Statutory Concerns	None identified during the engagement sessions.	Statutory provisions fully address in section 4.
Community	Engagement · Suggestion that not many of the community knew about the community engagement sessions. · Suggestion to seek further opportunities for the Oberon district community to provide feedback and gain more information. · Preference for hard copy documents, intimidated by large volumes of emails. · Critical of Black Springs Community Hall as the venue for Community Information Sessions and expressed suspicion of GPGA's intentions. · Felt survey was too restrictive. · Suggestions to format the information session as a presentation and Q&A session.	· No project amendments needed in response. · A Community and Stakeholder Engagement Plan has been prepared as part of the EIS. · Stakeholder and community engagement is addressed in section 5 of the EIS.
	Community Benefits · Requests for clarity around community benefits to be derived from the project. · Request for information on the threshold for neighbour deeds. Requests to be considered despite being outside the 3.5-4km radius. · Expression of concern about the quantum of real ongoing benefit. · Suggestion that battery systems should be provided to households for use when there are power outages.	· No project amendments needed in response. · A Social Impact Assessment has been prepared and more information is provided in section 6.19. · An Economic Assessment has been prepared and more information is provided in section 6.20. · A Community Benefit Scheme Framework will be developed to consolidate the various community benefit initiatives.

Theme / Topic	Comment Raised	Response to feedback
	· Request for assistance with the upgrade Jerrong and Cosgrove Roads (in addition to Abercrombie Road). · Suggestion that education scholarships for trade and University be offered as a community benefit. · Suggestion to install electric car adaptors at Oberon petrol stations. · Limited employment opportunities.	· Further project commitments are included in section 8.7.
Economic, Environmental and Social Impacts	Economic · Concerned that property will be devalued – seeking evidence that it will not be.	· No project amendments needed in response. · An Economic Assessment has been prepared and more information is provided in section 6.20.
	Environmental · View expressed that Paling Yards forms its own "bioregion" which is less susceptible to global, warming. Therefore, do not see any reason for the wind farm to be constructed at this location · Concern about health impacts to the local residents. · Concerns about loss of vegetation. · Concerns about impact of turbines on birds.	· No project amendments needed in response. · The proposal will include the provisions to allow for the micro-siting of turbines, ancillary infrastructure and temporary facilities post development consent during the optimisation and detailed design phase. · A Bird and Bat Adaptive Management Plan will be developed and implemented. · A Biodiversity Development Assessment Report (BDAR) has been prepared for the project. Refer to section 6.5 of this EIS. · A Health Impact Assessment has been prepared and is discussed in section 6.22.
	Social · Potential for artefact findings around site and conceded they may be clustered to the west (outside the Project Boundary). · Impacts to community cohesion due to divided opinions. · Interruptions to daily life as a result of project construction.	· No project amendments needed in response. · Local disruptions are to be addressed through plans that seek to manage disruptions as a result of the Project. · A Social Impact Assessment has been prepared and more information is provided in section 6.19.
	Visual · Concern regarding selected viewpoints of photomontages as an appropriate representation. · Request for specific visual impact consideration from private properties. · Recommendation to use of local landmarks to better help understand turbine dimensions.	· No project amendments needed in response. · An assessment of potential landscape and visual impacts are included in section 6.1. · Photomontages from selected viewpoints and sensitive locations have been prepared.

Theme / Topic	Comment Raised	Response to feedback
	· Comments regarding the local visual impact, however supportive of the proposed location. · Request for additional maps and examples of visual impacts. · Concern regarding benefits to homeowners along Jerrong Road who are impacted visually. · Suggestion that monetary payments should be made to those with direct visual impact for the duration of the Project life.	
	Traffic · Ability for O'Connell Road to accommodate freight at bends in the road. · Concern regarding heritage trees in O'Connell and possible damage during transport process. · The presence of trees in O'Connell. Road in the township of O'Connell. · Questions regarding traffic impacts and potential road damage. · Concerns regarding traffic impacts and road access especially transporting the turbines. · Suggestion that the turbines be air lifted to site via helicopter. · Road network is unsuitable for a project / industry of this magnitude. · Undue effects on rural roadways while transporting turbines.	· No project amendments needed in response. · The EIS has included an assessment of road traffic impacts, including blade transport, during construction and operation of the project. Refer to section 6.8and section 6.9. · Engagement with the relevant Local Councils have been undertaken and will continue throughout the exhibition of the application.
	Noise · Expressed desire to maintain a quiet, pristine environment. · Concern about the effects of noise on the pristine rural amenity of the area. · Increased construction noise and vibration from trucks and turbines that may scare and impact the native animals.	· A Noise Assessment has been prepared as part of this application - refer to section 6.7. · Sector and noise management could be implemented to reduce noise levels to any potential noise affected dwellings. · No project amendments needed in response.
	EMI · Reference to Crookwell Wind Farm and impact to TV reception. · Concern that the current mobile coverage will be worse after construction of the wind farm. Uncertainty if this issue will be covered in the EMI assessment.	· An Electromagnetic Interference Assessment has been prepared as part of this application – refer to section 6.15. · The proposed location of identified turbines located within 1km radius of NSW Telco Authority and NSW Police Force infrastructure (tower) and turbines located within 2km radius will be reconsidered in consultation with the aforementioned agencies.

Theme / Topic	Comment Raised	Response to feedback
		· Impacts on Telstra equipment and infrastructure will be further assessed in conjunction with Telstra.
	Biosecurity · Serious concerns about foot and mouth disease (FMD) spreading to the area. The emergence and rapid spread in Indonesia have changed the risk profile for passengers and goods arriving in Australia. Stakeholder concern is high regarding cattle and sheep becoming at risk of FMD. · Existing Draft Biosecurity Management Plan needs to be updated to include latest developments, guidelines, and restrictions. · Comment about preserving the pristine habitat of local animals, particularly protecting animals during construction phase.	· No project amendments needed in response. · A Biosecurity Risk Assessment has been prepared to address and minimise biosecurity risk. The assessment includes appropriate management strategies. · Refer to section 6.7
Justification	· Concerns that renewable energy will really make a difference in addressing climate change. · Concerned that Project will generate renewable energy that would not be available to power the local area (i.e., local homes and businesses)	· No project amendments needed in response. · The distribution of electricity into the grid is outside the scope of this project. · Full justification for the project is given in section 8.1.
Other Issues and Concerns	Proponent · Concern about the ownership of GPGA and perception that it is an overseas company with profits sent overseas. · Query regarding where funding for the wind farm is coming from. · Perception that there are no benefits associated with the wind farm except to the company who owns it. · Concern that foreign ownership will not provide benefits to the local community.	· No project amendments needed in response. · Community benefit scheme to be created. · Full justification for the project provided in section 8.1.
	Project History · Mentioned previous version of project and concerns from neighbours.	· No project amendments needed in response. · New application submitted following consultation with DPE in 2020.

5.4.2 Agencies

The Proponent and Project team have consulted with the relevant Local, State and Commonwealth Government authorities. Table 33 below provides a summary of the comments received.

Table 33. Agency Comments Received

Agency name	Comments received
Oberon Council	· Council confirmed that from an aviation impact perspective, they have no comments at this stage as a full assessment will be undertaken as part of the EIS following submission to DPE.

	· Additional engagement with Oberon Council during July 2022 included general discussions around the Project including: VPA, community benefit scheme, roads and infrastructure, land use, community engagement and visual impacts. · During October 2021, Oberon Council confirmed that they will provide further inputs and assess route options once the EIS has been lodged with DPE. · Oberon Council confirmed during May 2022 and May 2023 that no new development applications have been lodged or approved in the 12 months prior.
NSW Aboriginal Land Council	· The site falls within the Local Aboriginal Land Council of Pejar. · The site furthermore falls within the Regional Aboriginal Council of Wiradjuri. · The following people have also assisted the Project team during the preparation of the Aboriginal Cultural Heritage Assessment Report: · Members from the Corroboree Aboriginal Corporation · Members from the Gunjeewong · Members from the Didge Ngunawal Clan.
DPE's Biodiversity, Conservation and Science (BCS) Directorate	· The BCS Directorate recommended that the EIS address biodiversity and offsetting, water and soils, flooding, and impacts on national parks. · Following submission of the EIS, the BCS Directorate will review all material and provide written comments to the proposal.
NSW National Parks and Wildlife Services (NPSW)	· NPWS confirmed that the EIS will need to assess the potential impacts on Abercrombie Rivers National Park. Several assessments have been undertaken to identify potential impacts: · Following submission of the EIS, NPWS will review all material and provide written comments to the proposal.
Heritage NSW	· Heritage NSW confirmation that it has no concerns regarding the Project. Several assessments have been undertaken to assess and address any potential heritage concerns during the EIS.
Water NSW	· Water NSW confirmed that the Project is located in the Wyangala Dam Water catchment area. · A Hydrological Assessment has been prepared as requested by Water NSW.
Department of Planning and Environment: Water	· DPE Water commented on the proposal during the scoping stage and requested the following be included in the SEARs and addressed as part of the EIS: o Description of thew watercourses located on the site o Details of proposed water supply requirements and arrangements o An assessment of likely impacts on surface water and ground water o Description of erosion and sediment controls measures.
Environmental Protection Authority	· A referral for a wind farm development across the Project Area was submitted to the Commonwealth Department of Environment and Heritage in February 2005. In March 2005, the Minister declared that the action was not a controlled action and approval under Part 9 of the EPBC Act was not required. It should be noted that since the original referral, the project has evolved with minor adjustments to of number of proposed WTGs, site footprint and turbine height. A previous decision issued by the Commonwealth Department of Environment in 2005 confirmed that the Proposal is "not a controlled action". · The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is most likely not required. However, in accordance with Appendix H of the BDAR and if required, the Project could be referred to the

	Department of Agriculture, Fisheries and Forestry (DAFF) (previously Department of Agriculture, Water and Environment, DAWE) for comment and additional determination. · Notwithstanding this, the Proponent is prepared to lodge a new EPBC Referral to ascertain this and also in consideration of the dimensional envelope change for the proposed turbines. The new EPBC Referral is expected to be lodged with DAWE within the first quarter of 2023.
Crown Lands	· Crown Lands has been engaged on several occasions by the Proponent by means of ongoing consultation. · Crown Lands noted that Crown roads and a Crown reserve are located nearby or adjacent to the Project Area. · Crown Lands advised that an easement application should be made once infrastructure locations have been finalised (and if required). If lineal infrastructure such as roads and / or waterways is to traverse Crown land, an easement over said land will be required. · In addition to the above, Crown Lands will need to be notified prior to any use or occupation of any Crown roads or land, during the EIS assessment phase. · Lot 13 / - / DP257010 (Reserve 94535) is reserved for the purposes of access. If at any stage this parcel is required for the proposal or is to be impacted, a tenure may be required to authorise use of and / or access to the land. Native Title will be considered as part of the tenure.
Regional NSW – Mining, Exploration & Geoscience	· Geoscience Australia confirmed it has no concerns with the Project following an overview of the proposal and after additional discussions in relation to electrical matters. · Regional NSW will be consulted as part of the EIS process after lodgement of the application to DPE. · An initial assessment indicated that the land is not subject to Mine Subsidence Development and is not included under a Mine Subsidence District.
Department of Industries – Agriculture and Fisheries	· The Department of Primary Industries – Agriculture and Fisheries confirmed the relevant Environmental Assessment Requirements (EAR's) for the Project and provided guidelines for assessment as part of the EIS. · Matters to address a part of the EIS include: o Preparation of a *Land Use Conflict Risk Assessment* (LUCRA) and associated map o Provision of detail on water usage and demand o Biosecurity o Traffic o Land Stewardship o Community consultation o Emergency management o Aquatic ecology.
Transport for NSW	· TfNSW reiterated previous discussions with them that confirmed that over size and over mass (OSOM) components associated with blade movements could not occur via the Blue Mountains and Great Western Highway. · Due to the significant scope of the logistics assessment a concept-level route analysis is to be provided at the SSD application stage based on high-level 3D swept path analysis to generally indicate locations where civil works are likely to be required. · The route analysis is to include at a minimum the following: o identification of the OSOM route to be utilised and any indicative pinch points within the network vertically, horizontally, and laterally – the potential civil works required to accommodate the OSOM vehicles. – The logistics assessment which must highlight each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads. o The design vehicle templates used with the swept path analysis

	– Identification of which OSOM vehicles proposed to be used for the project. – Maximum blade length and overhang length. – Wheelbase dimensions. – Minimum mid-wheelbase height clearance. – Maximum load widths. – Maximum load heights (clearance to overhead obstructions such as structures, utilities and vegetation). – Maximum trailer articulation angle(s). o Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology). · A Traffic Impact Assessment (TIA) is required to be prepared in accordance with Austroads Guide to Traffic Management Part 12, the Roads and Maritime Supplements to Austroads and the RTA Guide to Traffic Generating Developments and addressing: o Detailed plans identifying location of project related infrastructure, and permanent / temporary connection / access to classified roads. o Project schedule. o Traffic volumes. o Traffic characteristics. o The origins, destinations and routes for light vehicle, pool vehicle and heavy vehicle commuters, over size and over mass vehicles. o Road safety assessment of key haulage routes. o The impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning. o The need for improvements on the road network. o An assessment in accordance with Austroads warrants for turn treatments at key intersections with classified road network. o 2D concept design inclusive of swept path analysis for the design vehicle. o Proposed road facilities, access and intersection treatments. o Local climate conditions that may affect road safety during the life of the project. o The layout of the internal road network, parking facilities and infrastructure. o Impact on rail corridors and level crossings detailing any proposed interface treatments. o Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as walking and cycling. o Identification and assessment of potential impacts of the project, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads. o Controls for transport and use of any dangerous goods in accordance with SEPP R&M. o Traffic Management Plan (TMP) to be developed following approval of the EIS, in consultation with relevant Council(s) and TfNSW. o Driver Code of Conduct for construction and operation to be prepared. · Summary of engagement undertaken: o SLR Transport Advisory team engaged TfNSW during October 2022. o A meeting was held on 25 October 2022 to discuss details of the TIA. o SLR again approached TfNSW during June 2023 to further discuss the transport route options. No further correspondence have been received at this stage.
NSW Telco Authority (NSW TA)	· NSW TA confirmed that high voltage transformers will need to be at least 200m from a telecommunication tower. There are therefore no concerns over high voltage transformers.

	· The collector substation will be at least 700m from a telecommunication tower, and therefore there are no concerns over the location of the collector substation. · High likelihood that four (4) turbines located within 1km from radiocommunication tower will negatively impact NSW TA equipment. Requested a 1km clearance zone be maintained and that turbines be relocated to outside of the clearance zone.
Fire & Rescue NSW	· FRNSW provided advice on 16 February 2022 for the consideration in the development of the SEARs. FRNSW requested to be consulted as part of the project's preliminary and final design phases. · FRNSW also requested that they be given the opportunity to review and provide comment once the approvals have been granted. · Ongoing and post approval consultation will be required to form part of the development and approval of all management and response plans.
NSW Rural Fire Services	· After assessment of the Aviation Impact Assessment, RFS on 10 November 2021 confirmed that they have no feedback regarding the Project. The Project will be considered as with any other potential hazard to aircraft operations. · RFS is to be provided with maps of the final turbine layout and identification information for individual wind turbine sites for internal response planning. · Ongoing consultation is requested post approval and will form part of the development and approval of all management and response plans.
Department of Defence	· The department of Defence have been provided a copy of the Aviation Impact Assessment on 17 September 2021 and again during November 2021. No response have been received to date.
NSW Police Force	· NSW Police Force raised concerns of potential interference from turbines and infrastructure on their equipment. · High likelihood that four (4) turbines located within 1km from radiocommunication tower will negatively impact NSW Police Force equipment. Requested a 1km clearance zone be maintained and that turbines be relocated to outside of the clearance zone.
Civil Aviation Safety Authority	· CASA in September 2021 confirmed that they will only review assessments referred to it by the relevant Planning Authority or Agency, and therefore have no comments at this stage.
Airservices Australia	· Airservices provided the following comments on 8 November 2021: o With respect to procedures designed by Airservices in accordance with ICAO PANS-OPS and Document 9905, at the position and heights supplied, the wind farm will not affect any sector or circling altitude, nor any instrument approach or departure procedure at any aerodrome. o We have assessed the proposal to a maximum height of 1295 m (4249 ft) AHD for any impacts to Airservices Precision / Non-Precision Navigation Aids, Anemometers, HF / VHF / UHF Communications, A-SMGCS, Radar, PRM, ADS-B, WAM or Satellite / Links and have no objections to it proceeding. o Based on the above assessment, our view is that the proposed wind farm would not have an impact on any Airservices designed instrument procedures, CNS facilities or ATC operations at any airport. o As this proposed wind farm is in excess of 30m (99ft) AGL, we request that the proponent completes the Vertical Obstacle Notification Form for tall structures and submits it to VOD@airservicesaustralia.com as soon as the development reaches the maximum height.
Royal Flying Doctor Services	· On 24 September 2021, the RFDS reviewed the proposal in accordance with their flight operations and safety teams and found no issued arising that would impact RFDS South Eastern operations.
Bureau of Meteorology	· The Project team engaged with the BOM during July 2022 to discuss the proposed wind farm layout and impact on weather radar operations.

	· The BOM have raised concerns regarding some turbines located within direct line of sight with their radar scans and systems. · No concerns were raised regarding fixed point-to-multipoint links.
NSW Spatial Services	· NSW Spatial Services reviewed the proposal and raised no concerns, provided assets are protected from physical disturbance during construction.
NBN Co	· In September 2022, NBN Co provide the following comments: o Once known, please provide information on any RF transmission equipment planned to be used during construction or permanently installed so a potential interference impact can be assessed. This information should include as a minimum, the operating transmission frequencies and transmit power, channel bandwidths, antenna types and radiation patterns as well as the exact location with antenna height, boresight azimuth and tilt [mechanical and electrical tilt]. · The Proponent will ensure ongoing discussions with NBN Co as soon as the requested information becomes available.
Telstra	· The Project team has engaged Telstra to review and assess the proposed application. The below comments were received in November 2022. · There is a potential for turbine PY-24 to interfere with Telstra's mobile phone services, and Telstra have asked for this turbine be moved outside of a 500m radius outside their three active sectors. · Turbine PY-17 is close to the clearance zone for a Telstra point-to-point link crossing the project site, and Telstra have asked that this turbine not be moved to the west of its current location. If possible, a movement of PY-17 around 15-20 m east of its current location would be welcomed. · No impacts on 10.5GHz radio service is anticipated. · Precautions should be put in place to prevent interference with Telstra point-to-point links during construction of the project. · Telstra is currently analyzing the power coordination impact of the wind farm development. · Telstra recommends that the locations of any underground infrastructure be determined by contacting Dial Before You Dig. · Telstra have asked for written confirmation from the developer that they: o agree to the conditions and matters set their comments / correspondence issued in Nov 2022; o are the proponent and ultimate owner of the wind farm and have the authority to ensure Telstra's conditions are implemented and complied with; o will provide Telstra with written agreement from any other entity that is required to ensure the conditions are complied with.
Muswellbrook Shire Council	· On 04 July 2023, Muswellbrook Shire Council provided owners consent for the Proponent to prepare and submit and SSD application for the Paling Yards Wind Farm, which would include a proposed transport route through the LGA. · Council reserves the right to make a formal submission once the EIS is on exhibition · Council will require a separate s138 of the Local Government Act for the proposed road works if the Project is approved.
Mid-Western Regional Council	· Mid-Western Regional Council was engaged during June 2023 to discuss the proposed transport route through the LGA. · An engagement session was held with Council officials on 12 July 2023, where after additional information was submitted for consideration. · Further comments from Mid-Western Regional Council are forthcoming.
Lithgow City Council	· Lithgow City Council was engaged during June 2023 to discuss the proposed transport route through the LGA. · While consultation is still underway, no formal comments have been received from Council.

Energy Corporation	· SLR's Transport Advisory team engaged Energy Corporation during June 2023. · A meeting was held with Energy Corporation on 27 June 2023, where no issued were raised and it was confirmed that they have no further comments at this stage. · Energy Corporation referred the Proponent to the Land Use Assessment at TfNSW (Development West) for further consultation.

5.5 Mitigation Measures

A number of mitigation measures have been identified to address key potential impacts of the Project, these are set out in the table below:

Table 34. Community & Stakeholder Engagement Mitigation Measures

Risk	Mitigation Strategy
Access to information Community members do not have access to adequate and accurate information about the project to keep themselves informed on progress and potential impacts.	· Provide extensive, clear and easy to understand information across a range of readily accessible mediums.
Approval Process and timing Previous application withdrawn, delays with published timelines for the project.	· Ensure that Project teams provide an accurate forecast of the Project timing for planning approvals and construction. · Update affected parties if any variations occur. · Keep published and online material up to date and current. · Undergo decommissioning and remediation planning.
Construction Impact Construction noise, dust and traffic impacts, poor worker behaviour or an influx of workers in the area.	· Undertake early and proactive community engagement to identify potential risks and issues associated with construction. · Ensure a dedicated program of communication and engagement with clear consistent messaging. · Provide radio and / or social media traffic updates (if appropriate) during component deliveries. · Provide accurate construction notices with any traffic changes / detours and update affected parties if any variations occur. · Establish a community information line and email address to enable reporting of complaints. · Continuously improve engagement processes and share lessons learnt. · Manage air quality and minimise dust emissions.
Project Design and Location Minor micro-siting of some project buildings / turbines.	· Respond to comments made by agency feedback by removing / relocating turbines and buildings if / where required. · Relocate substations to be closer to existing transmission lines.

5.6 Consultation Methods

The table below includes a list of ERM Australia's recommended communication and engagement tools that can be used throughout the Project to facilitate stakeholder and community engagement.

Table 35. Stakeholder Engagement Examples

Engagement Tools	Description
Stakeholder database	A stakeholder database has been established and is being maintained to capture stakeholder feedback, concerns, and enquiries as well as responses and commitments made.
Project website	A Project website is in place providing information for stakeholders. The website includes: · General Project information · A map of the Project site · Contact information · Fact sheets · Project updates · Construction updates · Media releases · High quality images and visual of the Project · Additional relevant Project documentation · Details about upcoming events such as information sessions.
Project email address	A Project email address has been established (palingyardswindfarm@globalpower-generation.com.au) and has been provided to stakeholders and the community for contact during the life of the Project. The email should have an auto-response acknowledging receipt of the email and advising a response time. Enquiries should be responded to within two business days.
Project phone line	A Project information phone line (1800 457 181) has been established and is available to stakeholders and the community during the life of the Project. The phone line should be available during regular business hours. Outside of business hours, a recorded message and voice mail facility is available so callers can leave a message.
Project postal address	A Project postal address has been established and is available to stakeholders and the community during the life of the Project. This is in recognition of the median age of residents in the local area and to mitigate any digital access concerns for regional and remote areas.
Frequently Asked Questions	A Frequently Asked Questions (FAQ) document has been prepared and aims to provide answers to common stakeholder questions about the Project. The FAQ document is available on the Project website.
Image library	High-resolution Project images and maps will be developed and kept on file for use on the Project website and to provide to media outlets. These will be updated during the life of the Project.
Fact sheets	Relevant fact sheets should be prepared for distribution at community engagement activities to provide tailored Project information on various topics. These should also be published on the Project website. Fact sheet topics should include: · General Wind farms and renewable energy · Wind farms and the electricity grid · Wind farm visual and noise impacts · Wind farm health and safety · Wind farm construction

Engagement Tools	Description
Letters	Letters will be used for formal engagement with directly affected stakeholders. Letters could include relevant updates on the Project and key details such as event / meeting timing and contact details. Letters can be sent out digitally and / or via mail.
Newsletters	Regular newsletter editions will be restarted to provide relevant updates on the Project, community benefits and upcoming engagement activities. Newsletters should be published every six months initially and then quarterly during the construction phase. Initial newsletters will target residences within close proximity to the Project Area.
Media releases	Media releases will be issued to communicate key Project messages, milestones and announcements. Copies will be provided to relevant media outlets and key stakeholders.
Face-to-face meetings	A range of face-to-face meetings are possible and can include door knocks, public meetings, stakeholder briefings and site visits. How meetings are delivered will be determined as the Project evolves.
Community information events	Local community information sessions will commence in the scoping and approvals phase and include pop-ups at local community events. Community feedback will be actively sought by means of presentations, face-to-face conversations and surveys.
Project boards	A range of Project boards have been designed for use at community events to help inform the community.
Construction updates	During the construction phase, regular and as-required construction updates and notifications will be provided via the website and to directly affected stakeholders.
Advertising	Advertising will be used to promote major Project events, milestones and announcements. The Project will consider advertising in local newspapers and on radio.
Social media monitoring	Monitoring of social media channels should be undertaken to understand the sentiment and key areas of interest about the Project within the local community.
Community Consultative Committee (CCC)	NSW planning guidelines encourage the establishment of CCCs to enable engagement with the community and stakeholder groups on State significant developments. These should be independently chaired with up to seven community and stakeholder representatives, a council representative and up to three representatives from the Project team. The CCC should meet on a regular basis, with the frequency to be determined. DPE will decide whether a CCC should be established for a State significant project. If DPE decides a CCC is warranted, it will require the proponent to establish the committee either: · Early in the assessment process through the SEARs for the Project; or · Following approval through the conditions of approval for the Project.
Community benefits fund	· NSW planning guidelines encourage establishing and maintaining a community engagement fund and ensure appropriate community involvement in its governance. The community fund should allow for opportunities for community-originated submissions, and clearly include and benefit proximal community members. GPGA may consider providing offers for community members to become shareholders in the project. · https: / / www.aeic.gov.au / observations-and-recommendations / community-engagement

5.7 Landowner and neighbour agreements

The Proponent has entered into contractual agreements with all involved landowners and the respective owners consents have been obtained. Note that not all agreements have been signed by the relevant landowners as some negotiations are still underway.

Neighbour agreements have also been offered to and terms agreed with several non-involved landowners.

5.8 VPA and Neighbour Benefit Sharing Agreement

Prior to construction, the proponent will enter into a Voluntary Planning Agreement (VPA) with Oberon Council in accordance with Section 7.4 of Division 7.1of the EP&A Act.

In addition to the VPA, the Proponent will consider the following terms or contributions:

- The Proponent is to consider offering to enter into a Neighbour Benefit Sharing Agreement with relevant neighbouring landholders;
- Under the terms of the proposed Neighbour Benefit Sharing Agreement, the Proponent will agree to pay each relevant neighbouring landholder a voluntary annual payment;
- If each of the relevant neighbouring landholders accept the Proponent's offer to enter into a Neighbour Benefit Sharing Agreement, then the total voluntary annual payments which the Proponent will be liable to pay under the Exchanged Neighbour Benefit Sharing Agreement will equal the total annual VPA contribution amount;
- It is possible that one or more relevant neighbouring landholders will not accept the Proponent's offer to enter into a Neighbour Benefit Sharing Agreement (or may not initially accept this offer); and
- If so, then the total voluntary annual payments which the Proponent will be liable to pay under each of the Exchanged Neighbour Benefit Sharing Agreement as at the date of this deed will be less than the total annual VPA contribution amount by the unpaid balance amount.

This will provide a framework for the distribution of benefits. It will provide a mechanism to track and monitor the effectiveness of the agreement and achieve the set targets of community benefits.

This is discussed in more detail under section 2.8 and section 7.4 of this EIS.

Assessment of Impacts

6 Assessment of Impacts

This environmental assessment has been undertaken to assess potential environmental impacts for a range of specific issues identified within the SEARs. Site investigations and a range of specialist assessments have been undertaken as part of this application.

Table 36. Potential Environmental Impacts

Issues	Section
Landscape and Visual Assessment	6.1
Shadow Flicker Assessment	6.2
Noise Assessment	6.3
Geotechnical Report	6.4
Biodiversity Development Assessment Report	6.5
Bird and Bat Adaptive Management Plan and Collusion Assessment	6.6
Biosecurity Risk Assessment Management Plan	6.7
Traffic, Access and Route Assessment	6.8
Blade Transport Route Study	6.9
Blade Throw Assessment	6.10
Aviation Assessment	6.11
Resilience and Hazards Assessment (previous SEPP 33)	6.12
Bushfire Assessment	6.13
Electric Magnetic Fields Assessment (EMF)	6.14
Telecommunication Assessment (EMI)	6.15
Heritage Assessment	6.16
Soils and Hydrology Assessment	6.17
Waste Assessment Plan	6.18
Social Impact Assessment	6.19
Economic Assessment	6.20

Cost Investment Report (CIV)	6.21
Health Assessment	6.22
Land Use Conflict Risk Assessment	6.23
Air Quality and Dust Control	6.24

6.1 Landscape and Visual Assessment

This report has been prepared in relation to the Secretary's Environmental Assessment Requirements (SEARs) for the Project, which included the following requirement in relation to the Landscape and Visual effects of the proposal:

> *Landscape and Visual – including a detailed assessment of the visual impacts of all components of the project (including turbines, transmission lines, substations, battery energy storage system, and any other ancillary infrastructure in accordance with the NSW Wind Energy: Visual Assessment Bulletin (DPE, 2016), including detailed consideration of potential visual impacts on local residents (including approved developments, lodged development applications and dwelling entitlements), amenity values of the Abercrombie National Park, scenic or significant vistas and road corridors in the public domain.*

6.1.1 Landscape and Visual Consideration

Moir Landscape Architecture has undertaken a Landscape and Visual Impact Assessment (LVIA) to establish a comprehensive baseline assessment of the existing landscape character, its scenic qualities, and the visibility of the Project.

The assessment provides a review of future landscape characteristics by factoring in the proposed wind turbines and associated equipment. The report also considers the placement and development of ancillary infrastructure including access tracks, road upgrades, underground and overhead electricity cabling, high voltage transmission lines, substations, potential battery storage system, switching stations, quarrying locations, concrete batching plants, potential workers accommodation village, operations and maintenance facility and grid connection to the existing 500kV transmission line. The assessment found that the proposed development will be located within a predominantly rural setting, dominated by established farming land which consists primarily of modified undulating hills. Generally, the 'Scenic Quality Classes' of the Landscape Character Units (LCU) within the Study Area have been rated as moderate or high with one area defined as low.

6.1.2 Regulatory Framework

The study has incorporated a quantitative study in line with the guidelines of the Wind Energy: Visual Assessment Bulletin (the Bulletin), and other relevant literature relating to large scale infrastructure projects. The Bulletin states:

> *'the visual impact of a wind energy project will depend upon the characteristics and values of the existing landscape, the extent to which the existing landscape is changed by the Project and how these changes are perceived by individuals and the broader community.'*

The LVIA has been prepared using the study findings as a baseline to identify Visual Influence Zones (VIZs) which have been established from key viewpoints and sensitive receptors and assessed against visual performance objectives outlined in the Bulletin. The conclusions take into consideration the findings from this assessment and comments from the community made during community consultation engagement.

6.1.3 Landscape Character and Key Landscape Features

The LVIA identified the following key landscape features, national parks and public viewpoints, which have all been considered as part of the assessment:

- Rivers and Creeks:
  - Abercrombie River
  - Burra Burra Creek

- Mount Werong Creek
- Wiarborough Creek
- Manus Creek

· National Parks and Nature Reserves:
- Abercrombie River National Park
- Blue Mountains National Park

· Topography:
- The site is located on a raised tableland (800m-1000m AHD)
- Surrounding region is predominantly undulating towards the north and steep with densely vegetated to the south

· State Forest:
- Gurnang State Forest

· Scenic Lookouts / Points of Interest:
- Broughton's Lookout
- Wombeyan Caves

· Walking Tracks and Campgrounds:
- Bummaroo Ford Campground
- Silent Creek Campground
- The Sink Campground
- The Beach Campground
- Licking Hole Campground
- Mount Werong Campground.

Section 5.0 of the LVIA includes a Visual Baseline Study for each of the LCUs.

Figure provides an illustration of these character areas, which includes the Abercrombie River Valley, Abercrombie Vegetated Hills, Blue Mountains, and Gurnang State Forest.

Each LCU was listed, key features and viewpoints highlighted, the Scenic Quality Rating Frame of Reference applied, and an overall Scenic Quality Rating allocated as follow:

· Abercrombie River Valley – Moderate Scenic Quality Rating

· Abercrombie Vegetated Hills – Moderate / High Scenic Quality Rating

· Blue Mountains – Moderate / High Scenic Quality Rating

· Parling Yards / Jerrong – Moderate Scenic Quality Rating

· Golspie / Curraweela – Low / Moderate Scenic Quality Rating

· Gurnang State Forest – Low Scenic Quality Rating.

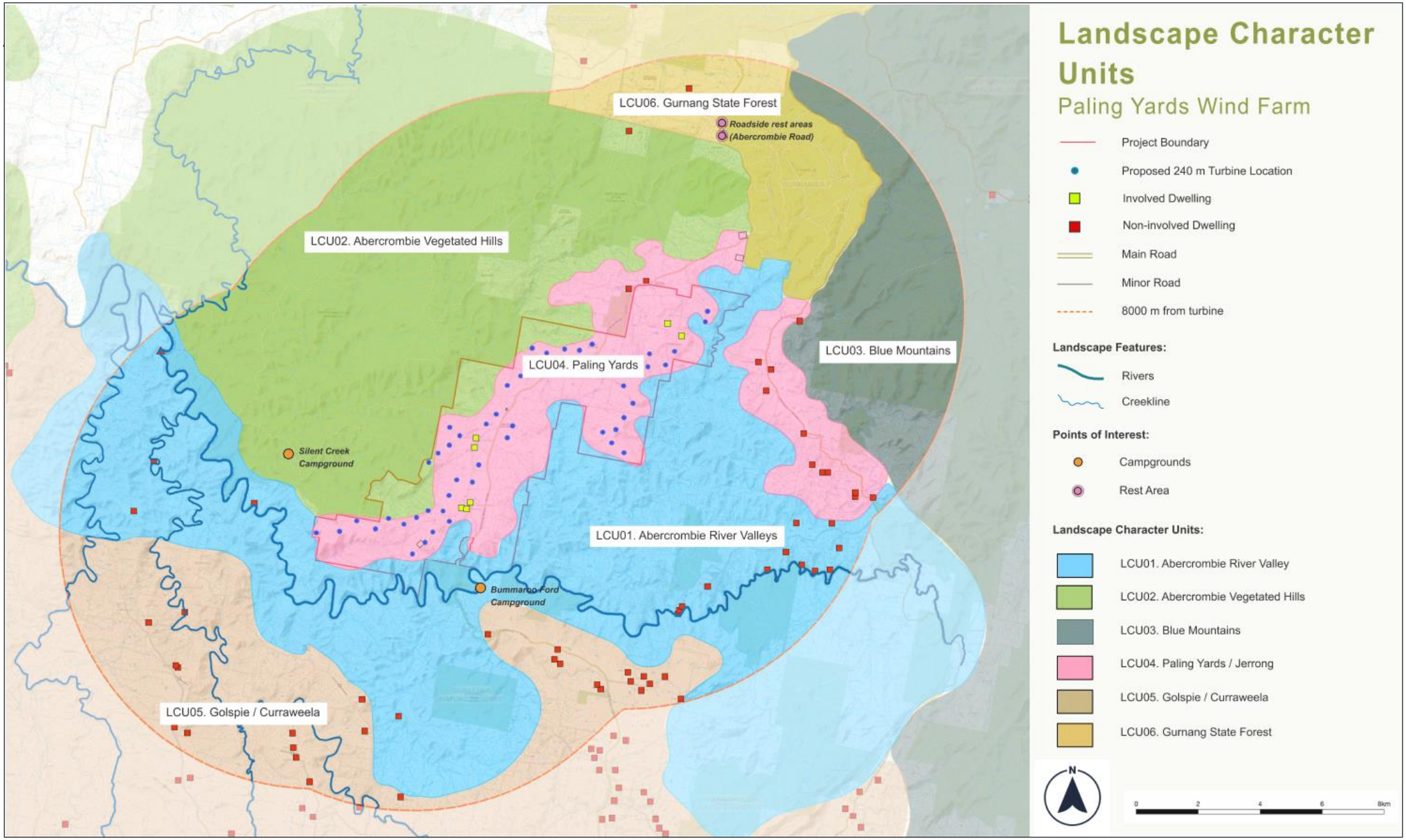


Figure 28. Landscape Character Units (Source: Moir Visual Baseline Study, 2023)

6.1.4 Findings

In accordance with the Bulletin, preliminary assessment tools have been developed to provide an early indication of where turbines will require careful consideration due to potential visual impacts. As highlighted in the LVIA, the assessment tools provide an early indication of where placement of turbines will require further assessment and justification, and also where further consultation with landowners needs to be undertaken.

The preliminary assessment tool involve analysis of two key parameters:

- Visual Magnitude
- Multiple Wind Turbine Tool.

Preliminary Assessment Tool 1: Visual Magnitude

Moir identified that the 'worst-case scenario', involving a turbine with a tip height of up to 240 metres, would potentially present a visual impact for dwellings within 3,200 to 4,750 metres. Figure 29 highlights the 'Visual Magnitude Threshold' identified for the Project. From this, it was found that a total of fourteen (14) non-involved dwellings have been identified with the use of preliminary assessment tools for further assessment.

Figure 30 confirms that seven (7) non-involved dwellings have been identified within 3,200 metres of a proposed turbine and three (3) non-involved dwellings are located within 3,200 – 4,750 metres of a proposed wind turbine.

Of the seven (7) non-involved dwellings within 3,200m the assessment found:

- Two (2) dwellings were rated as nil / negligible visual impact rating,
- Three (3) dwellings were rated as a low visual impact rating,
- One (1) dwelling was assessed as having moderate visual impact rating,
- One (1) dwelling was assessed as having a high visual impact rating.

In accordance with the Bulletin, all non-involved dwellings located within 3,200m of the nearest turbine were assessed as being Visual Impact Zone 2 (VIZ2). Practical and feasible mitigation measures have been recommended for the two (2) non-involved dwellings rated as having the potential for a moderate or high impact rating. They are identified as dwellings 4 and 108. It is expected that, with implementation of the proposed mitigation measures, the level of visual impact would be significantly reduced and be acceptable.

Of the three (3) dwellings identified within 3,200 – 4,750m the assessment found:

- Two (2) were assessed as having nil / negligible visual impact rating,
- One (1) was assessed as having a high visual impact rating (Dwelling 128).
    - Note that dwelling 128 have accepted planned mitigation measures to minimis visual impacts. Negotiations with other potentially impacted residents are underway with agreements expected to be signed in the near future.
    - All non-involved dwellings located between 3,200 - 4,750m of the nearest turbine were assessed as being Visual Influence Zone 2 (VIZ2). In accordance with the Bulletin, objectives for VIZ2 receptors within this zone are to consider screen planting to reduce potential visual impacts from the dwelling.
    - No none involved dwellings were identified in excess of 4,750m with the potential to view turbines in three (3) or more 60-degree sectors. An extensive public viewpoint analysis has also been undertaken as part of the LVIA.

Preliminary Assessment Tool 2: Multiple Wind Turbine Tool

The Multiple Wind Turbine Tool provides a preliminary indication of potential cumulative impacts arising from the proposed wind energy project. This assessment aims to establish the degree to which dwellings or key public viewpoints may be impacted by multiple WTGs. The proponent maps the proposed turbines and any existing or approved turbines within 8.0km kilometres of each dwelling or public viewpoint. It fragments key public viewpoint into six (6) sectors of 60-degrees and then assesses the number of impacted views.

Figure found later on in this section provides an example of where a dwelling or key public viewpoint may have WTGs visible in multiple 60-degree sectors. The Bulletin identifies that where WTGs are visible within three or more

of the 60-degree sectors on a horizontal view from the dwelling or key public viewpoint, further examination is required.

When applied to the Project using a 2D modelling tool, a total of two (2) non-involved dwellings were identified as having turbines located within three of the 60-degree sectors. The remaining non-involved dwellings had one or two 60-degree sectors which resulted in views of a wind turbine.

It is noted that there are no other proposed, approved, or operational wind farm projects within close proximity to the Project that require consideration when applying the Multiple Wind Turbine Tool. Below a summary of the findings:

- Two (2) non-involved dwellings have been identified as having up to three (3) 60-degree sectors visible (based on a 2D assessment alone): Identified as Dwellings 4 and 3 (previously identified as PYD_11 and PYD_12).
- Dwelling 4 was identified as having WTGs in up to three (3) 60-degree sectors, detailed assessment identified intervening vegetation is likely to reduce the extent of visible turbines to less than two (2) 60-degree sectors.
- Dwelling 3 was identified as having turbines in up to three (3) 60-degree sectors. Detailed assessment of this dwelling identified existing wind break planting surrounding the dwelling will screen views to the Project.

Dwelling Entitlements

Dwelling entitlements for all vacant lots, more than 100 ha in size, have been considered. As per the current planning controls, dwellings are only allowed on lots in excess of 100 ha in area. Discussions between the Proponent and Oberon Council indicated that no development applications or subdivision applications (approved or recently lodged) were identified within a 5km radius of the site as of 28 October 2022. Since the 2022, addition discussions between the Proponent and Oberon Council on 9 May 2023 confirmed the same that no development applications or subdivision applications had been identified within a 5km radius of the site in the 12 months prior.

A review of dwelling entitlements of all surrounding lots concluded that no further assessment is required at this stage. Refer to the attached LVIA (Section 9) for more information on dwelling entitlements.

The Detailed Dwelling Assessment Locations Map (Figure 18) of the LVIA by Moir (attached hereto as Appendix G) shows all identified dwellings within an 8km radius of the site. The map shows involved dwellings, non-involved dwellings and dwellings previously identified as ambiguous buildings. It further provides dwelling impact ratings for all dwellings located within a 4,750m radius.

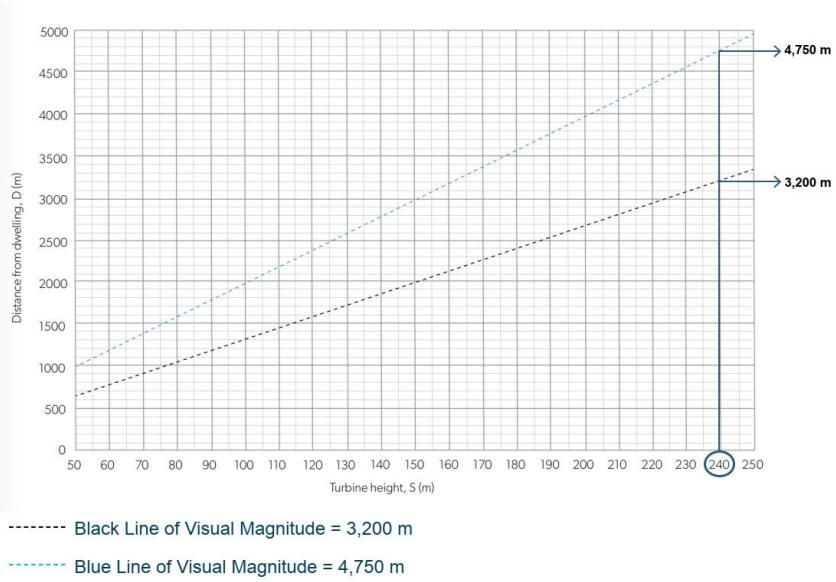


Figure 29. Prelim Assessment Tool 1: Visual Magnitude thresholds (Source: LVIA Visual Assessment Bulletin 2023)

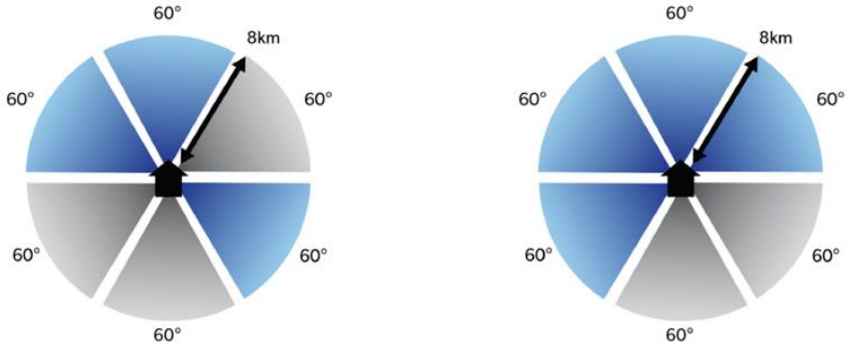


Figure 31. Prelim Assessment Tool 2: Multiple Wind Turbines (Source: LVIA Visual Assessment Bulletin 2023)

Non-involved dwellings within 3,200 metres of nearest WTG (Black Line of Visual Magnitude)

Dwelling ID:	Distance to nearest Turbine:	Nearest Turbine:	Number of turbines within 3,200 m
4	2.14 km	P34	10
3	2.15 km	P47	8
115	2.05 km	P46	4
116	2.49 km	P46	3
10	2.16 km	P5	2
108	2.84 km	P46	3
113	2.88 km	P47	2

Non-involved dwellings within 4,750 metres of nearest WTG (Blue Line of Visual Magnitude)

Dwelling ID:	Distance to nearest Turbine:	Nearest Turbine:	Number of turbines within 4,750 m
117	4.55 km	P46	1
127	4.13 km	P35	1
128	3.45 km	P1	9

Figure 30. Dwellings within Black & Blue Line of VM (Source: LVIA 2023)

Associated Infrastructure

The LVIA assessed the potential visual impact resulting from associated infrastructure, including substations (refer to Figure and Figure), transmission lines (refer to Figure and Figure), and internal roads. The key findings include:

- Substation:
  - The project will include one substation to be located at one of two potential locations. Both locations have been assessed.
  - There are two (2) non-involved dwellings within 2,000m of the proposed substation locations (Dwellings 3 and 4).
  - It was found that views to the substation locations are likely to be difficult to discern due to a combination of vegetation and topography.
- Collector Substation:
  - One collector substation is proposed near Abercrombie Road.
  - It is proposed that landscape screening is planted along the western side of the collector substation to reduce the potential visual impacts from Abercrombie Road.
- Internal Roads:
  - The proposed access roads are likely to be viewed as part of the existing character of the landscape.
  - Where possible, existing roads should be used and upgraded to provide access to the proposed turbines and infrastructure.
  - Local materials should be utilised where possible.
- Transmission Line:
  - The above assessment considered topography alone and does not account for intervening elements such as vegetation and structures.
  - The ZVI depicts that receivers in close proximity to the proposed transmission line and further to the north and northeast will have higher visibility of the transmission line. Existing screening factors will play an important role in limiting views to the infrastructure.
  - The ZVI depicts that receivers on the eastern side will have limited views of the transmission line due to the undulating topographic character. Receivers along Jerrong Road are likely to have low visibility due to topography.
  - Receivers within close proximity to the transmission line along Abercrombie Road will have higher visibility of the line, however it is likely that only certain parts of the transmission line will be visible due to exiting vegetation and topography.
  - The proposed transmission line is in keeping with the scale and appearance of the exiting power lines which ae an existing element in the landscape.
- Meteorological Monitoring Masts:
  - Three (3) meteorological monitoring masts are proposed to be located within the Project area.
  - Meteorological masts are generally difficult to discern at a distance and siting of the masts during the detailed design phase will ensure they are set back from nearby residences and public viewing locations to reduce visual impact.
  - The LVIA provides mitigation measures to assist in reducing any residual impacts.
- Construction Room:
  - A permanent construction room will be constructed to support the construction and operation of the facility.
  - This smaller structure will be screened by existing vegetation, proposed vegetation, and the existing topography. The LVIA provides mitigation measures to assist in reducing any residual impacts.

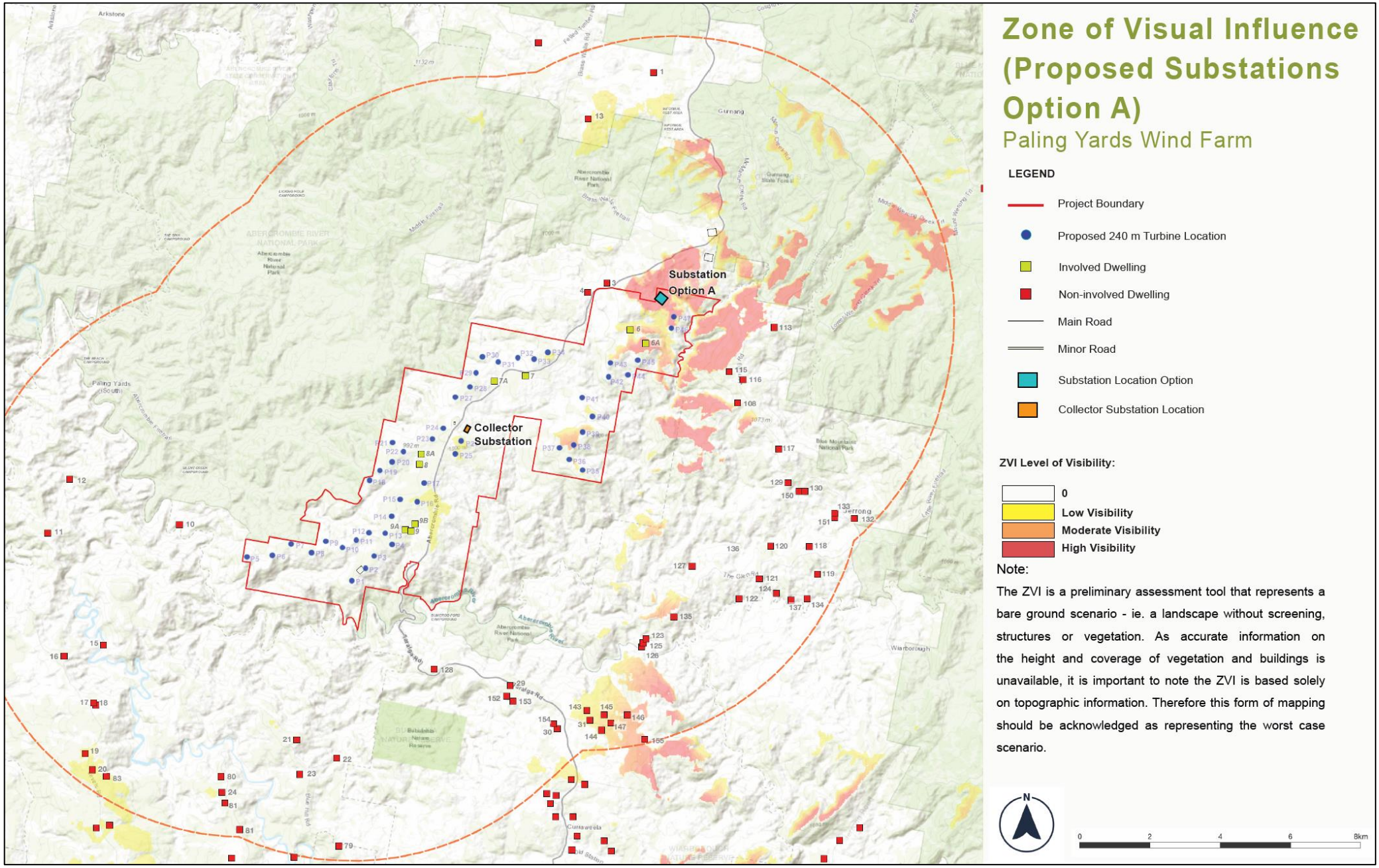


Figure 32. Option A - Zone of Visual Influence Substations (Source: LVIA 2023)

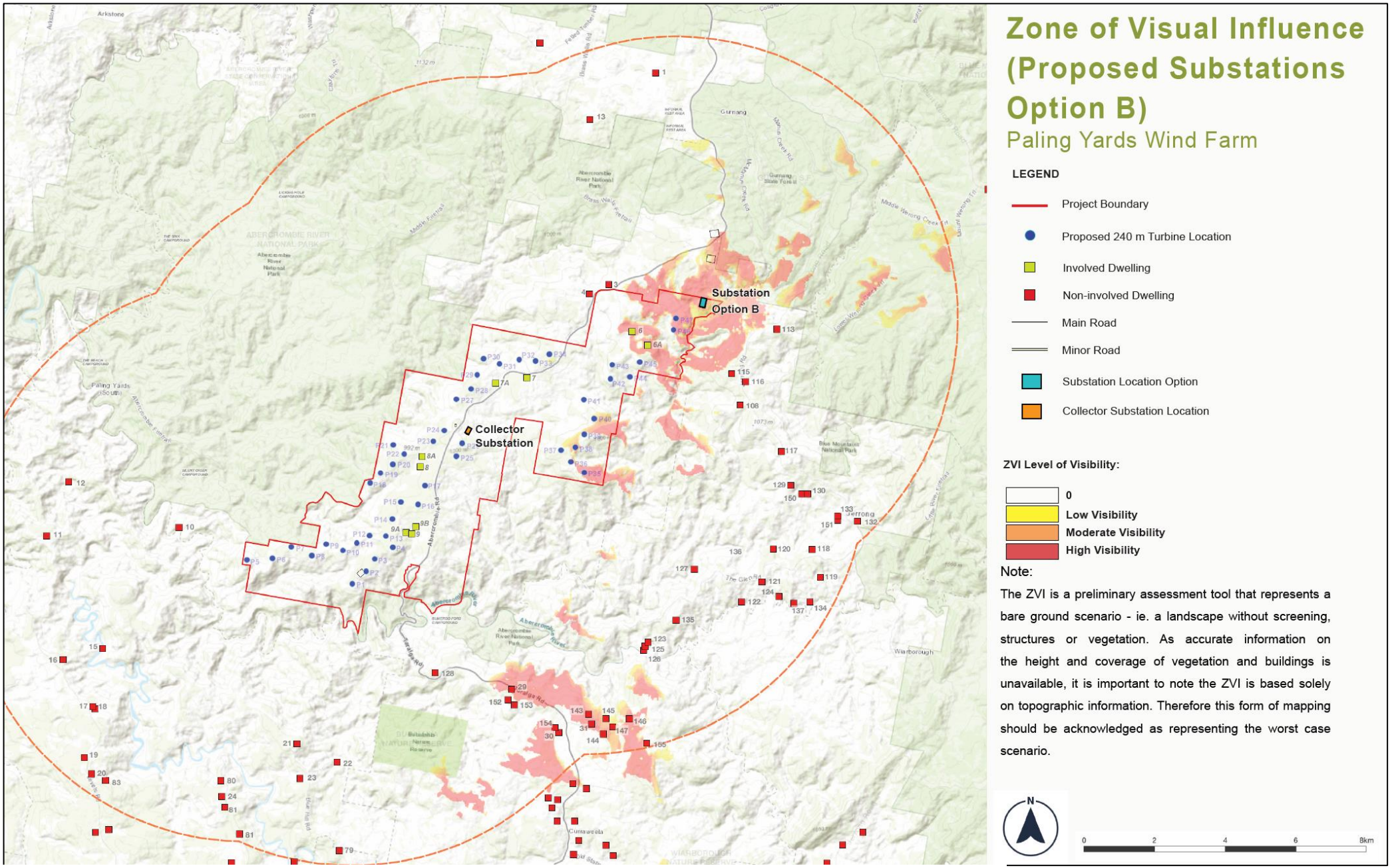


Figure 33. Option B - Zone of Visual Influence Substations (Source: LVIA 2023)

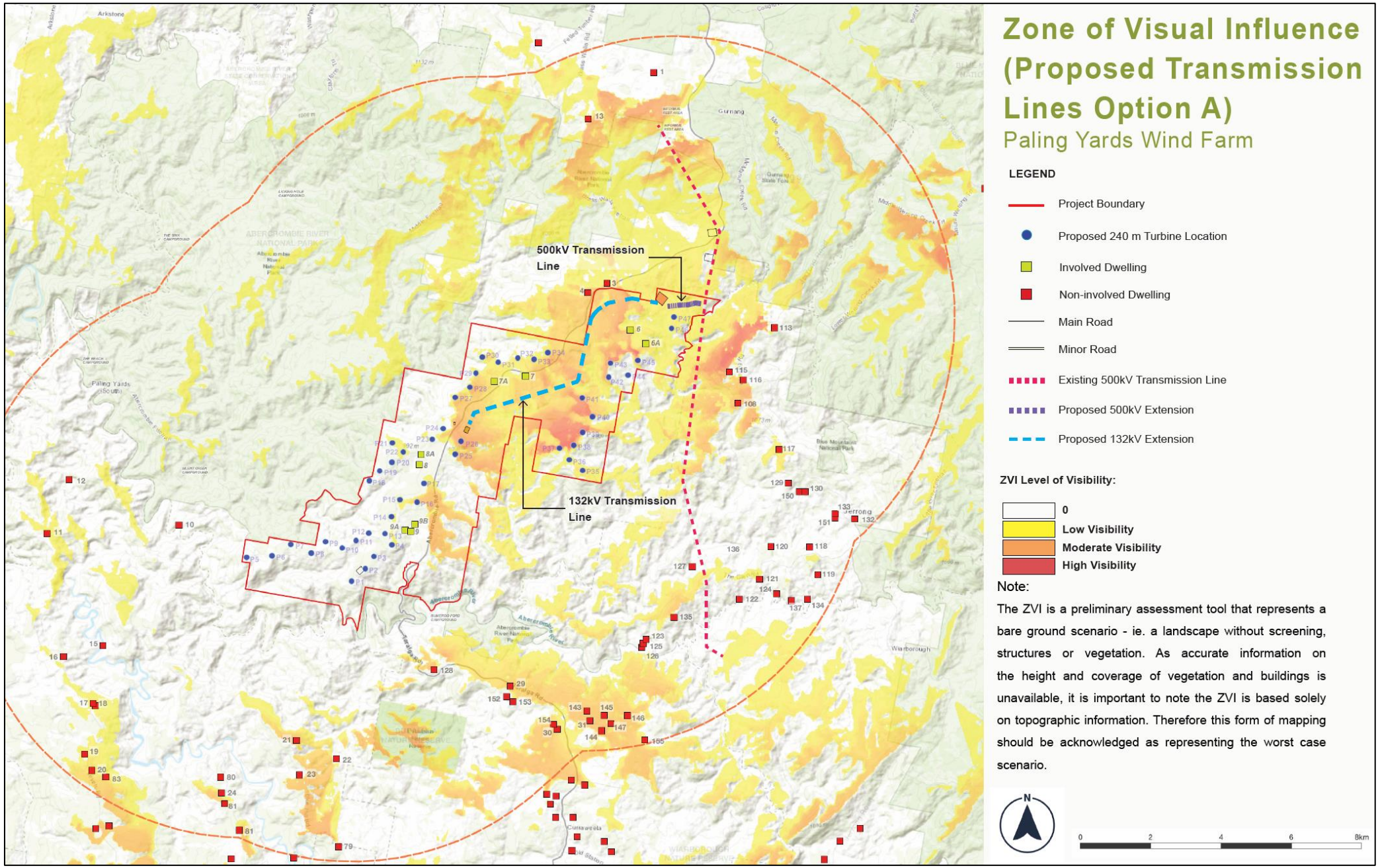


Figure 34. Option A - Zone of Visual Influence Transmission Lines (Source: LVIA 2023)

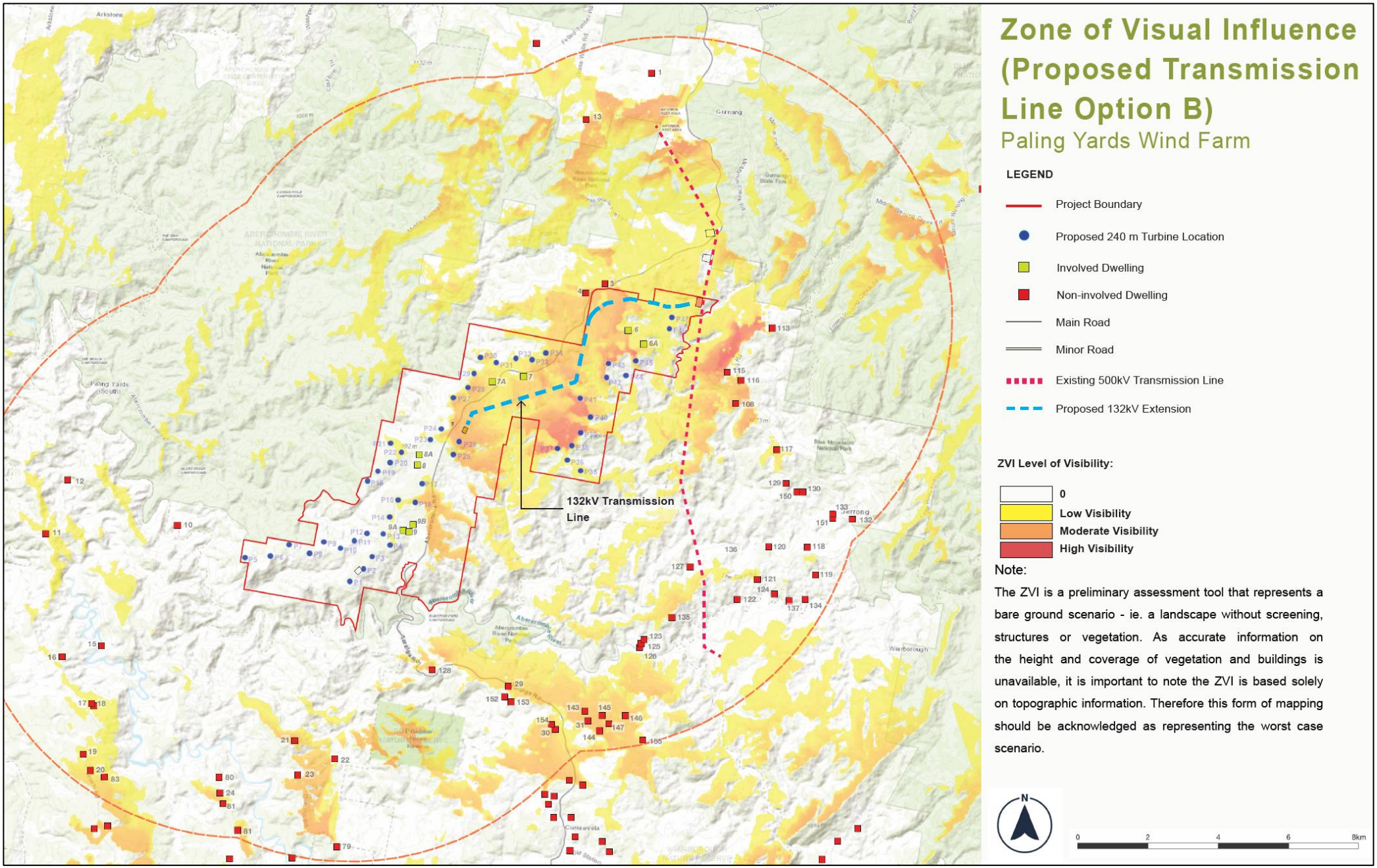


Figure 35. Option B - Zone of Visual Influence Transmission Lines (Source: LVIA 2023)

6.1.5 Mitigation Measures

Moir recommends that mitigation measures for the proposed works are best considered in two separate phases:

- Primary measures – form part of the development of the wind farm design through an interaction process; and
- Secondary measures designed to specifically address the remaining (residual) negative (adverse) effects of the final development proposals.

A number of measures have been identified to help mitigate the effects of the Project on the surrounding landscape. These include, but are not limited to:

- **Project layout and design**
  Primary mitigation measures employed through the Project design phase can significantly reduce the visual impact. This includes siting, access, layout and other principles which, will directly impact the appearance of the proposed development.
  - Wind farm Layout and size:
    - including controlling location of the different WTG types, densities and layout geometry to reduce visual impacts.
    - The alignment of WTGs should consider the contour of the natural landscape as best possible.
    - Ensure the WTGs are evenly spaced to give a regular pattern and therefore a better balance within the existing landscape.
  - Wind Turbine Design and Colouring:
    - Uniformity in the colour, design, rotational speed, height and rotor diameter.
    - Use of simple muted colours and non-reflective materials to reduce distant visibility.
    - Blades, nacelles and tower to appear as the same colour.
    - Avoidance of unnecessary lighting, signage, logos etc.
- **Residences**
  The findings concluded that three non-involved dwellings were classified with a 'moderate or high' visual impact rating. They are identified on the Dwelling Map as Dwelling 4, Ambiguous Building (or PYD_14), Dwelling 108 (or PYD_159), and Dwelling 128 (or PYD_47).
  - A building located to the north of the site was initially identified as a fourth dwelling with a 'moderate or high' visual impact rating. It has since been confirmed that this building (also identified as PYD_14) is not a dwelling.

Mitigation measures for these properties include:

- Residence Screen Planting
  - Where residences are subject to visual impact, screen planting is an option proposed to assist mitigate views of turbines from residential properties. Relevant screen planting should be undertaken with consultation of the landowner.
- Residence Supplementary Planting
- Landscaping Principles
  - General guidelines to adhere to when planning for landscaping and visual screening include:
    - Planting is recommended post construction in consultation with the landowner.
    - Planting should remain in keeping with existing landscape character.
    - Species selection is to be typical of the area.
    - Planting layout should avoid screening views of the broader landscape.
    - Avoid the clearing of existing vegetation. Where appropriate reinstate any lost vegetation.
    - Allow natural vegetation to regrow over any areas of disturbance.
  - The report notes that locally native plant species are preferred.

The LVIA confirms that the Project is compliant with the performance objectives as per the *Visual Assessment Bulletin*.

Moir notes that by no means the list provided is an exhaustive list, however the adoption of these recommendations will assist considerably in ensuring the proposal contributes positively to the visual quality and character of the area.

6.1.6 Dwelling Summary

As mentioned earlier, a total of seven (7) non-involved dwellings were identified within 3,200m of the nearest proposed turbine. One (1) was assessed as having a moderate visual impact rating, while another one (1) was assesses as having a high visual impact rating.

Three (3) non-involved dwellings were identified within 3,200m – 4,750m from a proposed turbine. One (1) was assessed as having a high visual impact rating.

No dwellings beyond 4,750m were identified as having potential to view turbines in three or more 60-degree sectors.

Mitigation measures have been included as part of Appendix E of the LVIA which will be undertaken with the associated landowners. Principles for screen planting and supplementary planting have been included. These principles can be included to reduce potential visual impacts at dwellings in excess of 4,750m, mainly post construction (if necessary).

6.1.7 Night Lighting Summary

Moir undertook an assessment of the visual impacts of potential night lighting of the project. Potential light sources include:

- Aviation Hazard Lighting (AHL) on nacelle of wind turbines (at height of 155m AGL)
- Night lighting for safety and security on ancillary structures.

The requirement of AHL is subject to the advice of CASA. CASA generally recommends night lighting if an obstacle exceeds 160m above ground level. Night lighting of turbines and associated infrastructure has the potential to extend the visual effect onto the night time. AHL has the potential to be visible from distances in exceeds of 20km, however this is dependent on a number of variables, including light intensity, topography, vegetation, and climatic conditions.

The highest visual impact from night lighting is likely to be people who experience the night landscape outdoors. The impacts of aviation lighting could be reduced by applying mitigation measures as highlighted below:

- If aviation lighting is required, it should be spaced around the outer edges of the wind farm and not be included on every tower.
- The rear of blades should be treated with a non-reflective coating.
- The lowest candela intensity allowed by CASA should be used.
- Shielding to limit downward spill of light should be provided.
- No light should be emitted at or below a 10-degree horizontal.

While it is unlikely that the proposed night lighting of associated ancillary infrastructure would create a noticeable impact on the existing night-time landscape, the following is proposed:

- Ancillary structures are to be painted in a dark non-reflective finish to reduce any potential reflectivity from light.
- Where possible, lighting will be projected downwards.
- Where possible, lighting will be fully or partially shielded to prevent spill into surrounding areas.
- Measures to control the level of lighting should be applied.
- Lighting design could be used to lower the intensity of lighting and ensure energy efficient lighting is used.
    - Refer to Section 11.0 Night Lighting of the LVIA from Moir for more information (Appendix G).

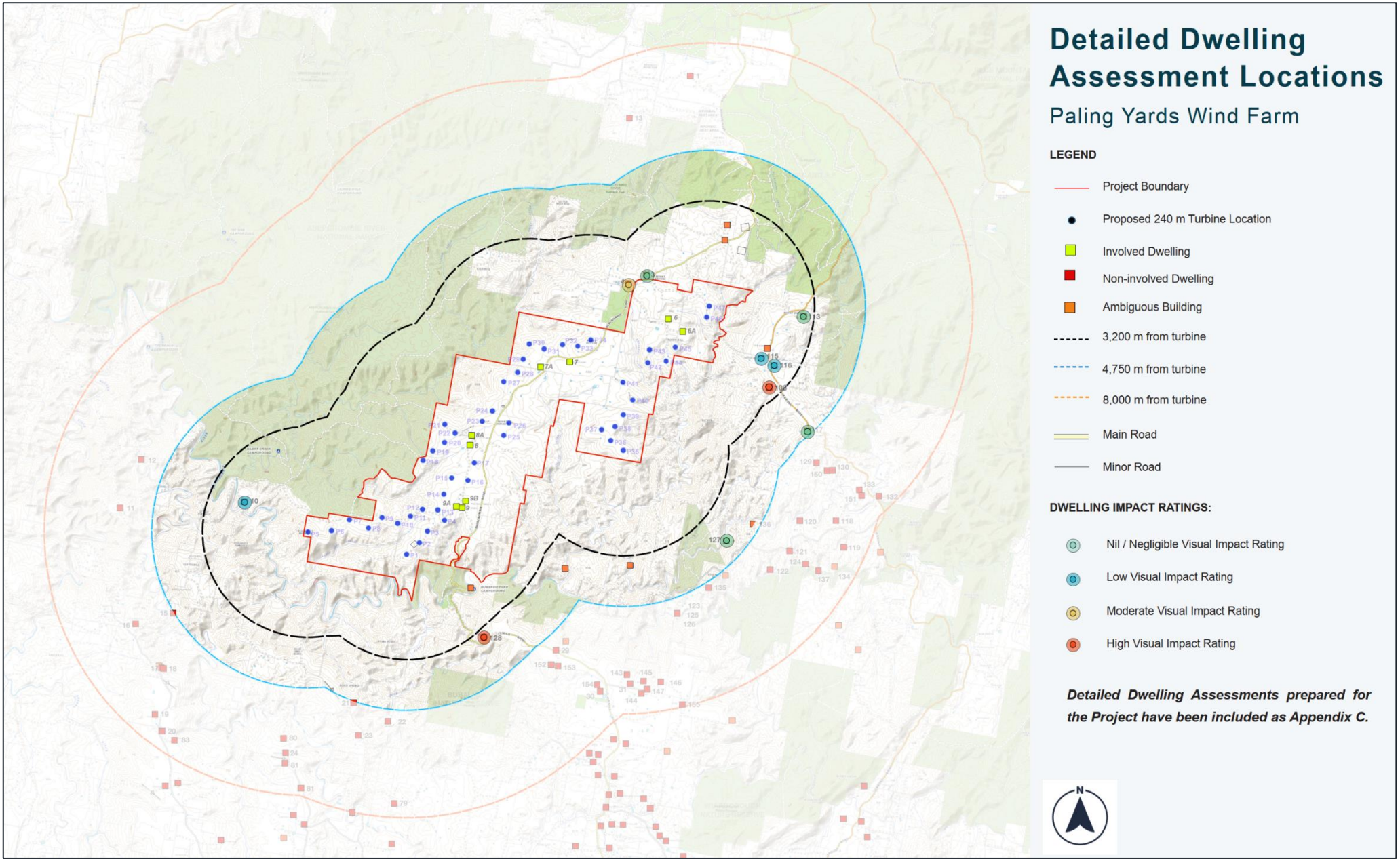


Figure 36. Dwelling Assessment Locations LVIA (Source: Moir 2023)

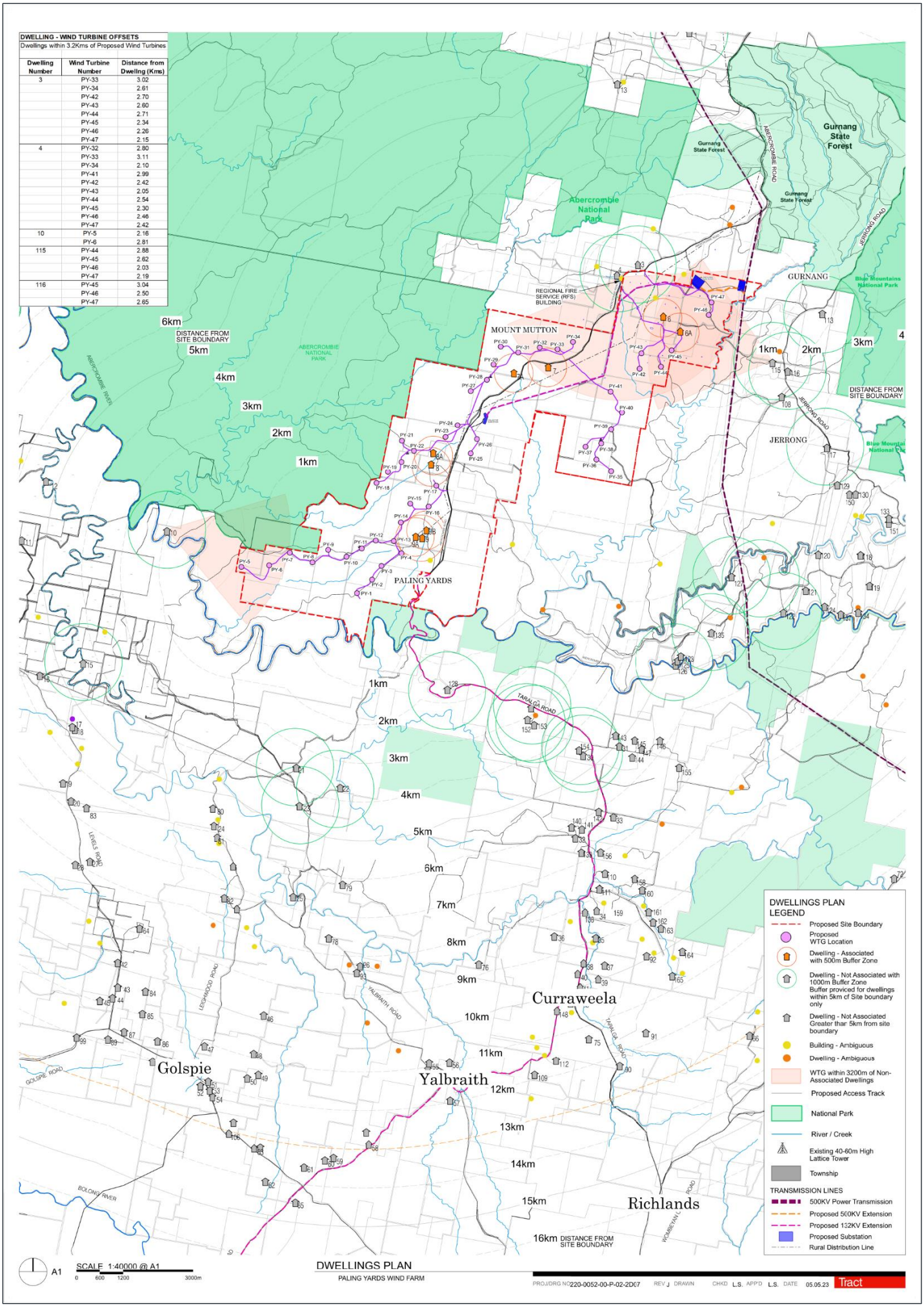


Figure 37. Dwelling Map (Source: Tract 2023)

6.1.8 Photomontages

The below Photomontages was prepared by Moir as part of the LVIA and show the potential turbines at selected key public and private viewpoints. Refer to Appendix G for the full LVIA.

Figure 38. Photomontage 1A - Abercrombie Road looking east from a public viewpoint PY03(A)

Figure 39. Photomontage 1B - Abercrombie Road looking west from public viewpoint PY03(B)

Figure 40. Photomontage 2 - The Glen Road looking northwest from a public viewpoint PY11

Figure 41. Photomontage 3 - Bummaroo Ford Campground looking north from a public viewpoint PY13

Figure 42. Photomontage 4 - Jerrong Road looking west from a public viewpoint PY16

Figure 43. Photomontage 5 - Taralga Road looking northwest from a public viewpoint PY07

Figure 44. Photomontage 6 - Taralga Road looking North from a public viewpoint PY18

Figure 45. Photomontage 7 - Abercrombie Road looking southwest from public viewpoint PY19

Figure 46. Photomontage 8 - Jeerong Road looking west from private viewpoint Dwelling 115

Figure 47. Photomontage 9 - Abercrombie Road looking South from Dwelling 4

Figure 48. Photomontage 10 - Jeerong Road looking West from Dwelling 117

Figure 49. Photomontage 11 - Taralga Road looking North from Dwelling 128

Figure 50. Photomontage 12 - Jerrong Road looking west from private viewpoint Dwelling 108

Figure 51. Photomontage 13 - Abercrombie Road looking south from private Dwelling 04

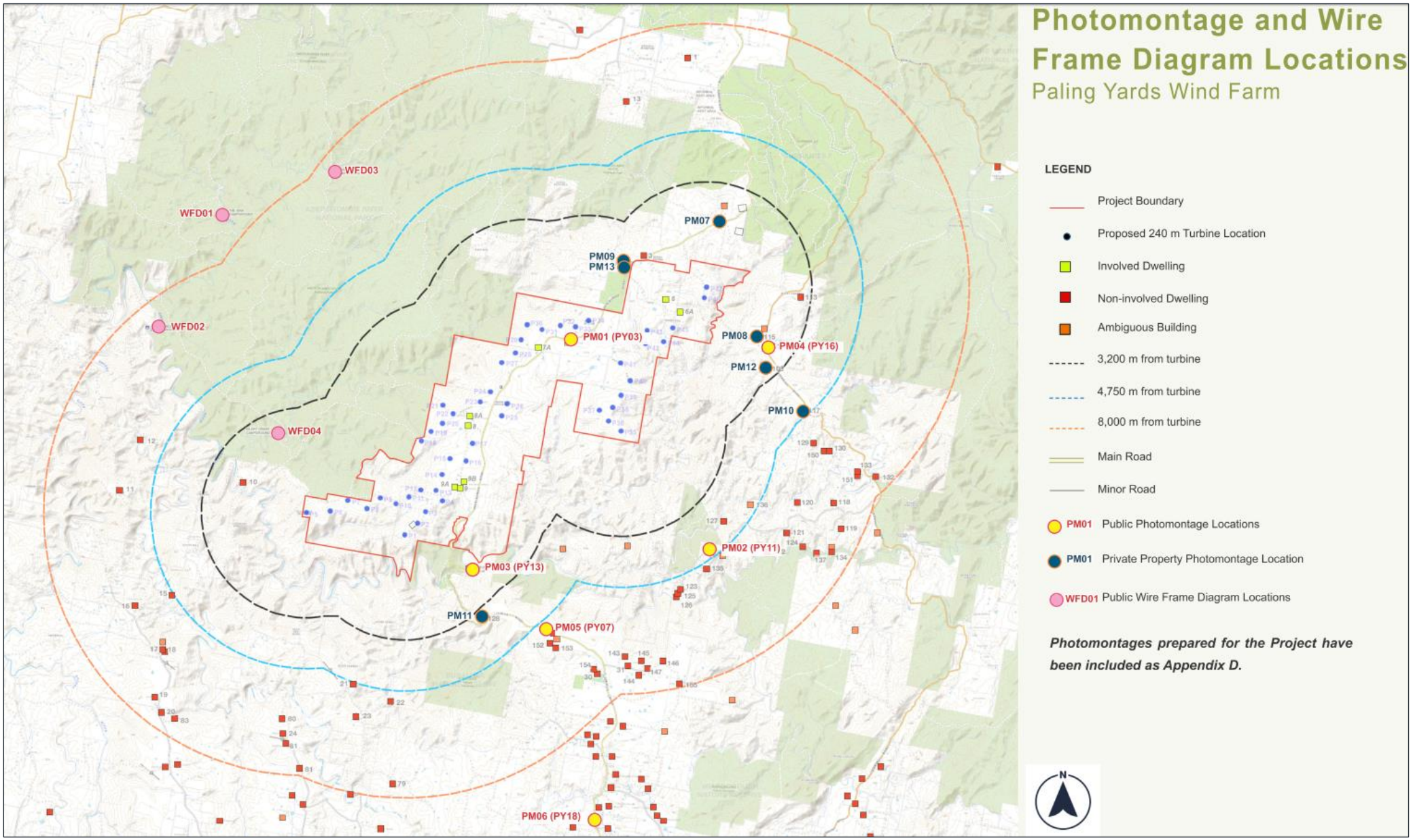


Figure 52. Photomontage and Wire Frame Diagram Locations (Source: LVIA 2023)

6.1.9 Cumulative Landscape and Visual Effects

The LVIA considers the potential for cumulative effects on the immediate and broader regional context as a result of the PYWF. The CIA has several dimensions, which includes:

- The impact of the wind farm, when added to the combined impacts of all other existing developments and environmental characteristics of the area.
- The impact of this development in the context of the potential for development of wind energy developments in the local, regional and national context.
- The impact of developments which are ancillary to or otherwise associated with the proposed wind farm.
- The potential for future development of wind farms in the region.

The LIVA considered the following other approved / constructed wind farms:

- Taralga Wind Farm (25km to the south)
- Crookwell 1, 2, and 3 Wind Farms (30-35km south west)
- Gunning Wind Farm (>50km south)
- Cullerin Wind Farm (>50km south).

For the purpose of this assessment, it was concluded that Gunning and Cillerin Wind Farms will have not cumulative landscape and visual effects as a result of the PYWF.

Moir prepared a Cumulative Zone of Visual Influence Map, which considered PYWF, Crookwell Wind Farms 1, 2 and 3, and Taralga Wind Farm. The map illustrates areas or zones where turbines would be visible from multiple wind farms. As per Figure below, the PYWF turbines will be visible in the zones marked in blue, green and red.

The cumulative visual impact assessment has concluded that due to topography, there are very limited opportunities to view any additional wind farms and associated turbined and infrastructure simultaneously from a static viewpoint in the foreseeable future. Cumulative impacts associated with other wind farm projects will be negligible.

The potential cumulative visual impact must also be assessed in relation to the potential visual impact when viewed sequentially or when travelling through the region. If a number of wind farms are viewed in succession as a traveller moves through the landscape, this may result in a change in the overall perception of the landscape character.

When travelling along Taralga Road between Goulburn to Oberon, turbines associated with the Taralga Wind Farm are a noticeable feature of the landscape for a short period of time. Further along the route, the Paling Yards Wind Farm will be a visible element along Abercrombie Road. The distance between the Paling Yards Wind Farm and Taralga Wind Farm exceeds 30 kilometres when travelling by road. The travel time between the two projects is approximately 30 minutes. The duration of time between motorists experiencing views to each project limits the potential for the sequential views of the Projects to alter the perception of the broader landscape character.

Additional on cumulative impacts are included as part of section 2.7 of this EIS.

The full CIA that was prepared by Tract is included as Appendix V.

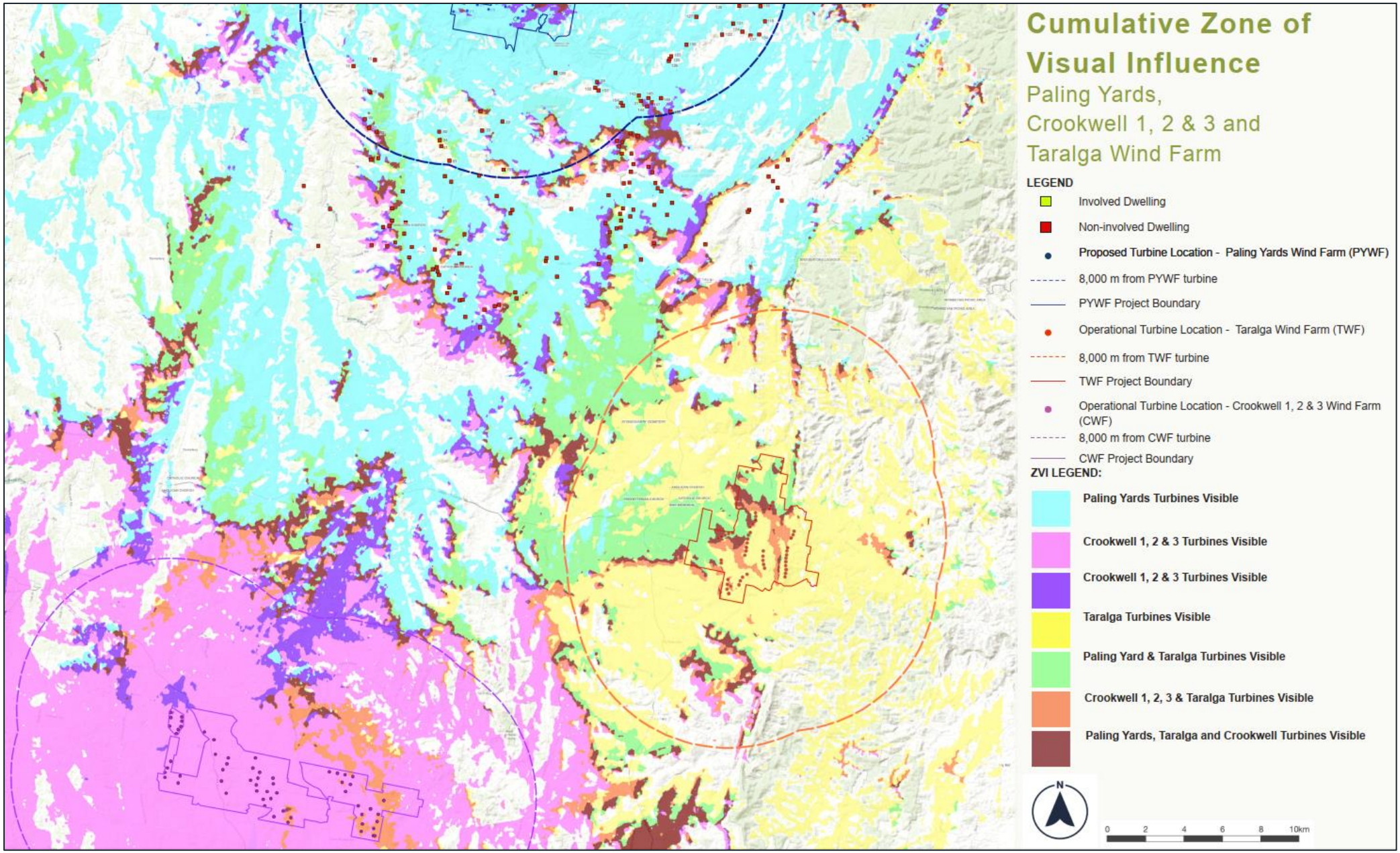


Figure 53. Cumulative Zone of Visual Influence on relevant Wind Farms (Source: Moir LVIA, 2023)

6.2 Shadow Flicker Assessment

A shadow flicker assessment was undertaken by environmental consultants from DNV (Appendix M). This review found that the proposed wind turbines shadow flicker will not result in any adverse impacts surrounding involved and non-involved dwellings.

The assessment includes the following definition of Shadow Flicker:

> *"Shadow Flicker occurs under certain combinations of geographical position and time of day when the sun passes behind the rotating blades of a wind turbine and casts a moving shadow over neighbouring areas. When viewed from a stationary position the moving shadows cause periodic flickering of the light from the sun."*

6.2.1 Regulatory Framework

As required under the SEARs, the shadow flicker assessment was prepared in accordance with the *NSW Wind Energy Visual Assessment Bulletin* prepared by the NSW Department of Planning and Infrastructure 2016 and the *Draft National Wind Farm Development Guidelines*.

DNV notes that under the *NSW Visual Assessment Bulletin*, a shadow flicker limit of 30 hours per year at dwellings is recommended in the vicinity of a wind farm. This limit is also recommended in the Draft National Guidelines with a limit of 30 hours per year on the theoretical shadow flicker duration, and 10 hours per year on the actual shadow flicker duration.

The methodology used for this assessment was informed by the guidelines to ensure an informed and detailed assessment.

6.2.2 Methodology

The assessment reviewed the proposed layout of the 47 wind turbines based on the GE Cypress 158-6.1 MW turbine model with a rotor diameter of 158m, a hub height of 151m and an upper tip height of 230m. Note that the assessment was undertaken for a maximum blade tip height of 230m, while the most recent preferred turbine model will have a total blade tip height of up to 240m. It is however not expected that the estimated (maximum) 10m additional height would have any significant impact on any of the surrounding dwellings and the shadow flicker results. If required, the shadow flicker analysis and modelling can be re-run for the 240m blade tip height prior to this application being approved.

Apparatus was positioned around the site in locations where the DNV team predicted a high intensity shadow flicker was likely to occur. The study considered the impacts upon 13 dwelling locations in the vicinity of the site with 9 of these dwellings being 'involved' dwellings.

The study applies shadow flicker standards used by the UK wind industry. The standard assumes a maximum length of shadow cast by a wind turbine as 10 rotor diameters from a turbine, which is approximately 1,200m to 1,900m. This is greater than the draft National Guidelines which assume a shadow length of 1,000m to 1,600m. DNV noted in their report that the UK wind industry considerations are more appropriate and will result in more accurate data being obtained. This will provide a more accurate representation of the likely shadow flicker effects proposed to be experienced.

6.2.3 Site Findings and Summary

The assessment found:

- None of the provided non-involved dwellings are predicted to experience high intensity shadow flicker due to the proposed wind farm, and the shadow flicker is within the acceptable limits for these dwellings.
- Nine of the involved dwellings experience high intensity shadow flicker. A shadow flicker rated as moderate intensity or above is expected to occur up to a distance of around 10 rotor diameters from the wind farm.
- One involved dwelling is predicted to experience shadow flicker at levels below limits outlined in the guidelines (Figure).
- For eight of the involved landowners, high intensity shadow flicker is predicted within 50 metres of their dwelling in exceedance of the proposed shadow flicker limits. The NSW Wind Energy Guidelines allow for negotiated

agreements between wind farm proponents and involved stakeholders to manage exceedances of the relevant assessment criteria. It is noted that the high shadow flicker durations may not be acceptable to some involved landholders and mitigation may be required.

- None of the non-involved dwellings are predicted to experience high intensity shadow flicker and as such shadow flicker limits are not exceeded at these houses.

[refer to Figure 54 on the next page]

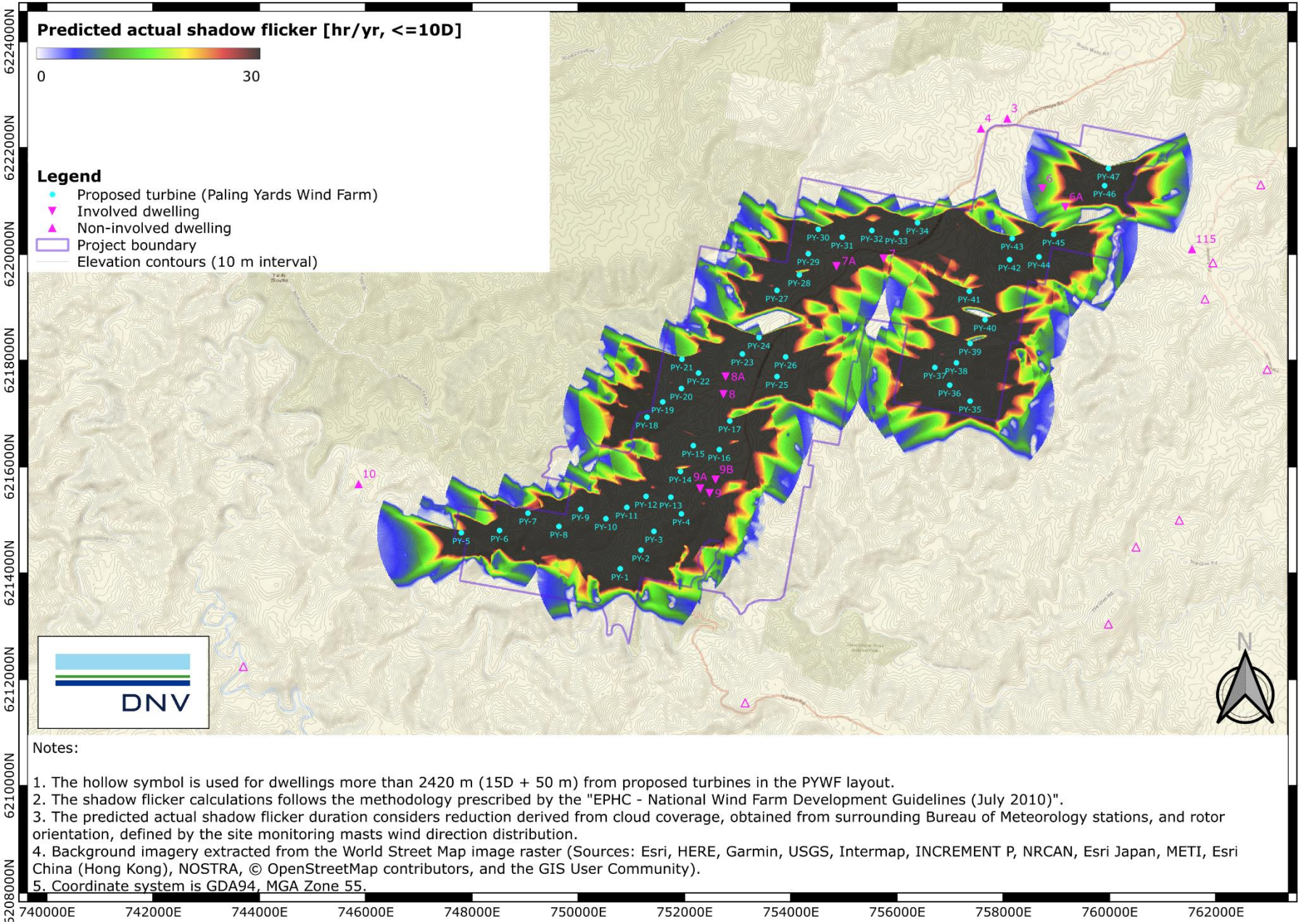


Figure 54. Predicted actual annual shadow flicker duration map (Source: DNV 2023)

6.2.4 Shadow Flicker Mitigation Measures

Suggested mitigation measures include:

- Relocation or removal of turbines.
- Installation of screening structures or planting of trees to block shadows cast by the turbines.
- Using turbine control strategies to shut down turbines when shadow flicker is likely to occur.
    - The Report concludes that there is no potential for cumulative impacts as a result of shadow flicker that would impact non-involved dwellings located near the Wind Farm.

The report also notes that blade glint will not result in any adverse effects as the blades will have a matte finish. Nearby non-involved dwellings will not be affected by shadow flicker caused by the PYWF.

6.3 Noise Assessment

The SEARs for the Project requires the EIS to assess:

- 'Wind turbine noise in accordance with the NSW Wind Energy: Noise Assessment Bulletin (EPA / DPE,2016)
- Noise generated by 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)
- Vibration under the Assessing Vibration: A Technical Guideline (DECC, 2006)
- Noise impacts on amenity / recreational use of the Abercrombie National Park (including walking tracks, campgrounds, and lookouts) considering the NSW Noise Policy for Industry (EPA, 2017).'

A Noise Impact Assessment has been prepared by SLR and is included in Appendix K of the EIS.

The report details the Project Area and all dwellings within a 10-kilometre radius of a turbine in accordance with the *South Australian EPA Wind Farms – environmental noise guidelines,* 2009.

The Project Area includes three landowners who have agreements with GPGA to ensure a noise assessment had been carried out under WHO Guidelines to ensure there is no unreasonable impact on amenity.

As part of the assessment, SLR detailed a noise contour map shown in Figure 55 below.

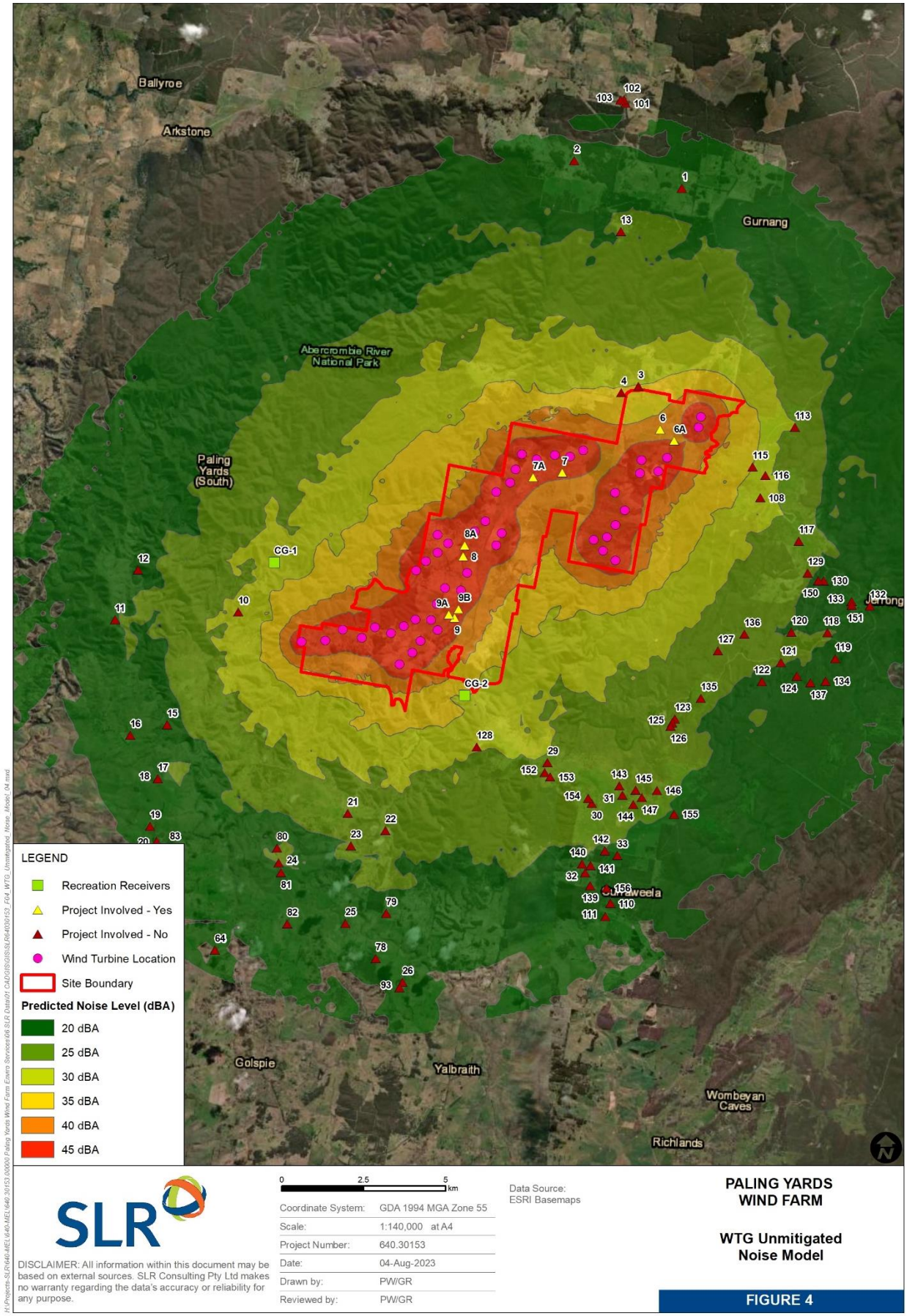


Figure 55. Noise Contour Map (Source: SLR Noise Assessment 2022)

6.3.1 Wind Farm Assessment Methodology

The Assessment was prepared in accordance with the following:

- NSW Planning and Environment's Wind Energy: Noise Assessment Bulletin for State Significant Wind Energy Development - 2016 (NSW Bulletin).
- South Australian EPA Wind Farms – Environmental Noise Guidelines for Wind Farms – 2009 (SA Guideline).
- World health Organisation limits and Interim Construction Noise Guideline.
- NSW Noise Policy for Industry.
- NSW Road Noise Policy.
- NSW Road Noise Policy.

The identified principal acceptability limits that apply include that the wind farm should not exceed an amenity limit of 35dBA or the pre-existing background noise by more than 5dBA for any given wind speed.

Given that the specific WTG for the Project has not yet been selected, the noise assessment adopted a typical turbine model that may be adopted for the purpose of modelling noise impacts. As such, the Noise Impact Assessment has assumed that the General Electric – Cypress 158 – 6.1MW WTG, model will be adopted for the windfarm. This WTG has a maximum sound power level of 107dBA at standard operational mode, with noise reduced operation modes available at a minimum of 100dBA.

The noise criteria applied is in accordance with the NSW Government guideline *Wind Energy: Noise Assessment Bulletin: for State significant wind energy development* (December 2016) and the World Health Organization *Guidelines for Community Noise*.

The minimum noise criteria are:

- 35dBA for receivers in areas primarily intended for 'rural living' (Wind Energy: Noise Assessment Bulletin (2016).
- 45dBA for project involved receptors (WHO Guidelines for Community Noise).

6.3.2 Predicted Noise Level

Operational Noise

Noise modelling of the worst-case layout has been completed by SLR using three-dimensional SoundPLAN V8.1 software, including the parameters set out in the UK Institute of Acoustics *'A Good Practice Guide to the Application of ETS-R-97 for the Assessment and Rating Wind Turbine Noise'*.

The wind farm noise levels from the proposed 47 WTG locations were calculated for a hub height wind condition of 10m/s. A full list of the predicted WTG noise levels are included at Table 15 of the SLR noise assessment.

With the WTGs operating at their full noise emission level (107dBA Sound Power Level), the following minor exceedances are likely:

- Non-involved receptors 3 and 4 marginally exceed the minimum 35 dBA SA EPA Guideline criteria.
- Project-involved receptors 6A, 7, 7A, 8, 8A, 9, 9A and 9B, exceed the minimum 45 dBA WHO criteria.

Table 37. Predicted WTG noise level exceedances (adapted from Table 1 and Table 15 of SLR Noise Impact Assessment)

Receptor ID	Distance to nearest WTG (km)	Project Involved?	Predicted WTG Leq noise dBA	Exceedance
3	2.0	No	35.2	0.2 dBA
4	2.1	No	36.0	1.0 dBA
6A	0.6	Yes	45.1	0.1 dBA
7	0.5	Yes	46.8	1.8 dBA
7A	0.6	Yes	47.4	2.4 dBA
8	0.5	Yes	48.0	3.0 dBA
8A	0.5	Yes	48.3	3.3 dBA

9	0.7	Yes	46.8	1.8 dBA
9A	0.5	Yes	48.5	3.5 dBA
9B	0.6	Yes	47.1	2.1 dBA

All other receptors will be within the prescribed minimum criteria.

The predicted noise levels at the nearest amenity / recreational uses and locations within the Abercrombie National Park have also been assessed in accordance with the NSW Noise Policy for Industry (EPA, 2017). Noise levels to the nearest use, Silent Creek Campground (CG2), is predicted to be 35.3 dBA, while levels to Bummaroo Ford Campground (CG-1) is predicted to be 30.8 dBA. These were the closest two amenity / recreational uses of the Abercrombie National Park that were identified. It is not expected that the wind farm will impact any other amenity or recreational uses or locations within the national park as the proposed noise expected from the turbine and substation to the two campgrounds is registered as being below the required dBA noise level, Table 38 below provides the guidelines for campgrounds. We note that the Guidelines allow the provision of an additional 5dBA background criteria to all guideline noise level.

Table 38: Guideline Noise Levels (Source: SLR 2022)

Receiver Location / Type	Period	Guideline Noise Level
Campgrounds	Day	55dBA
	Evening	50dBA
	Night	45dBA

Substation Noise

Noise predictions for the transformer substations have been made using ISO 9601 algorithm. The predictions are based upon the assumed capacity of the transformers, two are proposed as being 180 MVA transformers and a single 320 MVA transformer. The two transformers at 180MVA are expected to produce sound levels of up to 106dBA and the single 320MVA transformer may produce noise levels of up to 109 dBA.

The proposed three substation locations that were assessed included:

- Collector substation location - 2x180MA
- Switching station (Western Option) - 1x320MVA
- Switching Station (Eastern Option) – 1x320MVA

The results of the assessment found that noise emitted from the transformers will not exceed the appropriate noise limit and complies with the relevant noise criteria. Refer to Tables 19 and 20 of the SLR Noise Assessment report for more information.

Construction Noise

The Department of Environment, Climate Change and Water (DECCW) issued the *"Interim Construction Noise Guidelines"*, which includes defining Noise Management Levels (NMLs) at residences, and how they are to be applied in practice.

Key construction activities which relate to the associated construction of a wind farm and the expected construction time for the Project have been evaluated to anticipate the expected noise level. The report anticipates that most construction will occur during standard construction hours, and it is therefore considered appropriate that construction noise levels up to 10 dBA above the rating background levels would be acceptable.

A total of nine (9) receptors (identified as receptors: 6A, 7, 7A, 8, 8A, 9, 9A and 9B,) are deemed to be potentially affected by construction noise. It is important to note that all these receptors are project involved. No locations will exceed the highly noise affected criteria of 75 dBA noise management levels.

Refer to Table 22 of the SLR noise assessment report for more information on the predicted construction noise, including construction of access roads, establishment of WTG foundations, trenching and WTG erection & assembly.

Construction Vibration

Vibration has the potential to impact on occupants (human comfort) and structures (building damage). Vibration impacts from key construction activities have been assessed and the worst-case scenarios modelled in accordance with the following standards:

- Human Comfort is informed on the Department of Environment Climate Change and Water's (DECCW) *Assessing Vibration: A Technical Guideline*. It provides the acceptable values for continuous and impulsive vibration based upon guidelines contained in BS 6472-1992, Evaluation of human exposure to vibration in buildings (1-80Hz).
- Building Damage as a result of vibration has been informed by the German Standard DIN4150 which recommends a limit of 10mm/s Peak Velocity (PPV) within any building, and the British Standard BS7385: Part 2 – 1993 which sets a limit within buildings which depends upon a vibration frequency as low as 7.5mm/s PPV. For the purpose of this assessment, a limit of approximately 5mm/s PPV has been applied to the Project.
- Given that the distances between sensitive receptors and the construction works areas are assumed to be greater than 500m, building damage and human comfort vibration criteria will easily be met during construction. It was considered that the proposed vibration levels were found to be acceptable.

Abercrombie National Park

The Abercrombie National Park, and associated campgrounds, have been considered as part of the noise assessment. The assessment evaluated the potential impact of project noise on passive recreation to the nearest campgrounds.

The noise triggers to these campgrounds were assessed in accordance with the requirements for 'hotels, motels, holiday accommodation, caravan parks'. The projected noise level triggers for these uses are:

- Day time: 55dBA
- Evening: 50dBA
- Night: 45dBA.

The modelling found that the predicted noise generated by construction and operation of the wind farm will not exceed the maximum allowed noise levels as per the guidelines. It is furthermore not expected that other amenity or recreational locations or facilities in the national park will be negatively impacted by the proposed Project.

Traffic Noise and Night-time deliveries

Road traffic noise as a result of the project is anticipated to comply with the *Road Noise Policy* for daytime traffic.

Night-time deliveries may occur for certain scheduled deliveries. It is assumed that noise levels at residences located approximately 50m away from roads would result in 35 to 45 dBA noise inside the dwelling. It is not expected that noise generated from night-time deliveries are likely to affect health and wellbeing of residents.

6.3.3 Mitigation Recommendations

Modern WTGs are generally able to apply a noise curtailment strategy to their operations which can typically include:

- Sector Management - Where individual turbines are switched off during certain meteorological conditions such as specified wind speed and directions. This method is best utilised when a combination of wind speeds and directions results in higher noise levels at a given receptor.
- Noise Management Mode (NMM) - This is firmware-locked operation mode of the WTG whereby the speed of the rotor is reduced to lessen the sound power generated by the blades. This is set by the turbine manufacturer and is fixed for each WTG.

Based on the findings, SLR ran the noise model with those turbines nearest the impacted receptors running at reduced noise modes of NMM 104 and NMM 101. It was determined that under these mitigated conditions, the WTGs will satisfy the noise criteria at each receptor, Figure 56 provides a Contour Map of the WTG mitigated Noise Model highlighting the effectiveness of the mitigation measures.

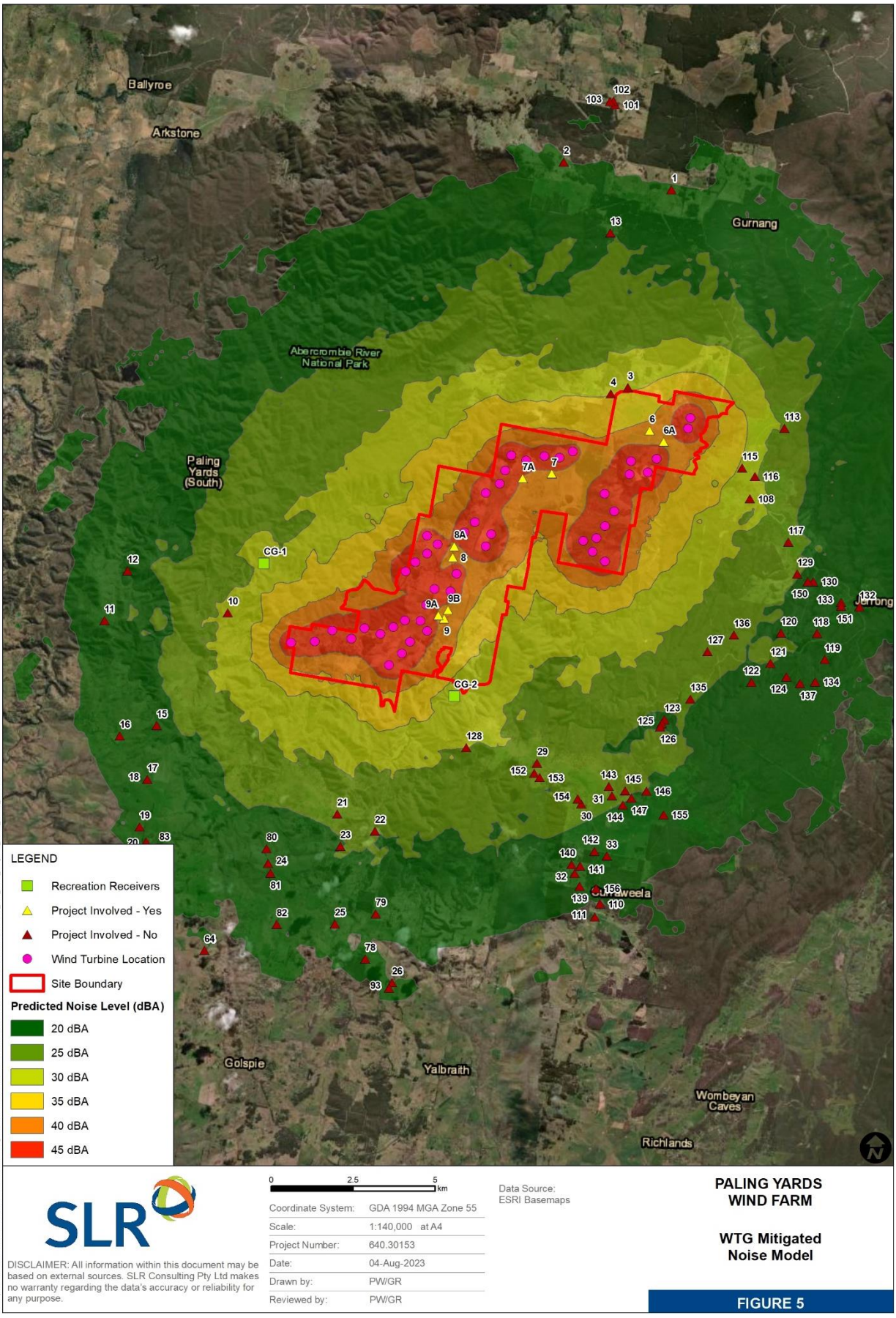


Figure 56. Predicted Mitigated Noise Contour Map (Source: SLR 2022)

Considering the minor exceedances as the identified receptors as per Table 37 above, those WTGs requiring reduced noise modes are as follows:

Table 39. WTGs requiring reduced noise modes (Source: SLR 2022)

Turbine Name	Type
PY-4	101 NMM
PY-13	104 NMM
PY-14	101 NMM
PY-15	101 NMM
PY-16	104 NMM
PY-17	101 NMM
PY-20	101 NMM
PY-21	101 NMM
PY-22	101 NMM
PY-23	104 NMM
PY-29	101 NMM
PY-31	101 NMM
PY-32	104 NMM
PY-33	104 NMM
PY-34	101 NMM
PY-45	104 NMM

The predicted noise levels at the identified receptors after the mitigation measures have been applied to the selected turbines are as follow:

Table 40. Predicted Noise Levels: Mitigated Turbine Layout (Source: SLR 2022)

Receptor ID	Distance to nearest WTG (km)	Prior to Mitigation Measures	Predicted WTG Leq noise dBA after Mitigation	Complies with minimum criteria
3	2.0	35.2	34.2	Yes
4	2.1	36.0	34.8	Yes
6A	0.6	45.1	43.9	Yes
7	0.5	46.8	44.1	Yes
7A	0.6	47.4	44.8	Yes
8	0.5	48.0	44.2	Yes
8A	0.5	48.3	44.7	Yes
9	0.7	46.8	43.2	Yes
9A	0.5	48.5	44.6	Yes
9B	0.6	47.1	43.5	Yes

The SLR report outlines that, in order to ensure construction noise is managed appropriately, a more detailed management plan should be developed by the proponent upon the finalisation of equipment selection and construction management. The document would provide more detailed guidance on a noise mitigation strategy for the construction stage.

The following mitigation measures is proposed for 'noise affected' dwellings impacted by construction noise:

- Scheduling construction works for less critical times of day
- Using alternative, quieter equipment
- Noise controls including temporary walls / earthy berms and exhaust silencers
- Keeping the community informed about upcoming works in the area
- Detailed tracking regarding complaints about construction noise.

The following measures is proposed for mitigating night-time delivery noise levels:

- Prior notification of affected public where night-time convoys is scheduled
- Restricted use of exhaust / engine brakes in built up areas.

6.4 Geotechnical Assessment

The Project SEARs requires the EIS to prepare:

> *'an assessment of the potential impacts of the development on existing land uses on* ***the site and adjacent land, including:***
>
> ...
>
> - *A soil survey to determine the soil characteristics and consider the potential for erosion to occur.'*

SLR has prepared an interim interpretive geotechnical investigation report to determine existing ground conditions, seismic design parameters, material reusability and to provide recommendations and commentary on the geotechnical aspects of the proposal.

Due to difficult site conditions caused by recent weather events, limited fieldwork has been undertaken. To provide meaningful data for this assessment, a detailed review of the previous geotechnical report prepared by URS in 2011 at the same location has been undertaken. The comprehensive URS Geotech report referenced a previous layout that is similar but not identical to the current iteration. The new report is based on the site's latest layout. While not yet finalised due to weather delays, the investigation's findings already mirror observations from the initial study. It is therefore not expected to differ in conclusion.

SLR also prepared an interim interpretive geotechnical report form the proposed transmission line and infrastructure, which is discussed in more detail under section 6.4.10.

6.4.1 Site Geology

The geotechnical report identifies a number of near-surface geologies underlying the Site, characterised generally by:

- Oberon Basalt (NM_o) – Miocene
- Alluvial Sediments (GN_aa) – Pleistocene
- Poidevins Sandstone (Omap) – Llandovery
- Bumballa Formation (Obeb) – Late Ordovician
- Warbisco Shale (Obew) – Late Ordovician
- Abercrombie Formation (Oada) – Early Ordovician
- Colluvium (Q_c) – Quaternary
- Residual Deposits (Q_r) – Quaternary
- Mummel Chert Member (Oadam) – Early Ordovician

The mapping contained within the geotechnical report indicates that most of the turbines would be underlain by Oberon Basalt, which can weather due to extremely reactive and highly plastic residual soils.

Recommendations contained in the geotechnical report are based on a peer review of a preliminary assessment carried out in 2011 by URS at the site. A summary of the relevant test locations and subsurface conditions is provided below.

Table 41. Summary of relevant URS test locations (excerpt from SLR preliminary geotechnical report)

Relevant Turbine Location	URS Site ID	Elevation (mRL)	Depth (m)	Summary of subsurface conditions
PY-1	TP15	887	1.9 (refusal)	Shallow residual soil over BASALT
PY-2	TP16	898	1.5 (refusal)	Shallow residual soil over BASALT
PY-3	TP17	919	1.5 (refusal)	Shallow residual soil over BASALT
PY-4	TP18	941	0.9 (refusal)	Shallow residual soil over BASALT
PY-6	TP3	862	1.3 (refusal)	Shallow residual soil over SILTSTONE
PY-8	TP5	869	1.5 (refusal)	Shallow residual soil over SILTSTONE
PY-9	TP9	870	0.6 (refusal)	SILTSTONE outcrop
PY-9	BH1	870	20	Moderate to High strength SILTSTONE
PY-10	TP12	911	2.1 (refusal)	Shallow residual soil over BASALT
PY-11	TP13	903	0.5 (refusal)	SILTSTONE outcrop
PY-12	TP14	903	1.8 (refusal)	Shallow residual soil over SILTSTONE
PY-13	TP19	943	1.6 (refusal)	Shallow residual soil over BASALT
PY-14	TP20	972	1.8 (refusal)	Shallow residual soil over BASALT
PY-15	TP28	972	1.4 (refusal)	Shallow residual soil over BASALT
PY-16	TP27	977	1.7 (refusal)	Shallow residual soil over BASALT
PY-18	TP31	933	1.5 (refusal)	Shallow residual soil over BASALT
PY-19	TP32	956	2.4 (refusal)	Residual soil over BASALT
PY-20	TP33	976	1.0 (refusal)	Shallow residual soil over BASALT
PY-21	TP35	971	1.4 (refusal)	Shallow residual soil over BASALT
PY-22	TP34	994	3.0	Residual soil over BASALT
PY-23	TP36	985	1.7 (refusal)	Shallow residual soil over BASALT
PY-24	TP37	1001	1.4 (refusal)	Shallow residual soil over BASALT
PY-25	TP38	1000	3.4	Residual soil
PY-25	BH2	1000	19.7	Residual soil over BASALT
PY-26	TP39	1010	3.3	Residual soil over BASALT
PY-28	TP44	1003	1.0 (refusal)	Shallow residual soil over BASALT
PY-29	TP45	983	2.0 (refusal)	Residual soil over BASALT
PY-30	TP47	976	1.9 (refusal)	Residual soil over BASALT
PY-31	TP48	968	1.5 (refusal)	Shallow residual soil over SANDSTONE
PY-32	TP49	991	1.3 (refusal)	Shallow residual soil over BASALT
PY-33	TP50	1038	2.3 (refusal)	Residual soil over BASALT
PY-34	TP51	1046	2.0 (refusal)	Residual soil over BASALT
PY-35	TP60	1024	2.1 (refusal)	Residual soil over BASALT
PY-36	TP59	1026	1.0 (refusal)	Shallow residual soil over BASALT
PY-37	TP58	1031	1.6 (refusal)	Shallow residual soil over BASALT

PY-38	TP57	1042	1.5 (refusal)	Shallow residual soil over BASALT
PY-39	TP56	1022	1.1 (refusal)	Shallow residual soil over BASALT
PY-40	TP54	1018	1.5 (refusal)	Shallow residual soil over BASALT
PY-41	TP52	982	0.8 (refusal)	Shallow residual soil over BASALT

BH = Borehole; TP = Test Pit

6.4.2 Scope and Methodology

In addition to the URS site investigations in the 2011 report, SLR identified eight site investigation locations that reflect the latest Project layout. Due to adverse weather conditions and access issues, SLR were unable to complete investigations at all eight investigation sites. Further investigations are being carried out at the time of writing the report, weather permitting.

Two boreholes were drilled to a maximum depth of 20.1 metres, including rock coring. The boreholes excavated were:

- PYWF-BH02 – Easting 198699.21, Northing 6214021.91
- PYWF-BH03 – Easting 199691.57, Northing 6215408.11

Test pitting was unable to be carried out safely given the weather conditions and will be undertaken when weather permits.

6.4.3 Subsurface Conditions

Based on information gathered from the boreholes that were successfully excavated, SLR identified five predominant material units with varying depths to the base of each unit. The encountered material units were:

1. Top soil
2. Alluvium
3. Residual Soil
4. Extremely Weathered Basalt
5. Slightly Weathered / Fresh Basalt.

A summary of the encountered strata is provided in Table 42 below.

Table 42. Summary of encountered strata (adapted from SLR Report)

Location / Property	Deposition Environment	Dominant Material Type	Encountered	Encountered Depth Range (mbgl)
Oberon Basalt	Topsoil	Clayey SILT, Silty sandy CLAY	PYWF-BH02, PYWF-BH03	0.00 to 0.30
	Alluvium	Silty CLAY, Sandy CLAY	PYWF-BH02, PYWF-BH03	0.20 to 1.50
	Residual Soil	CLAY, Clayey SILT, Silty CLAY, Clayey SAND	PYWF-BH02, PYWF-BH03	1.20 to 5.00
	Extremely Weathered Basalt	Mixture of cobbles and boulders of Basalt	PYWF-BH02, PYWF-BH03	3.40 to 5.60
	Slightly Weathered / Fresh Basalt	Basalt	PYWF-BH02, PYWF-BH03	3.50 +

Topsoil

Topsoil was observed to be generally cohesive in nature, extending to a depth of approximately 0.3 mbgl. A variable consistency was present with the soil displaying a low plasticity and high organic content.

Alluvium

Due to proximity to Black Bett Creek and Oaky Creek, alluvium was encountered at both borehole locations. Alluvium extended to a maximum depth of approximately 1.5 mbgl, and soils encountered were of medium to high plasticity and of a firm consistency. SLR note that this is unlikely to be consistent across the site and confined to creek drainage lines.

Residual Soil

Orange-brown cohesive soils were present between 1.2 mbgl and 5.0 mbgl. Consistency increased with depth from stiff to very stiff. The soil exhibited a medium to high plasticity and exhibiting high levels of reactivity.

Extremely Weathered Basalt

Extremely weathered basalt was encountered as layers of cobbles and boulders up to a maximum depth of 5.6 mbgl. This layer provides evidence of chemical and physical weathering made evident with staining and the number of vesicles. Some vesicles are infilled with mineral inclusions and as such it is considered that the strength of the weathered basalt is variable.

Slightly Weathered / Fresh Basalt

The parent rock was observed as being vesicular basalt with occasional mineral infill. The strength of the basalt is noted as being high to very high, with occasional defects.

6.4.4 SPT, Dynamic Cone Penetrometer and Pocket Penetrometer Test Results

A review of the test results from the SPT and Pocket Penetrometer indicated that the consistency / relative density increases with depth, this aligns with the pocket penetrometer values.

A Dynamic Cone Penetrometer test has not been undertaken in the Project Area as it has not been possible to excavate test pits due to adverse weather conditions at the time field work was undertaken.

6.4.5 Rock Quality

Rock quality designation (RQD) provides a measure of the quality of rock recovered from a borehole. RQD signifies the degree of jointing or fracture in a rock mass measure in percentage.

As a base, it is understood that RQD values ≥75% signify good quality rock with low defect densities, RQD values less than 50% typically signify highly fractured rock masses, typical of weathered, low-quality rock.

The Borehole samples showed an overall trend that the rock sampled from the boreholes was highly fractured at shallow depths and increased in quality at deeper depths. A rock strength of high to very high was visually confirmed. Based on this information and the data from a previous study, it is identified that rock quality is dependent upon location.

6.4.6 Ground water

Ground water was encountered in PYWF-BH03 at 5.6mbgl with underlying rock being observed as being dry. This was the only location to where groundwater was found. The presence of groundwater is expected to vary based on a number of factors including topography, drainage systems and seasonal variation and rainfall.

6.4.7 Site Classification

The site classification is in accordance with AS 2870 *'Residential Slabs and Footings'* and relates to residential type construction. The preliminary tests undertaken as part of the report identify that in accordance with AS 2870, the site is classified as Class M. It is anticipated that the ground surface is subject to movement (approximately 20mm to 40mm). It is recommended that a footing system be designed and used which will accommodate the anticipated ground movement.

6.4.8 Trafficability

It is believed that trafficability of the site can be appropriately managed. Trafficability is to be improved by ensuring the ground surfaces are prepared correctly to ensure damage to the surface remains minimal. During heavy or prolonged rain, it is suggested that dedicated construction tracks are used to reduce damage.

6.4.9 Construction Considerations

A number of construction considerations have been suggested within the report and provide the following guidance:

- The base of proposed footings should extend 500mm below the base level of the trench and should not be located within 1.0m from the trench (measured laterally).
- The base of proposed piers should extend 1.0 m below the base level of the trench and should not be located within 1.0 m laterally from the trench.
- High level footings:
  - It is recommended that a blinding layer of concrete, at least 50 mm thick, be laid immediately following excavation, cleaning and inspection of the footing base by an experienced geotechnical engineer.
  - It is possible that shoring will be required to support the sides of the footing excavations to prevent side wall collapse. This is a risk in all material types, whether controlled, uncontrolled or natural and precautions should always be taken to ensure the pit sides are stable.
  - Regular inspections by an experienced geotechnical engineer to confirm the adequacy of the founding soils are required.
- Anchors and Piles:
  - If bored piles are being constructed, all loose material should be removed from the base of the piles prior to the pouring of concrete. The use of a 'clean out' bucket should be explicit in instructions to the drilling contractor.
  - Some allowance for dewatering and the use of liners should be made. In addition, it may be preferable to drill a 'trial pile' to fully assess construction difficulties. It is recommended that the pile holes be poured as soon as possible following boring.

6.4.10 Transmission Line

As above, limited fieldwork has been undertaken due to difficult site conditions caused by recent weather events. To provide meaningful data for the assessment, a detailed review of the previous report that was compiled by URS in 2011 at the same location has been undertaken. Once the proposed fieldwork is complete, the geotechnical report will be revised to incorporate findings from the current geotechnical investigations.

The additional assessment was undertaken to determine:

- Ground conditions to inform geotechnical design parameters for transmission tower footings
- Electrical resistivity survey for the substation site
- Seismic design parameters
- Recommendations for the geotechnical aspects of the transmission line development.

A review of the Geotechnical Survey of NSWE database indicated the near-surface geology underlying the site characterised by predominantly:

- Colluvium (Qc)
- Oberon Basalt (NMo)
- Abercrombie Formation (Oada).

Abercrombie Formation (Oada). The geotechnical site investigation included the following:

- Borehole drilling
- Test pit excavation

- Site investigations and visits
- Review of previous prepared material and report
- Laboratory testing if soil samples.

From information contained within the URS (2011) report and from findings gathered on site, it is evident that the majority of the transmission line tower locations are underlain by shallow alluvial and residual soils trending to weathered Basalt at depth.

Based on the existing geotechnical investigation data, at a depth where gravity footings could be constructed, the ground conditions generally comprise extremely weathered to distinctly weathered basalt and siltstone. Once the final geotechnical investigations are available for the site, the following foundation design parameters are recommended and presented in the below table:

Table 43. Recommended Foundation Design Parameters

Foundation design Parameters			
Material	Allowable Bearing	Ultimate Bearing	Ultimate Bond Stress
Very stiff (or stiffer) Clay	250 kPa	750 kPa	-
Medium Strength Siltstone or Basalt	1.0 MPa	8.0 MPa	500 kPa
High Strength Basalt	3.5 MPa	30MPa	2000kPa

Notes:
All capacities and footing bases are subject to inspections by a geotechnical engineer.

(Source: SLR Consulting: Interim Interpretive Geotechnical Report 2022)

It should be noted that SLR will undertake an electrical resistivity study as part of their final assessment during detailed design. Their current report includes the findings of the original study that was undertaken by URS.

The following construction considerations have been included:

- Where proposed foundations are located within close proximity to proposed or existing features and / or excavations (i.e., Underground service trenches, unsupported batters etc.), the interaction between the foundation and the feature must be carefully considered
- Given the properties of the founding materials it is recommended that following excavation, the footings be poured as soon as possible to minimise the potential for desiccation or wetting of the founding material. Alternative recommendations are made if not possible.
- Some difficulty with fall-in may occur, particularly when drilling through the upper-level soils. If bored piles are being constructed, it should be ensured that all loose material is removed from the base of the piers prior to the pouring of concrete. The use of a 'clean out' bucket should be explicit in instructions to the drilling contractor. Inspections should be carried out during excavation.

6.5 Biodiversity Development Assessment Report

The Secretary's Environmental Assessment Requirements (SEARs) for the Project require the EIS to:

- *'assess biodiversity values and the likely biodiversity impacts of the project, including impacts associated with transport route road upgrades and indirect impacts on the Abercrombie National Park, in accordance with the Biodiversity Conservation Act 2016 (NSW), the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR), including a detailed description of the proposed regime for avoiding, minimising, managing and reporting on the biodiversity impacts of the development over time, and a strategy to offset any residual impacts of the development in accordance with the BC Act [(NSW Biodiversity Conservation Act 2016)].*
- *assess the likely impacts on listed aquatic threatened species, populations or ecological communities, scheduled under the Fisheries Management Act 1994, and a description of the measures to minimise and rehabilitate impacts;*
- *assess the impacts of the development on birds and bats, including blade strike, low air pressure zones at the blade tips (barotrauma), alteration to movement patterns, and cumulative impacts of other wind farms in the vicinity; and*

- *if an offset is required, details of the measures proposed to address the offset obligation.'*

This is consistent with the NSW *Wind Energy Guideline for State Significant Wind Energy Development, December 2016*.

A BDAR prepared by Hunter Ecology accompanies the EIS and is provided at Appendix N. The BDAR has been prepared in accordance with the Office of Environment and Heritage (OEH) BAM established under the NSW BC Act.

The BDAR focusses on the subject Site plus a 50-metre buffer around the proposed alignment ('Survey Area'), which includes a 100m buffer around the proposed WTGs.

A Bird and Bat Utilisation Survey (BBUS) (Appendix Z) has also been prepared by Hunter Ecology providing baseline data on the utilisation of the Project Area by birds and bats over time in response to the operational phase of the Project, and for use in the BBAMP, should the Project receive consent. Refer to section 6.6.

6.5.1 Site and Landscape Features

The BDAR identifies that the Assessment Area is located within both the South Eastern Highlands *Interim Biogeographic Regionalisation for Australia* (IBRA) bioregion and Crookwell IBRA subregion.[29] Specific to NSW, the area occurs across the Rockley Plains and Mount David Basalts Mitchell Landscapes, noting that the majority of the area is within the Mount David Basalts landscape. Other key landscape features include:

- 50% of the Assessment Area is covered in native vegetation.
- The patch size of native vegetation is >100 ha.
- Abercrombie River occurs south of the Site, approximately 1km from the nearest part of the construction footprint.
- The proposal does not interfere with any watercourses or wetlands, although some turbines are within close proximity to watercourses and farm dams (<100m).
- The proposed access tracks intercept main drainage features.
- A transmission line would cross Mount Brown Gully in the north-east.
- All watercourses within the vicinity of the Site are 1st order streams (Strahler stream order30), including:
    - Oaky Creek
    - Black Bett Creek
    - Paling Yard Creek
- There are no Wetlands of International Importance within 10km of the Site.
- There are no specific corridors of native vegetation within the Site, although there are large tracts of forested land surrounding the Site including:
    - Abercrombie River National Park to the west and north.
    - Blue Mountains National Park to the east.
    - Kanangra-Boyd National Park to the south.
- No karst, caves, crevices, cliffs or areas of geological significance exist within the Assessment Area.
- No Areas of Outstanding Biodiversity Value (AOBV) under the BC Act occur within the Assessment Area.
- No predictable or habitual migratory and nomadic bird and bat species flight paths were able to be mapped within the Assessment Area.
- The BDAR recognises that there are several migratory and nomadic bird and bat species that may fly through the Assessment Area.

[29] *Interim Biogeographic Regionalisation for Australia (IBRA) version 7.0 represents a landscape based approach to classifying the land surface of Australia. 89 biogeographic regions and 419 sub regions have been delineated, each reflecting a unifying set of major environmental influences which shape the occurrence of flora and fauna and their interaction with the physical environment across Australia and its external territories (excluding Antarctica). IBRA Version 7.0 data consists of two datasets. IBRA bioregions, which is a larger scale regional classification of homogenous ecosystems, and sub regions, which are more localised. IBRA Version 7.0 is the result of both significant changes to certain IBRA 6.1 boundaries, plus refinement of other boundaries due to better data availability amongst some states and territories, and alterations by the states/territories along state borders.*
https://www.environment.gov.au/fed/catalog/search/resource/details.page?uuid=%7B1273FBE2-F266-4F3F-895D-C1E45D77CAF5%7D

[30] *'Stream order' is used to describe the hierarchy of streams from the top to the bottom of a caption. Under the Water Management (General) Regulation 2018 exemptions for access licences or approvals apply depending on the stream order. The Strahler system is based on confluence, a 1st order stream has no other streams flowing into it. https://www.industry.nsw.gov.au/__data/assets/pdf_file/0020/172091/Determining-Strahler-stream-order-fact-sheet.pdf*

Controlled Actions

As of November 2013, the Commonwealth Government and the NSW Government (DPE) signed a bilateral agreement to allow the NSW planning system to undertake the singular environmental assessment process for projects that are to be considered under the EBPC Act.

A referral for a wind farm development within the Project Area was submitted to the Commonwealth Department of Environment and Heritage in February 2005. On 31 March 2005, the Minister declared that the action was not a controlled action and approval under Part 9 of the EPBC Act was not required. The Minister's decision described the 'proposed action' as:

- '*The proposed action to establish and operate a wind farm 70km south of Oberon and 30km north of Taralga, bordering the Abercrombie River National Park in the Southern Tablelands of NSW, as described in the referral received under the Act on 25 February 2005 (EPBC 2005/2018)*.'

It should be noted that since the original referral, the project has evolved with minor adjustments to of number of proposed WTGs, site footprint and turbine height.

The BDAR concludes that no MNES would be significantly impacted by the proposal and therefore referral to the Commonwealth Department of Environment is most likely not required. However, in accordance with *Appendix H* of the BDAR and if required, the Project could be referred to the Department of Agriculture, Fisheries and Forestry (DAFF) (previously Department of Agriculture, Water and Environment, DAWE) for comment and additional determination.

Therefore, the Proponent is prepared to lodge a new EPBC Referral to ascertain this and also in consideration of the dimensional envelope change for the proposed turbines. The new EPBC Referral is expected to be lodged with DAWE within the first quarter of 2023.

6.5.2 Native Vegetation

Six Plant Community Types (PCTs) comprising nine vegetation zones (VZs) have been identified within the assessment area, summarised in Table 44 below. Refer to Table 3-4 (Section 3.3) of the BDAR for detailed description and justification of PCT selection.

Table 44. Impacted PCTs within survey area and required Ecosystem Credits required (adapted from BDAR)

PCT	Vegetation Zone (VZ)	Area within Survey Area	Area within Construction Footprint (to be removed)	Total VI Loss	No. of Ecosystem Credits Required
PCT 85 River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion	85_1	4.69 ha	1.73 ha	47	41
PCT 649 Apple Box – Broad-leaved Peppermint dry open forest of the South Eastern Highlands Bioregion	649_1	15.3 ha	5.57 ha	47.9	100
PCT 654 Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion	654_1	2.39 ha	1.95 ha	19.5	24
PCT 727 Broad-leaved Peppermint Brittle Gum – Red Stringybark dry open forest on the South Eastern Highlands Bioregion	727_1	10.2 ha	7.53 ha	62.5	206
	727_2	2.79 ha	1.25 ha	34	19
	727_3	12.99 ha	7.38 ha	10.5	0

PCT	Vegetation Zone (VZ)	Area within Survey Area	Area within Construction Footprint (to be removed)	Total VI Loss	No. of Ecosystem Credits Required
PCT 951 Mountain Gum – Manna Gum open forest of the South Eastern Highlands Bioregion	951_1	0.50 ha	0.50 ha	57.9	14
	951_2	7.61 ha	2.34 ha	42.1	49
PCT 1093 Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	1093_1	9.19 ha	3.45 ha	51.4	78

6.5.3 Vegetation Integrity

Vegetation Integrity (VI) is a metric-based assessment used to measure the condition of native vegetation against a benchmark, based on survey data collected by the assessor. The assessor considers the condition of the composition, structure and function against the benchmark PCT of each vegetation zone in their assessment of VI.

The BDAR has calculated the VI scores for existing VZs in the impacted by the development in accordance with the BAM as outlined Table 45 below.

Table 45. Vegetation Integrity Assessment Scores (adapted from Table 3-6 & Table 7-1 BDAR)

Vegetation Zone (VZ)	Composition Score	Structure Condition Score	Function Condition Score	VI Score
85_1	32.6	35.6	89.8	47.1
649_1	34.8	63.4	49.7	47.9
654_1	4.5	36.2	45.3	19.5
727_1	41.4	59.5	99.1	62.5
727_2	18.9	49.9	41.8	34
727_3	12.9	18.1	5	10.5
951_1	34.6	73.8	76.3	57.9
951_2	23.3	75.3	42.4	42.1
1093_1	31.2	44.6	97.6	51.4

6.5.4 Exotic Vegetation

The Assessment Area contains a large portion of exotic vegetation, concentrated in the grassland / cleared areas, reflecting a history sewn cultivated pasture species. Grasses observed in these areas include:

- *Lolium perenne* – Rye Grass
- *Hordeum sp.* – Barley Grass
- *Poa annua* – Winter Grass
- *Dactylis glomerata* – Cocksfoot
- *Cenchrus clandestinus* – Kikuyu
- *Paspalum dilatatum* – Paspalum

- *Holcus lanatus* – Yorkshire Fog
- *Phalaris aquatica* – Phalaris.

Significant infestations of *Nassella trichotoma* (Serrated Tussock) and *Rubus fruticosus* (Blackberry) were present in the north-eastern portion of the Assessment Area.

There were no derived or natural native-dominant grasslands observed in the Assessment Area.

6.5.5 Threatened Species

Table 4-3 of the BDAR identifies habitat suitability for Ecosystem Credit Species within the assessment area. Confirmed predicted species include:

- *Anthrochaera phrygia* Regent Honeyeater
- *Artamus cyanopterus* Dusky Woodswallow
- *Callocephalon fimbriatum* Gang-gang Cockatoo
- *Calyptorhynchus lathami* Glossy Black-Cockatoo
- *Chtonicola sagittate* Speckled Warbler
- *Circus assimilis* Spotted Harrier
- *Climacteris picumnus victoriae* Brown Treecreeper (eastern subspecies)
- *Daphoenositta chrysoptera* Varied Sittella
- *Dasyurus maculatus* Spotted-tailed Quoll
- *Falsistrellus tasmaniensis* Eastern False Pipistrelle
- *Glossopsitta pusilla* Little Lorikeet
- *Grantiella picta* Painted Honeyeater
- *Haliaeetus leucogaster* White-bellied Sea-Eagle
- *Hieraaetus morphnoides* Little Eagle
- *Hirundapus caudacutus* White-throated Needletail
- *Lathamus discolor* Swift Parrot
- *Melanodryas cucullata* Hooded Robin (south-eastern form)
- *Melithreptus gularis* Black-chinned Honeyeater (eastern subspecies)
- *Miniopterus orianae oceanensis* Large Bent-winged Bat
- *Ninox strenua* Powerful Owl
- *Petaurus australis* Yellow-bellied Glider
- *Petroica boodang* Scarlet Robin
- *Petroica phoenicea* Flame Robin
- *Phascolarctos cinereus* Koala
- *Polytelis swainsonii* Superb Parrot
- *Pteropus poliocephalus* Grey-headed Flying Fox
- *Scoteanax rueppellii* Greater Broad-nosed Bat
- *Stagonopleura guttata* Diamond Firetail
- *Suta flagellum* Little Whip Snake
- *Varanus rosenbergi* Rosenberg's Goanna

Table 4-4 of the BDAR identifies habitat suitability for Species Credit Species within the Assessment Area. Confirmed candidate species include:

- *Acacia bynoeana* Brynoe's Wattle
- *Ammobium craspedioides* Yass Daisy
- *Callocephalon fimbriatum* Gang-gang Cockatoo
- *Calyptorhynchus lathami* Glossy Black-Cockatoo
- *Cercartetus nanus* Eastern Pygmy-possum
- *Diuris aequalis* Buttercup Doubletail
- *Eycalyptus aggregata* Black Gum
- *Eucalyptus robertsonii subsp.* Hemisphaerica Robertson's Peppermint
- *Haliaeetus leucogaster* White-bellied Sea-Eagle
- *Heleioporus australiacus* Giant Burrowing Frog
- *Hieraaetus morphnoides* Little Eagle
- *Lepidium hyssopifolium* Aromatic Peppercress
- *Leucochrysum albicans var. tricolor* Hoary Sunray
- *Litoria aurea* Green and Golden Bell Frog
- *Litoria booroolongensis* Booroolong Frong
- *Litoria castanea* Yellow-Spotted Tree Frog
- *Mixophyes balbus* Stuttering Frog
- *Ninox strenua* Powerful Owl
- *Petauroids Volans* Greater Glider
- *Petaurus norfolcensis* Squirrel Glider
- *Phascolarctos cinereus* Koala
- *Polytelis swainsonii* Superb Parrot
- *Pteropus poliocephalus* Grey-headed Flying-Fox

'Species credits' apply to all threatened species which to occur at that Site and cannot be reliably predicted to occur within the identified ecological communities at the proposed development site. One 'species credit' species was confirmed at the site being breeding *Callocephalon fimbriatum* (Gang-gang Cockatoo). This was determined through field surveys undertaken on two separate occasions dated between 02 February to the 10 February 2021 and 01 October to the 07 October 2021 (refer to Section 4.2 of the BDAR for full outline of survey findings).

The Species Credits generated by the impact are outlined in Table 46 below.

Table 46. Species Credits Required to Offset the Project

Species	Vegetation Zone (VZ)	Habitat Condition (VI) loss	Area	No. of Species Credits Required
Callocephalon fimbriatum Gang-gang Cockatoo	727_1	63.1	4.2 ha	131
	951_1	57.9	0.4 ha	12

Note that the BAM Credit Report has been finalised and will be resubmitted in the coming days as per section 6.15 of the NSW BC Act.

6.5.6 Impacts on Threatened and Protected Animals from Wind Turbine Strikes

The BDAR provides a list of candidate animals which may use the Site as a flyway or migration route, identifying species across three categories, namely: resident threatened aerial species', resident raptor species', and nomadic and migratory species. The list of species in each category was identified from several sources, including a BioNet search of fauna records within 10 km of the site, an EPBC Act Protected Matters Search (for migratory species) and from available literature or general knowledge of species known to occur in the area.

A summary of the 'prescribed impacts' or predicted occurrences identified are outlined in Table 47 below.

Refer to Table 5-2 of the BDAR for the full assessment.

Table 47. Summary of prescribed impacts identified (adapted from Table 5-2 BDAR)

Protected animals that may live in or fly over the development Site	Habitual flight path or likely habitat for the species?	Predicted habitual flight paths and likely habitat
Resident threatened aerial species		
Hirundapus caudacutus White-throated Needletail (Confirmed Ecosystem Credit Species)	Yes – *Hirundapus caudacutus* (White-throated Needletail) is a confirmed Ecosystem Credit Species.	· May potentially occur anywhere in the Assessment Area · No predictable habitual flight path · Known to fly over partly cleared pasture, plantations or remnant vegetation · Occurs from heights <1m to >1000m above the ground
Resident raptor species		
Haliaeetus leucogaster White-bellied Sea-Eagle (Confirmed Ecosystem Credit Species) *Haliaeetus morphnoides* Little Eagle (Confirmed Ecosystem Credit Species) *Circus assimilis* Spotted Harrier (Confirmed Ecosystem Credit Species)	Yes – *Aquila audux* (Wedge-tailed Eagle), *Elanus axillaris* (Black-shouldered Kite), *Accipiter fasciatus* (Brown Goshawk), *Falco cenchroides* (Australian Kestrel), *Falco longipennis* (Australian Hobby), *Falco berigor* (Brown Falcon) were recorded in the Assessment Area. Three confirmed Ecosystem Credit Species.	· Recorded species were observed flying within Rotor Sweep Area (RSA) height (30-240m) · Identified raptor species are known to hunt in open areas and may occur anywhere in the Site - No predictable habitual flight paths

Any other common raptor species potentially occurring in the area		
Nomadic and migratory species		
Candidate Nomadic Any common nomadic species (parrots, some honeyeaters, some waterbirds) *Polytelis swainsonii* Superb Parrot (Confirmed Ecosystem Credit Species) *Calyptorhynchus lathami* Glossy Black-Cockatoo (Confirmed Ecosystem Credit Species) *Glossopsitta pusilla* Little Lorikeet (Confirmed Ecosystem Credit Species) *Miniopterus orianae* Large Bent-winged Bat (Confirmed Ecosystem Credit Species) *Saccolaimus flaviventris* Yellow-bellied Sheathtail Bat (Confirmed Ecosystem Credit Species) *Lathamus discolor* Swift Parrot (Confirmed Ecosystem Credit Species) *Pteropus poliocephalus* Grey-headed Flying Fox (Confirmed Ecosystem Credit Species) *Callocephalon fimbriatum* Gang-gang Cockatoo (Confirmed dual credit species) Candidate Migratory *Hirundapus caudacutus* White-throated Needletail (Confirmed Ecosystem Credit Species) *Monarcha melanopsis* Black-faced Monarch (Confirmed Ecosystem Credit Species) *Motacilla flava* Yellow Wagtail (Confirmed Ecosystem Credit Species) *Myiagra cyanoleuca* Satin Flycatcher (Confirmed Ecosystem Credit Species) *Rhipidura rufifrons*	Yes – *Cacatua galerita* (Sulphur-Crested Cockatoo), *Calyptorhynchus funereus* (Yellow-tailed Black Cockatoo), *Eolophus roseicapilla* (Galah), *Platycercus eximius* (Eastern Rosella), *Platycercus elegans* (Crimson Rosella), *Anthochaera 215arlingtoni* (Red Wattlebird), *Caligavis chrysops* (Yellow-faced Honeyeater) and *Egretta novaehollandiae* (White-faced Heron) were recorded in the Assessment Area. Seven confirmed Ecosystem Credit Species. One confirmed dual credit species. EPBC Act specifies that *Monarcha melanopsis* (Black-faced Monarch), *Apus pacificus* (Fork-tailed Swift) and *Hirundapus caudacutus* (White-throated Needletail) are the only migratory species to be affected by wind turbines, as other species would not fly at TSA height (even at migration).	· Some nomadic bird species were observed flying at RSA height. Birds that were not observed at the RSA height are at less risk. · Nomadic bats have less predictable flight paths and may be at higher risk. · Flying foxes are not anticipated to occur on the Site. · Migratory White-throated Needletail, Black-faced Monarch, Australasian Pipit and Fork-tailed Swift may occur at RSA height having no predictable habitual flight path.

Rufous Fantail
(Confirmed Ecosystem Credit Species)

Anthus novaeseelandiae
Australiasian Pipit
(Confirmed Ecosystem Credit Species)

Apus pacificus
Fork-tailed Swift
(Confirmed Ecosystem Credit Species)

6.5.7 Impact Assessment

Direct Impacts on Native Vegetation and Fauna Habitat

The proposal has the potential to have the following direct impacts on native vegetation and fauna habitat:

- Clearing and modification of native vegetation communities and fauna habitat.
- Impacts on local populations of native species.
- Removal of hollow-bearing trees and subsequent impact on hollow-dependent native fauna.
- Removal of woody debris and bush rocks.
- Mortality and injury to native fauna during vegetation clearing.

These direct impacts are anticipated to be permanent, occurring at the construction phase. Generally, the extent of impact anticipated can be summarised as follows:

- 31.6 ha of native vegetation clearing resulting in loss of potential sheltering, foraging and breeding habitat.
- 185 hollow-bearing trees removed out of a total 405 within the Assessment Area resulting in potential increased competition between hollow-dependent fauna.
- 31.6 ha of scattered coarse woody debris and bush rocks removed in association with the above native vegetation clearing resulting in loss of potential breeding, foraging and refuge habitat as well as biological processes associated with woody decay.
- Undetermined extent of physical harm during vegetation removal on native fauna.

Indirect Impacts on Native Vegetation and Fauna Habitat

Indirect impacts on native vegetation and fauna habitat anticipated by the Proposal include:

- Inadvertent impacts on adjacent habitat or vegetation during construction reducing the condition of retained native vegetation adjacent to the Proposal.
- Reduced viability of adjacent habitat due to edge effects reducing the condition and habitat quality of retained native vegetation and affecting habitat use or movements of some species.
- Reduced viability of adjacent habitat due to noise, dust and / or light spill disrupting habitat during construction and operation.
- Transport of weeds and pathogens from the site to adjacent vegetation reducing the condition of adjacent native vegetation.

Refer to Section 7.2 of the BDAR for full assessment of indirect impacts.

Prescribed Impacts

Prescribed impacts identified in the BDAR include:

- Impacts on karst, caves, crevices, rocks and other geological features of significance potentially impacting the Ecosystem Credit Species of Suta flagellum (Little Whip Snake) and Varanus rosenbergi (Rosenberg's Goanna) being species known to shelter in rock crevices.

- Impacts on non-native vegetation impacting Ecosystem Credit Species of Melanodryas cucullate (Hooded Robin), Petroica boodang (Scarlet Robin), Petroica phoenicea (Flame Robin) and Stagnopleura guttata (Diamond Firetail) being species known to shelter and even nest in thickets of exotic plant species.
- Impacts on areas connecting threatened species habitat, such as movement corridors, potentially impacting all Ecosystem Credit Fauna Species identified in Table 4-3 of the BDAR (Section 6.5.2) and the Species Credit Species breeding Callocephalon fimbriatum (Gang-gang Cockatoo), as vegetation removal and development on the Site may isolate habitat patches.
- Impacts that affect water quality, water bodies and hydrological processes that sustain threatened entities (including from subsidence or subsidence from underground excavation) impacting all Ecosystem Credit Fauna Species listed in Table 4-3 of the BDAR (Section 6.5.2) and the Species Credit Species breeding Callocephalon fimbriatum (Gang-gang Cockatoo). Impacts anticipated include erosion and sedimentation during construction, and increased runoff during operation affecting water quality.
- Impacts from threatened and protected animals from turbine strikes (refer to Section 0 and Bird and Bat Adaptive Management Plan.
- Impacts on threatened species or fauna that are part of a TEC from vehicle strikes on roads throughout the windfarm, potentially impacting Ecosystem Credit Species Dasyurus maculatus (Spotted-tail Quoll), Petaurus australis (Yellow-bellied Glider) and Phasocolarctos cinereus (Koala) (extremely low probability).

Refer to Section 7.3 of the BDAR for full assessment of Prescribed Impacts.

6.5.8 Avoid and Minimise Impacts

The Proponent is required to identify measures to mitigate and manage impacts in accordance with the guidelines outlined in the BAM. Section 8 of the BDAR outlines the measures proposed to mitigate and manage impacts.

Avoidance Measures Applied to Proposal Siting & Design

The Proposal's siting and design has been guided through consideration of landscape features, ecological values and social factors. These investigations commenced prior to 2013 and have led to modifications to reduce the extent of vegetation clearing and avoid wherever possible important habitat features (including hollow-bearing trees). These measures were informed by the Supplementary Ecological Report prepared by ERM in (2014).

Avoidance measures are outlined in Table 48.

Table 48. Avoidance measures already applied to the Project (adapted from Table 6-1 BDAR)

Project Feature	Adjustment	Reason for Adjustment
Overhead transmission line	Originally south from the Site to the Crookwell 2 Wind Farm Station, moved to the north-east of the Site to Mt Piper to Bannaby 500kV transmission line.	Avoid removal or modification of remnant native vegetation.
WTGs P2, P6 and P7 Associated access tracks and crane pads	Removed from within a Box Gum Woodland (CEEC) environmental stewardship area.	Avoid the removal or modification of an area of Box Gum Woodland (CEEC) that is being managed under an environmental stewardship program.
WTG P11 Associated access tracks and crane pads	Removed from within a remnant native woodland.	Reduce removal or modification of remnant native vegetation.
WTGs P10, P13 and P14 Associated access tracks and crane pads	Moved closer to the edge of a remnant red stringybark woodland and broad-leaved peppermint woodland.	Reduce removal or modification of remnant native vegetation.
Adjustments Since 2021		
WTGs P6, P7, P9, P10 and P11	Removed / moved out of or closer to the edge of remnants of PCT 1093, PCT 727, PCT 654 and PCT 649.	Reduce removal or modification of native vegetation and Box Gum Woodland CEEC (PCT 654) due

Project Feature	Adjustment	Reason for Adjustment
Associated access tracks and crane pads		to high numbers of hollow-bearing trees being recorded within these areas.
Overhead transmission line	Moved slightly south into a more disturbed area of vegetation and away from the Gang breeding hollow-bearing tree.	To avoid disturbance of a Gang hollow bearing tree.
Micro-siting	Micro-siting, as described at Section 3.4 of this EIS, will be utilised to allow for relocation of turbines within a 100m radius of its original location, and relocation of ancillary infrastructure within a 50m wide corridor.	To accommodate for unforeseen circumstances arising during the construction process.

Adaptive Management for Uncertain Impacts

Adaptive management is used to address impacts that are infrequent or difficult to measure. The BAM details a range of adaptive management measures at Section 8.2, including:

- Development of a BBAMP (refer Section 6.6).
- Preparation of a Flora and Fauna Management Plan (FFMP) implemented as part of the Construction Environmental Management Plan.
- Vegetation clearing protocols:
  - Clear on-site vegetation removal boundaries.
  - Pre-clearance surveys and inventory.
  - Qualified ecologist presence during removal of hollow-bearing trees.
  - Knocking hollow-bearing trees the day prior to removal to vacate fauna.
  - Removal of hollow-bearing trees to be undertaken outside of the period between May-September.
  - Relocate ground timber, bush rocks and any salvaged tree hollows from areas of vegetation clearing.
  - Install a nest box for every hollow-bearing tree that is removed.
  - Implement appropriate weed management protocols.
  - Install appropriate sediment and erosion controls.

6.5.9 Serious and Irreversible Impacts on Biodiversity

'Serious and irreversible impact entities' (SAII entities) are those species and ecological communities with a 'very high' biodiversity risk weighting.

Two SAII entities are within the Project area:

- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands.
  - Listed as a Critically Endangered Ecological Community (CEEC) under the BC Act.
  - The CEEC occurs on the Site as PCT 654 Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion. There is only one Vegetation Zone (654_1).
  - It does not meet the condition threshold for the EPBC Act listing as the perennial exotic ground cover is well over 50%.
  - 1.85ha of the CEEC required to be removed for the Project.
  - VZ 654_1 is highly disturbed with understorey / groundcover being cleared, exotic and heavily grazed. A high number of large, senescent trees with abundant hollows present.
  - Complete SAII assessment in accordance with Section 9.1.2 of the BAM is provided at 9.1.1 of the BDAR.
- Tableland Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregions.

- Listed as an Endangered Ecological Community under the BC Act.
- Occurs on the site as PCT 951 Mountain Gum – Manna Gum open forest of the South Eastern Highlights Bioregion. Two Vegetation Zones (951_1 and 951_2).
- 3.85ha of the TEC proposed to be removed.
- VZ 951_1 is characterised as fairly intact open forest/woodland with a shrubby understorey.
- VZ 951_2 is characterised as heavily disturbed with the understorey and groundcover being largely cleared and pasture improved.

6.5.10 Aquatic Species

The Department of primary Industries – Fisheries provided advice for consideration in the SEARs. They requested that an assessment and mitigation measures for key fish habitats, waterway crossings and riparian zones be included. The BDAR considered impacts that affect water quality, water bodies and hydrological processes that sustain threatened entities. It confirmed that several ephemeral drainage lines, semi-permanent creeks and farm dams occur in the assessment area and Survey Area. Abercrombie River also occurs within the assessment area.

The Hydrology Assessment notes a number of ephemeral watercourses present within the Site, characteristic of its ridgeline location. Site drainage is to the south and west, toward the Abercrombie River which flows into the Lachlan River.

There is therefore the potential for impacts on water quality, water bodies and hydrological processes during both the construction phase and operational phase. Construction phase impacts can include erosion and sedimentation. Operational phase impacts can include an increased runoff from non-permeable surfaces. However, there are no confirmed ecosystem or species credit amphibian species confirmed for the Survey Area, but water quality may have generalised impacts on any threatened entity, not just pollution sensitive amphibians.

All WTG construction works are proposed to be greater than 40 metres from the high banks of any river, lake or wetlands. Similarly, access tracks or cabling are not required to cross any significant watercourses.

While not impacting on any aquatic species, the following was concluded:

- Ensure appropriate runoff management and mitigation measures are in place.
- There is a very low risk of run-on or run-off of concentrated stormwater flows.
- Construction sites within the Project Area generally present low erosion hazard.
- Sustainable water supply options will be pursued through consultation with landowners and relevant Government agencies, and appropriate licenses required as required.
- A detailed Soul and Water Management Plan (SWMP) must be prepared by a suitable qualified person.
- Impacts on water flows are not anticipated during the construction phase, with any potential impacts able to be managed by an Erosion and Sediment Control Plan (ESCP).
- A Construction Environmental Management Plan (CEMP) would be prepared post-approval.
- Ensure appropriate hazardous substance procedures are in place.

Section 4.41 of the EP&A Act lists the authorisations that are not required for SSD. This includes a permit under sections 201, 205, and 219 of the *Fisheries Management Act,1994*, which is not applicable for this application.

Refer to section 6.17 for more information regarding the site hydrology.

6.5.11 Ecosystem Credits Required

The BAM Credit Report was previously submitted when the BDAR was finalised. This will be re-opened and finalise to ensure the most recent report is re-issued within 14 days from submission of the EIS.

The biodiversity credit report, including credit classes and matching credit profiles for required ecosystem and species credits, is provided within the BDAR (Section 10).

According to Section 10 of the BDAR, the following biodiversity credits are required to offset the Project:

Table 49. Ecosystem Credits Required (Source: Hunter Ecology, 2022)

PCT	VZ	Area	No. of Ecosystem Credits Required
PCT 85: River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion.	85_1	1.73ha	41
PCT 649: Apple Box – Broad leaved Peppermint dry open forest of the South eastern Highlands Bioregion.	649_1	5.57ha	100
PCT 654: Apple Box – Yepp0w Box dry grassy woodland of the South Eastern highlands Bioregion	654_1	1.95ha	24
PCT 727: Broad-leaved Peppermint – Brittle Gum – Red Stringybark dry open forest on the South Eastern Highlands Bioregion	727_1	7.53ha	206
	727_2	1.25ha	19
	727_3	7.38ha	0
PCT 951: Mountain Gum – Manna Gum open forest of the South Eastern Highlands Bioregion	951_1	0.5ha	14
	951_2	2.34ha	49
PCT 1093: Red Stringybark – Brittle Gum – Inland scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion.	1093_1	3.45ha	78

Table 50. Species Credits Required (Source: Hunter Ecology, 2022)

Species	VZ	Area	No. of Ecosystem Credits Required
Callocephalon fimbriatum Gang-gang Cockatoo	727_1	4.2ha	131
	951_1	0.4ha	12

It is understood that land bases offsets will be paid into the fund as the Proponent is likely to pay for the offsets required.

6.5.12 Transportation Route Road Upgrades

Hunter Ecology, in conjunction with ERM, also prepared a due diligence assessment to identify any biodiversity issues that may need to be addressed during the formal assessment and approval process of the proposed transportation route road upgrades. Road upgrades would be required along the transportation route at eight separate locations, mainly to accommodate the oversized wind turbine blades during transport and, in particular, during the transportation vehicles turning.

The due diligence assessment should be read in conjunction with the SLR TIA and is included as part of the BDAR as an Addendum Scoping Report. The anticipated biodiversity impacts and associated assessment of impacts is provided in Table 58 under section 6.8 of this report. Additional route assessment options are also provided under section 6.9.

Of the eight transportation route road upgrade locations, only three would have some minor biodiversity impacts:

- ID 20 (Douro St onto Horatio St, Mudgee): Two small, exotic street trees would require removal. This would have minimal biodiversity impacts and the project would need to ensure compliance with Mid-Western Regional Council policies and requirements regarding removal of street trees.
- ID 29 (O'Connell Rd Range – Dogleg corner): An approximately 0.13 ha area of native roadside vegetation would potentially require removal (to be confirmed during the final design stage). The identified vegetation is not associated with any state or Commonwealth listed TECs. Assessment and approval under the BC Act and other relevant legislation would be required, as summarised below and in Section 4 of this report.
- ID 30 (O'Connell Rd onto Abercrombie Rd at Oberon): Two small, exotic street trees would require removal. This would have minimal biodiversity impacts and the project would need to ensure compliance with Oberon Council policies and requirements regarding removal of street trees.

It is recommended that further assessment be undertaken prior to finalisation of detailed design to determine the need for the proposed road upgrades at location ID 29.

6.6 Bird and Bat Adaptive Management Plan

The SEARs for the Project require the EIS to:

> *'assess the impacts of the development on birds and bats, including blade strike, low air pressure zones at blade tips (barotrauma), alteration to movement patterns, and cumulative impacts of other wind farms in the vicinity'*

The BDAR prepared by Hunter Ecology attached in Appendix N includes an assessment of the impacts from wind turbine strike and barotrauma (tissues and lung damage caused by air pressure changes around turbine rotors. A Bird and Bat Utilisation Survey (BBUS) has been prepared by Hunter Ecology providing baseline data on the utilisation of the Project Area by birds and bats over time in response to the operational phase of the Project, and for use in the BBAMP, should the Project receive consent.

More recently, a Collision Risk Assessment (CRA) for Bird and Bat Strike have also been undertaken by Hunter Ecology and is discussed in more detail below. The report has been included as an addendum to the BDAR, along with the BBUS (including as Appendix E in the BDAR).

This section of the EIS should be read in conjunction with the BDAR, BBUS and Collision Risk Assessment prepared by Hunter Ecology (included as an Addendum Report to the BBUD under Appendix Z).

6.6.1 Impacts from Wind Turbine Strike and Barotrauma

Collision risk varies with species, number and behaviour of birds and bats, site specific topography, weather conditions, turbine height / design and turbine layout (Smales, 2006).

Microchiropteran bats may experience barotrauma if they move through low-pressure zones caused by air flowing over the rotors.

Collision risk for birds

The four most dominant bird species recorded flying within the RSA during summer were:

- *Aquila audux* – Wedge-tailed Eagle (28.6%)
- *Cacatua galerita* – Sulphur-crested Cockatoo (28.6%)
- *Falco cenchroides* – Australian Kestrel (12.2%)
- *Cracticus tibicen* – Australian Magpie (10.2%)

The four most dominant bird species recorded flying within the RSA during spring were:

- *Cracticus tibicen* – Australian Magpie (35.5%)
- *Cacatua galerita* – Sulphur Crested Cockatoo (30.5%)
- *Aquila audux* – Wedge-tailed Eagle (14.8%)
- *Corvus coronoides* – Australian Raven (14.8%)

Table 51 provides the estimated annual collision-related fatality rates for confirmed bird species (by order) based on the rates provided in Thaxter et al. (2017).

Table 51. Estimated Annual Collision-related Fatality Rates for Confirmed Bird Species, by Order

Bird Order	Associated Protected or Threatened Species*	Estimated Annual Fatality Rate[1]
Accipitriformes	*Aquila audax* (Wedge-tailed Eagle), *Elanus axillaris* (Black-shouldered Kite), *Haliaeetus leucogaster* (White-bellied Sea-Eagle), *H. morphnoides* (Little Eagle) and *Circus assimilis* (Spotted Harrier)	3.29 birds
Apodiformes	*Apus pacificus* (Fork-tailed Swift), *Hirundapus caudacutus* (White-throated Needletail)	0.99 birds
Falconiformes	*Accipiter fasciatus* (Brown Goshawk), *Falco cenchroides* (Australian Kestrel), *F. longipennis* (Australian Hobby) and *F. berigor* (Brown Falcon)	N / A
Passeriformes	*Monarcha melanopsis* (Black-faced Monarch), *Cracticus tibicen* (Australian Magpie), *Strepera graculina* (Pied Currawong), *Corvus coronoides* (Australian Raven)	1.03 birds
Pelecaniformes	Egretta novaehollandiae (White-faced Heron)	1.03 birds
Psittaciformis	*Cacatua galerita* (Sulphur-crested Cockatoo), *Calyptorhynchus funereus* (Yellow-tailed Black Cockatoo), *Eolophus roseicapilla (Galah), Polytelis swainsonii (Superb Parrot), Calyptorhynchus lathami (Glossy Black-Cockatoo), Glossopsitta pusilla (Little Lorikeet), Callocephalon fimbriatum (Gang-gang Cockatoo), Lathamus discolor (Swift Parrot)*	1.41 birds
Strigiformes	*Ninox strenua* (Powerful Owl)	1.03 birds

** These species have been confirmed through the BDAR as being potentially impacted species flying at RSA height.*
[1] Based on Thaxter et al. (2017) as described in the BBUS.

Collision risk for bats

Three threatened species of microbat species were identified through site surveys being:

- Eastern False Pipistrelle (Falsistrellus tasmaniensis).
- Greater Broad-nosed Bat (Scoteanax rueppellii).
- Large Bent-winged Bat (Miniopterus orianae).

The BBUS notes that a single call of the Yellow-bellied Sheathtail-bat *(Saccolaimus flaviventris)* was possibly identified, however this is not a reliable indication of the presence of the species.

Similar to the bird collision estimates, *Thaxter et al. (2017)* rates were used. It is noted that these rates are based on European and North American studies and should be applied with caution to Australian conditions. They do not consider site-specific factors, species abundance and activity levels, or turbine specifications.

Table 52. Estimated Annual Collision-related Fatality Rates for Recorded Microchiropteran Bat Species

Family	Species Recorded within Survey Area	Estimated Annual Fatality Rate[1]
Emballonuridae	*Saccolaimus flaviventris* (Yellow-bellied Sheathtail Bat)	32.9 bats
Miniopteridae	*Miniopterus orianae oceanensis* (Large Bentwinged Bat)	32 bats
Molossidae	*Tadarida australis* (White-striped Freetail Bat), *Ozimops planiceps* (Southern Freetailed Bat), *O. ridei* (Ride's Free-Tailed Bat)	36.7 bats
Rhinolophidae	*Rhinolophus megaphyllus* (Eastern Horseshoe Bat)	30.1 bats

Vespertilionidae	*Chalinolobus gouldii* (Gould's Wattled Bat), *Chalinolobus morio* (Chocolate Wattled Bat), *Falsistrellus tasmaniensis* (Eastern False Pipistrelle), *Nyctophilus* sp., *Scoteanax rueppellii* (Greater Broad-nosed Bat), *Scotorepens greyii* (Little Broad-nosed Bat), *S. orion* (Eastern Broad-nosed Bat), *Vespadelus 223arlingtonia* (Large Forest Bat), *V. regulus* (Southern Forest Bat), *V. vulturnus* (Little Forest Bat).	32.4 bats

[1] *Based on Thaxter et al. (2017) as described in the BBUS.*

Flying Foxes

Targeted surveys for *Pteropus poliocephalus* (Grey-headed Flying Fox) were undertaken in the assessment area with no occurrences recorded. The closest Grey-headed Flying Fox camp is at Thilmere approximately 75 kilometres east of the Site (DAWE Interactive Flying-fox Web View).

Refer to Section 6.6.4 below for more information on the collision risk assessment.

Barotrauma

Barotrauma relates to tissue damage to air containing structures caused by rapid or extreme changes in pressure caused by the rotation of turbine blades. The Australian Bat Society estimate fatality rates ranging from 1.6 bats per turbine per year to over 90 bats per turbine per year as a result of barotrauma.

Migrating bats are considered to be the most vulnerable groups to be impacted by either collision or barotrauma. Of the four threatened species recorded, two are migratory (*Miniopterus orianae oceanensis* and *Saccolaimus flaviventris*).

6.6.2 Habitat Reduction

The Project may lead to alienation of habitats resulting from species avoiding the wind turbines and associated structures. In Australia, birds generally avoid flying through WTGs at a rate of 95% to 99% (Smales, 2006). This avoidance effect essentially leads to a loss of habitat within the development footprint, however, also it greatly reduces the number of birds interacting with the WTGs once the wind farm enters its operational phase.

6.6.3 Monitoring

Monitoring should include assessments of monthly mortality and periodic BBUS. Appropriate mitigation measures will be identified (such as the regular removal of lamb carcasses during lambing season, to decrease the attraction of the area to feeding raptors).

6.6.4 Additional Collision Risk Assessment

Hunter Ecology recently prepared a collision risk assessment, regarding bird and bat strike for the PYWF. The report stated:

- *Regarding bird and bat strike, provide a risk rating for each turbine, including the following parameters:*
  - *Proximity to potential microbat roosts and foraging habitat*
  - *Connectivity and likely movement pathways*
  - *Presence of raptor nests*
  - *Canopy buffer to rotor swept height.*

This assessment builds upon data collected under the BDAR and the BBUS and has been expanded to include risk assessment for each 'species of concern' in addition to the requested risk assessment for each turbine.

The species risk assessment has determined the risk ratings to be either negligible, low or moderate. No species were rated as high or server. The below species were determined to be at moderate risk:

- *Anthochaera phrygia* (Regent Honeyeater)

- *Aquila audux* (Wedge-tailed Eagle)
- *Callocephalon fimbriatum* (Gang-gang Cockatoo)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Hirundapus caudacutus* (White-throated Needletail)
- *Lathamus discolor* (Swift Parrot)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat).

The turbine risk assessment has also determined the risk rating to be either negligible, low or moderate, with none being high or severe. The below turbines were identified to present a moderate risk:

- P-1, PY-5 to PY-29, and PY-32 to PY-38.

The assessment recommends that the species and turbines as assessed as having a moderate risk are prioritised in terms of monitoring and implementation of appropriate mitigation measures. This should be done in accordance with the BBAMP as detailed in the BDAR.

6.7 Biosecurity Risk Management Plan

The Biosecurity Risk Management Plan (BRMP) has been prepared by ERM to develop and implement management practices that will be used to undertake, manage and identify biosecurity risks within the Project area, including weeds and pest animal species. The report aims to determine and recommend measures to prevent, minimise and / or eliminate these biodiversity risks such as weed and pest animal species.

The report provides an overview of the construction phase through the operational stage of the Project and seeks to ensure compliance with the Biodiversity Act 2015 and the General Biosecurity Duty through the adoption of evidence-based and suitable management practices. It is expected that the Project will commit to the actions outlined in the Biosecurity Risk Management Plan to ensure the protection of national and state biosecurity.

6.7.1 Regulatory Framework

The Biosecurity Risk Assessment has been prepared in accordance with the following legislation and guidelines:

- Department of Agriculture, Fisheries and Forestry – Foot-and-mouth disease: a threat to Australian livestock 2022
- Australian Pest Animal Strategy 2017–2027
- Australian Weeds Strategy 2017–2027
- Central Tablelands Regional Strategic Weed Management Plan 2017 – 2022
- Central Tablelands Regional Strategic Pest Animal Management Plan 2018 – 2023
- The NSW Wild Dog Management Strategy 2017-2021
- Central Tablelands Local Land Services Wild Dog Management Plan 2021-2026
- NSW Weed Control Handbook Centre for Invasive Species Solutions – Feral Scan (a pest animal recording and management tool) https: / / www.feralscan.org.au

6.7.2 Biosecurity Risks

The potential to create disturbance and potentially spread weed and pest species throughout the site is typically greatest during the construction phase of the Project. The most significant vectors for the spread of weeds are from increased movement of vehicles and disturbances to soil during track work and vegetation clearing. It is also noted that weeds can be transferred into and through the site on clothing, vehicle wheels and undercarriages.

Existing Weeds

Ecological surveys conducted in 2021 for the Paling Yards Biodiversity found that the Project area has been subject to a long history of pasture improvement and contains cultivated pasture species. Weeds identified within the area are noted in Table 53 and are considered to be priority weeds of the Central Tablelands as listed in the *Central Tablelands*

Regional Strategic Weed Management Plan 2017-2022. This Plan recommends that land managers mitigate the risk of new weeds being introduced into the region and on their land.

Table 53. Existing weeds identified within Project Area

Scientific Name	Common Name	Priority Weed	Weeds of Natural Significance
Rubus fruticosus	Blackberry	Asset protection	Yes
Taraxacum officinale	Common Dandelion	-	-
Holcus lanatus	Yorkshire Fog	-	-
Modiola caroliniana	Red-Flowered Mallow	-	-
Rosa canina	Dog Rose	-	-
Cirsium vulgare	Spear Thistle	-	-
Carthamus lanatus	Saffron Thistle	-	-
Malva parviflora	Mallow	-	-
Solanum nigrum	Blackberry Nightshade	-	-
Gamochaeta calviceps	Cudweed	-	-
Lycium ferocissimum	African Boxthorn	Asset Protection	Yes
Urtica dioica	Common Nettle	-	-
Nassella trichotoma	Serrated tussock	Asset Protection	Yes
Lolium perenne	Perennial Ryegras	-	-
Trifolium repens	White Clover	-	-
Echium plantagineum	Paterson's Curse	-	-
Plantago lanceolata	Plantago Inaceolate	-	-
Lysimachia arvensis / Anagallis arvensis	Scarlet Pimpernel	-	-
Carduus nutans Subsp. Nutans	Nodding Thistle	-	-
Conyza sumatrensis	Tall Fleabane	-	-
Hordeum leporinum	Barely Grass	-	-
Rumex acetosella	Red Sorrel	-	-

Veronica persica	Birdeye Speedwell	-	-
Bromus sp.	-	-	-
Spergularia sp.	-	-	-
Conyza bonariensis	-	-	-
Phalaris canariensis	Canary Grass	-	-
Cynodon dactylon	Bermuda Grass	-	-

Known Pest Species

Under the *NSW Biosecurity Act 2015*, pest species are not defined by species rather they are considered as any species other than native species) which present a significant threat to biosecurity, biodiversity, economy, environment and community wellbeing. Pest species may prey on livestock and wildlife, increase grazing pressure on pastures, damage crops and plants, compete with native fauna for food and habitat, damage infrastructure and spread diseases to people and other animals. A number of pest species have been identified within the Project Area and are identified in Table 54 below.

Table 54. Pest animal species identified within Project Area

Scientific Name	Common Name	Priority Pest Species
Canis familiaris	Wild Dog	Asset Protection
Vulpes	Red Fox	Asset Protection
Dama	Fallow Deer	Asset Protection
Lepus europaeus	Hare	-
Oryctolagus cuniculus	Rabbit	Asset Protection
Mus musculus	House Mouse	-
Rattus	Black Rat	-
Acridotheres tristis	Common Myna	Asset Protection

Foot and Mouth Disease

Foot and Mouth Disease (FMD) has been identified in May 2022 within Indonesia. While it is noted in Australia the BRMP has highlighted the importance to be aware of the signs and symptoms of the disease which affects cloven-hooved animals and is highly contagious. An intrusion of the disease to Australia's agricultural and native wildlife would have severe consequences for Australia's animal health and trade.

Signs of Foot and Mouth Disease include:

- Fever
- Drooling or excessive salivation
- Reluctance to move

- Blisters on the lips, tongue, palate, feet or teats.

If FMD is identified, it must be reported immediately to a veterinarian, or the relevant state / territory agricultural department and protocols and hygiene requirements detailed in Section 4 of the BRMP are to be followed.

6.7.3 Management Strategy

The main concern outlined within the Biodiversity Risk Assessment was the possibility of further contamination and introduction of new weed species and pest animals to the area as a result of increased activity at the Project Site. Management Strategies identified within the BRMP incorporate both management and prevention practices to help minimise the risk of spreading or introducing weed plant species, pest animals and potential pathogens to the Site and the surrounding area. Suggested strategies to help minimise any biosecurity risk include:

- Awareness and training
- Access procedure
- Implementing Signage
- Vehicle hygiene
- Record keeping
- Targeted weed management
- Weed management techniques
- Pest animal management
- Wild dog
- European Red Fox
- Fallow Deer
- Rabbit
- Myna

The Strategy outlines that a detailed weed and pest assessment should be undertaken prior to construction to establish a baseline dataset and detailed mapping. This will form part of the recommended monitoring program.

If a biosecurity risk is identified, it is recommended that actions are undertaken as outlined within section 5.1 of the Biosecurity Risk Assessment Report (Appendix O).

6.8 Traffic Impact Assessment

The SEARs for the Project require the EIS to include:

- *'An assessment of the construction operational and decommissioning traffic impacts of the development on the local and State road network;*
- *Provide details of the peak and average traffic volumes (including light, heavy and over-mass / over-dimensional vehicles) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel);*
- *An assessment of the potential traffic impacts of the Project on road network function including intersection performance, site access arrangements, site access and haulage routes, and road safety, including school bus routes and school zones;*
- *An assessment of the existing road network to accommodate the type and volume of traffic generated by the Project (including over-mass / over-dimensional traffic haulage routs from port) during construction, operation and decommissioning;*
- *An assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown Land (including existing Travelling Stock Route network), particularly in relation to the capacity and conditions of the roads and use of rail level crossings (and rail safety assessment if required), and impacts to rail underbridges and overbridges;*

- *A cumulative impact assessment of traffic from nearby developments including Crookwell 3 Wind Farm; and*
- *Provide details of measures to mitigate and/or manage potential impacts including a schedule of all required road upgrades (including resulting from over-mass/over-dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road and/or rail authority.'*

A Traffic Impact Assessment (TIA) prepared by SLR is included in Appendix L. The TIA should be read in conjunction with the RJA Route Assessment Study, included in Appendix AA.

Policy Framework

The TIA has been prepared in accordance with the traffic and transport requirements of Oberon Regional Council, Transport for New South Wales (TfNSW) and Austroads Guidelines. The TIA also considered potential impacts relating to traffic and transport requirements associated with the transportation route through other LGA's.

6.8.1 Existing Conditions

Road Network

One (1) road exists within the surrounding road network, summarised in Table 55 below.

Table 55. Surrounding Road Network (Table 3 TIA)

Road Name	Jurisdiction	Average Daily Weekday Traffic	Average Daily Weekend Traffic	Average Daily Traffic	Posted Speed Limit	Road Classification
Abercrombie Road	Oberon Council	280[1]	460[1]	330[1]	100km/h	Regional Road (Road Number 256)

[1] *Average daily traffic was obtained from traffic survey data collected from 21 May to 7 June (Appendix L TIA)*

Automated Tube Count (ATC) surveys were undertaken by SLR over a seven-day period from 31 May 2022 to 7 June 2022 at two locations – proposed Access Location 1 and proposed Access Location 5. Section 3.2 of the TIA provides a summary of the Traffic Survey Peak Hour Volumes.

Crash History

Crash data for the road network in proximity to the site was extracted by SLR from the TfNSW Centre for Road Safety website for the latest 5-year period (between 2016-2020) to highlight any road safety deficiencies.

A total of 24 crashes were identified along Abercrombie Road:

- 2 resulting in fatality.
- 11 resulting in serious injury.
- 4 resulting in moderate injury.
- 7 non-casualty crashes.

Based on road user movement codes of the crashes, the TIA concludes that the majority of crashes were as a result of loss of vehicle control.

Consistent with TfNSW comments, SLR recommend a driver's code of conduct is prepared prior to the development commencing.

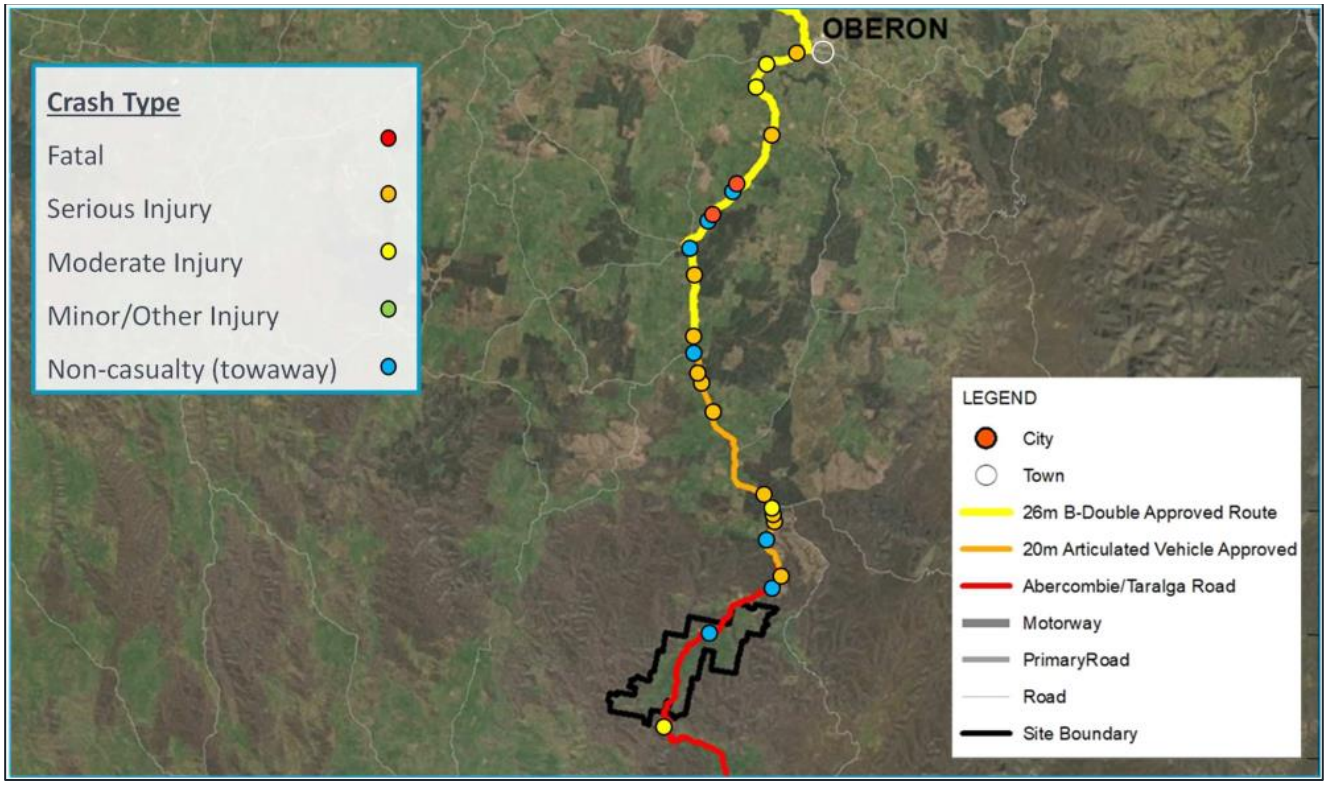


Figure 57. Study Road Network Crash Data (Source: SLR TIA 2022)

6.8.2 Site Access

The proposal includes the development of five (5) new intersections via Abercrombie Road. Access to Location 2 will provide dual access to internal access tracks that will be utilised to facilitate movement of vehicles between access locations and infrastructure. Refer to Figure 3 of the TIA.

Access locations 1 and 2 will service the western portion of the site. Access locations 3, 4, and 5 will service the eastern portion of the site. Internal access tracks will be utilised throughout to facilitate vehicle movements between the access locations and site infrastructure.

Access location 5 will provide access to the substation and will require a construction lead time if project commissioning is not to be delayed. It is therefore expected that this access point will be constructed first. This is to be followed by Access location 2, which will provide access to the collector substation, construction laydown area and batching plant. The construction of access locations 1, 3 and 4 are anticipated to follow shortly after.

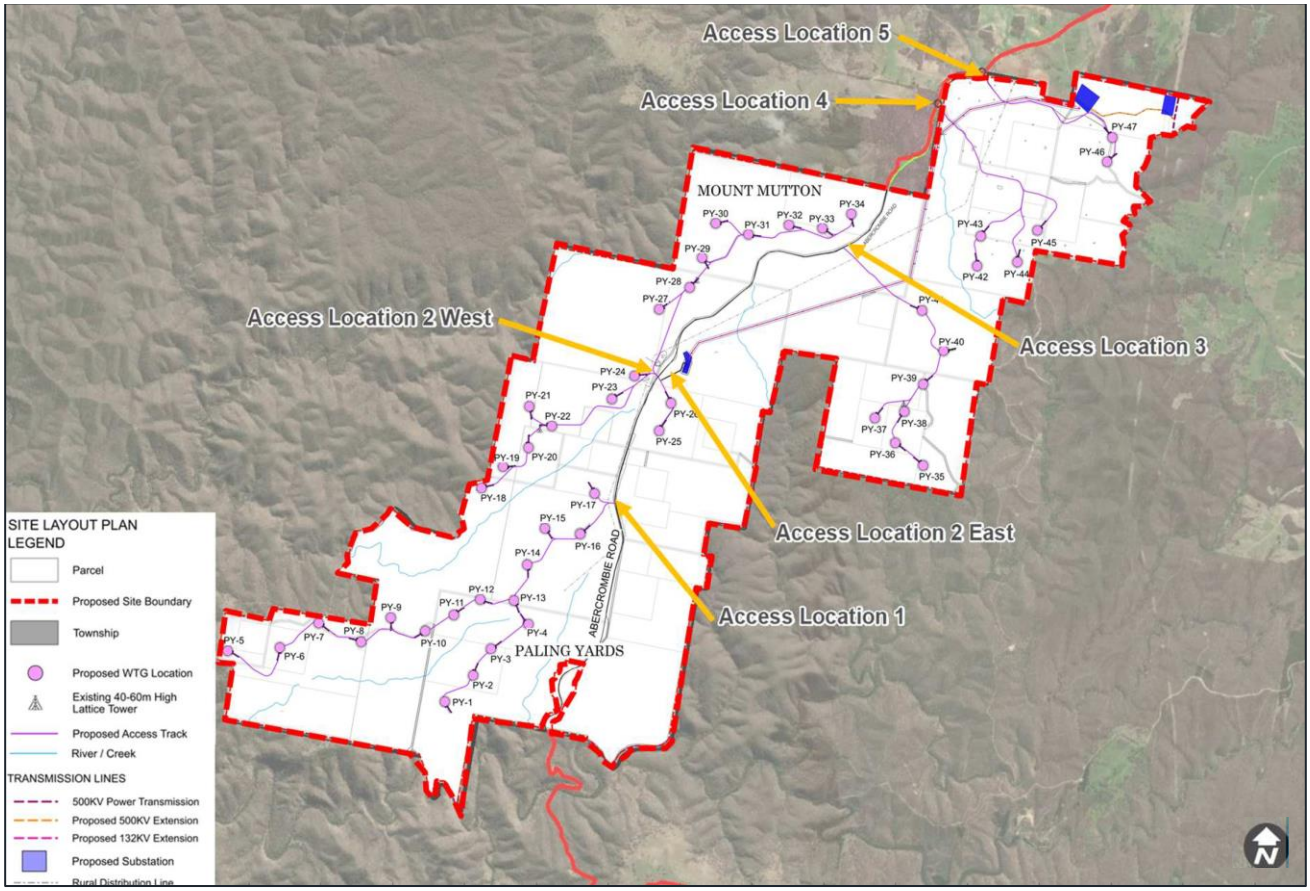


Figure 58. Proposed Five Access Locations (Source: SLR, 2022)

6.8.3 Haulage

Wind turbine components will be imported from the point of manufacture to the Port of Newcastle. Road freight will be used to transport components to the Site. Route feasibility studies have been carried out by Rex J Andrews (RJA), the findings of which are summarised in section 6.9 of this EIS.

The oversize and / or overmass study has been based on the following WTG component specifications:

Table 56. WTG component specifications

Component	Dimensions (metres)			Weight (tonnes)
	Length	Width	Height	
Turbine Blade Components				
Blade tip	15.1	2.4	2.4	2.5
Blade root	65.4	4.0	3.3	28
Turbine Tower Components				
Section 1 (Base tower)	9.3	5.5	5.0	73
Section 2	12.6	4.85	5.0	74
Section 3	14.0	4.6	4.85	74
Section 4	19.8	4.6	4.3	90
Section 5	23.5	4.3	4.3	82
Section 6	30.8	4.3	4.3	75
Section 7 (Top tower)	35.9	4.3	3.7	63

Component	Dimensions (metres)			Weight (tonnes)
	Length	Width	Height	
Hub	4.6	4.2	3.85	51
Machine Heads	14.12	3.97	3.45	98
Drive Trains	6.6	3.98	3.45	82

Preferred Haulage Route

The route assessment provides for a 'worst case scenario' based on the longest and heaviest components to determine the most appropriate route. The 'Blue Mountains Route' (via Great Western Highway) would not be used for transportation of OSOM materials, consistent with comments received from TfNSW.

The preferred route covers approximately 654 kilometres. It commences from the Port of Newcastle and includes:

- Out of Port of Newcastle via Selwyn Street
- North via Industrial Drive
- Continue onto Maitland Road (through Tarro)
- Continue onto New England Highway (through Belford via John Renshaw Drive and the Hunter Expressway)
- Continue to Golden Highway (through Jerry Plains)
- Exist onto Denman Road and travel north (through Elderton and Wybong via Wybong Road)
- Continue back to Golden Highway off Denman Road (west through Sandy Hollow)
- Exit highway at Dunedoo and travel onto Castlereagh Highway (through Mudgee)
- Continue south on Great Western Highway (via Wallerawang toward Bathurst via Kelso)
- At Kelso, travel south onto Littlebourn Street and continue onto O'Connell Road (through Oberon)
- Connect onto Abercrombie Road and travel south to designated location.

Based on the above, the anticipated return trip will require three (3) days per wind turbine component considering the *NSW Heavy Vehicle Fatigue Management Regulations* (maximum 12 hours work time for heavy vehicle drivers).

Approximately two (2) wind turbine blades are anticipated to be delivered to Site per week, subject to resource availability and concurrent demands on site.

National Heavy Vehicle Regulator (NHVR) Approved Routes

SLR have carried out a review of NHVR routes included in the preferred OSOM haulage route to identify potential constraints. A summary of the NHVR allowances is provided in below.

Table 57. National Heavy Vehicle Regulator Approved Routes

Road Name		NHVR Allowances
Selwyn Street George Street Industrial Drive Maitland Road New England Highway	John Renshaw Drive Hunter Expressway Golden Highway Denman Road	B-double 25/26m
Bengalla Road		B-double 25/26m (partially)
Wybong Road		20m Articulated Vehicle (AV)
Golden Highway (Merriwa Road)	Castlereagh Highway	B-double 25/26m
Main Street Pipers Flat Road Range Road		B-double 25/26m "Only for use in emergency situations when directed by Roads and Maritime Services personnel or NSW police"

Road Name		NHVR Allowances
Great Western Highway Littlebourne Street	O'Connell Road	B-double 25 / 26m
Abercrombie Road		B-double 25 / 26m (partially)

Railway Crossings

Based on the preferred OSOM material transport route, there are a total of four 'flashing light' crossings that would need to be negotiated during transportation as follows:

- Castlereagh Highway through Birriwa (LXM ID 1425) – Wallerawang-Gwabegar.
- Castlereagh Highway before Ben Bullen (LXM ID 1385) – Wallerawang-Gwabegar.
- Main Street off Castlereagh Highway (LXM ID 1436) – Wallerawang Colliery Line.
- Pipers Flat Road off Main Street (LXM ID 1381) – Wallerawang-Gwabegar.

No passive crossings or boom gate crossings exist on the preferred route.

Consolidated Route Assessment Table

The information provided below should be read in conjunction with the following assessments:

- RJA Route Study – Appendix AA.
- SLR TIA - Appendix L (particularly the Key Intersections of OSOM Material Transport Route Assessment Appendix F1 and Potential Land Impacts of ASOM Material Transport Route Appendix F2).
- ERM / Hunter Ecology BDAR – Appendix N (Addendum: Transportation Route Road Upgrades Assessment).

The assessment provides detailed information on the following:

- Specifications of the OSOM materials that will be transported to site;
- Specifications of the proposed vehicles that will transport the OSOM materials;
- Port of Import and where materials will be stored at Port of Newcastle;
- A detailed route study where transport challenges & advantages are itemised in a spreadsheet, such as some items being classified as "critical", "caution" and "emergency parking – rest / break";
- Swept path assessments for the blade roots at critical intersections along the route; and
- Overhead structures along the route.

Noted that detailed swept path assessments was undertaken by SLR for access locations 1 – 5 and is included under the TIA as Appendix J.

The table below was adapted from the assessment undertaken by SLR and RJA and outlines the schedule of works associated with the transportation of the turbine blades.

Table 58. Consolidated Route Assessment Table

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
0	0.0	Mayfield berth #4 into Selwyn Street at Mayfield	No upgrades required and no environmental impacts expected. Blade overhang to not impact any property or infrastructure.	Spotter to guide the load through pinch point.	Lot 41 / DP1191982 (Owner: Port of Newcastle Lessor Ministerial Holdings - Note overhang only)	 https://goo.gl/maps/864FhMSaF9P2

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
1	0.4	Rail crossing over Selwyn Street at Mayfield	No upgrades required and no environmental impacts expected.	Police and escorts required to control local traffic either side of the crossing. ARTC approval will need to be obtained to travel over this crossing.	None	No swept path required – travel directly ahead. https://goo.gl/maps/864FhMSaF9P2
2	1.3	Selwyn Street onto Industrial Drive, via George Street at Mayfield	No upgrades required and no environmental impacts expected.	Right hand turn from Selwyn Street through George Street and onto Industrial Drive. Load to travel right from Selwyn Street onto George Street, before turning to the incorrect side of Industrial Drive. Once on Industrial Drive, the loads will travel over the centre median strip to return to the correct side of the road. Spotter to guide load through this pinch point.	None	 https://goo.gl/maps/gXeHvBtCp4D2

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
3	4.9	Industrial Drive under traffic signals at Steel River Blvd intersection.	No upgrades required and no environmental impacts expected.	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3metres will need to travel in the right-hand lane Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://goo.gl/maps/YmqhiS2iR582
4	5.5	Industrial Drive onto Maitland Road at Mayfield West.	No upgrades required and no environmental impacts expected.	The blades will need to cross to the incorrect side of Industrial Drive 150 metres prior to the intersection. Once on Maitland Road, the blades will return to the correct side 120 metres past the intersection. Spotter to guide load through this pinch point.	None	

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
						https://goo.gl/maps/Kn49dhWG2qG2
5	6.4	Maitland Road over rail bridge	No upgrades required and no environmental impacts expected.	Spotter to guide load through this pinch point. Obtain approval from rail company.	None	No swept path required – travel directly ahead. https://goo.gl/maps/W2JWWjhfqv5UMviB7
6	13.9	New England Highway under gantry	No upgrades required and no environmental impacts expected.	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.9 metres should not be exceeded. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://goo.gl/maps/YTMoFe7Aick
7	15.1	New England Highway over rail bridge, Tarro.	No upgrades required and no environmental impacts expected.	Spotter to guide load through this pinch point. Obtain approval from rail company.	None	No swept path required – travel directly ahead. https://goo.gl/maps/tTnWLwQC2hzSPhAp6

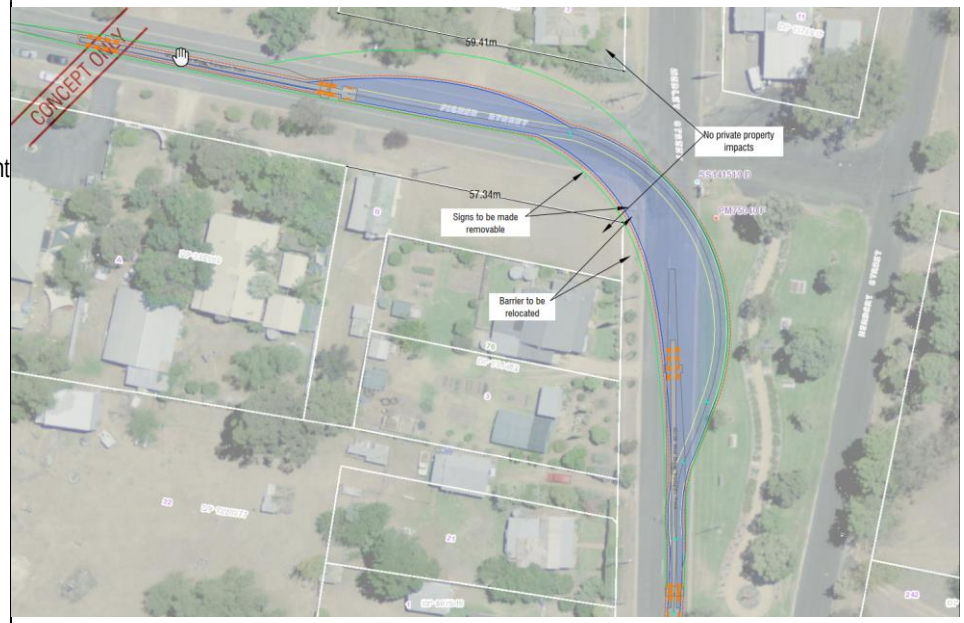
ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
7A	28.7	John Renshaw Drive onto the Hunter Expressway at Buchanan.	No upgrades required and no environmental impacts expected.	Loads to turn left onto the slip lane. Spotter to guide the load through the corner.	None (blades not likely to extend onto private property outside of what is currently part of the road reserve)	 https://goo.gl/maps/pWg3RxePzz9sYLBe8

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
8	67.3	The New England Highway onto the Golden Highway, Whittingham.	No upgrades required and no environmental impacts expected.	Left-hand turn- The NSW Government is currently upgrading this intersection. At this stage the data that is available for the upgrades shows the section of road does not change considerably. However, we will monitor the progress of the upgrades, and that any changes will be thoroughly looked at.	None	No swept path available. https://goo.gl/maps/nAnfkYfeUn42
9	68.0	Golden Highway over rail bridge, Whittingham.	No upgrades required and no environmental impacts expected.	Travel directly ahead in the centre of the road. Approval from rail company (ARTC) will be required to cross this structure. Travel over this structure may have specific conditions. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://goo.gl/maps/5NwDQofandvvMKfY9

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
10	77.3	Golden Highway over rail bridge, Mount Thorley.	No upgrades required and no environmental impacts expected.	Travel directly ahead in the centre of the road. Approval from rail company (ARTC) required to cross this structure. Travel over this structure may have specific conditions. Spotter to guide load through this pinch point.	None	No swept path required. https://goo.gl/maps/qTxSbkxPu87L5hx4A
11	80.6	Golden Highway over rail bridge, Mount Thorley.	No upgrades required and no environmental impacts expected.	Travel directly ahead in the centre of the road. Approval from rail company (ARTC) required to cross this structure. Travel over this structure may have specific conditions. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://goo.gl/maps/ipGU4USXmWZ8GkJs6
12	80.8	Putty Road under Mt Thorley Road, Mount Thorley	No upgrades required and no environmental impacts expected.	Travel under the bridge in the left lane. Mt. Thorley underpass is 6.3 metres in the centre of the road. Towers to pass under this structure on the correct side. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://goo.gl/maps/SMzSLP1kvQYDMqa86

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
13	126.0	Golden Highway, Ogilvy	No upgrades required and no environmental impacts expected.	Travel directly ahead up a 6% gradient. This section of road has a steep mountain range that will require additional pull trucks to assists loads that exceed 80T gross weight. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://goo.gl/maps/58Tj9ojs7CC2
14	158.0 - 183.0	Wybong Road, Bengalla	No upgrades required and no environmental impacts expected.	This road is owned and maintained by Muswellbrook Council. Approval will be required to travel on this section of the route. Obtain approval from the local council.	None	No swept path required – travel directly ahead. https://goo.gl/maps/ekGZA5wFFK55Mvmc7

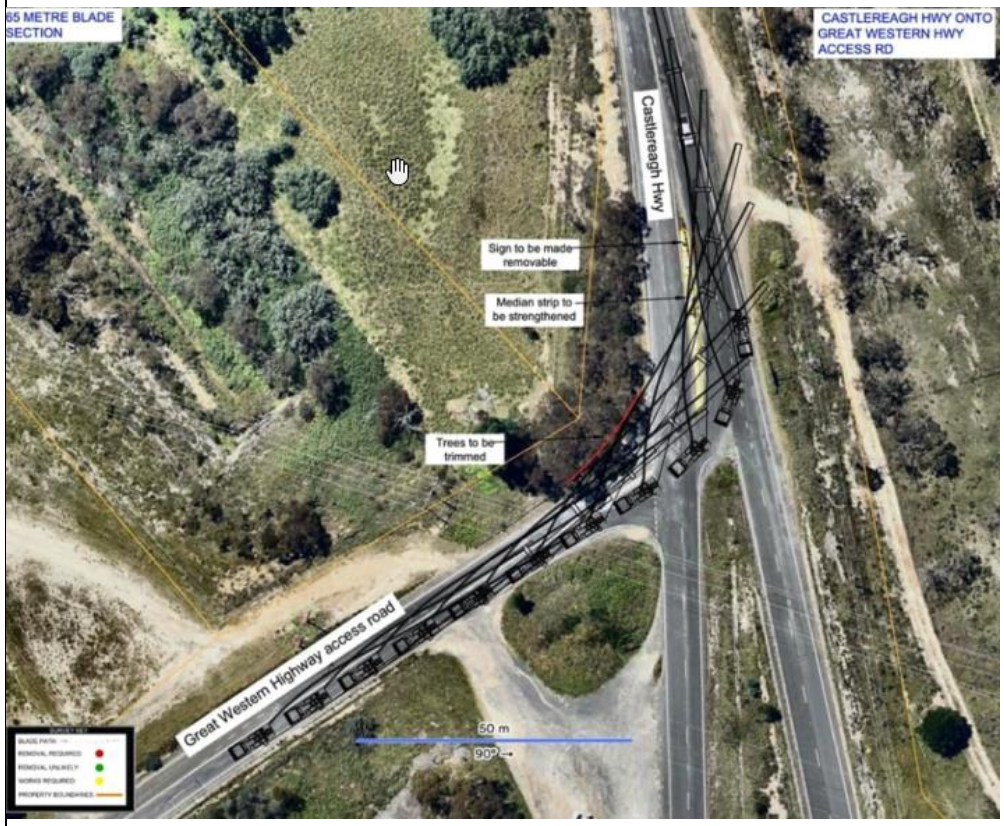
ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
15	314.0	Golden highway onto the Castlereagh, Leadville.	No upgrades required and no environmental impacts expected.	Left hand turn. Blades to travel onto the incorrect side of the road for this procedure. Spotter to guide the load through this pinch point.	None	 https://www.google.com/maps/@-32.0373378,149.4771067,291m/data=!3m1!1e3
16	343.0	Castlereagh Highway rail crossing	No upgrades required and no environmental impacts expected.	Loads to travel over the crossing in the centre of the road. Approval required crossing this line, likely cross with caution. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://www.google.com/maps/@-32.1222853,149.4652342,122m/data=!3m1!1e3

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
17	370.0	Castlereagh Highway Goolma Road intersection, Gulgong.	No upgrades required and no environmental impacts expected.	Travel directly ahead. Spotter to guide load through this pinch point. Police and pilots to supply traffic control as per the procedure for this section of road. Spotter to guide load through this pinch point.	None	No swept path required – travel directly ahead. https://www.google.com/maps/@-32.3653277,149.5259539,488m/data=!3m1!1e3
17A	370.0	Fisher Street (Castlereagh Highway) onto Medley Street (Castlereagh Highway) at Gulgong	Minor upgrades required with only minor environmental impacts expected.	Blades to travel around this right hand corner on the correct side of the road. Hardstand is required on the inside of the corner. Several signs and a barrier will need to be relocated. Additionally, some trees on the overhang will need to be trimmed. Spotter to guide the load through this pinch point.	None. All works to be accommodated within the road reserve and adjacent Council reserve / park.	 https://goo.gl/maps/GxJvNXi8vB6h7oLS6

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
18	383.0-393.0	Castlereagh Highway, Mudgee.	Minor upgrades are required, likely to have only a minor environmental impact. See ID19 below for more information.	Follow the main road (Castlereagh Highway) through Mudgee. Loaded trailers are to avoid travelling through Mudgee on school days between 7:00am - 10:00am and 2:00pm - 4:30pm.	None	Follow the main road. See swept path analysis under ID 19 below. https://www.google.com/maps/@-32.5901998,149.5843574,410m/data=!3m1!1e3
19	386.0	Market St onto Douro St, Mudgee.	Minor upgrades are required, likely to have no or only minor environmental impacts. Note: some small, exotic street trees occur in the medium strip near the upgrades, but these would not require removal.	Prime mover to stay on the correct side of the road, however the trailer will need to travel on the inside of the corner and over the centre median strip. The centre median strip will need to be concreted, and kerbs lowered. Additionally, some signs will need to be made removable and some no parking areas put in place. Spotter to guide the load through this pinch point.	None	 https://www.google.com/maps/@-32.5901998,149.5843574,410m/data=!3m1!1e3

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
20	386.5	Douro St onto Horatio St, Mudgee.	Minor upgrades required as shown in the swept path assessment. The proposed works have the potential to cause a "*large environmental impact*" according to the SLR assessment, though the proposed works only propose the trimming / removal of exotic vegetation.	Blades to travel around this corner on the incorrect side of the road. The centre median strip will need to be concreted, and kerbs lowered. Some existing street trees (2 exotic trees) in the medium strip will require removal, and some 'no parking' areas put in place. Additionally, some signs will need to be made removable. Spotter to guide the load through this pinch point.	None	 https://goo.gl/maps/VARs5R2ooQWShcim6
20A	387.0	Douro Street onto Horatio Street at Mudgee	No upgrades required and no environmental impacts expected.	Blades to travel through this roundabout on the correct side of the road. Spotter to guide the load through this pinch point	None	Travel directly ahead through roundabout. https://goo.gl/maps/LtMDGuX6cbAL8eri6

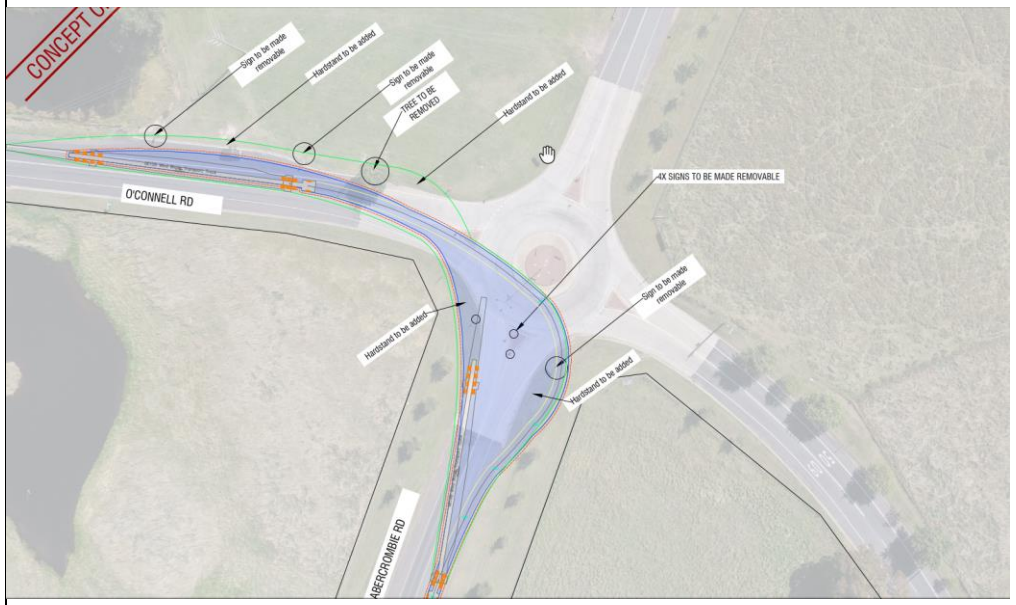
ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
21	367.0	Horatio St onto Sydney Road at Mudgee	Some upgrades are required as indicated in the swept path assessment. However, blades will be lifted / tilted upwards to minimise ecological impacts where possible. No environmental impact identified in the ERM Road Upgrades Report.	Blades to travel around this corner on the incorrect side of the road. Several signs need to be made removable. Spotter to guide the load through this pinch point.	None	 https://goo.gl/maps/z2USgGmixFP1vfR58
22	477.0	Castlereagh Highway rail crossing, Ben Bullen	No upgrades required and no environmental impacts expected.	Left hand than right hand dogleg turn. Loads to travel over the crossing in the centre of the road. Approval is required from the rail company (ARTC) crossing this line. Likely cross with caution. Spotter to guide the load through this pinch point.	None	Travel along existing road. https://goo.gl/maps/5ZtGAGDHBTq1vX2r8

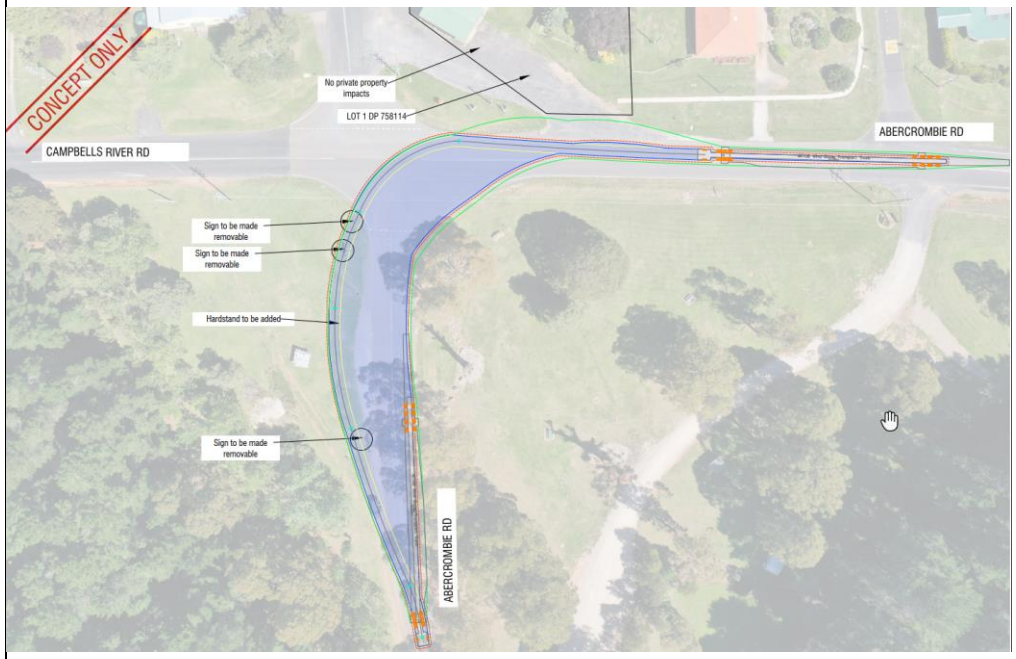
ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
23	499.0	Main Street onto Pipers Flat Road	No upgrades required and no environmental impacts expected.	Towers to cross to the inside of the corner. Spotter to guide load through this pinch point. Police and pilots to supply traffic control as per the procedure for this section of road.	None	 https://goo.gl/maps/TsL2Ur8tUJJ5CfZe9
24	502.0	Main Street onto Pipers Flat Road	No upgrades required and no environmental impacts expected.	Towers to cross to the inside of the corner. Spotter to guide load through this pinch point. Police and pilots to supply traffic control as per the procedure for this section of road.	None	Follow existing road – no swept path assessment required. https://www.google.com/maps/place/33%C2%B024'39.1%22S+150%C2%B003'50.8%22E/@-33.4110583,150.0638235,241m/data=!3m1!1e3!4m4!3m3!8m2!3d-33.4108611!4d150.0641111

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
25	502.0	Pipers Flat Road, Wallerawang	No upgrades required and no environmental impacts expected.	Travel directly ahead. Loads to travel over the crossing in the centre of the road. Approval from the rail company (ARTC) is required for crossing this line. Likely cross with caution.	None	Travel directly ahead. https://goo.gl/maps/KyEM8hfuSLgAGavq9
26	510.0 - 520.0	Range Road, Portland	No upgrades required and no environmental impacts expected.	This section of road will require some minor pruning of trees. However, trees will be maintained.	None	Travel directly ahead. https://goo.gl/maps/dezKvGygnYWownJT9
27	532.0	Great Western Highway roundabout at Kelso	Minor upgrades required as per the swept path analysis. No environmental impact identified in the ERM Road Upgrades Report.	A light pole will need to be relocated and several signs will need to be made removable. Spotter to guide the load through this pinch point.	None	 https://www.google.com/maps/@-33.4206287,149.6251443,241m/data=!3m1!1e3

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
28	533.0	Great Western Highway onto Littlebourne St at Kelso.	Minor upgrades required as per the swept path analysis. No environmental impact identified in the ERM Road Upgrades Report.	Loads will turn from the correct side of Great Western Highways onto the wrong-side of Littlebourne St and move to the correct side after the traffic island. The tail swing will overhang onto the eastbound lanes of the Great Western Highway so the roundabout will need to be blocked from all directions. Several signs will need to be made removable. Spotter to guide the load through this pinch point	None	 https://www.google.com/maps/@-33.4193399,149.6148107,203m/data=!3m1!1e3

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
29	580.0	O'Connell Road Range: Dogleg corner	Upgrades are required as shown in the below swept path assessment. However, blades will be lifted / tilted upwards to minimise ecological impacts where possible. ERM notes that a small area of native roadside vegetation would likely require removal.	Very steep ascend with several very tight turns. A large number of modifications are required on several of the corners. This will require some embankments cut back, some vegetation removal as a minimum. Spotter to guide the load through this pinch point.	Cadastral data appears to show all works to be undertaken within the road reserve. Embankment to be modified.	 https://goo.gl/maps/Lq6yNM3MBwZGpASC6

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
30	574.0	O'Connell Road onto Abercrombie Road at Oberon	Upgrades are required as shown in the below swept path assessment. 2 trees and 4 signs need to be removed. Larger environmental impacts expected as per the SLR assessment. ERM identified two small, exotic street trees which would require removal. Hardstand area would occur in area currently containing managed exotic grass only.	Right-hand turn at the roundabout from the wrong side. A large amount of hardstand is required on the inside and outside of the corner of the roundabout between O'Connell Road and Abercrombie Road. Spotter to guide the load through this pinch point	None	 https://goo.gl/maps/nV3ygxLL9SV7xy6z8

ID	KM index	Item	Expected Upgrades and Impacts	Proposed Control and Works	Lot Details (outside of road corridor)	Swept Path Screenshot and Google Maps Link
31	597.0	Abercrombie Road, intersection of Campbells River Roads at Black Springs	Upgrades (hardstand area) are required as shown in the below swept path assessment. No environmental impact identified in the ERM Road Upgrades Report. Hardstand area would occur in area currently containing managed exotic grass only.	Left-hand turn to stay on Abercrombie Rd. Several signs need to be removed on the. A small amount of hardstand is required on the western portion of Abercrombie road to widen the southern leg. Spotter to guide the load through this pinch point	None	 https://goo.gl/maps/wPBfjVRiyWCrVtFU6
32	627.0 – 635.0	General assessment along Abercrombie Road	No upgrades are required as shown in the below swept path assessments and no environmental impacts expected	This is an undulating section of road with numerous sweeping bends. Blades up to 70m will navigate this section without issue. Trees should be checked closer to commencement to ensure no trimming is required. Spotter to guide the load through this pinch point.	None	Travel directly ahead. https://www.google.com/maps/dir/-34.1093412,149.7931008/-34.0791667,149.8318889/@-34.0950686,149.8033645,3829m/am=t/data=!3m1!1e3!4m2!4m1!3e0

6.8.4 Project Traffic Demands

Construction Phase

Vehicle Fleet

The TIA anticipates that the majority of traffic generated during construction would be associated with the transportation of the workforce, and materials and equipment. The anticipated vehicle fleet is outlined in Section 4.1.1 of the TIA and included the typical vehicle profiles.

Traffic Generated by Construction Workforce

Table 59 below provides an overview of the anticipated construction workforce assumptions, equating to 19,000 return trips during the construction phase of the Proposal over a 22-month period.

Table 59. Traffic generated by construction workforce (adapted from Table 8 TIA)

Element	Assumption	Source
Workforce	150 persons maximum on-site (140 Laborers and 10 Supervisors)	GPG
Roster	5 days on / 2 days off	SLR Assumption
Shift rotation	Up to 9 hours during daylight (8 hours average)	GPG
Construction Duration	22 months (475 days)	GPG
Construction Progress	Linear progress across 22 months	SLR Assumption
Travel Arrangements	Labourers via coaster bus Supervisors via private (light) vehicle	GPG
Light vehicle occupancy	1 passenger per vehicle	SLR Assumption
Coaster bus occupancy	14 passengers per vehicle	SLR Assumption
Staff Movements per day	20 Coaster bus trips 20 Light Vehicle trips	SLR Assumption
Accommodation	Oberon and Bathurst (preferred)	GPG
Workforce Distribution	100% to / from North (70% Bathurst, 30% Oberon)	GPG
Total Staff Movements	19,000 workforce trips in total (9,500 Coaster bus trips and 9,500 Light Vehicle trips)	-

Traffic Generated by Haulage (WTGs, Transmission Line and Substation)

In addition to the vehicle trips generated by the construction workforce, there are an anticipated 8,882 trips associated specifically with the transportation of turbine components during the 22-month construction period and 7,014 trips associated with construction of the transmission line and substations.

Table 60. Traffic generated by turbine erection

Element	Location	Assumption	Vehicle Type	Source
Wind Turbine Blades (each blade is two (2) pieces)	Newcastle Port	564 trips[2]	Custom Vehicles	RJA
Wind Turbine Tower (each tower is seven (7) pieces)	Newcastle Port	658 trips[3]	Custom Vehicles	
Consumables	Bathurst	150 trips total	20m AV	GPG
Fuel	Bathurst	150 trips total	20m AV	
Quarry product (Road Base)	Oberon or on-site	4,200 trips total[4]	20m Truck & Dog	SLR Assumption
Quarry product (Wearing Coarse)	Oberon or on-site	2,100 trips total[5]	20m Truck & Dog	

Miscellaneous Materials	Bathurst	600 trips total	20m Truck & Dog	
Miscellaneous Equipment	Bathurst	60 trips total	20m AV	SLR Assumption
Construction Mobilisation	Bathurst	200 trips total	20m AV	
Construction de-mobilisation	Bathurst	200 trips total	20m AV	
Total Turbine Specific Movements		8,882 trips in 22 months		
500kV Substation	Via Bathurst	1,426 trips total	Trucks	
500kV Substation	Via Bathurst	170 trips total	Semi-trailer	
132kV Substation	Via Bathurst	50 trips total	Crane	
		50 trips total	OSOM	
		944 trips total	Trucks	
132kV Substation	Via Bathurst	102 trips total	Semi-trailer	
Transmission Lines	Via Bathurst	38 trips total	Crane	TransGrid / GPG
		46 trips total	OSOM	
		3,848 trips total	Trucks	
	Via Bathurst	312 trips total	Semi-trailer	
	10,782 over 22 months	14 trips total	Crane	
		14 trips total	OSOM	
		-		
Total Substation / Transmission Line Movements	7,014 trips over 22 months			-
Total Haulage Movements	17,801 trips over 22 months			-
				-

[4] *A total of 21,000m³ of road base – assumed 10km long, 7m wide and 0.3m deep (20t per truck & density 2t/m³)*
[5] *A total of 7,000m³ of wearing coarse – assumed 10km long, 7m wide and 0.1m deep (20t per truck & density 2t/m³)*

Table 61. Transmission and Substation Traffic Generation

Element	Location	Assumption	Vehicle Type	Source
500kV Substation	Via Bathurst	1,426 trips total	Trucks	TransGrid / GPG
		170 trips total	Semi-trailer	
		50 trips total	Crane	
		50 trips total	OSOM	
		944 trips total	Trucks	
132kV Substation		102 trips total	Semi-trailer	
		38 trips total	Crane	
		46 trips total	OSOM	
		3,848 trips total	Trucks	
Transmission Lines		312 trips	Semi-trailer	
		14 trips	Crane	
		14 trips	OSOM	

Total	7,014 trips over 22 months

Total Construction Phase Traffic Generation

Based on the above estimates, it is expected that a total of 5,651 internal trips will be made within the site for concrete batching plant movements. It is therefore anticipated that the total traffic generated by the construction of the proposed development will be in the order of 40,547 trips across the construction duration (22 months / 475 days). This equates to daily traffic generation of 86 movements a day (inbound and outbound).

Operational Traffic Demands

The TIA concludes that the operational traffic demands associated with the Proposal will not result in unreasonable traffic impacts. This is due to the limited workforce required on-site for operation of the wind farm. During the life of the development, a range of preventative, corrective and condition-based maintenance activities would be carried out. These activities and anticipated staff numbers are described in section 3 of the EIS. Operational workforce assumptions are as follows:

- Permanent Workforce:
  4 persons
- Contractor Workforce:
  10 persons
- Anticipated Fleet:
  Light vehicles, disposal trucks
- Distribution:
  50% to / from Bathurst (north)
  50% to / from Goulburn (south)

The workforce is anticipated to travel with light vehicles and / or disposal trucks.

Decommissioning

During the decommissioning phase, the largest OSOM materials will be disassembled into several pieces before being transported to the designated recycling centre. Further details will be provided at a later point in the project lifecycle.

6.8.5 Other Traffic Engineering Considerations

Cumulative Traffic Impacts

Construction of the nearby Crookwell 3 Wind Farm is currently underway. It is understood that the construction of Crookwell 3 will continue into the first half of 2023. The construction of PYWF is set to commence in the second part of 2023 at the earliest, and therefore no overlap in the construction of the two wind farms is expected.

Safe Intersection Sight Distance (SISD)

The TIA provides an assessment of the minimum sight distance to be provided for each of the proposed Access Locations calculated in accordance with the *Austroads Guide to Road Design, Part 4A, Section 3.2.2*.

A summary of the SISD for each Access Location and SLR recommendation is provided in Table 62.

Table 62. Access Locations and required Sight Distance

Access Location	Required Sight Distance (m)	Sight Distance (m)	Recommendations
1 North Approach	224	225	· This approach is situated on a minor horizontal bend. · Vegetation on verge east of carriageway from north approach must be cleared on a regular basis to maintain required sight distance.
1 South Approach	224	231	· The south approach is located on a straight with no substantial horizontal bends or vertical curves that limit sight distance.
2 North Approach	224	289	· Nil – straight north approach with no substantial horizontal bends or vertical curves.
2 South Approach	216	230	· Nil – straight south approach with no substantial horizontal bends or vertical curves.
3 North Approach	196	227	· North approach is located on a straight with no substantial horizontal bends. The vertical alignment of the north approach is partially impacted by a crest in the carriageway. It was confirmed that the sight distance was satisfactory.
3 South Approach	166	170	· Satisfies sight distance requirements. It is recommended that the appropriate signage be provided on the Operational Traffic management Plan (OTMP) to warn drivers.
4 North Approach	232	271	· Nil – north approach considered to satisfy, confirmed through footage review.
4 South Approach	224	243	· Nil – south approach considered to satisfy, confirmed through footage review.
5 North Approach	185	225	· North approach satisfies sight distance requirements.
5 South Approach	210	222	· Vegetation on west shoulder of south approach must be cleared on a regular basis to maintain required sight distance.

6.8.6 Avoid and Minimise

The TIA recommends that a Construction Traffic Management Plan (CTMP) or equivalent document be prepared prior to the substantial commencement of construction activities but following approval of the EIS.

The CTMP would detail impact mitigation strategies including soft strategies such as moving workforce via bus and hard strategies such as roadworks at access points. It would also specify the sight distance maintenance requirements as outlined in the TIA.

6.9 Blade Transport Route Study

This section should be read in conjunction to the TIA prepared by SLR Consulting.

A Route Study prepared by Rex J Andrews (RJA) accompanies the EIS and is included as Appendix AA. All WTGs components are anticipated to arrive at the Port of Newcastle, with the ideal berth being Mayfield #4 Berth.

The Route Study assessed a total of three route options from Port of Newcastle to the site. The Route Study further provides recommendation for two selected route options, which were initially assessed based on different load sizes as a result of turbine components. The Route Study is based on component specifications for a GE158 wind turbine.

The two recommended route are detailed below.

Table 63. Route Survey Review

Route Survey		Load Size	Route	Total Distance
1	Newcastle to Paling Yards	Loads under 5.1m height	Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, New England Highway, Thomas Mitchell Drive, Denman Road, Golden Highway, Castlereagh Highway, Great Western Highway, Littlebourne Street, O'Connell Road, Abercrombie Road.	635.0 km
2	Newcastle to Paling Yards	Loads up to 5.9m height	Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Castlereagh Highway, Main Street, Pipers Flat Road, Range Road, Great Western Highway, Littlebourne Street, O'Connell Road, Abercrombie Road.	654.0km

The route surveys also identify locations suitable for emergency stopping / parking and fatigue breaks.

It is anticipated that each turbine is expected to weigh around 850-900 tonnes and assembled by 16 major components (which includes the blades, base tower, sections, hub, machine heads and drive trains). Each turbine will require three blade roots and three blade tips to be transported and assembled. Refer to section 2.4 (haulage) of the SLR TIA for more details on the various components being transported.

The longest load that will be transported to the site is the blade root, which has the following specifications:

- Blade root: 65.4m long x 4.0m wide x 3.3m high with an approximate weight of 28 tonnes.

The heaviest load that will be transported to the site is the machine had (Nacelle), which has the following specifications:

- Machine Heads (Nacelle): 14.12m long x 3.97m wide x 3.45m high with an approximate weight of 98 tonnes.

6.9.1 Route Study Summary

It was concluded that the route from the Port of Newcastle, through Mudgee to the Site is the most favourable. For this route, a route study summary evaluation was done and are provided in the table below.

Table 64. Route Study Summary

	No works required	Some works required	Moderate amount of works required	Large amount of works required
A Harbour				
B Road Modification				
C Road Furnishings				
D Trees				
E Site Entrance				
F Bridge Calculations				
G Traffic Control				

The selected route is illustrated below:

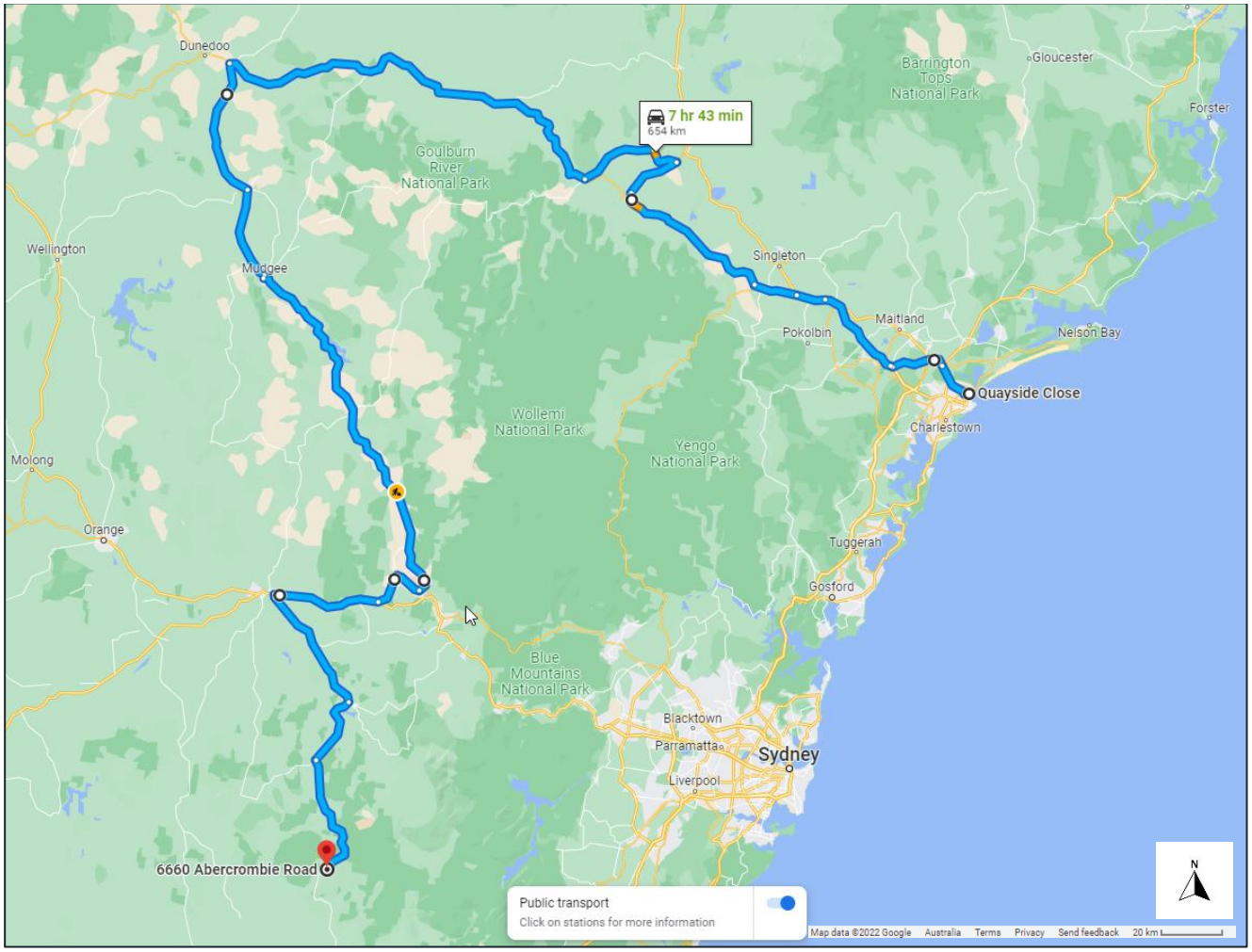


Figure 59. Proposed Access Route (Source: Google, 2022)

6.9.2 Route Upgrades

As mentioned earlier in this section, the entire route (via Mudgee) covers approximately 654km. This route option considers the transportation of the blades from the Port of Newcastle to the Site.

The Route Study identifies the required road upgrades for the safe transportation of WTG components for the preferred route option (Route Survey 2).

Note that the report also provides a full review of the alternative route option (Route Survey 1). Refer to Section 9.0 of the RJA Route Study for full assessment and the associated diagrams.

Route Survey 2

The required modifications based on transporting loads up to 5.9 metres in height are outlined in the table below. It assesses the transport route from Newcastle to Paling Yards via Mudgee, which is approximately 654km in total, and lists the key pinch points or constraints along the route.

This route is summarised as running from: Selwyn Street, George Street, Industrial Drive, Maitland Road, New England Highway, John Renshaw Drive, Hunter Expressway, Golden Highway, Denman Road, Bengalla Road, Wybong Road, Golden Highway, Castlereagh Highway, Main Street, Pipers Flat Road, Range Road, Great Western Highway, Littlebourne Street, O'Connell Road, Abercrombie Road.

A detailed and consolidated summary of the route and associated works is included in Table 58 under section 16.8.3. Below is a summary of the key road sections, current measures associated with that section, and notes on potential works as identified by RJA in their assessment.

Table 65. Route Survey 2 (Preferred)

Location	Section of Road	Current measures	Notes
Mayfield 0.4km	Selwyn Street over rail crossing	Length: 90.0m Width: 9.0m	Loads to travel over the crossing in the centre of the road. Approval required crossing this line, likely cross with caution.
Mayfield 4.9km	Industrial Drive under traffic signals	Height: 5.4m	The lowest traffic signal on route is at the intersection of Steel River Blvd. Trucks that exceed 5.3 metres will need to travel in the right-hand lane. Clearance in the right end lane is 6.0 metres.
Sandgate 6.4km	Maitland Road over rail bridge	Length: 90.0m Width: 9.0m	Approval from rail company required to cross this structure. Travel over this structure may have specific conditions.
Hexham 13.9km	New England Highway under gantry	Height: 5.9m	This is the lowest structure on route. There is no bypass around the gantry. A maximum loaded height of 5.9 metres should not be exceeded.
Tarro 15.1km	New England Highway over rail bridge	Length: 90.0m Width: 7.0m	Approval from rail company required to cross this structure. Travel over this structure may have specific conditions.
Whittingham 67.3km	New England Highway onto the Golden Highway	Length: 70.0m Width: 8.0m	The NSW Government is currently upgrading this intersection. At this stage the data that is available for the upgrades shows that the section of road that we would need to access does not change considerably. However, it is recommended that progress of upgrades is monitored, and any changes are thoroughly looked at.
Whittingham 68.0km	Golden Highway Over Rail Bridge	Length: 90.0m Width: 9.0m	Approval from rail company required to cross this structure. Travel over this structure may have specific conditions.
Mount Thorley 77.3km	Golden Highway over rail bridge	Length: 90.0m Width: 9.0m	Approval from rail company required to cross this structure. Travel over this structure may have specific conditions.
Mount Thorley 80.6km	Golden Highway over rail bridge	Length: 90.0m Width: 9.0m Height: 5.2m	Approval from rail company required to cross this structure. Travel over this structure may have specific conditions.
Mount Thorley 80.8km	Putty Road under Mt Thorley Road	Heights: Left: 6.6m Centre: 6.3m Right: 6.3m	Travel under the bridge in the left lane. Mt Thorley underpass is 6.3m in the centre of the road. Towers to pass under this structure on the correct side.
Ogilvy 126km	Golden Highway	6% gradient	This section of road has a steep mountain range that will require additional pull trucks to assist loads that exceed 80T gross weight.
Bengalla 158-183km	Wybong Road	Length: 60.0m Width: 8.0m	This road is maintained by Muswellbrook Council. Approval will be required to travel on this section of the Road. Muswellbrook Council will be engaged to obtain approval. Alternative route options are available.
Ben Bullen 477km	Castlereagh Highway rail crossing	Length: 60.0m Width: 9.0m	Loads to travel over the crossing in the centre of the road. Approval required crossing this line, likely cross with caution.
Wallerawang 502km	Main Street onto Pipers Flat Road	Length: 45.0m Width: 8.0m	Right hand turn. Towers to cross to the inside of the corner. Spotter to guide load through this pinch point. Police and pilots to supply traffic control as per the procedure for this section of the road.
Wallerawang 502km	Pipers Flat Road	Width: 8.0m	Loads to travel over the crossing in the centre of the road. Approval required crossing this line, likely cross with caution.

Portland 510-520km	Range Road	Width: 7.0m	This section of road will need trees to be pruned. Vegetation assessment to be undertaken prior to any works to be undertaken.
Oberon 580km	O'Connell Road	Length: 50.0m Width: 6.0m	Travel around several tight corners while ascending a mountain range. All loads over 70T gross will require a backup prime mover to assist with the gradient on this section of road. The largest towers will need to have assistance from a steer operator.
Oberon 593km	O'Connell Road onto Abercrombie Road	Length: 45.0m Width: 6.0m	Right hand turn. Some signs will need to be removed for the longest loads.
Paling Yards 654km	Abercrombie Road into windfarm entrance	Length: 70.0 metres Width: 10.0 metres	Left and right hand turns. Location of the site entrance as per SLR report. Site entrance will need to be designed to suite all components.

Refer to Section 11 of the Route Study for full assessment with interactive Google Maps links to the relevant road sections.

Route Option 2 Conclusion

This route option will require a moderate number of upgrades before it could be deemed suitable for transporting the proposed WTG components. The following are key points for consideration, as identified by RJA in the Route Study:

Bridges:

- There are a large number of bridges on route that will require bridge assessments for the capacity of the listed loads.

Overhead Structures that cannot be detoured (5.9m maximum loaded height):

- The overhead gantry on to New England Highway at Hexham is the lowest structure on route with a maximum clearance of 5.9m in height.

Overhead structures that can be detoured (5.4m in height):

- A traffic signal on Industrial Drive has a maximum height clearance of 5.4 metres in the left lane however, if loads use right hand lanes, they can pass this signal at up to 5.9 metres in height.

Overhead utilities:

- Overhead utilities will need to be checked by an authorised scoping company for a clearance height of 5.9 metres. Extensive works may be required to pre-lift assets.

Vegetation:

- The State highways have suitable clearance from vegetation.
- However, sections of Wybong Road, Main Street, Pipers Flats, Range Road, O'Connell Road and Abercrombie Road will have sections where pruning or removal of vegetation will be required.
- These sections of vegetation should be assessed and mapped prior to any works commencing.

Width and Pavement:

- The roads generally have suitable clearance other than Range Road and Abercrombie Road, which will require some vegetation pruning.
- The width and quality of the pavement will be acceptable for the route; however, several council roads would need to be checked for capacity. These roads include Wybong Road, Main Street, Pipers Flat, and Range Road.

O'Connell Road:

- As highlighted in the report, some works along the dogleg corner of O'Connell Road Mountain range will be required.
- This might include some embankments to be cut back, vegetation pruning or removal.

Abercrombie Road:

- If the works proposed to be undertaken along this route are done, the WTG components will be able to be transported along this route.

6.10 Blade Throw Assessment

The SEARs for the Project require the EIS to *'assess blade throw risks.'*

This is consistent with the NSW *Wind Energy Guideline for State Significant Wind Energy Development, December 2016*.

A Blade Throw Assessment (BTA) prepared by DNV accompanies the EIS and included in Appendix J. The BTA applies international regulatory frameworks and classifications to assess the potential risk of blade throw on sensitive locations within vicinity of the Site including dwellings, public facilities, roads and other neighbouring properties.

6.10.1 Blade Throw considerations

'Blade throw' refers to incidents where structural failure causes the blade or part of the blade of a wind turbine to detach and be thrown into the surrounding area. Detachment may also occur while the wind turbine is not in operation (rotor not in motion) falling close to the structure. Occurrence of blade throw is rare.

Structural failure of turbine blades can occur from physical damage caused to the blade by external factors including extreme weather conditions such as high winds and lightning, erosion, material and / or manufacturing defects, and material fatigue. High winds can result in loads on the turbine which exceed those that the turbine has been designed to withstand. Blade deterioration, if left untreated, and mechanical stresses can lead to weak points in the material structure of the turbine and eventuate in failure, detachment, and blade throw.

Modern wind turbines and their components are designed to recognised international standards (IEC 61400) which significantly reduces the risk of blade throw incidents. Despite this, mitigation against the potential consequences arising from blade throw incidents is essential.

Refer to section 2.2 of the accompanying BTA in **Appendix J** for further information.

6.10.2 Regulatory framework

The BTA recognises that there is no State regulatory methodology for blade throw assessment, and as such DNV adopts the Dutch Wind Turbine Risk Zoning Handbook 2014 (the Dutch Handbook) for guidance, which Handbook forms the basis of the 2020 Dutch Wind Turbine Risk Zoning Guide. The Dutch Handbook offers both:

- A methodology for performing a detailed site-specific analysis of blade throw risks; and
- A methodology for conducting a conservative high-level risk assessment which can be used as a screening assessment to evaluate the potential risks for a wind farm which can determine whether a more detailed assessment is needed.

DNV has also applied the United States Renewal Energy Laboratory (NREL) classification of blade throw to their assessment.

Refer to section 2.3 of the accompanying BTA in Appendix J for further information.

6.10.3 Potential risk of blade throw

DNV describes that the risk posed to people, property, or infrastructure by blade throw incident is determined by three factors:

- The frequency of a blade or blade fragment detaching and being thrown from a turbine, and the circumstances under which this happens.
- The probability of the blade or blade fragment landing in a given location.
- The probability of a blade or blade fragment landing at a given location causing injury or death to a person, or damage to property or infrastructure.'

Refer to section 3 of the accompanying BTA for further information.

Blade throw frequency in Australia

DNV provides a conservative estimate based on the Dutch Handbook frequencies that, of the 3,504 wind turbines currently installed and operating in Australia (759 of which are located in NSW), a total of up to approximately three blade throw incidents may be expected on average in a year across Australia or less than one incident on average in NSW.

Based on the frequencies provided in Table 1 of the BTA, it is estimated that the Project could experience one blade throw incident approximately every 25 to 85 years on average. This indicates that one blade throw incident could occur at the Project during its lifetime, however DNV notes that *'the occurrence of a blade throw incident does not necessarily correspond to the blade or blade fragment landing at a location that would result in injury or death to a person or damage to property or infrastructure.'*

Refer to section 3.1 of the accompanying BTA for further information.

Maximum theoretical blade throw distance

The BTA compares theoretical blade throw distances from a range of studies with actual recorded blade throw incidents to establish parameters through which potential throw distance for the Project can be modelled. The report finds that *the maximum potential throw distances for the turbines at the Project calculated at a tip speed of 70.0 m/s (normal operating speed) are expected to be in the order of 180 m for an entire blade and 500 m for a blade fragment. For a high tip speed of 100.0 m/s, the maximum potential throw distance is calculated at 220 m for an entire blade and 860 m for a blade fragment. In the unlikely event of overspeed conditions, the throw distances for turbines of this size could potentially reach distances in the order of 450 m for an entire blade or 1450 m for a blade fragment.'*

These distances are based on assumed scenarios for the turbine behaviour and wind conditions at the time of the blade throw incident, and do not consider the unlikely probability that these scenarios might actually occur.

Refer to section 3.2 of the accompanying BTA for further information.

Blade throw incidents causing injury or death

Using the Dutch Handbook, the BTA finds that:

- At a distance of half the maximum proposed rotor diameter, the risk of being hit and killed by a blade or blade fragment is expected to be less than 1-in-100,000 for a person who remains at a fixed location from the turbines continuously for a whole year and 1-in-100 million for a person who remain at a fixed location continuously for one working day per year (8 hours).
- At a distance equal to the turbine tip height (240m as the greater distance compared to theoretical throw distance of the entire blade under normal operating conditions), the risk of being hit and killed by a blade or blade fragment is expected to be 1-in-1 million or less for a person who remains at a fixed location from the turbines continuously for a whole year, and 1-in-1 billion for a person who remains at a fixed location from the turbines for 8 hours (one working day) per year.

Refer to section 3.3 of the accompanying BTA for more information.

6.10.4 Site specific blade throw risk

The BTA provides a high-level assessment of the site-specific risks of blade throw for the proposed Project, which includes blade throw risks at dwellings and other sensitive locations, blade throw risks at nearby properties, and blade throw risks on nearby roads.

A summary of the blade throw risk calculations is outlined and the corresponding 'Risk Classification' from the NREL is outlined in Table 66 below.

Refer to section 4 of the accompanying BTA for further information.

Table 66. Summary of blade throw risks (taken from Table 11 of BTA prepared by DNV, 2022)

Risk category	Blade throw risk evaluated for the Project and corresponding NREL risk classification	Blade throw risk limit presented in the Dutch Handbook	Existing Risk
At dwellings and other sensitive locations such as schools and childcare facilities			
Location-specific risk (for an unprotected person remaining at that location for a whole year)	Considerably less than 10^{-6} per year (1-in-1 million), "extremely remote" to "improbable" likelihood and "low" to "routine" risk	10^{-6} per year (1-in-1 million)	-
At neighbouring properties			
Location-specific risk (for an unprotected person remaining at a fixed location for a whole year)	Less than 10^{-5} per year (1-in-100,000) "Extremely remote" likelihood and "routine" risk	-	Risk of death for people working in agriculture in Australia: 1.5×10^{-4} per year (1-in-6,667)
For road users on Abercrombie Road (representing the worst-case scenario for all road users in the vicinity of the Project)			
Individual risk (for a typical person travelling on that section of road)	1.40×10^{-8} per person per year (1-in-71 million) "Improbable likelihood" and "routine" risk	10^{-6} per person per year (1-in-1 million)	Risk of death on all Australian roads per head of population 4.3×10^{-5} per year (1-in-23,256)
Societal risk (total number of people at risk)	1.40×10^{-5} persons per year (one death every 71,000 years)[1]	2×10^{-3} persons per year (one death every 500 years)	-

12 *The NREL risk classifications are only applicable for risks expressed as a likelihood or frequency per year, as in the case of a location-specific or individual risk.*

6.10.5 General Electric Setback Consideration

In addition to blade throw, other potential safety risks associated with wind turbines such as objects (maintenance tools, ice, etc.) directly falling from the wind turbine, unlikely occurrences such as tower collapse, and environmental / operational risks such as ice throw might occur. General Electric (GE), a potential turbine provider for the project, developed setback requirements for wind turbine siting.

Risks other than blade throw include:

- Falling objects;
- Tower collapse; and
- Ice shedding or ice throw.

Recognized industry practices suggest the following actions be considered when siting turbines in order to mitigate risk resulting from the listed hazards:

- Place physical and visual warnings such as fences and warning signs as appropriate for the protection of site personnel and the public.
- Remotely stop the turbine when ice accumulation is detected by site personnel or other means. Additionally, the wind turbine controller may have the capability to shut down or curtail an individual turbine based on the detection of certain atmospheric conditions or turbine operating characteristics.
- Restrict site personnel access to a wind turbine where / when possible if ice is present on any turbine surface such as the tower, nacelle or blades.

Setback considerations include adjoining population density, usage frequency of adjoining roads, land availability, and proximity to other publicly accessed areas and buildings. GE provides recommended setback distance from centre of turbine tower in accordance with the recognised industry standards and practices. This proposal complies with the required setbacks.

6.10.6 Blade throw risk conclusions

Based on the assessment provided by DNV, the BTA found that '*the potential risks [of blade throw] are at least 74 times less than the blade throw risks considered acceptable in other jurisdictions, and considerably less than existing risks*.'

The layout, parameters and specifications of the proposed development would have a "very low" risk of injury or property damage associated with blade throw.

6.11 Aviation Impact Assessment

A comprehensive analysis of aviation impacts that may be a result of the Project has been undertaken by Aviation Projects (Appendix I). The report has been prepared in relation to the SEARs comment outlined below:

- *assess the impact of the development under the National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft;*
- *provide associated height and co-ordinates for each turbine assessed;*
- *assess potential impacts on aviation safety, including cumulative effects of wind farms in the vicinity, potential wake / turbulence issues, the need for aviation hazard lighting and marking, including of wind monitoring masts, considering, defined air traffic routes, aircraft operating heights, approach / departure procedures, radar interference, communication systems, navigation aids, use of emergency helicopter access, and aerial baiting and culling in the National Park;*
- *identify aerodromes within 30 km of the turbines and consider the impact to nearby aerodromes and aircraft landing areas and aerial pest control and fire management operations in the Abercrombie National Park;*
- *address impacts on obstacle limitation surfaces; and*
- *assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line.*

The report considers the Site's surroundings and existing characteristics and identifies its proximity to nearby certified aerodromes or airports.

The report was prepared in accordance with the legislative framework of the:

- EP&A Act; and
- National Airports Safeguarding Framework (NASF) Guideline D: Managing the Risk to aviation safety of wind turbine installations (wind farms) / Wind Monitoring Towers.

6.11.1 Site Considerations

The site is located in between two airports, to the north is Bathurst Airport (84km) and to the south is Goulburn Airport (67km). When preparing this assessment report, a main focus was to identify wind turbines which could result in disturbance to the flight path of airplanes that use either Bathurst or Goulburn Airports.

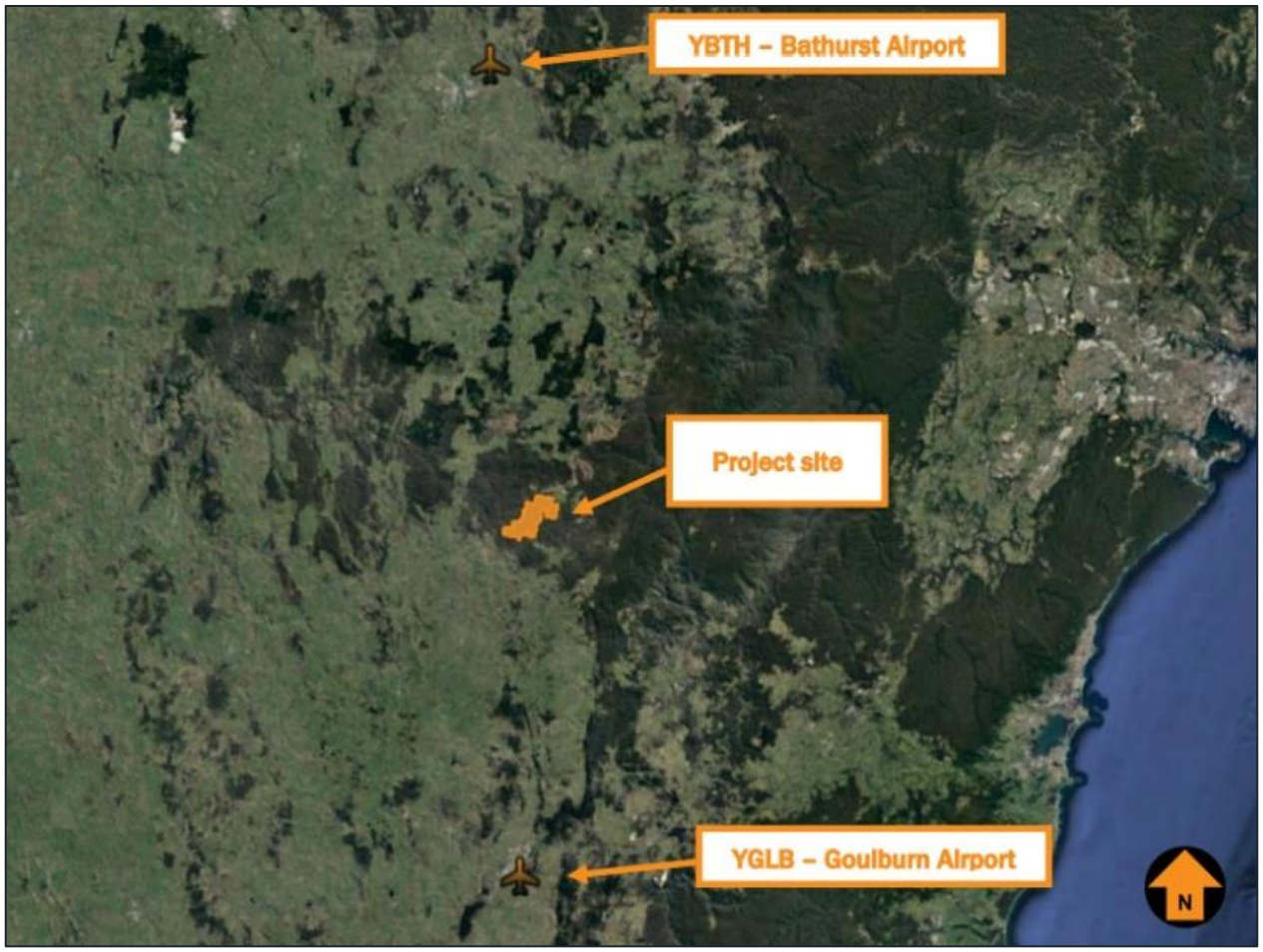


Figure 60. Project sites relative to nearby certified airports (Source: Aviation Impact Assessment 2021)

6.11.2 Methodology

The methodology used to conduct the Aviation Assessment included a primarily qualitative approach and involved the analysis of a number of possible variations that could influence the site and its impact on aviation use in the surrounding area. The scope of the methodology included:

- Confirmation of scope and deliverables;
- Review Client material;
- Undertake a site visit;
- Review regulatory requirements;
- Identify risk mitigation strategies in accordance with NASF Guideline D Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation; and
- Consult relevant stakeholders.

6.11.3 Site Findings

The findings have been provided in accordance with the *Guide D* of the *National Airports Safeguarding Framework* which identifies the importance of airports to national, state / territory and local economies, transport networks and social capital. *Guide D: Managing the risk to Aviation safety of Wind turbine installations (wind farms) / Wind monitoring Towers* outlines a number of objectives which are to be considered and met to ensure the wind turbines do not interrupt the flight paths and aviation regulations within the area.

A review of the findings is summarised below:

Certified airports

- The Project site is further than 30nm (55.56km) from a certified airport. The closest certified airport is Goulburn Airport which is located approximately 69 km (37.3 nm) south of the Site.
- The Project will not impact the 25nm minimum sector altitude of any certified airport, and therefore there will not be any impacts on the instrument flight procedures.

Obstacle Limitation Surfaces

- The Project is located outside the horizontal extent of the obstacle limitation surface (OLS) for certified airports. The OLS is a height limit plain or line determine by the highest obstacle established on a horizontal axis from an established airport.

Aircraft Landing Areas

- The Guide outlines that the area within a 3nm radius of an aircraft landing area (ALA) is a 'interest area' and is used to assess the potential impacts of proposed developments on aircraft operations.
- A review of relevant resources highlighted that there are four nearby ALAs.
- Of the four ALAs, ALA 1 is located within the nominal 3nm buffer from a wind turbine. Further assessment identified the following:
- The proposed WTGs are located outside the horizontal extent of approach and take-off surfaces of the ALA and thus the Project will not impact approach and take-off surfaces of the ALA.
- It is likely that the identified ALAs are predominantly used by aerial application operators, and the aerial application operators would likely use an abbreviated circuit path.
- The effects of wake turbulence could be noticeable operating at ALA 1.

Air Routes and Lowest Safety Altitude

- The highest turbines were identified as PY-34 and PY-38 and are both located to the north-eastern portion of the Project site. Wind Masts and Overhead transmission lines were not considered to impede on aviation space or air routes.

Airspace

- The Project is located outside of controlled airspace and will therefore have no impact.

Aviation Facilities

- The Project will not penetrate any protection areas associated with aviation facilities and will therefore have no impact.

Obstacle lighting risk assessment

- A safety risk assessment undertaken as part of the Aviation Assessment concluded that the WTGs and WMTs will not require obstacle lighting to maintain an acceptable level of safety to the aircraft.

Consultation

- As part of the assessment, consultation was undertaken with key agency stakeholders to identify any concerns.

Their comments are provided below:

Table 67. Key Community Stakeholder Outcome Summary

Agency	Date Received	Comment
Airservices Australia	8 Nov 2021	Airservices confirmed that the proposal would not have an impact on any Airservices designed instrument procedures, facilities or operations at any airports.
Civil Aviation Safety Authorisation	27 Sept 2021	CASA has advised that it will only review assessments referred to it by a planning authority or agency.
Department of Defence	Outstanding (submitted 17 Sept 2021)	No response received
NSW Rural Fire Service	10 Nov 2021	RFS confirmed that they have no further comments and that the Project would be treated like any other potential hazard to aircraft operations.
Oberon Council	19 Oct 2021	Council will only be able to assess the proposal as part of the EIS, once submitted to DPE.
Royal Flying Doctor service	24 Sept 2021	RFDS confirmed that their flight operations and safety teams found no issues arising that would impact RFDS operations.

Refer to Table 26 under section 5.2 for a detailed breakdown on all the Agency comments received.

6.11.4 Recommendations

Recommended actions resulting from the conduct of the assessment are provided as follows:

- 'As constructed' details of wind turbine and WMT coordinates and elevations should be provided to Airservices Australia, using the following email address: vod@airservicesaustralia.com.
- Department of Defence should be consulted if there is any subsequent modification in the wind turbine height or scale of development, using the following email address: land.planning@defence.gov.au.
- Any obstacles above 100 mAGL (including temporary construction equipment) should be reported to Airservices Australia NOTAM office until they are incorporated in published operational documents. With respect to crane operations during the construction of the Project, a notification to the NOTAM office may include, for example, the following details:
    - The planned operational timeframe and maximum height of the crane.
    - Either the general area within which the crane will operate and / or the planned route with timelines that crane operations will follow.
- Details of the Project should be provided to local and regional aircraft operators prior to construction for them to consider the potential impact of the wind farm on their operations.
- To facilitate the flight planning of aerial application operators, details of the Project, including location and height information of wind turbines, wind monitoring towers and overhead transmission lines should be provided to landowners so that, when asked for hazard information on their property, the landowner may provide the aerial application pilot with all relevant information.

Operation

- While not a statutory requirement, GPGA should consider engaging with local aerial agricultural operators and aerial firefighting operators in developing procedures for such aircraft operations in the vicinity of the Project.

Marking of turbines

- The rotor blades, nacelle and the supporting mast structure of the wind turbines should be painted white, typical of most wind turbines operational in Australia. No additional marking measures are required for WTGs.

Lighting of turbine

- Aviation Projects has assessed that the proposed Project will not require obstacle lighting to maintain an acceptable level of safety to aircraft.

Marking of wind monitoring towers

- Consideration should be given to marking the temporary and permanent WMTs according to the requirements set out in the Manual of Standards 139 Section 8.10 (as modified by the guidance in NASF Guideline D).
- The Standards require that:
  - marker balls or high visibility flags or high visibility sleeves should be placed on the outside guy wires
  - paint markings should be applied in alternating contrasting bands of colour to at least the top 1/3 of the mast
  - the guy wire ground attachment points should have contrasting colours to the surrounding ground/vegetation or a flashing strobe light during daylight hours.

Triggers for review

- Triggers for review of this risk assessment are provided for consideration:
  - Prior to construction to ensure the regulatory framework has not changed
  - Following any significant changes to the context in which the assessment was prepared, including the regulatory framework
  - Following any near miss, incident or accident associated with operations considered in this risk assessment.

6.12 Resilience and Hazards Assessment

The Resilience and Hazards Assessment (RHA) was undertaken by Switch Co Projects (SwitchCo) to provide a site screening to ensure the storage of dangerous goods on site is in accordance with the *NSW State Environmental Planning Policy Resilience and Hazards 2021* (Resilience and Hazards SEPP 2021) for Paling Yards Wind Farm (Appendix H).

SwitchCo investigated the permissible maximum quantities of hazardous materials that can be stored or transported without causing a significant offsite risk as stipulated in the Resilience and Hazards SEPP 2021guidelines. It was found that the thresholds are not exceeded for any material. Further, SwitchCo found that the risks associated with storage and transportation of hazardous materials would be unlikely to be significant or pose a risk to public safety.

SwitchCo considered that the PYWF Project will not be a hazardous or potentially hazardous industry under their Resilience and Hazards SEPP 2021 chemical screening. SwitchCo outlined that a Preliminary Hazard Analysis (PHA) was not required for the Project. In considering the results of environmental impact statement report, type of the material stored, proposed mitigation measures for the Project, distance from nearby land users, SwitchCo concluded that no potentially offensive impacts were associated with the Project. This report has investigated the permissible quantities as specified in the NSW Resilience and Hazards SEPP 2021guidelines.

6.12.1 Site Considerations

The proposed Project Area is noted as being located away from any significant population centres. The report identifies that only a small number of dwellings are located within the vicinity of the site and are dispersed across the low-density rural landscape.

As part of the assessment undertaken, a risk analysis of the site profile was conducted to identify what is proposed to be stored at the site with the following parameters considered:

- The properties of the substance being handled/sorted;
- The condition of storage or use;
- The quantities involved;
- The location with respect to the site boundaries; and
- Surrounding land use.

6.12.2 Methodology

This report was undertaken as a desktop assessment which included the assessment of environmental hazards and risks that could happen during the construction and operation of key infrastructure components of the Project. The findings were collated within a summary table.

6.12.3 Site Findings

The Resilience and Hazards SEPP guidelines state that wind farms are not considered to be a 'Potentially Hazardous Industry'.

Further the findings of the Resilience and Hazards SEPP Assessment include:

- Resilience and Hazards SEPP Thresholds are not exceeded and are therefore not considered to be hazardous.
- Risks associated with storage and transportation of hazardous materials are unlikely to pose a threat to public safety.

6.12.4 Mitigation Measures

In accordance with SEARs and Resilience and Hazards SEPP guidelines, the following is proposed to be prepared to accompany the submission of the EIS:

- A detailed Construction Environmental Management Plan (CEMP) and Operational Management Plan (OMP) to demonstrate that the Project will not exceed the SEPP screening limits. These plans are to ensure hazardous materials will be stored appropriately and at the required distance from sensitive land uses, in accordance with the thresholds established under Applying SEPP 33 and relevant Australian Standards.
- A Safe Work Method Statement (SWMS) is to be prepared in accordance with the Work Health and Safety Act 2011, the Storage and Handling of Dangerous Goods Code of Practice (Safe Work NSW) and Resilience and Hazards SEPP requirements to ensure proper storage and handling.

The PYWF is not considered to be a hazardous or potentially hazardous industry under *Resilience and Hazards SEPP*.

6.13 Bushfire Assessment

The SEARs for the Project require the EIS to:

> *'identify potential hazards and risks associated with bushfires/use of bushfire prone land, potential impacts on Abercrombie National Park and including the risks that a wind farm would cause bush fire and any potential impacts on the aerial fighting of bushfires and demonstrate compliance with Planning For Bush Fire Protection 2019.'*

A Bushfire Risk Assessment (BRA) prepared by ERM accompanies this EIS. Fire and Rescue NSW (FRNSW) has requested by advice dated 16 February 2022 to be consulted with respect to the proposed fire and life safety systems and their configuration at the Project's preliminary and final design phases.

The *Rural Fires Act 1997* imposes obligations on land occupiers to take all practicable steps to prevent the occurrence and spread of wildfire to adjoining land from land under their care and management.

The BRA has been prepared in accordance with the management and mitigation measures of the NSW Rural Fire Service (RFS) guidelines *Planning for Bushfire Protection 2019*. The purpose of the BRA is to identify potential hazards and risks associated with use of bushfire prone land and outline how the Proposal can be designed, constructed and operated to provide for the appropriate bushfire management requirements.

The Site is within the Chifley Bush Fire Management Committee (BFMC) region.

6.13.1 Legislative Framework

The bushfire assessment considered the relevant legislation and planning controls. This includes:

- NSW Rural Fires Act 1997
- Planning for Bushfire Protection 2019
- Australia Standard 3959 – 2018 Construction of buildings in bushfire-prone areas (AS 3959-2018)

- Biodiversity Conservation Act 2016
- Commonwealth Environment protection and Biodiversity Act 1999
- Environmental Planning and Assessment Act 1979
- A full description of the key legislation and guidelines addressed within the assessment is provided in Table 2-1 of the BRA.

6.13.2 Existing Conditions

Identification of Assets

Existing and proposed assets within and surrounding the Project area considered in preparation of the BRA are outlined below:

- Project infrastructure:
  - Wind Turbine Generators (47 x WTGs);
  - Obstacle Lighting;
  - Meteorological Monitoring Masts (x3);
  - Permanent Operations and Maintenance Building.
- Electrical Reticulation:
  - Overhead Transmission Line Connection (132kV up to 500 kV), along 70m wide easement.
  - 2 x onsite substations (Collector substation and Terminal (switching) station, which includes two possible locations).
- Construction laydown areas involving crushed rock hardstands approximately 195m by 75m for cranes to install WTGs.
- Minimum of 5 access points of Abercrombie Road.
- Archaeological heritage sites – majority of which are scatters of low density.
- 2 x Threatened Ecological Communities (TECs) listed under the BC and EPBC Act.
- Residential Properties and Farms:
  - The Project area expands across four freehold landholdings.
  - Transmission Line Corridor is located across nine parcels of land.
  - Predominantly agricultural land, with native understorey converted to exotic pasture in many locations.
- Nearest towns and localities:
  - Oberon (60km north).
  - Goulbourn (75km south).
  - Bathurst (100km).
  - Sydney (277km).
- Conservation Areas:
  - Abercrombie River National Park and Abercrombie River State Conservation Area.

Climate and Fire Weather

The Oberon LGA is subject to cool to very cold and moist tablelands climate. Maximum temperatures decrease and rainfall increases with elevation above sea level. Rainfall is generally spread evenly throughout the year, with the lowest rainfall recorded in autumn. As a consequence, the Oberon LGA has been relatively free of severe extended fire events and a shortened fire season. Fire season typically occurs in January / February, with extremes of drought occasionally occurring as early in September and as late as March / April.

Bureau of Meteorology (BOM) weather stations located at the Taralga Post Office suggest strong north-easterly winds are common during the early bushfire season, with stronger westerly winds common in the late bushfire season.

Vegetation Hazard

The BDAR prepared by Hunter Ecology sets out the relevant vegetation types within the Project area. This information has been simplified for the purposes of the BRA in accordance with the vegetation formations as described in the BRA and set out in table below.

Importantly, a recommendation of the BRA is that vegetation fuel loads around the Project assets are maintained to a low fuel state through mechanical, manual and chemical clearing methods.

Table 68. Description and Characteristics of Fuel Groups within Project Area (Table 3-2 of BRA)

PCT	PCT Description	Vegetation Formation
885	River Oak forest and woodland wetland of the NSW South Western Slopes and South Eastern Highlands Bioregion	Forested Wetlands
649	Apple Box – Broad-leaved Peppermint dry open forest of the South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrubby sub-formation)
654	Apple Box – Yellow Box dry grassy woodland of the South Eastern Highlands Bioregion	Grassy Woodlands
727	Broad-leaved Peppermint – Brittle Gum – Red Stringybark dry open forest on the South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrubby sub-formation)
951	Mountain Gum – Manna Gum open forest of the South Eastern Highlands Bioregion	Wet Sclerophyll Forests (Grassy sub-formation)
1093	Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highlands Bioregion	Dry Sclerophyll Forests (Shrubby sub-formation)
-	Pasture and Grassland	Grassland

6.13.3 Bushfire Risk

Fire and Wind Farms in Australia

The BRA finds that wind turbine fires occur relatively infrequently, with rates of approximately 50 each year out of 300,000 WTGs internationally. The BRA identifies the following reported fires involving wind farms within Australia:

- Ten Mile Lagoon, Western Australia (mid-1990s).
  - Caused by technology that is now redundant, damage to affected turbines.
- Lake Bonney, South Australia (2006).
  - Related to maintenance works during a shutdown, damage to affected turbines.
- Star Fish Hill Wind Farm, South Australia (2010).
  - Turbine fire causing spot fires as the blades did not cease rotating, affected turbine damaged and surrounding spot fires were extinguished.
- Cathedral Rocks Wind Farm, South Australia (2009).
  - Turbine fire affected turbine damaged and surrounding spot fires extinguished.
- Currandooley Fire, New South Wales (2017).
  - Caused by a crow connecting to electrical infrastructure, falling into dry foliage and starting a fire. Burnt approximately 3,400 hectares and subject to class action.

These past incidents have provided lessons for emergency management procedures and protocols relating to wind turbines and bushfire risk, which are summarised as follow:

- Wind farm access roads were beneficial in helping to fight the bushfire on the ground
- Wind farm access roads provided an effective firebreak.

- The turbines did not present a hazard to aerial firefighting and were clearly visible. However, some visibility issues were reported relating to transmission infrastructure, transmission lines, meteorological masts and guy wires, which need to be addressed.
- Improved communication protocols need to be in place between wind farm operators and land management agencies to direct turbine shut down procedures in emergencies.
- Wind farm operators should have the capacity to respond to emergency events.

The fire risk associated with wind farms are therefore very low and easily managed.

Fire History within the Project Area

A total of fourteen (14) major fires were reported within the immediate area of the Site over the past 35 years. Refer to Table 5-1 and Figure 5-1 of the BRA for more information (Appendix P).

Fire Ignition

The main sources of fire ignition within the Chifley BFMC area are:

- Lightning activity;
- Illegal / careless burning activities by private landowners / occupiers, most commonly in grasslands and forested areas adjacent to villages;
- Escaped fires from legal burning activities by private landowners / occupiers;
- Campfires; and
- Farm Machinery.

The BRA suggests that the presence of wind turbines, particularly along ridgelines, may reduce the risk of fire starting as a result of lightning strike – this is due to wind turbines being fitted with built-in lightning protection systems.

The proposed WTGs will have on-board control systems connected to a central control centre that monitors all turbines and shuts down those at risk of overheating.

Fire Behaviour Potential

The combination of high fire danger weather conditions and the natural landscape conditions within the National Park presents the greatest fire hazard. Bushfire risk cannot be eradicated entirely, and a Bushfire Emergency Management and Operations Plan prepared in conjunction with relevant stakeholders is therefore an essential part of the Project.

Firefighter and Public Safety

The BRA recommends the preparation of a Bushfire Emergency Management and Operations Plan to be developed post approval and prior to construction, in consultation with NPWS. Because volunteer firefighters or property owners from neighbouring farms attending potential bushfires in this area may not be trained in structure and electrical firefighting, the Bushfire Emergency Management and Operations Plan will need to detail appropriate measures for mitigating risks to health and safety of firefighters and first responders. Two (2) copies of the Emergency Management and Operations Plan are to be stored at the main entry points in an Emergency Information Cabinet as well as in the operations facilities.

Summary of Bushfire Risk Factors

The BRA details all potential bushfire risk factors including loss of life (to populated areas, aerial firefighters, firefighters, workers and visitors), damage to infrastructure within the Project area, damage to surrounding properties, and damage to ecological values / assets. A summary is provided in Table 69.

Table 69. Summary of Bushfire Risk Factors (adapted from Table 5.2 of BRA)

Risk factor and description	Analysis of the Risk	Potential to reduce impact
Loss of life for populated areas	Fire Risk, due to electrical fault or overheating – Wind turbines contain on-board control systems which are designed to mitigate risk of fire. Control centres constantly monitor and shut down turbines if they are at risk of overheating. Wind turbines will also shut down automatically if they are likely to exceed their design conditions or are subject to an electrical surge.	· Wind turbines will be controlled by a remote Supervisory Control and Data Acquisition (SCADA) located within a permanent site operations maintenance facility. This will allow remote operation of all turbines and shutdown as required. · Site access points will be constructed as the first stage of development. Access roads will need to be reviewed by the NSW RFS to ensure safe access and egress for residents and emergency service personnel. · Key assets such as the switching station, substation and O&M buildings are all located outside of the flame zone and will have increased defendable space on all sides. · A Bushfire Emergency Management and Operations Plan will be prepared in conjunction with relevant stakeholders.
Loss of life for aerial firefighters	Aviation Safety from rotating turbine blades, transmission equipment and other infrastructure – In clear conditions, where wind turbines are turned off, the turbines are clearly visible from aircraft and not likely to constrain aerial firefighting operations. For further information refer to the Aviation Impact Assessment and discussed at Section 6.11of the EIS.	· Maps of the final wind turbine layout and identification information will be provided to NSW RFS. · Liaison will occur with Civil Aviation Safety Authority (CASA) and the RAAF Aeronautical Information Service, which maintains a database of structures on behalf of CASA. · Monitoring masts will be recorded in the Tall Structures Database maintained by Air Services Australia. · Visible markers will be installed on all masts and on long spans of transmission lines.
Loss of life for firefighters	Fire Risk and requirement for members of RFS to respond – Volunteer firefighters from the NSW RFS and / or individual property owners are those likely to respond to a bushfire at the Site. Brigades from the NSW Fire and Rescue and National Parks could also respond.	· Bushfire Emergency Management and Operations Plan will be implemented to safely mitigate potential risk to firefighters and first responders. · Adequate access to water for firefighters including static water supplies will be provided. · All weather access for heavy fire fighting vehicles will be provided. · A schedule for ongoing site familiarisation in conjunction with NSW RFS and the NPWS will be developed.
Loss of life for workers and visitors	Fire Risk and requirement for employees to respond – Provided that appropriate firefighting equipment, training in initial response and water supplies are maintained onsite, the likelihood of fire adversely impacting the safety of site personnel is very low. The potential consequences, however, are major.	· Safe working and emergency response procedures will be developed and implemented for all work tasks. · Firefighting equipment capable of controlling and suppressing small initial outbreaks of fire will be provided and maintained. Firefighting equipment will be located outside the switching station, substation, and O&M buildings
Damage to infrastructure	Fire Damage to Infrastructure –	· Accounting for steep slopes, an increased Asset Protection Zone (APZ) of 20m will be established on all

within the project area	Monitoring technology would be utilised to minimise risks associated with malfunction across electrical, mechanical and hydraulic systems. This would include temperature and blade speed. Transmission line poles would be either concrete or galvanised steel. Maintenance beneath transmission lines would be the responsibility of the asset owner, this would include clearing fuel loads.	sides of the substation, switching station, and O&M buildings. · The APZ will be increased where necessary to ensure key assets are outside of the flame zone. · A minimum 10m APZ will apply around each wind monitoring mast. · Each wind turbine will be mounted on a concrete foundation (approximately 25m in diameter) located on a cleared hardstand area. · The transmission line easement will be maintained, including the reduction of fuel loads beneath transmission lines – at the responsibility of the asset owner.
Damage to surrounding properties	Fire Damage to Surrounding Properties Access roads facilitate movement of vehicles and can also act as an effective firebreak in many circumstances.	· Site access points will be constructed as the first stage of development. Signage throughout the wind farm will also assist emergency crews. · Firefighting equipment capable of controlling and suppressing small initial outbreaks of fire will be provided and maintained. Firefighting equipment will be located outside the switching station, substation, and O&M buildings. · Adequate access to water for firefighters including static water supplies will be provided. · All weather access for heavy fire fighting vehicles will be provided.
Damage to ecological values / assets	Fire impact on native flora and fauna – Risk unlikely to be increased by the proposal.	· Operators will be made aware of the locations of threatened flora records to assist in managing fire in these areas.

6.13.4 Mitigation Strategies

Strategies for mitigation of bushfire risk are guided by consideration of:

- Fuels, weather, topography and predicted fire behaviour;
- Suppression resources (air and ground), access (roads, tracks) and water supply; and
- Values and assets.

During the operational phase of the Project, a total of four full-time staff are anticipated on site, with additional ten full time support staff expected on a monthly / quarterly roster.

Most construction employees are anticipated to remain on site during construction for a period of up to 22 months, where there may be up to 150 people on site.

The BRA recognises that operation of the wind farm is a low intensity use in terms of number of people on the site at any one time. However, during construction there is likely to be a high number of people present on site at any given time and consideration of provision of adequate defendable spaces and access arrangements at the early stages of the Project is warranted and will be provided.

Asset Protection Zone

The BRA recommends the following:

- A minimum of 10m APZ is to be established around each monitoring mast in accordance with the requirements of Planning for Bushfire Protection 2019 and consistent with the Victorian CFA renewable energy guidelines.
- Each WTG will be mounted on a 25m diameter concrete foundation in a cleared hardstand area.

- An increased APZ of 20m (or greater as required) is to be established on all sides of the substation, switching station and O&M buildings to account for steep slopes.

Specifications for the APZ are:

- Will not extend beyond the property boundary, including the neighbouring National Park.
- Will not rely on actions being undertaken by adjacent landowners.
- Mineral earth fire break (i.e., dirt or gravel).
- No trees and shrubs will be planted within the APZ.
- Increase the distance between trees and the APZ where possible.

Vegetation fuels throughout the Site should be regularly maintained by grazing, slashing or mowing. Where this is not possible, low risk ground cover should be considered.

Other Fire Advantage Zones

Strategic Fire Advantage Zones (SFAZ) and Heritage Management Zones (HMZ) have been identified to the west and southeast of the Project Site. These zones will assist to contain wildfire, limit the damage of wildfires in sensitive areas, and provide safe access and egress for bushfire fighters.

Wind Farm Construction

The BRA recommends the following mitigation measures to be implemented during the entire period of construction:

- Site access points constructed as the first stage of development and maintained for the life of the Project.
- Appropriate bunding in areas where there is potential for flammable fuels and oils to leak and create bushfires or other environmental risks.
- Install appropriate signs to assist emergency response crews determine track names, location, and turbines.
- Ensure that appropriate permits have been issued and adhered to for work during the Fire Danger Period.
- Adhere to restrictions on Total Fire Ban days or days of high fire danger.
- Retain suitable firefighting equipment on site.
- Carry fire extinguishers or firefighting equipment in vehicles.
- Carry emergency communications equipment.
- Site vehicles should have diesel engines and / or use site access roads where practicable to minimise the likelihood of igniting dry grass.
- Restrict smoking to prescribed areas and provide suitable disposal facilities.
- All plant, vehicles and earth moving machinery are to be regularly cleared of any accumulated flammable material.
- Regular review of the 'Fires Near Me' app should be checked hourly for fire threats to the Site during Very High or worse fire danger days.

Emergency Management and Operations Plan

An Emergency Management and Operations Plan should be prepared for the wind farm as outlined in Section 6.4 of the BRA. The Emergency Management and Operations Plan would outline emergency response protocols for the wind farm including control and coordination arrangements, agreed roles and responsibilities, personnel contact details, minimum evacuation zone distances. The Emergency Management and Operations Plan is to include:

- Wind turbines shut down immediately during emergencies – stopped in a 'Y' or 'rabbit ear' position where possible to assist with firefighting and aircraft movement.
- Explicit protocols about what party has the authority to direct turbine shutdown.
- Control and coordination arrangements for emergency responses.
- Location of all fire control advantages within the Project area.
- Agreed roles and responsibilities.
- Up-to-date contact details of site personnel and relevant stakeholders.

- Manifest and safety data sheets for any dangerous goods storage / handling.
- Work health safety risks and procedures to be followed by firefighters.
- Minimum level respiratory protection.
- Minimum excavation distances.
- Activation of water spray / foam systems and any other response / protection measure.
- Any other risk control measure required to be followed by fire fighters.

To account for changing personnel, the BRA also recommends that a schedule for ongoing site familiarisation be developed in conjunction with NSW RFS and NPWS.

Access Roads and Road Network

All access roads should be upgraded to provide sufficient, safe and unobstructed access for firefighting crews and equipment. All roads will be maintained with the *NSW RFS Fire Trail Standards* and *NSW RFS Fire Trail Design, Construction and Maintenance Manual*.

Refer to Section 6.5 of the BRA for full specifications.

Water Storage

A minimum combined water storage of 50,000 litres is recommended for the Project Area. This is based on refilling six (6) tanker units (4,000 litres each) twice each. The BRA notes that the final requirements will be confirmed by NSW RFS.

Total Fire Bans

To reduce risk of fires damaging or destroying life, property and the environment, the landowner should reconsider activities such as using a tractor or slashing on Total Fire Ban days.

6.14 Electric and Magnetic Fields

The SEARs for the Project require the EIS to:

> *'Health – consider and document any health issues having regard to the latest advice of the National Health and Medical Research Council, and identify potential hazards and risks associated with electric and magnetic fields (EMF) and demonstrate the application of the principles of prudent avoidance'*

Electric and Magnetic Fields (EMFs) are associated with all electrical wiring and equipment. The electric field is caused by the voltage of the equipment and the magnetic field is caused by the current flowing or 'amperage'. In combination, electric fields and magnetic fields cause energy to be transferred along electric wires.

Electric fields are defined by units commonly used to describe electric field strength, known as volts per metre (V / m) or kilovolts (1,000 volts) per metre (kV / m).

Magnetic fields are described in terms of their flux density, measured in units of Tesla (T) or Gauss (G):

- 1 Tesla (T) = 1,000 milliT (mT) = 1,000,000 microT (μT);
- 1 μT = 10 mG; and
- 1 Gauss (G) = 1,000 milliG (mG).

The typical magnetic field of a transmission line at the edge of an easement and a substation at the substation fence measures 0.2 – 5 μT (or 2 – 50mG) and 0.1 -0.8 μT (or 1 – 8mG), respectively (ARPANSA, 2020c).

An EMF Assessment has been prepared by ERM and is included as Appendix CC.

6.14.1 Statutory Framework and Standards

The EMF Assessment has been prepared with consideration to the following statutory framework and standards:

- *Australian Radiation Protection and Nuclear Safety Act 1998 (Cth)*;
- Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1Hz to 100kHz) (ICNIRP, 2010);
- National Wind Farm Commissioner 2020 Annual Report; and

- NHMRC Statement: Evidence on Wind Farms and Human Health 2015.

6.14.2 Potential Risk

There is conflicting research on EMF emissions for both WTGs and transmission lines. The available evidence at large does not find EMF from wind turbines to be a likely causative agent for negative health effects in the community *(Knopper et al., 2014)*.

Substations are not considered to be a significant source of EMF exposure (*Energy Networks Association 2015*). Switching stations are likely to be an even lower source of exposure than substations, having fewer sources of magnetic fields. Based on available data, the EMFs from transmission lines, substations and associate infrastructure are well within the accepted levels.

The EMF Assessment concludes that based on predicted exposure scenarios, the EMFs are well within acceptable levels for the Project. This is further supported by the significant distance of any wind turbines, substations or transmission lines from dwellings or publicly accessible locations. EMF exposure from the Project infrastructure would be negligible.

6.14.3 Management and Mitigation

The EMF Assessment confirms that the Project has been designed with prudent avoidance measures implemented. The Project has been designed to minimise the EMFs that people may encounter over prolonged periods through the provision of setbacks and easements.

A summary of the provided setbacks and easements is provided in Table 70.

Table 70. Distance between Dwellings and Project Components (Table 4-1 in EMF Assessment by ERM)

Project Component	Approximate Distance to Nearest Dwelling (m)	Approximate Distance to Operation & Maintenance building (m)
Substation Option 1 (Switching Station)	1,136	6,799
Substation Option 2 (Switching Station)	1,412	7,752
Collector Substation	1,097	0
Transmission Line	421	0

The project has been designed in accordance with the relevant standards and guidelines as highlighted above. Due to the low exposure likely to be generated from the proposed activities, no adverse EMF impacts are expected as a result of the project.

6.15 Electromagnetic Interference Assessment (EMI)

The SEARs require the EIS to:

> *'Telecommunications – identify possible effects on telecommunications systems, assess impacts and mitigation measures including undertaking a detailed assessment to examine the potential impacts as well as analysis and agreement on the implementation of suitable options to avoid potential disruptions to telecommunication services, which may include the installation and maintenance of alternative sites'*

An Electromagnetic Interference Assessment (EMI) has been prepared by DNV Energy Systems (DNV) and is included as Appendix CC of this EIS. The EMI provides an assessment that identifies any perceived effects on telecommunication systems and mitigation measures.

The EMI report prepared by DNV notes that wind farms have the potential to interfere with radiocommunication services. Radiocommunications are defined in the EMI as *"a broad term to encompass all services that rely on microwave or radio frequency electromagnetic waves to transfer information"*.

The *National Wind Farm Development Guidelines, July 2010* (Draft National Guidelines) provides advice and methodologies to identify likely affected parties, assess EMI impacts, consult with affected parties and develop mitigation steps to address the likely impacts.

DNV considers that the recommendations of the Draft National Guidelines meet, if not exceed, the requirements of the SEARs and the NSW Wind Energy Guideline, and therefore the Draft National Guidelines have been used to inform this assessment.

6.15.1 Assessment Approach

For this assessment, a hypothetical turbine with a rotor diameter of 158m and a tip height of 240m has been considered. The measurements represent the maximum known tip height and rotor diameter under consideration for the Project.

Radiocommunication data was collected from a copy of the Australian Communication and Media Authority (ACMA) Register of Radiocommunications Licenses (RRL) database dated 10 June 2022.

The methodology adopted for the assessment has been informed by the draft version of the Draft National Guidelines. While the Draft National Guidelines recommend identifying affected service areas by measuring a radial distance of 50km to 60km from the centre of the wind farm, a distance of 75km was used in this assessment. DNV adapted this approach to further reduce the likelihood of excluding any radiocommunication links crossing the project.

A total of 640 radiocommunication towers were identified within the nominal 75km radius. Three of these towers are within 2km of the proposed turbine locations, details of which are provided in Table 71 below.

Table 71. Details of radiocommunication towers within 2km of proposed WTGs (adapted from DNV EMI 2022)

Site ID	Operator	Licence / Service Type	Distance to nearest turbine (m)
202200	New South Wales Government Telecommunications Authority (NSW Telco Authority)	Point-to-point links Point-to-area (land mobile)	203
	NSW Police Force	Point-to-point links Point-to-area (land mobile)	
	NSW Rural Fire Service	Point-to-point links	
205732	Telstra Corporation Limited (Telstra)	Point-to-point links	1725
10006826	Telstra Corporation Limited (Telstra)	Point-to-point links Point-to-area (spectrum)	374

In addition to radiocommunications tower licences / services (i.e., fixed point-to-point links, fixed point-to-multipoint links, and radiocommunication assets belonging to emergency services), other services with the potential to experience interference from the project were also identified and assessed. These include:

- Meteorological radars
- Trigonometrical stations
- Citizen's band (CB) radio and mobile phones
- Wireless internet
- Broadcast radio
- Satellite television and internet
- Broadcast television.

6.15.2 Stakeholder Engagement

Radiocommunication towers

DNV contacted the service operators of radiocommunication towers as outlined in Table 71 above. Table 72 provides a summary of the responses received from operators, specifying turbines requiring relocation as they are within their respective clearance zones.

Table 72. Specified clearance zones requested by operators

Site ID	Operator	Requested clearance zone	Turbines within requested clearance zones
202200	New South Wales Government Telecommunications Authority (NSW Telco Authority)	1km from tower	4 turbines (PY-23, PY-24, PY-25, PY26)
	NSW Police Force	1km from tower	
	NSW Rural Fire Service	No response received to date	
205732	Telstra Corporation Limited (Telstra)	Move turbine PY-17 15m-20m to the east, if possible	PY-17
10006826	Telstra Corporation Limited (Telstra)	Clearance zone of 500m radius was requested, relocation of turbine PY-24 to the north or south of its current location	PY-24

Other Services

In addition to the radiocommunication tower considerations, other potential service interferences are outlined in Table 73, including the requirements specified by operators.

Table 73. Turbines within clearance zones as requested by operators

Service Type	ID	Operator	Requested clearance zone	Turbines within requested clearance zones
Fixed licences of point-to-point type	1	New South Wales Government Telecommunications Authority (NSW Telco Authority)	1km from tower	4 turbines (PY-23, PY-24, PY-25, PY-26)
	2	New South Wales Government Telecommunications Authority (NSW Telco Authority)	1km from tower	4 turbines (PY-23, PY-24, PY-25, PY-26)
	3	New South Wales Government Telecommunications Authority (NSW Telco Authority)	1km from tower	4 turbines (PY-23, PY-24, PY-25, PY-26)
	4	New South Wales Government Telecommunications Authority (NSW Telco Authority)	1km from tower	4 turbines (PY-23, PY-24, PY-25, PY-26)
	5	NSW Police Force	1km from tower and link path	5 turbines (PY-23, PY-24, PY-25, PY-26, PY-27)
	6	NSW Rural Fire Service	No response received to date	2 turbines in diffraction zone for one link – high likelihood of interference.
	7	NSW Rural Fire Service	No response received to date	No turbines in diffraction or nearfield zones.

Service Type	ID	Operator	Requested clearance zone	Turbines within requested clearance zones
	8	Telstra Corporation Limited (Telstra)	Move turbine PY-17 15m-20m to the east, if possible	PY-17
Fixed license of point-to-multipoint type		Ace Internet Services The Bureau of Meteorology Water NSW	No concern	-
Meteorological radar	9208	Bureau of Meteorology – Wollongong Radar (LETTERBOX)	N / A *Refer Figure 11 in the EMI from DNV*	10 turbines (PY-33, PY-34, PY-35, PY-36, PY-37, PY-38, PY-39, PY-43, PY-45, PY-47)
Trigonometrical stations		Geoscience Australia	-	-
	TS1797	NSW Spatial Services	No objection subject to conditions	-
Terrestrial television broadcasting		BAI Communications	No response received to date	-

6.15.3 Summary of EMI Findings

Table 74 below has been adapted from the EMI and provides a summary of the anticipated impacts and mitigation options for the licence and service types assessed.

Table 74. Summary of EMI assessment results (DNV 2022)

Licence or Service Type	Results of DNV Assessment	Stakeholder Feedback	Expected Impact	Potential mitigation options
Radio-communication towers	· 3 towers within 2km of proposed turbine locations, hosting both point-to-point links and point-to-area operated by: - NSW Telco Authority - NSW Police Force - NSW RFS - Telstra	NSW Telco Authority, NSW Police Force: Potential for interference raised. Telstra: potential for interference raised. NSW RFS: No response received.	Point-to-point links: see findings for point-to-point links Point-to-area style communications: see findings for emergency services and mobile phones	Point-to-point links: see mitigation for point-to-point links Point-to-area style communications: see mitigation for emergency services and mobile phones
Fixed point-to-point links	· 9 fixed point-to-point links cross the Project boundary	-	-	

Licence or Service Type	Results of DNV Assessment	Stakeholder Feedback	Expected Impact	Potential mitigation options
	· NSW Telco Authority links: No turbines in diffraction or near-field zones, 15 turbines in potential reflection / scattering zones	Potential for interference raised, 1km clearance around tower requested – 4 turbines in requested clearance zone.	High likelihood of interference	Relocate turbines to be outside clearance zones requested by operators
	· NSW Police Force link: No turbines in diffraction or near-field zones, 6 turbines in potential reflection / scattering zones	Potential for interference raised, 1km clearance around tower and link path requested – 5 turbines in requested clearance zone.	High likelihood of interference	Relocate turbines to be outside clearance zones requested by operators
	· NSW Rural Fire Service links: 2 turbines in diffraction zone for one link, 7 turbines in potential reflection / scattering zones, no turbines in potential near-field zones	No response received	High likelihood of interference	Relocate turbines to be outside diffraction exclusion zone established by DNV
	· Telstra links: No turbines in diffraction or near-field zones, 12 turbines in potential reflection / scattering zones	No response received	Low likelihood of interference	If required – relocate turbines to be outside any requested clearance zones, reroute affected links, replace affected links with alternative technologies
Fixed point-to-multipoint links	· 156 assignments within 75km of Project boundary	Ace Internet Services, BoM, Water NSW: no concerns raised.	Ace Internet Services, BoM, Water NSW licences: none Other licences: potential interference if link paths cross the Project near turbines	If required – relocate turbines to be outside any requested clearance zones, reroute affected links, replace affected links with alternative technologies
	· No base stations within 20 km of Project boundary	Other operators: no response received.		
Other licence types	· Point-to-area style communications: See findings for emergency services, mobile phones, radio broadcasting, and television broadcasting.		-	-

Licence or Service Type	Results of DNV Assessment	Stakeholder Feedback	Expected Impact	Potential mitigation options
Emergency services	· Point-to-point links: NSW Telco Authority, NSW Police Force, and NSW Rural Fire Service links crossing boundary	NSW Telco Authority: potential for interference raised, 1km clearance around tower – 4 turbines in requested clearance zone. NSW Police Force: potential for interference raised, 1km clearance around tower and link path requested – 5 turbines in requested clearance zone. St John Ambulance: no concerns raised. Other operators: no response received.	Point-to-point links: See findings for point-to-point links. Services from towers within 2km of turbines: high likelihood of interference. Other service: unlikely to cause interference.	Point-to-point links as for point-to-point links. Services from towers within 2km of turbines: relocate turbines to be outside clearance zones requested by operators. Other services: if required – increase signal strength from affected tower or alternative towers, install signal repeater, install additional tower.
Meteorological radar	· Nearest radar: 78km from Project	Concerns raised regarding potential for interference to Wollongong radar, necessary exclusion zone identified – 10 turbines in requested exclusion zone.	High likelihood of interference	Relocate turbines to be outside exclusion zones requested by the BoM. Alternatively, enter into formal agreement to advise the BoM of the final turbine layout and any changes to the Project design, notify the BoM prior to any planned shutdown of the Project to allow calibration of systems, collaborate with the BoM in the event of severe weather conditions.
Trigonometrical station	· Unlikely to be affected	Geoscience Australia: no concerns raised. NSW Spatial Services: no concerns raised, provided assets are protected from physical disturbance during construction.	Unlikely to cause interference	None required
Citizen's band (CB) radio	· Unlikely to be affected	Consultation not considered necessary	Unlikely to cause interference	None required
Mobile phones	Telstra: One tower within 2km of turbines, fair to good coverage across the Project area.	Potential for interference raised, relocation of one turbine by at least 50m requested.	High likelihood of interference to Telstra services from towers	Relocate turbine as requested by Telstra.

Licence or Service Type	Results of DNV Assessment	Stakeholder Feedback	Expected Impact	Potential mitigation options
			within 2km of the Project Low likelihood of interference to other Telstra towers	
	· Optus and Vodafone: Limited to no coverage across project. Unlikely to be affected in areas with good coverage, may experience interference in areas with marginal coverage.	No concerns raised	Unlikely to cause interference	If required – increase signal strength from affected tower or alternative towers, install additional tower
Wireless internet	· Mobile broadband service providers: Ace internet Services Pty ltd, Telstra, NBN Co.	Telstra: potential for interference raised (see feedback for mobile phones)	See findings for mobile phones	As for mobile phones
	· NBN: Available as a satellite service only	No concerns raised	None	None required
Satellite television and internet	· Services intended for Australian audiences: Unlikely to be affected	Consultation with operators not considered necessary	Unlikely to cause interference	If required – redirect satellite dish to alternative satellite, install larger or higher-quality satellite dish, change location or height of satellite dish.
	· Services intended for international audiences: Signals from 53 satellites intercepted at 13 dwellings			
Radio broadcasting	· AM and FM signals: May experience interference in close proximity to turbines	Consultation not considered necessary	Low likelihood of interference	If required – install higher-quality antenna at affected location
	· Digital radio signals: project is outside the intended coverage area		None	None required

Licence or Service Type	Results of DNV Assessment	Stakeholder Feedback	Expected Impact	Potential mitigation options
Television broadcasting	· Central Tablelands transmitter: Patchy coverage with 'variable' to 'good' coverage in small areas close to turbines in west of Project and small areas to north, south, and southwest, 'poor' to no coverage elsewhere.13 dwellings in potential interference zone	No response received	Low likelihood of interference – most identified dwellings are unlikely to be receiving signals from the corresponding transmitter, but dwellings that are receiving signals may experience interference	If required: – re-align antenna at affected dwelling to existing tower, - re-direct antenna to alternative tower, - install more directional or higher gain antenna, - change location of antenna, - install cable or satellite television, - install relay transmitter.
	· Illawarra transmitter: Patchy coverage with 'variable' to 'good' coverage in areas to northeast and east, 'poor' to 'variable' coverage in small areas within Project boundary and small areas to north, south, and southeast, no coverage elsewhere. 6 dwellings in potential interference zone	No response received		
	· Canberra transmitter: Patchy coverage with 'poor' to 'variable' coverage in small areas within Project boundary and small areas to northeast, east and south, no coverage elsewhere.10 dwellings in potential interference zone	No response received		

6.15.4 Conclusion

The EMI Assessment prepared by DNV has investigated broadcast towers and transmission paths around the Project Area to determine whether any EMI would be experienced as a result of the development and operation of the Project. The EMI Assessment has highlighted a preference for some turbines to be relocated to avoid interference to various assets, as detailed above.

In its current configuration, the Project has the potential to interfere with several point-to-point links crossing the Project boundary and point-to-area style communications hosted by radiocommunication towers located within 2km of the proposed turbines.

NSW Telco Authority has asked that turbines be relocated to be outside a 1km radius around the tower hosting services. Similarly, the NSW Police Force has also asked that turbines be located to be outside both a 1km radius around the relevant tower and a 1 km clearance zone on either side of the link path for their point-to-point crossing the Project boundary. These adjustments will, as a first instance, be accommodated through micro-siting prior to the approval of the application. Alternative measures will be taken should this not be sufficient in addressing the concerns from the NSW Telco Authority and the NSW Police Force. Updated layout plans will be provided, if required, prior to approval of the application.

Although feedback has not yet been received from either Telstra or the NSW RFS regarding potential impacts to their point-to-point links crossing the Project boundary, it is recommended that turbined be relocated to be outside the diffraction exclusion zone established in the EMI assessment for a point-to-point link operated by NSW RFS. Additionally, a preliminary response from Telstra regarding potential impacts to their mobile phone services operated from a tower located within 2km of proposed turbine locations has asked that one turbine be relocated by at least 50m from its current proposed location. Consultation with NSW RFS and Telstra is ongoing.

Feedback received from the BoM indicated that there is potential for the Project to materially impact on the operation of their Wollongong radar facility and the associated weathering monitoring and prediction services. The BoM has asked that some turbines be relocated to be outside of the defined exclusion zone. Alternatively, the Proponent will enter into a formal agreement with the BoM to establish strategic collaborative framework to help minimise and manage the potential impacts without relocating / removing turbines.

Mitigation measures have been discussed in the EMI assessment, should any interference to public point-to-area style services be experienced.

Potential EMI impacts on other services (including emergency services, satellite television, CB radio, etc.) have been assessed and are either considered to be minor or have been assessed in consultation with the service operators.

Consultation with the various providers / operators are ongoing and will help refine the project layout and configuration prior to approval of the application.

6.16 Heritage

The northern portion of the Project is located approximately 2km west of the Greater Blue Mountains Area.

The Greater Blue Mountains World Heritage Area was inscribed on the World Heritage List in 2000. It is 1 million hectares (10,000 km2) of national park and wilderness dominated by temperate eucalypt forest. The area supports exceptional biodiversity including a number of rare plants. It is also highly valued for its Aboriginal heritage and its outstanding geological features.

Assessments have been undertaken to determine the potential impact of the Project on both Aboriginal cultural heritage and historic heritage and includes a heritage due diligence assessment for the anticipated transport route and an addendum.

The below outlines the findings of the indirect and cumulative impacts to the site and the world heritage area.

6.16.1 Aboriginal Cultural Heritage

Background

An Aboriginal Cultural Heritage Assessment (ACHA) report has been undertaken by Environmental Resources Management Australia (ERM). Previous assessments of the Project area have been completed as follows:

- Draft cultural heritage assessment by Heritage Concepts in 2005 – which recorded a total of 14 Aboriginal archaeological sites across the landscape.
- Cultural Heritage Impact Assessment by Anderson Environmental Consultants in June 2013 – which identified a further 8 sites of moderate archaeological potential, however the previous identified 14 sites could not all be verified.

- Supplementary Cultural Heritage Report by ERM in November 2013 – which clarified the archaeological and cultural significance levels of the identified sites, as request by the OEH.

The report recommended the micro-siting of turbines and infrastructure to reduce impacts to the Aboriginal archaeological sites.

Methodology

After assessing the findings of the initial assessments, the layout has been updated and subsequent site investigations have been undertaken. The ACHA report has been prepared by ERM in accordance with the following guidelines:

- *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW 2010a)*;
- *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECWW, 2010b)*;
- *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH,2011)*; and
- *The Australian International Council on Monuments and Sites, Charter for Places of Cultural Significance (The Burra Charter: The Australian ICOMOS 2013)*.

ERM's methodology in preparing the report includes:

- Desktop research and archaeological site database searches;
- Review of previous cultural assessments associated with the Project and Project site;
- Consultation with the local Aboriginal community;
- Field surveys of the development footprint (including a 25m buffer for linear infrastructure and 100m buffer from wind turbine locations);
- Assessment of heritage significance;
- Heritage impact assessment; and
- Preparation of management and mitigation recommendations.

The key objectives of the ACHA report are to:

- Identify Aboriginal heritage items and sites within the Project area, including archaeological and intangible cultural heritage values;
- Confirm Aboriginal community engagement undertaken and the results / outcomes of the consultation;
- Evaluate the impacts of the planned works on any identified heritage values;
- Provide recommendations to mitigate impacts.

Aboriginal Community Consultation

In accordance with the guidelines, consultation with Aboriginal people is an essential part of the heritage assessment process as it:

- Determines potential harm on Aboriginal cultural heritage from proposed activities; and
- Informs decision-making during applications for a heritage permit where it is determined that harm cannot be avoided.
- As explained within the ACHA, consultation with Aboriginal people was undertaken across four stages:

Table 75. Aboriginal Community Consultation Undertaken

Aboriginal Community Consultation		
Stage 1 (Jan 2022) (Feb 2022)	Notification of Project Proposal and Registration of Interest	
	Action	Engagement / Response
	· Identify and engage with stakeholder groups or people wishing to be consulted as part of the Project. ERM also	· Pejar Local Aboriginal Land Council

	placed a public advert in the Oberon Review on Thursday 14 January 2021. · Issue letters to Agencies.	· Central Tablelands Local Land Services · National Native Title Tribunal · Native Title Services Corporation · Heritage NSW · Office of the Registrar, Aboriginal Land Rights Act 1983 · Oberon Council.
	· Responses received from Agencies · Invitation letters sent to each on 2 February 2022 (14 days period) to respond.	· 15 individuals / organisations may have interest in the Project. · 3 organisations registered interest to be consulted in the Project.
Stage 2 (Apr 2022)	Presentation of Information	
	Action	Engagement / Response
	· Provide parties with information · Provide field survey methodology	1 response received, advising that the proposed methodology is accepted.
Stage 3 (2021 / 2022)	Presentation of Information	
	Action	Engagement / Response
	· Discussion of cultural values and examination of intangible elements of significance · RAPs were provided the opportunity to participate in field survey.	· Corroboree Aboriginal Corporation (Attended 2021 and 2022 field surveys). · Gunjeewong (Attended 2021 field surveys). · Didge Ngunawal Clan (Attended 2021 and 2022 field surveys). Pejar LALC (Attended 2021 and 2022 field survey).
	Discussions on site.	· ERM received no formal correspondence relating specifically to areas of cultural significance on the site · Several culturally significant places were noted in surrounding localities. Feedback on site noted several scarred trees in the area.
Stage 4 (May 2021 + September 2022)	Presentation of Information	
	Action	Engagement / Response
	· Draft ACHA Report issued to RAPs for comment on 7 May 2021 (28-day period). · Updated ACHA Report was issued to RAPs for comments on 8 Sept 2022.	2 RAPs provided comments – agreeing with the report and its recommendations.

Findings

A preliminary field survey of the Project Area was undertaken over three days between 30 March 2021 and 1 April 2021. The survey set out to ground truth the location of known Aboriginal heritage sites and to identify any previously unrecorded sites within the Project Area.

ERM and the relevant RAPs identified a total of 14 sites during the survey, consisting primarily of artifacts sites. The findings of the survey are available under *Table 7-2 Description of Survey Results* and *Table 7-3 Survey Results* of the ERM *Aboriginal Cultural Heritage Assessment Report, 2022* (attached as Appendix Q).

A second archaeological field survey was undertaken over two days between 27 July 2022 and 28 July 2022. The survey encompassed the northern portion of the Project Area that was not included as part of the 2021 survey.

In addition to the previously identified sites, ERM and the relevant RAPs identified three new sites consisting of a combination of artefact sites and scarred trees. The findings of the survey are available under *Table 7-4 Description of Survey Results* and *Table 7-5 Survey Results* of the ERM *Aboriginal Cultural Heritage Assessment Report, 2022* (attached as Appendix Q).

The findings can be summarised as follow:

- 17 new sites were recorder during the 2021 / 2022 field surveys.
- ERM identified a total of 28 sites within or close to the Project area (including 11 previously registered sites).
- Out of the 28, a total of 13 sites would be subject to direct or indirect impacts from the Project.

Table 76 below provides a summary of the impact of the Aboriginal Cultural Heritage values that will result from the proposed works.

Figure and Figure below show the survey results and artefact / site locations found during the 2021 and 2022 surveys.

Section 10 of the ACHA Report (Appendix Q) prepared by ERM, provides a map showing the Proposed Impacts to Known Sites – Figure F10.1.

Table 76. Summary of identified impacts (Source, ERM 2022)

Site Name	Description	AHIMS	Scientific Significance	Impact resulting from	Type of Harm	Degree of Harm	Consequence of Harm
PYWF A7	Artefact Scatter and Deposit	#51-3-0037	Moderate	Access Tract	Direct	Total	Total loss of value
PYWF A9	Isolated Find	#51-3-0039	Low	None	None	None	None
PYWF A10	Artefact Scatter	#51-3-0040	Moderate	Access Track	Direct	Total	Total loss of value
PYWF A11	Artefact Scatter and Deposit	#51-3-0041	High	Turbine	Direct	Partial	Partial loss of value
PYWF A13	Artefact Scatter	#51-3-0043	Moderate	None	None	None	None
PYWF A14	Artefact Scatter	#51-3-0044	Low	None	None	None	None
Paling Yard 7	Artefact Scatter	#51-3-0057	Moderate	None	None	None	None
Paling Yard 8	Artefact Scatter and Deposit	#51-3-0058	Moderate	Access Track	Direct	Partial	Partial loss of value
PYWF 2021-1	Isolated Find	Pending	Low	None	None	None	None
PYWF 2021-2	Artefact Scatter	Pending	Moderate	None	None	None	None
PYWF 2021-3	Artefact Scatter	Pending	Moderate	None	None	None	None
PYWF 2021-4	Isolated Find	Pending	Moderate	None	None	None	None
PYWF 2021-5	Artefact Scatter	Pending	Moderate	None	None	None	None
PYWF 2021-6	Artefact Scatter	Pending	Moderate	None	None	None	None
PYWF 2021-7	Artefact Scatter	Pending	Moderate	None	None	None	None
PYWF 2021-8	Artefact Scatter	Pending	Moderate	None	None	None	None
PYWF 2021-9	Artefact Scatter	Pending	Moderate	None	None	None	None

Site Name	Description	AHIMS	Scientific Significance	Impact resulting from	Type of Harm	Degree of Harm	Consequence of Harm
PYWF 2021-10	Artefact Scatter	Pending	Moderate	Access Track	Direct	Total	Total loss of value
PYWF 2021-11	Isolated Find	Pending	Low	Access Track	Potential Indirect	Total	Total loss of value
PYWF 2021-12	Isolated Find	Pending	Low	Access Track	Direct	Total	Partial loss of value
PYWF 2021-13	Artefact Scatter	Pending	Low	Access Track and Turbine	Direct	Total	Partial loss of value
PYWF 2021-14	Scarred Tree	Pending	Low	None	None	None	None
PYWF22_AS2	Artefact Scatter and Deposit	Pending	Moderate	Substation	Direct	Total	Total loss of value
PYWF22_AS1	Artefact Scatter	Pending	Low	Access Track	Direct	Partial	Partial loss of value
PYWF A1	Artefact Scatter and Deposit	53-1-0031	Moderate	Access Track and Turbine	Direct	Partial	Partial loss of value
PYWF A4	Artefact Scatter and Deposit	53-1-0034	Moderate	Access Track	Direct	Partial	Partial loss of value
PYWF22_ST_01	Scarred Tree	Pending	Moderate	None	None	None	None
PYWF A6	Artefact Scatter and Deposit	53-1-0036	Low	Transmission Line	Direct	Partial	Partial loss of value

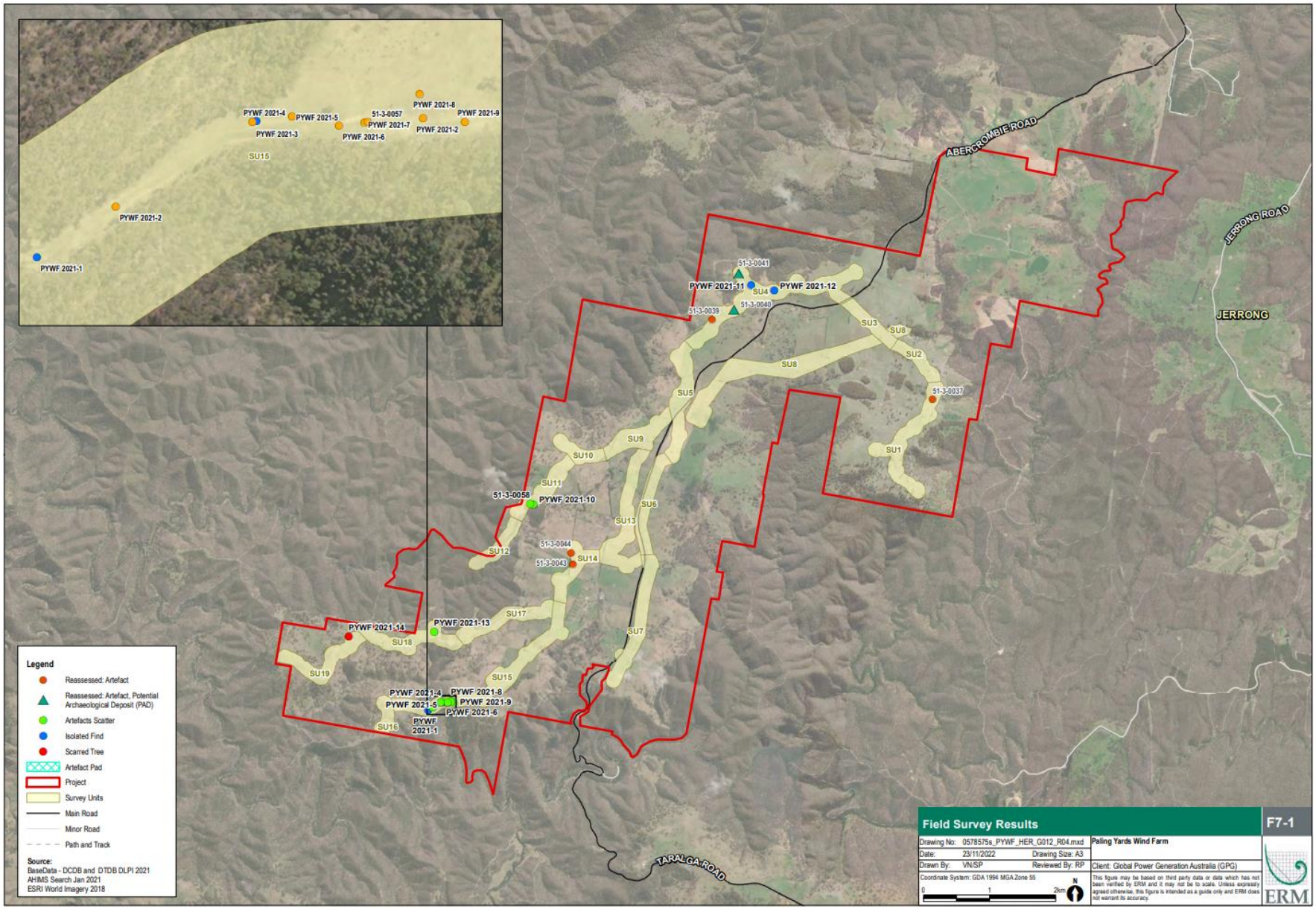


Figure 61. 2022 Field Survey Results (Source: ERM 2022)

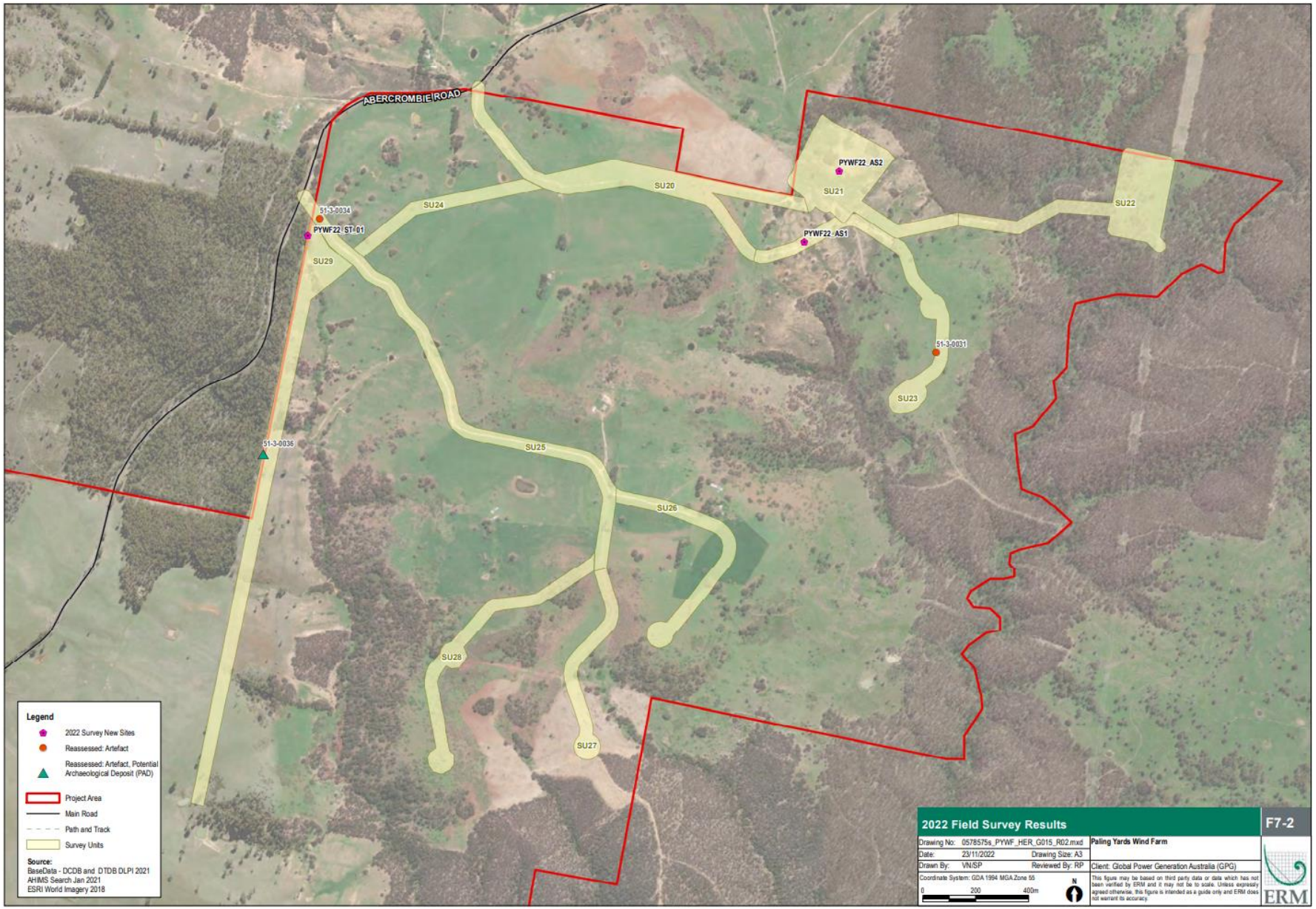


Figure 62. 2022 Field Survey Results (Source: ERM 2022)

In consideration of these findings, and in order to assist in ongoing management of identified heritage sites, ERM recommends the following measures (*Section 11.2, ACHA Report 2022*):

- Cultural awareness induction:
  - Contractors should complete and Environmental Management Strategy, Environmental Work Method Statement (EWMS) and / or a Construction Environmental Management Plan (CEMP) to ensure all workers are aware of their obligations and requirements relating to Aboriginal heritage.
- Surface Collocation of Artefact Scatters:
  - Prior to construction, the RAPs should be provided the opportunity to collect any artefacts present on the ground surface at the location of identified sites within the Development Footprint and outline the location of these items within the Cultural Heritage Management Plan;
  - Surface collection will be undertaken by the RAPs, in consultation with a qualified archaeologist and subject to detailed recording, including submission of the necessary forms to AHIMS; and
  - All recovered material is to be stored for safekeeping until such time that the materials could repatriated to the site, in a location to be determined by the RAPs.
- Staged Salvage Excavation:
  - At sites with an associated intact subsurface deposit component (see Table 11-1 in ACHA Report) a staged salvage excavation process is recommended to provide an opportunity to salvage a representative sample of the subsurface component of each assessed site area. Salvage Excavation should be guided by the preparation of an Archaeological Method Statement (AMS) for each site, which would detail the proposed salvage methodology and proposed research questions.
- Archaeological Monitoring:
  - In identified areas of high and moderate archaeological sensitivity, archaeological monitoring is recommended during initial earth clearance activities; and
  - Archaeological monitoring would aim to identify, record, and salvage any previously unknown Aboriginal archaeological material.
- Chance Finds Procedures:
  - Areas assessed to demonstrate low archaeological sensitivity should be subject to a Chance Finds Procedure.
  - Where Aboriginal objects (excluding human remains) are identified as a chance find, works would be temporarily halted in the area and the appropriate procedures should be followed:
    - In the event of the discovery of human skeletal material (or suspected human skeletal material) during Project activities in the Project area, all work must cease, and the Proponent should contact State Police and Heritage NSW; and
    - The Chance Finds Procedure should be included in the EMS / EWMS / CEMP.
- Preparation of a Cultural Heritage Management Plan (CHMP):
  - It is recommended that a CHMP be developed (in consultation with the RAPs) for the site, prior to the commencement of construction;
  - The CHMP should detail management and mitigation protocols and further involvement with RAPs; and
  - The CHMP should incorporate the results of this assessment, and all previous investigations.
- Repatriation of Archaeological Material:
  - Following completion of all construction works, archaeological material salvaged from the Project Area will be repatriated to a designated location on the site;
  - RAPs will determine the location for repatriation;
  - Archaeological material will be reburied in accordance with leading practice guidelines, and the location of the reburial recorded and submitted to AHIMS.
- Aboriginal Community Endorsement and Recommendations:
  - A copy of this report should be provided to the RAPs for their review and comment; and

- A copy of the report incorporating comments from the RAPs should be provided to the relevant Heritage NSW regional branch.

- Upon completion of the ACHAR, a CHMP should be prepared to ensure appropriate management of any identified cultural heritage throughout the construction process.
- All recommendations and the relates sites / locations are summarised below:

Table 77. Summary of Recommendations

Management Measures	Relevant Sites / Locations
Cultural Awareness Induction	All
Surface Collection	PYWF A7 (AHIMS # 51-3-0037) PYWF A10 (AHIMS # 51-3-0040) PYWF A11 (AHIMS # 51-3-0041) Paling Yard 8 (AHIMS # 51-3-0058) PYWF 2021-10 (AHIMS # Pending) PYWF 2021-11 (AHIMS # Pending) PYWF 2021-12 (AHIMS # Pending) PYWF 2021-12 (AHIMS # Pending) PYWF22_AS2 (AHIMS # Pending) PYWF22_AS1 (AHIMS # Pending) PYWF A1 (AHIMS # 51-3-0031) PYWF A4 (AHIMS # 51-3-0034) PYWF A6 (AHIMS # 51-3-0036)
Staged Salvage Excavation	PYWF A4 (AHIMS # 51-3-0034) PYWF22_AS2 (AHIMS # Pending) Paling Yard 8 (AHIMS # 51-3-0058) PYWF A11 (AHIMS # 51-3-0041) PYWF A1 (AHIMS # 51-3-0031) PYWF A7 (AHIMS # 51-3-0037)
Archaeological Monitoring	Areas of High and Moderate Archaeological Sensitivity
Chance Finds Procedure	Areas of Low Archaeological Sensitivity
Cultural heritage Management Plan	All sites
Repatriation of Archaeological Material	All sites
Aboriginal Community Endorsement and Recommendations	This Report

The above recommendations and mitigation measures have been included under Table 86 as part of section 7.4.

6.16.2 Non-Indigenous (Historic) Heritage

Background

The EP&A Act requires that environmental impacts be considered in land use planning, including impacts on Aboriginal and non-Aboriginal heritage.

ERM prepared a Historic Heritage Due Diligence Assessment (HHDDA) reviewing the Project Area for non-Indigenous historic heritage. Previously, a draft undertaken in 2005 by Heritage Concepts identified a number of historic heritage sites during the initial assessment, including 'Stillwell Burial Ground', Stockyards', 'Steam Boiler', 'Mingary Park Airstrip'

and 'Quobleigh basalt chimney and plantings'. The 2005 report concluded that the *historical use of the study area reflects the e*stablishment of early rural settlements...".

Methodology

This HHDDA has been prepared in accordance with the requirements of the following guidelines:

- *NSW Heritage Manual (1996)*;
- The Australia International Council on Monuments and Sites, Charter for Places of Cultural Significance (also known as the Burra Charter, Australia ICOMOS 2013);
- *Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Branch, Department of Planning 2009)*; and
- *Assessing Heritage Significance (NSW Heritage Office 2001)*.

The HHDDA aims to:

- Identify historic heritage resources within the Project area, including archaeological potential and built heritage values;
- Present historical contextual data to aid in the development of an archaeological predictive model;
- Evaluate the impact of the proposed works on any identified historic heritage resources; and
- Provide recommendations for the mitigation of impacts and management of identified historic heritage resources.

Findings

A preliminary historic heritage field survey was undertaken across the Project Area between 30 March and 1 April 2021, with a secondary field survey undertaken in July 2022. The surveys aimed to ground truth previously recorded historic heritage sites and identify any unknown heritage sites that may be impacted by Project.

As identified in the HHDDA, the survey found five heritage sites within the Project boundary. Below a summary of the items identified and a summary their heritage significance.

- Stillwell Burial Ground: The Stillwell burial ground is an early, private burial ground still in use by descendants of the original settlers. Situated on a slope overlooking the location of the original road, the burial ground would have previously been a prominent feature in the landscape, with passers-by able to see the ground. Recent burials continue the traditional pattern of burials on the family property. Allowing stock to graze within the area respects the historic use of the land without compromising the significance of the area as an acknowledged place of mourning, remembrance and contemplation. (ERM, 2002)
- Stockyards: The stockyards confer a strong visual sense of historic property use and represent an historic agricultural aesthetic. Although not rare within the local area, they represent a feature which will become increasingly rare with the modernisation of materials in most rural contexts. (Heritage Concepts, 2005).
- Steam Boiler: The steam boiler is significant as a movable heritage item which denoted past land use in the area. The poor condition of the boiler detracts from its significance. (Heritage Concepts, 2005).
- Mingary Park Airstrip: The Mingary Park airstrip was built as a direct consequence of an important aircraft crash. It was situated so as to provide emergency landing facilities in an area that was otherwise poorly serviced. The airstrip has also been used for agricultural air requirements such as crop-dusting planes. (Heritage Concepts, 2005)
- 'Quobleigh' Basalt Chimney and Plantings: The site is significant as the site of an early rural house. The site reflects the early settlement patterns and has potential to provide information which is not readily available from historical sources. (Heritage Concepts, 2005).

Figure 63 below provides some context on the location of the identified historic heritage items.

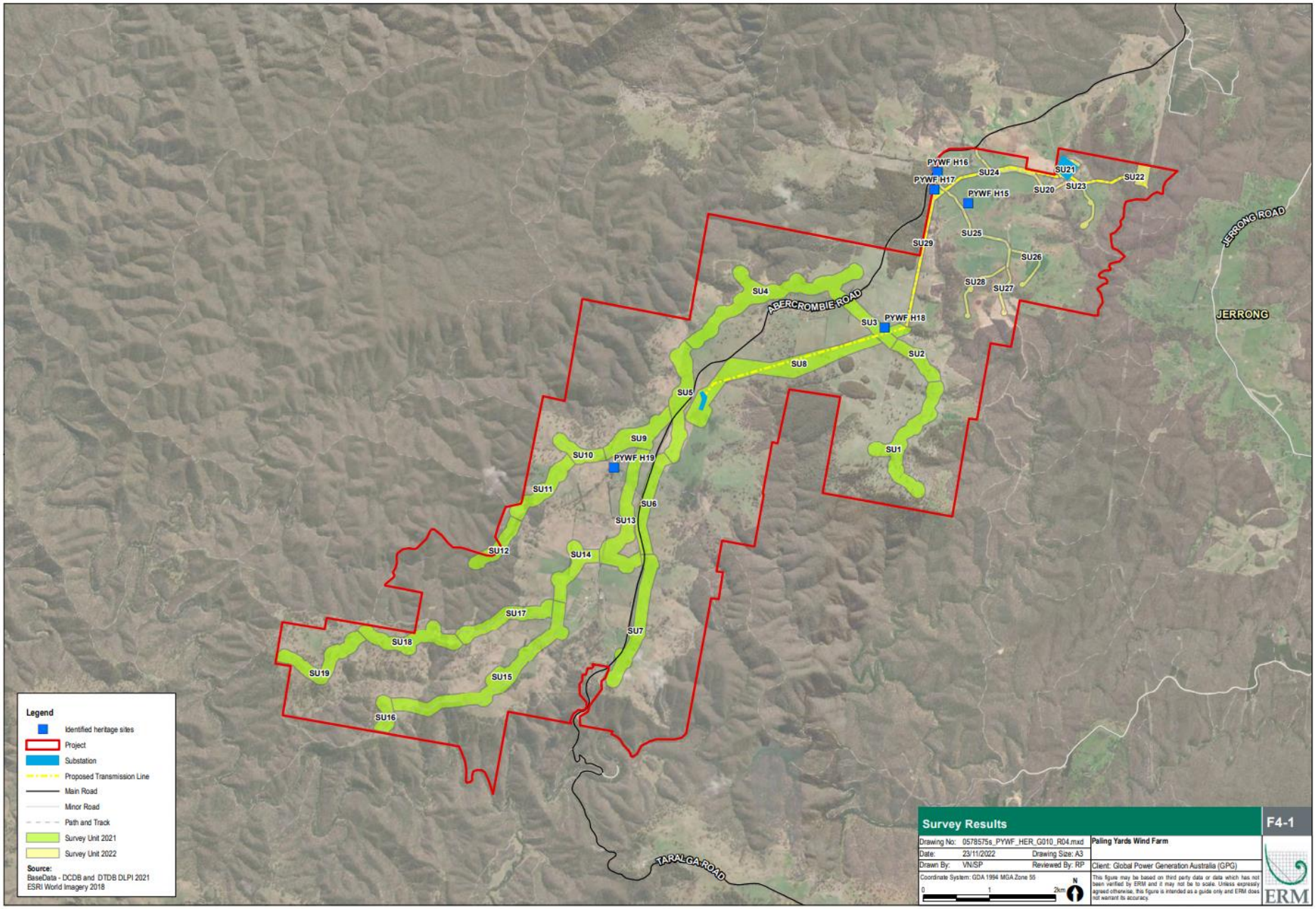


Figure 63. Historic Heritage Survey Results (Source: ERM, 2022)

The Project Area contains four heritage items of local significance and one heritage feature which does not meet the local significance threshold.

- The 'Stillwell Burial Ground' (identified above as Item PYWF H15) and 'Quobleigh' basalt chimney and plantings (Item PYWF H19) relate to early European occupation of the region and the development of large pastoral runs in the area.
- The 'Steam Boiler' (item PYWF H17) relates to the timber industry in the region and moves towards industrialisation in the late nineteenth century.
- The 'Mingary Park Airstrip' (Item PYWF H18) relates to early aviation in NSW, and particularly the role of aviation in the establishment and management of rural properties. These sites are considered to be of local heritage value as markers of early development, and the continued history of pastoralism in the region.
- The 'Stockyards' (Item PYWF H16) was identified as a historic feature however it was not assessed to meet the threshold of local significance.

The HHDDA assessment included an additional heritage survey of the northern portion of the Project Area not previously surveyed. The HHDDA report has considered potential impacts to heritage and archaeology and any intangible (social) values held by the community or relevant stakeholders. Preparation of the HHDDA report involved detailed historical research including analysis of historical aerial imagery and physical inspections of the relevant areas within the Project boundary. The preparation of the HHDDA report ensures compliance with all statutory obligations and best practice guidelines and will assist in the management of risk associated with inadvertent impact to heritage values.

The HHDDA makes the following recommendations:

Table 78. Historic Heritage Recommendations

Recommendation	Description of Works
Heritage Induction and Protocols	· All staff and contractors to prepare Environmental Management Strategy (EMS), and Environmental Work Method Statement (EWMS), and / or Construction Environmental Management Plan (CEMP). · All staff and contractors attend site-specific heritage induction, which is to include information on the identified sites and potential historic features and archaeological evidence that may be found during works. · Identified sites are to be marked on site plans during construction and operation.
Unexpected Finds Protocol	· Where a potential historic heritage item is found during works, all works within the vicinity of the item, or with the potential to impact the item should cease and a temporary exclusion zone should be established. · An appropriately qualified heritage consultant should examine the item to assess its significance and archaeological potential. · Where a relic is found, the NSW Heritage Council should be notified, and approval will likely be required prior to the continuation of works. Other archaeological deposits should be recorded and assessed for significance and potential salvage by an appropriately qualified heritage consultant. · Works should only recommence when relevant approvals and an appropriate and approved management strategy is instigated.

As mentioned earlier, a heritage due diligence assessment for the **transport route** was prepared as an addendum by ERM. The assessment considered potential impacts caused by road amendment and upgrade works on known heritage items and sites. Key findings of the report include:

- No registered historic heritage items or Aboriginal cultural heritage sites have been identified within the transport route or areas impacted by planned road upgrades.
- While 7 LEP listed heritage items, 194 statutory heritage items and 14 non-statutory listed heritage sites are located adjacent to the transport route, it is expected that the proposed works do not pose a direct or indirect risk of impact to the heritage values.

It is however recommended that works proceed under an Unexpected Finds protocol, which should form part of the project environmental management documentation.

6.17 Hydrology and Flooding

6.17.1 Hydrology Assessment

ERM prepared a Hydrology Assessment identifying the existing soils and water environment of the Project Area, identifying impacts, describing mitigation measures to be implemented, quantifying the required water supply and detailing available water supply solutions.

The Hydrology Assessment concludes that the Project will require an estimated 40 ML of water over the 24-month construction period with supply options available to meet this demand. Potential soil and water impacts resulting from construction of the Project are minor due to the low erosion hazard over much of the Site.

A detailed Soil and Water Management Plan will be prepared for the project prior to construction commencing. The Soil and Water Management Plan would incorporate the mitigation measures identified within the Hydrology Assessment.

The Hydrology Assessment responds to the relevant components of the Project SEARs with respect to water and soils, land, and consultation requirements.

Agency Consultation

Table 79 below outlines the agency, consultation type and comments received in relation to hydrology.

Table 79. Agency Consultation (adapted from table 1.2 of the Hydrology Assessment prepared by ERM).

Agency	Consultation Description	Comments
Oberon Council	No comments to add to SEARs in relation to soil and water	· Relates to landholder property
DPE – Biodiversity and Conservation Division	Provided advice for consideration in SEARs	· Include description of relevant water and soil features. · Include assessment and mitigation measures for water quality, hydrology and Abercrombie River National Park. · Include flooding assessment.
National Parks and Wildlife Services	Provided advice for consideration in SEARs	· Apply guideline developments adjacent to National Parks and Wildlife Service lands (NPWS 2020).
DPIE Water Group	Provided advice for consideration in SEARs	· Include assessment and mitigation measures for watercourses, erosion and water supply.
Regional NSW – Mining, Exploration & Geoscience (MEG)	No comments to add to SEARs in relation to soil and water	· Related to biodiversity offsets.
Department of Primary Industries – Agriculture	Provided advice for consideration in SEARs	· Include measures to address erosion. · Detail estimated water demand, availability and sources.

Agency	Consultation Description	Comments
Department of Primary Industries – Fisheries	Provided advice for consideration in SEARs	· Include assessment and mitigation measures for Key Fish Habitats, waterway crossings and riparian zones.
WaterNSW	Provided advice for consideration in SEARs	· Protect water quality monitoring site (412053 – Abercrombie River at Bumaroo) located within the Project Area.
Transport for NSW	No comments to add to SEARs in relation to soil and water	· Related to traffic management.
Department of Environment – Crown Lands	No comments to add to SEARs in relation to soil and water	· Related to the use of Crown Lands, if required.

Climate

Monthly rainfall data from the Taralga Post Office (070080) located at an elevation of 845m and 35km south of the Site was used in assessing average monthly precipitation.

The Taralga Post Office has recorded a mean annual precipitation of 804.0mm, with the highest mean for the month of June (75.6mm) and lowest mean in April (58.2mm).

Annual Rainfall data between 1881 and 2022 collected from BoM's climate data online is shown in Figure 64 below.

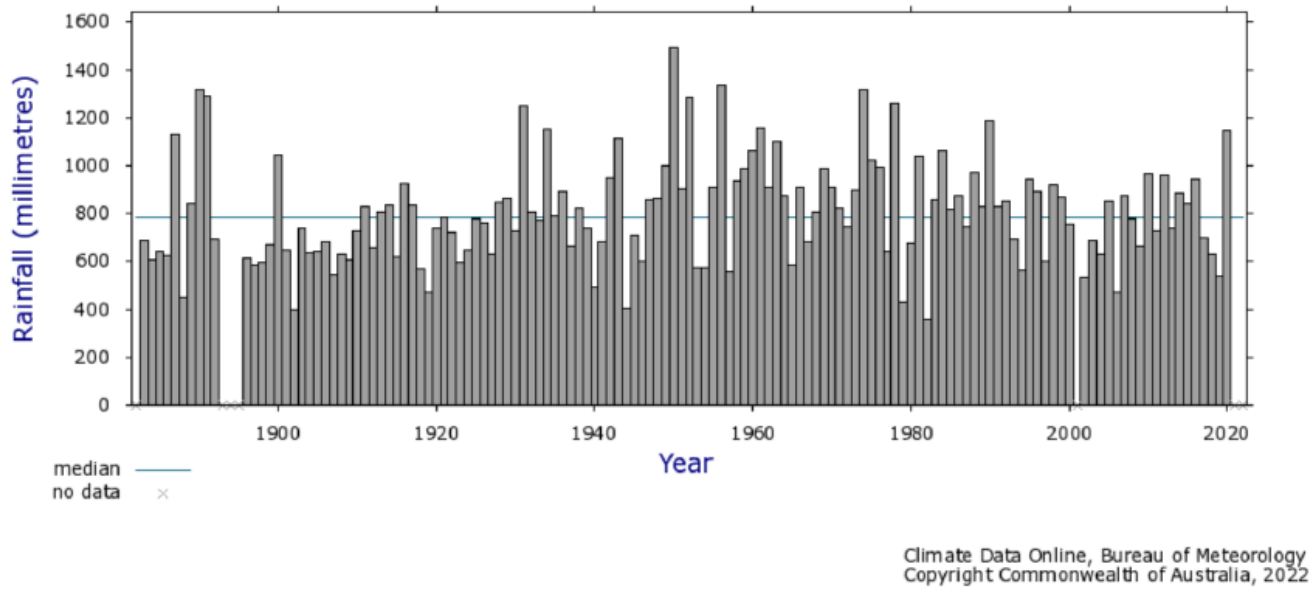


Figure 64. Taralga Post Office Annual Rainfall (Figure 1.4 Hydrology Assessment, ERM 2022)

Water Licencing and Statutory Matters

Pursuant to Section 4.41 of the EP&A Act, SSDs do not require approvals under Section 89 (water use), Section 90 (water management work) or Section 91(2) (controlled activity) of the *Water Management Act 2000* (WM Act). No exemption to aquifer interference approvals required pursuant to Section 91(3) of the WM Act exist under Section 4.41 of the EP&A Act, however no interference approvals are activated by the Proposal.

The Hydrology Assessment recognises that two Water Sharing Plans (WSPs) intersect the Site, namely:

- Lachlan Unregulated and Alluvial Water Sources 2012 (effective from September 2012 to July 2023); and
- NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020 (effective from July 2020 to June 2031).

WSPs are statutory obligations under the WM Act establishing a 10-year management plan tailored to guide water provisions and allocations for a given catchment area.

Other Water Licensing and statutory requirements considered in the Hydrology Assessment include:

- Basic Landholder Rights (BLR):
  - domestic and stock rights (Section 52 WM Act);
  - harvestable rights (Section 53 WM Act); and
  - native title rights (Section 55 WM Act).
- Water Access Licenses:
  - Surface Water Extraction; and
  - Groundwater Extraction.
- Aquifer Interference Policy (2012).

With respect to aquifer interference, the Hydrology Assessment does not anticipate any interception of aquifers resulting from the Proposal as turbine foundations are likely to be to a depth of between 3 metres – 5 metres. Cuttings in the side of hill slopes may require excavation up to a depth of 10–15 metres, however the estimated water table depth is approximately 20 metres below surface.

Construction Water Demands

The Hydrology Report recognises that, during the construction period, the Project will require water to be sourced for the following purposes:

- Concrete production;
- Construction of roads and hardstands; and
- Dust suppression.

Based on the construction of 47 WTGs, the Hydrology Assessment anticipates the water demands outlined in Table 80 below.

Table 80. Water demands by activity (ML) (Adapted from Table 3.1 of Hydrology Assessment, ERM 2022)

Project Stage	Activity	Water Requirement
Construction	Access track construction	6.1 ML
	Road maintenance, dust suppression and wash down	28.6 ML
	Crane hardstands	3.1 ML
	Concrete production	1.9 ML
	Total	39.7 ML

Water Supply Options

Key options for water supply identified are:

- Surface water collection from existing (or new) dams;
- Ground water pumping from bores;
- Water abstraction from nearby permanent water sources (i.e., Abercrombie River); and
- Tanking water to site from Council supply or other local WAL owners.

Following detailed design, confirmation of the proposed water supply would be established. However, the Hydrology Assessment finds that there would be sufficient water supply available for the development, without impacting adjacent licensed water users and basic land holder rights.

Soil and Water Assessment

ERM undertook a Soil and Water Assessment to determine the potential environmental impacts associated with the Project.

The Soil and Water Assessment concludes that there is a combination of soils presenting low erodibility and general permeability. This reduces runoff potential. There are also instances of soils with moderate to severe erodibility and limited permeability. Generally, the assessment found that soil quality in the Project Area will not restrict plant growth critical for the post-construction rehabilitation of ground cover.

Measures to avoid disturbance of steep sloped areas and ensure appropriate soil management will be implemented through the detailed design phase.

Soils

Site soils were reported to be slightly dispersible and non-sodic, suitable for plant growth which is critical for ground cover rehabilitation.

The primary concern for soil management is in the disturbance of steep sloped areas, which can be avoided throughout the detailed design phase. Primary ground excavation works associated with installing work pads is confined to ridgelines.

Hydrology

The Site is located within the Lachlan River Catchment, with the Abercrombie River delineating the southern boundary of the Project Area.

The Hydrology Assessment notes a number of ephemeral watercourses present within the Site, characteristic of its ridgeline location. Site drainage is to the south and west, toward the Abercrombie River which flows into the Lachlan River.

All WTG construction works are proposed to be greater than 40 metres from the high banks of any river, lake or wetlands. Similarly, access tracks or cabling are not required to cross any significant watercourses.

Potential impacts to soil and water during construction and operation are outlined in Table 81 and Table 82 respectively.

Table 81. Potential construction impacts to soils and water (ERM 2022)

Construction Activities	Potential Impacts to Soils and Water
All-weather unsealed road network	· Creation of fugitive dust due to vehicle movements. · Creation of fugitive dust due to onsite livestock movements. · Erosion of unsealed roadways and resultant sedimentation of run-off from road surfaces. · Erosion of roads and roadside drainage in areas of steep terrain or in inappropriately 'finished' locations. · Insufficient compacting of the road surface which could lead to erosion or batter slips in areas of steep terrain. · Mud tracking at the confluence of internal access roads with the public road network.
Watercourse crossings	· Erosion of drainage lines and subsequent sedimentation. · Removal of vegetation and subsequent increased erosion potential. · Any vehicle movement across unaltered watercourses during construction phase leaving wheel tracks and causing damage to creek beds. · Potential for any unstable steep banks collapsing under weight of vehicles / machinery. · Bank erosion at creek crossings from culvert installations.

Construction Activities	Potential Impacts to Soils and Water
Water supply	· Over-extraction of surface water or groundwater resulting in reduced environmental flows, reduced water availability for existing licensed users and impacts on water dependent ecosystems.
Establishment of pad sites (e.g., laydown area, batching area)	· Erosion of relatively large, disturbed areas during establishment and subsequent sedimentation of run-off.
Turbine and transmission pole foundations	· Erosion of soils around turbine / pole foundations. · Potential increase to water filtration and subsequent impacts to groundwater. · Erosion from spoil stockpiles and subsequent sedimentation should it reach a waterway.
Dewatering of sites	· Potential interception of groundwater during construction of turbine foundation, requiring dewatering.
Ancillary infrastructure (e.g., substation, operations and maintenance facility)	· Erosion of relatively large, disturbed areas during establishment and subsequent sedimentation of run-off. · Erosion from spoil stockpiles and subsequent sedimentation should it reach a waterway.
Stockpile management	· Erosion of stockpiles and loss of soil resource. · Subsequent sedimentation impacts.
General construction activities (e.g., machinery operations)	· Erosion of soil stockpiles created during excavation works. · Creation of fugitive dust due to exposed surfaces. · Hydrocarbon spills from machinery (burst hoses, mechanical failures, leaking machinery, etc.). · Contamination of soils from poor refuelling practices. · Discovery of previously contaminated sites.

Table 82. Potential operational impacts to soils and water (ERM 2022)

Operational Activities	Potential Impacts to Soils and Water
Driving on all-weather unsealed road network	· Creation of fugitive dust due to vehicle movements. · Creation of fugitive dust due to onsite livestock movements. · Erosion of roads and roadside drainage in areas of steep terrain or in inappropriately 'finished' locations. · Mud tracking at the confluence of internal access roads with the public road network.
Watercourse crossings	· Any vehicle movement across unaltered watercourses during operational phase leaving wheel tracks and causing damage to creek beds. · Bank erosion at culvert crossings.
Pad sites	· Potential for erosion and subsequent sedimentation of run-off during heavy rainfall.
General operational activities (e.g., machinery operations)	· Hydrocarbon spills from machinery (burst hoses, mechanical failures, leaking machinery, etc.).

Operational Activities	Potential Impacts to Soils and Water
	· Contamination of soils from poor refuelling practices. · Increased soil erosion following heavy rainfall and potential subsequent sedimentation.

Based on the findings of the Soil and Water Assessment, ERM conclude that:

- Pad sites and access road construction generally occurs on relatively low gradient lands remote from the respective drainage catchments.
- There is a very low risk of run-on or run-off of concentrated stormwater flows.
- Construction sites within the Project Area generally present low erosion hazard.
- The site landscape is relatively stable with no significant areas of erosion.
- Impacts on water flows are not anticipated during the construction phase, with any potential impacts able to be managed by an Erosion and Sediment Control Plan (ESCP).
- Sustainable water supply options will be pursued through consultation with landowners and relevant Government agencies, and appropriate licenses required as required.
- Additional measures can be implemented to mitigate any impacts associated with the adjacent National Park.
- A Construction Environmental Management Plan (CEMP) would be prepared post-approval.

Soil and Water Impact Mitigation Measures

The Hydrology Assessment provides mitigation measures for the Project, both during the construction and operational phases, to ensure that potential impacts to hydrological processes are avoided wherever practicable. The key mitigation management measures include requirements to:

- Prepare a detailed Soil and Water Management Plan (SWMP) by a suitably qualified person, including progressive ESCPs.
- Design and construct the Project to minimise land disturbance and, in turn, minimise erosion hazard.
- Stage the construction phase to minimise duration and extent of disturbance to the land.
- Schedule dust-generating construction activities when wind conditions are favourable and monitor air quality during construction. Where required, dust suppression measures such as a water cart should be used.
- Manage topsoil resources and maximise topsoil reuse.
- Divert clean stormwater around disturbed areas to facilitate sediment control.
- Promptly and progressively rehabilitate the site during construction.
- Avoid additional land disturbance beyond that considered in the Hydrology Assessment, particularly within 20 metres of minor streams and 40 metres from higher order watercourses.
- Ensure appropriate hazardous substance procedures are in place.
- Construct the necessary access tracks in early stages to minimise Site disturbance during construction.
- Obtain the necessary water access licenses.
- Ensure that good practice and requirements of the NSW EPA are adhered to with regard to stormwater collection, treatment and recycling.

Runoff management and mitigation measures include:

- During construction:
  - Direct runoff from all hardstands and access tracks to appropriate sediment control facilities and flow velocity controls.
  - Install appropriate erosion and sediment controls near waterways.
  - Treat steep batters for erosion and sediment control.

- Utilise overland flow management to prevent concentration and diversion of water onto steep or erosion prone areas.
- Following rain events, undertake thorough visual inspections identifying actions for localised erosion.

· During operation:
  - Project infrastructure would likely cause marginally higher velocity and less infiltration when compared to existing conditions. Erosion and sediment controls (e.g., grass swales, rock checks, level spreaders) would contribute to offsetting this change.

The Hydrology Assessment recognises that erosion risk is primarily a consideration during construction phases, with the exception of concentrated flow paths along drainage lines which can be managed through appropriate controls.

6.17.2 Flooding Assessment

A Flood Assessment for the Project was prepared by ERM in line with the SEARs and DPE requirements and accompanies the EIS (Appendix U).

Typically, surface water follows topography and surrounding drainage paths and gullies, flowing from higher elevation towards lower elevations. The topography of the site suggests that water flow direction is to the east and west from the elevated points towards Manus Creek and Silent Creek, which merge with the Abercrombie River approximately 500m south of the investigation area. Several earth dams were observed throughout the Site, with most of these dams at their maximum capacity, having a freeboard of approximately 0.2-0.5m due to recent rain events during the time of investigation.

Groundwater was encountered at a location during the geotechnical testing however the underlying rock was observed as being dry. Therefore, it is likely that the groundwater sits atop the weathered rock layer and may be perched. It should be noted the location and presence of groundwater level is likely to vary significantly across the site due to the topography, presence of localised drainage lines and seasonal variation and rainfall. It was also noted that a previous 2010-14 geotechnical assessment report did not identify groundwater at any of the testing locations at that time, which further suggests that the observed groundwater level is highly variable and seasonal.

Flood Assessment Approach

The report considered that the limited footprint and positioning of WTGs and ancillary infrastructure, primarily to the catchment ridge lines, contributions to the limited potential of significant or prolonged flood exposure across the Project Area. Flood models developed for the site were based on Geoscience Australia's 2019 *Australian Rainfall and Runoff (ARR) Guidelines* and data.

This assessment approach aids in the placement of the Project infrastructure to ensure it is located outside of the predicted flood extents in addition to the mandated riparian setbacks for the relevant stream order.

The assessment approach included consideration into the following:

· Input Data:
  - Aerial imagery of the study area.
  - Project description and proposed layout.
  - Digital Elevation Model (DEM) in 2m resolution tiles based on LiDAR aerial survey (classification level 3).
  - Cadastral information.
  - Bureau of Meteorology (BOM).
  - Storm losses and temporal patterns for design rainfalls.
  - Review of flood studies.
  - Climate.
  - An understanding of the climatic context of the Project area has been developed through the data available from the Australian BoM. Data used from the BoM was retrieved from the following weather stations:
    - Taralga Post Office (Station No.070080)

- Oberon (Station No. 163063).

- Model Development
  - A rain-on-grid model hydraulic model and RORBwin rainfall-runoff routing model were developed based on the ARR 2019 data and methodology to facilitate the design flood simulation for 5% AEP, 1% AEP and Probable Maximum Flood (PMF) events for study area. The 1% AEP event generally depicts a critical flood event and is used to assess flood risk and to reduce flood exposure and damage.
- Catchments:
  - The Project area is part of the Lachlan River catchment in the Murray-Darling Basin. Two catchments were developed, and focus on the site boundary and creeks' upgradient, where surface water flows are in proximity to the Project and creeks within the Project area.
  - The catchment encompasses several smaller creeks catchments and is not focused on one individual watercourse and contributing catchment. The catchment is approximately 136km2.
  - The catchment features a ridge running in a north-east, south-west orientation, with watercourses running from the ridge in largely a north-westerly and south-easterly direction.

Flood Assessment Results

Based on the models used, the 5% AEP and 1% AEP design flood events were simulated for the study area to establish the peak flood depths and indicative flood extents that can be used to assess the flood risks for the Project infrastructure. The PMF was also simulated in the Flood Assessment to determine the potential impact of an extreme event.

The results presented indicate flooding from both watercourses and minor overland flow paths (filtered to exclude flow depths less than 0.25m).

In accordance with the *Floodplain Development Manual* for NSW the potential flood planning level (FPL) was developed, indicating the potential for land to be inundated as determined from a flood event, a historic flood, or a flood of a certain AEP. Factors influencing FPLs include:

- Risk to life;
- Flood behaviour;
- Social issues;
- Economic factors;
- Environmental issues, and
- Cultural issues.

The 0.5% AEP was selected as the FPL for the Flooding Assessment, with a freeboard of 0.5m added to the water surface elevation to function as a pseudo-function of safety. This AEP was selected to acknowledge the probability of rare rainfall events taking place within the greater region as being experienced in NSW in 2022.

Flood Risks to Project Including Hydraulic and Hazard Categorisation

The Flooding Assessment notes that the site is within an area of deeply incised valleys and rolling hilltops that form slopes with gradients between 10% and 20%.

Due to this, the opportunity for flood storage is negligible resulting in the floodway representing approximately all the flow in the creek. Flood hydraulic categorisation (per the NSW *Floodplain Development Manual 2005*) was not undertaken given the Site is located in catchment headwaters, where gradients are steep with minimal opportunity for the development and presence of floodplains.

Assessment of hazard categorisation concluded that, where WTGs have been located, creeks draining the hill ops show a low hazard rating. This is because of the relatively gentle slopes associated with the top of the ridges that result in a low velocity.

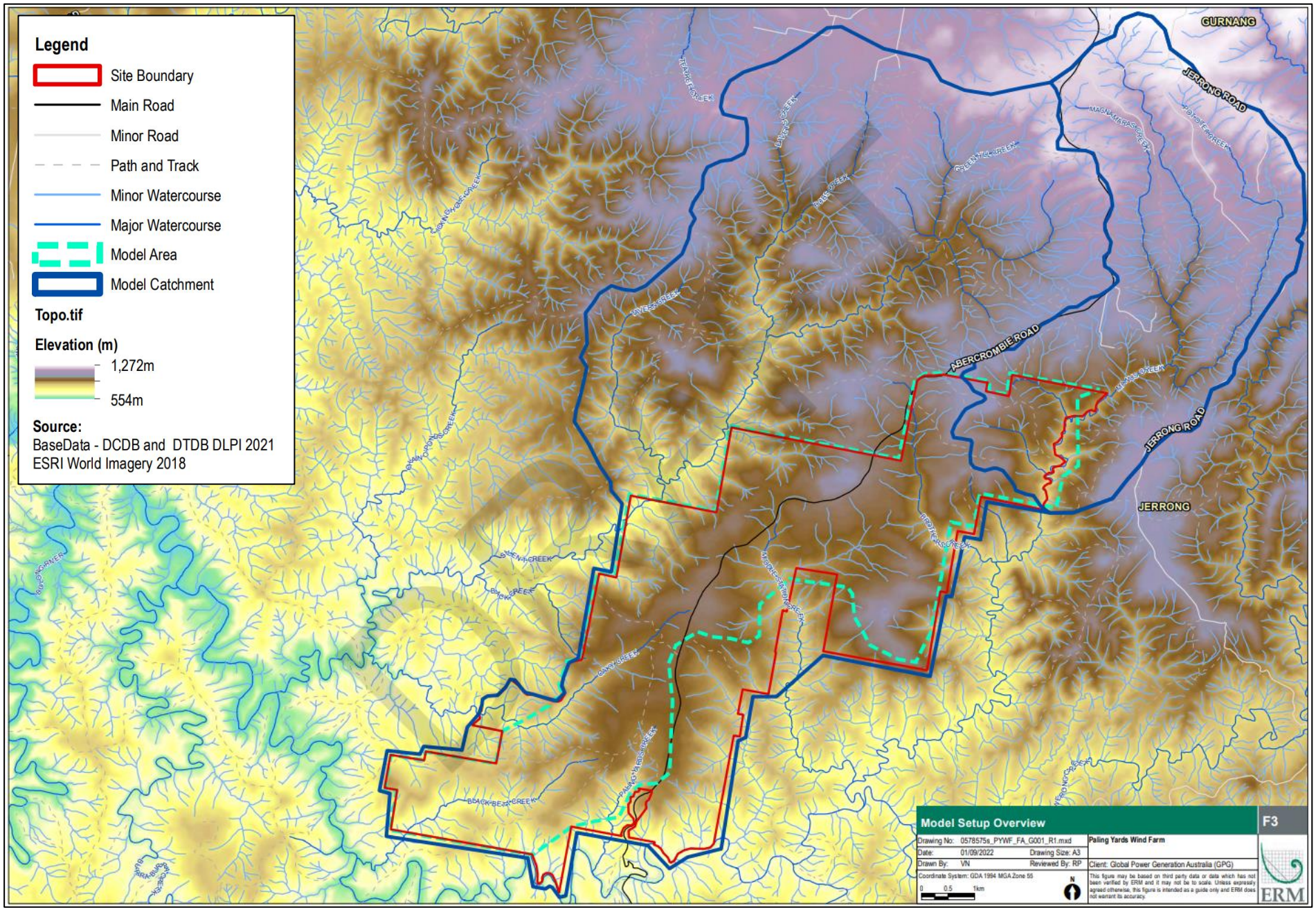


Figure 65. Model Setup Overview (Source: ERM 2022)

6.18.1 Rehabilitation and Decommissioning Plan

WSP was appointed by GPGA in 2021 to prepare a Decommissioning and Rehabilitation Plan for the Project. Rehabilitation and decommissioning of the site is crucial when considering the long-term sustainability of the Project and ensuring use of the site returns to its natural pre-development state.

The operational life of the Project is intended to be at least 30 years, with the potential to extend its operational life depending on site and plant conditions. An assessment of the equipment and material to review whether it would be appropriate to continue use in a safe and sustainable manner without causing risk to surrounding land will be required.

At the end of the site's operational life, the site will be decommissioned in accordance with the *Decommissioning and Rehabilitation Plan* (PS123149-POW-WIN Rev B) which outlines appropriate recovery for the WTG tower materials such as metallic components, blades etc.

Throughout the operational life of the PYWT, WTGs may be dismantled, in part or in whole, prior to the final decommissioning and closure of the site. If this is to occur, the process of decommissioning individual WTGs will remain in line with the waste management plan which has been prepared for the site.

6.18.2 Waste Management Plan

A Waste Management Plan (WMP) was prepared by WSP. WSP outlines that all waste management will be undertaken in accordance with the EPA NSW waste legislation such as the *Protection of the Environment Operations Act 1997, Protection of the Environment Operations Waste Regulation 2014, Waste Avoidance and Resource Recovery Act 2001* (the WARR Act) and the relevant guidelines.

The WMP provides details on the anticipated waste streams to be produced during the construction and operation of the site. Waste volumes have been anticipated for each phase of the Project. A full assessment of the waste streams is included in Section 3 of the WMP by WSP. In short, they key waste types and proposed management tools include:

Table 83. Summary of the Projected Waste Streams

Waste Type	Description	Proposed Management and Disposal
General wastes	Plastics, rubber, food waste, miscellaneous wastes. These materials are non-hazardous but may be potentially odorous.	Dedicated General Waste bin. Disposed to landfill via private waste contractor.
Recyclable wastes	Recyclable plastics, paper, cardboard, glass. Excluding scrap metal.	Source separated and dedicated Recycling bins. Collected for recycling by a private waste contractor.
Scrap metal	Steel, copper, aluminium.	Dedicated metal waste skip bin. Collected by metal recycling contractors. Dedicated metal waste skip bin. Collected by metal recycling contractors as described in the Decommissioning and Rehab Plan.
Filler material	Clean fill, soils, sands and waste rock.	All fills will be retained on site, re-used for minor fill works locally.
Green waste	Shrubbery, trees and other plants un-mulched.	Temporary segregated green waste stockpile separated from combustible wastes and vegetation. Reused on site for mulching. Remainder collected by private waste contractor for green waste mulching. Mulched on site for use in rehabilitation activities.

		Volumes that exceed onsite reuse needs collected by private waste contractor for green waste mulching.
C&D Waste	Brick, concrete, timber, asphalt materials excess to construction.	C&D wastes to be temporarily stockpiled prior to being removed by waste contractors for offsite reuse and / or recycling. Managed in accordance with the Decommissioning and Rehab Plan C&D wastes generated during decommissioning to be temporarily stockpiled prior to being removed by waste contractors for offsite reuse and / or recycling.
Oils / hydrocarbons	Liquid oil, lubricants, hydrocarbons and transformer oils.	Stored in bunded oil container pending transport to licenced regulated waste facility by appropriately licenced contractor.
Oily rags	Solid waste containing oil contamination, flammable waste.	Dedicated, labelled segregated Oily Rag bin. Transport to licenced regulated waste facility by appropriately licenced contractor.
Oil / Chemical containers	Solid containers with potential residual liquids.	Reused on site where possible. Collected for recycling by a private waste contractor or container collection scheme such as drummuster.
Sewerage	Sewerage from onsite staff and contractors.	Collected by portable toilet contractors as part of hire agreement. Disposed to the sewerage system via commercial bulk disposal. Permanent constructed septic tank to treat sewerage and release effluent. Collected by portable toilet contractors as part of hire agreement. Disposed to the sewerage system via commercial bulk disposal.

WSP proposes to utilise the waste minimisation hierarchy of avoid / reduce / reuse / recycle / dispose as the overarching principle for the Project. Through the implementation of a Waste Management Plan (WMP) mitigation and management measures can be utilised during construction, operation and decommissioning to minimise environmental impacts and protect environmental and biodiversity values of the site. The waste management controls are designed to meet the objectives of the WARR Act through the implementation of the waste management hierarchy and consider waste at all stages of the development. This is outlined in the report with the following key stages to be assumed by the plan:

- Transportation:
  - Transportation of materials to and from the site, including the arrival of materials in a neat manner and ensure that when being taken away all waste is taken and disposed of appropriately.
- Monitoring, review, and continuous improvement:
  - Monitor and Report requirements throughout all phases of development. This ensures that all materials and waste products are handled correctly and are managed appropriately. This ensures that the Project remains in line with the environmental objectives and performance outcomes outlined in the WMP.
- Record Keeping:
  - Ensure that materials are used appropriately and keep a record of all events that occur.

6.19 Social Impact Assessment

A Social Impact Assessment (SIA) prepared by ERM provides a detailed overview of the Project's potential social impacts. Initial baseline information relating to land use context, demographics, economics, and social infrastructure have

been gathered from ABS's 2016 census data and information provided by the Oberon and Upper Lachlan LGAs and Community Stakeholder Engagement sessions undertaken on the 28th and 29th July 2022.

The areas surrounding the Project comprise sparsely distributed rural communities that predominantly where farming is the major land use activity. The demographic profile of the area indicates a below-median age population, strong indigenous representation, and a high percentage of unoccupied dwellings. The Project Area contains little to no social infrastructure and little to no commerce with closest services being located approximately 35km at Taralga.

6.19.1 Regulatory Framework

The report includes and assessment against relevant planning legislation including:

- Commonwealth Legislation:
  - *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
    Provides for the protection of nationally significant environments. During the initial stages of the project an EPBC referral was provided in 2005. Confirmation as to whether a further EPBC referral is required can be confirmed upon further field studies.
    ERM notes that Commonwealth Legislation does not include requirements or guidelines specific to conducting a SIA, these are addressed in the NSW Legislation.

- NSW Strategic Plans and Legislation
  - NSW SIA Guidelines:
    - DPIE's *Social Impact Assessment Guideline: For State Significant Projects and Technical Supplement: Social Impact Assessment Guideline for State Significant Projects* provides guidance on undertaking social impact assessments in NSW.
    - The Guidelines provide a detailed framework to identify, evaluate and respond to social impacts and assist in providing stakeholder and community consultation for impacts throughout the Project's life.

  - NSW Electricity Infrastructure Roadmap:
    - The NSW Government's *Electricity Infrastructure Roadmap* is a framework to transition NSW to clean, reliable and affordable energy as existing carbon intensive power generation capacity is decommissioned over the following years.
    - This Roadmap commits the NSW Government to establishing five Renewable Energy Zones (REZs), including one in the Central West and Orana Region.

  - Draft Central West Orana Regional Plan 2041:
    - The Plan provides a 20-year land use blueprint. To meet the Plan's objectives of achieving a "healthy, connected and resilient region, with a prosperous economy" the Government has identified the central role renewable energy transition will have within the region. This is reflected in the establishment of the REZs and complemented with the ongoing implementation of existing and new projects elsewhere within the region.
      These are further reflected in the Plans objectives specifically:
      - Objective 5: Ensure site selection and design embraces and respects the region's landscapes, character and cultural heritage.
      - Objective 10: Provide accommodation options for temporary workers.

  - *Oberon LGA Local Strategic Planning Statement 2036* (LSPS):
    - The LSPS's planning priority Four – Environment acknowledges the NSW Government's plans to 'increase renewable energy generation in the region but also notes Council's role in managing land use conflicts and impact on primary producers.

  - *Oberon LGA Development Control Plan 2001 (amended 2012) (DCP):*

- The Oberon DCP was updated in 2005 to include Part O: Wind Power Generation to complement other LEPs and to provide more detailed planning guidance given the increased interest in Wind power generation.
  Parameters were established for neighbouring consultation upon receipt of an application for a new wind farm development based on a 2km radius and a number of planning and environmental controls.

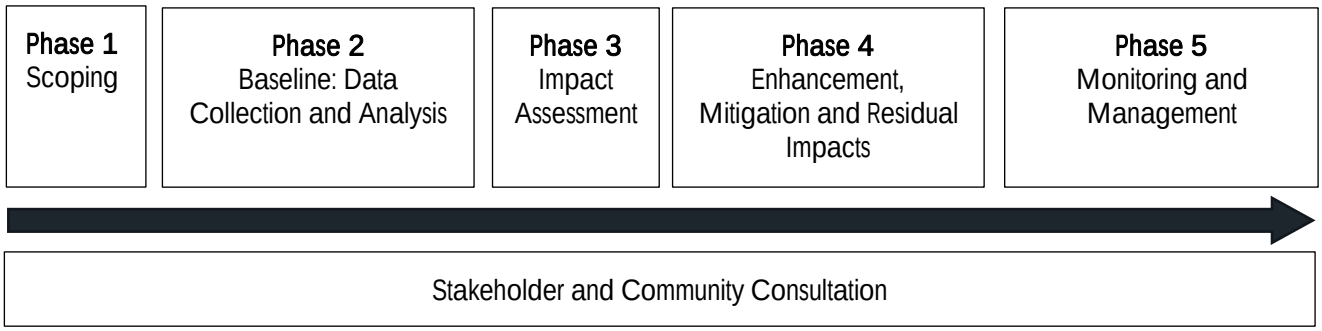
6.19.2 Social Impact Assessment Methodology

The methodology utilised within this SIA has been guided by the Project's SEARs. It recognises the requirements set out in the NSW Guideline and Technical Supplement which aims to enhance SIAs with a view to minimising impacts and enhancing benefits in line with good international industry practice.

The purpose of the SIA is to provide the DPIE with an understanding of the Project's potential social impacts, and the means by which these social impacts are identified, assessed, managed, and monitored, consistent with the legislative and regulatory context.

The structure of the report is as follows:

Figure 66. Structure of Report (Source: SIA Guidelines 2021)



Refer to Section 2 of Appendix S.

6.19.3 Social Locality and Stakeholder Identification

Social Locality identification

The Project Area as previously mentioned is located within Oberon Shire LGA and adjacent to the Upper Lachlan Shire LGA. To understand the social locality of the site, the SIA considers the surrounding towns and regional centres surrounding Oberon which include Taralga, Goulburn, and Crookwell. These are identified as they could provide goods and services to support the construction phase of the Project. It is important to note that whilst the Project Area is contained entirely within the Oberon LGA, it is accessible via Taralga Road to the south (an extension of Abercrombie Road) and proportion of this road is located within the Upper Lachlan Shire LGA. Abercrombie Road is the main access route to the site for haulage and other transport and access purposes.

Baseline information was further retrieved from the Australian Bureau of Statistics (ABS) to provide an enhanced understanding of the broader and comparative social context within which the Project is located.

Stakeholder identification

Based upon the Social Locality, the stakeholder groups identified as potentially impacted as part of this SIA are:

- Host Landowners (Involved landowners)
- Immediate neighbours (defined as neighbouring dwellings within 5km of the proposed site and along the transmission corridor)
- Surrounding communities (community members who live outside of a 5km radius of the proposed site.)
- Aboriginal Communities (Registered Aboriginal Parties (RAPs)
  - Pejar Local Aboriginal Land Council
  - Corroboree Aboriginal Corporation

- Gunjeewong Cultural Heritage Corporation
- Didge Ngunnawal Clan Aboriginal Corporation

- The Approving Authority (Department of Planning and Environment);
- Local Council (Oberon Council members and Upper Lachlan Shire Council (adjacent LGA)).

6.19.4 Engagement Activities

Community and Stakeholder engagement commenced in 2004 and has continued through several Project evolutions. Throughout this time and to meet the information needs of the community, a range of consultation strategies were adopted and undertaken throughout the Project's planning phase, including:

- Consultation with government departments and agencies, non-government agencies, community groups and individuals;
- Direct contact with identified community groups;
- Door-knock consultations undertaken within 5km of the site and along the corridor of the proposed transmission line routes;
- Community newsletters distributed to the local area and to anyone registering interest in the Project;
- Public exhibition undertaken at several locations

6.19.5 Social Impact Assessment Findings

The report identified a number of key drivers for social change as a result of the Project which may affect the surrounding communities. These include:

- Procurement opportunities for local businesses and employment opportunities for the local workforce;
- Opportunities for diversification of income streams for host landowners;
- Disruptions due to construction related activities (noise, dust, transportation of materials and workers etc.);
- Accommodation arrangements for construction workforce; and
- Amenity (noise, visual) and other land use and landscape changes due to altered landscapes.

The table below outlines the identified social impacts, their identified possible impact category and at which stage of the project they are expected to occur.

Table 84. Preliminary Social Assessment impact findings (ERM 2021)

Description of Impact	Impact Categories	Project Phase
Project Engagement not being transparent and inclusive of all stakeholder perspectives and comments.	Project neighbours, wider community	Construction
Impacts to community cohesion due to divided opinions	Community, project neighbours, wider community	Construction and Operation
Real or perceived adverse potential health impacts associated with wind farms	Health and wellbeing, host landowners, project neighbours	Construction and Operation
Impacts on social infrastructure and availability of services due to increased population / increased demand for services	Way of life, community, accessibility, health and wellbeing, local businesses, visitors to the region, access and wider community	Construction
Interruptions to daily life as a result of project construction.	Way of life, Host landowners, project neighbours, wider community	Construction

Description of Impact	Impact Categories	Project Phase
Impacts to recreational pursuits in the National Park and Conservation Reserve	Way of life, community, accessibility, health, and wellbeing	Construction and Operation
Psychological impacts on people with an interest in environmental conservation (i.e., distress caused by threats of infrastructure on bats and avifauna)	Way of life, community, accessibility, health, and wellbeing	Construction and Operation
Aircraft safety associated with the WTG locations and associated tip heights	Livelihoods, host landowners, project neighbours, emergency services	Operation
Increased economic activity within the region	Way of life, livelihoods, local businesses	Construction
Increased tourism to the local area	Wider community, local communities	Operation
Cumulative socio-economic impacts	Wider community	Operation
Direct or indirect job creation, contribution to skills shortage	Livelihoods, Local workforce, local businesses	Construction and Operation
Diversification of income streams for involved landowners	Way of life, livelihoods, local businesses	Operation
Impacts to existing agricultural operations, including efficiency of aerial agricultural applications in the vicinity of Project	Way of life, livelihoods	Operation and Construction
Impacts to telecommunications	Way of life, livelihoods	Operation
Construction traffic impacts to community safety and amenity	Way of life, community, accessibility, health, and wellbeing	Construction
Perceived impacts to land values	Way of life, livelihoods of host owners and project neighbours	Life of Project
Construction environmental impacts Vibration Noise Dust Visual amenity Increased risk of fire	Way of life, community, health and wellbeing, host landowners and project neighbours	Construction
Operational environmental impacts Vibration Noise Dust Visual amenity Increased risk of fire	Way of life, community, health and wellbeing, surroundings	Operation
Visual amenity impacts altering rural character	Way of life, community, culture, health, and wellbeing, surrounding impacts to host	Operation

Description of Impact	Impact Categories	Project Phase
	landowners, project neighbours, wider community, visitors to the region, wider community	
Altered landscapes have the potential to impact tangible and intangible Aboriginal heritage	Culture, Traditional owners	Operation, Life of project
Perceived health impacts, including from electromagnetic interference, shadow flicker, blade throw and noise	Way of life, community, culture, health, and wellbeing	Operation

Further details in relation to community consultation and feedback is provided within section 5 of this EIS and is further discussed in section 4 of Appendix S.

6.19.6 Summary of Mitigation Measures

Given the findings of the ongoing consultation and community engagement the following mitigation measures have been suggested for the Project:

Construction Phase

- Ensure more transparent and inclusive engagement is achieved through further development and implementation of construction phase specific elements of the project Stakeholder Engagement Plan (SEP).
- Develop and implement a Local Employment Plan to establish incentives for Engineering, procurement and Construction contractor requirement to preference regional residents where they have the required skills and experience.
- Develop and implement a Local Content Plan which establish incentives for selected contractors to preferred procurement of local non-labour inputs to production.
- Develop and implement a SEP requiring frequent communication around local impacts arising from construction related activities.
- Develop and implement a CEMP that will include specific mitigations for construction phase impacts.
- Develop and implement a traffic management plan.
- The project should consider developing and implementing a workforce accommodation management plan.

Operation Phase

- Extend the above mentioned Local Employment Plan and Local Content Plan into the operations phase of the project.
- Ensure the SEP includes a complaints mechanism, so that community concerns can be identified and actively addressed.
- Local aviation impacts should be considered in future engagement with the local community.
- The Cultural Heritage Management Plan must be implemented in consultation with the local Aboriginal community.

Other considerations

- Improvements to public and roads safety by implementing viewing platforms. Include a viewing platform within the site boundary adjacent to Abercrombie Road corridor to allow the public to safely pull over off the road to better view the wind farm from a designated and safe location.
- Development and implementation of a Local Employment Plan which would establish incentives for Engineering, Procurement and Construction contractor recruitment. The Project could also develop and implement a Local Content Plan which establishes incentives for the Engineering, Procurement and Construction contractor to use local non-labour inputs to production where local producers or suppliers are cost and quality competitive.
- Local disruptions are to be addressed through plans that seek to manage disruptions as a result of the Project.

6.20 Economic Assessment

An Economic Assessment undertaken by Gillespie Economics provides an overview of the Project and assesses the economic activity within the regional economies of Oberon, Upper Lachlan, and Goulburn Mulwaree Local Government Areas, during both the construction and operation phase. As the Project has a capital value of more than $30 million, and in accordance with the requirements outlined in the SEARs, an Economic Assessment report has been prepared to accompany this EIS package.

6.20.1 Site Considerations

The Site is located within the Oberon Local Government Area (LGA) is near the border with the Upper Lachlan LGA. The major regional centre servicing this area is Goulburn which is in the Goulburn-Mulwaree LGA. As such, for this report the region for analysis has been identified as the combined LGAs of Oberon, Upper Lachlan and Goulburn-Mulwaree.

6.20.2 Regulatory Framework

The Project aims to contribute to transition across the National Electricity Market to low–emission energy sources. It aligns with several key commonwealth, state and local government policies and directives identified below:

- The *2015 United Nations Framework Convention on Climate Change* – the "*Paris Agreement*".
- The *Commonwealth Technology Investment Roadmap: First Low Emissions Technology Statement – 2020*.
- Australia's Long-Term Emissions Reduction Plan: A whole-of-economy Plan to achieve net zero by 2050.
- The Australian Energy Market Operator's (AEMO) Integrated System Plan (ISP).
- *NSW Electricity Strategy (2020).*
- *NSW Net Zero Plan Stage 1: 2020-2030.*
- *NSW Electricity Infrastructure Roadmap 2020*.
- Central West and Orana Regional Plan 2036.
- Oberon Local Strategic Planning Statement 2040 – Oberon - More than You Imagine

6.20.3 Methodology

Regional economic impacts were assessed using Input-Output analysis. The Report assesses the Project's economic impact on the region and NSW economy throughout the Project's lifespan including construction, operation and decommissioning.

An Input-output analysis or an IO analysis involves the two steps:

- Construction of an appropriate IO table (regional transaction table) that can be used to identify the economic structure of the region and apply multipliers for each existing sector of the economy; and
- Identification of the impact or stimulus of the project (construction / operation of the project and reduced potential agricultural activity) in a form that is compatible with the IO equations so that the IO multipliers and flow-on effects for the impacts or stimulus of the project can then be estimated (West, 1993).

6.20.4 Findings

The Project will provide economic activity to the regional economy during both construction and operation phases. Below is a summary of the key findings from the Economic Assessment, which focusses on the existing regional economy.

- The main occupations of residents in the region are managers (including farm managers), followed by Technicians, Trade Workers and Professionals.
- Hospitals is the most significant industry sector for employment of residents in the requin. Sheep farming is the most significant industry of employment.
- The population of the region has grown at an annual average growth rate of 1,16% since 2006, mostly through the Goulburn Mulwaree LGA.

- Based on a model developed by Gillespie Economics, the gross Regional product of the regional economy was estimated at $2,013 million for 2016. The region is a net importer, with exports out of the region of $386 million and imports into the region of 1,621 million.

The regional economic impacts, as a result of the project proceeding, is summarised below. The average annual construction impacts of the Project on the regional economy are estimated at up to:

- $41 million in annual direct and indirect output
- $17 million in annual direct and indirect value-added
- $7 million in annual direct and indirect household income.
- 94 direct and indirect jobs

The impacts are larger for the NSW economy as there is less league of direct and indirect expenditure out of the NSW economy compared to the regional economy.

During operation, the project is estimated to make up to the following total annual contribution to the regional economy:

- $40 million in annual direct and indirect regional value-added.
- $3 million in annual direct and indirect household income.
- 43 direct and indirect jobs.

The project is estimated to make up to the following total annual contribution to the NSW economy:

- $46M in annual direct and indirect regional value-added.
- $8M in annual direct and indirect household income.
- 65 direct and indirect jobs.

Again, the impacts are larger for the NSW economy as there is less league of direct and indirect expenditure out of the NSW economy compared to the regional economy.

The report noted that the construction and operation phases of the Project will have a net positive impact on the level of economic activity in the regional and NSW economy. GPGA proposes to work in partnership with the Oberon Council and the local community so that, as far as possible, the benefits of the projected economic growth in the region are maximised and impacts minimised.

In addition to the above, the Economic Assessment also reviewed the potential agricultural impacts as a result of the project proceeding. It further provided commentary on matters relating to land value impacts as a result of the project. Refer to section 3.5 and section 2.6 of the Economic Assessment (Appendix T).

6.20.5 Management Measures

Whilst the Project will be beneficial, a number of mitigation measures have been suggested to assist in general economic impact mitigation. Proposed management measures include:

- As per the measures identified in the SIA, employment of regional residents preferentially where they have the required skills and experience and can demonstrate a cultural fit with the organisation.
- Enact host landowner agreements as agreed.
- Participate, as appropriate, in business group meetings, events or programs in the regional community.
- Establish a neighbouring property benefit scheme so the eligible properties neighbouring the wind farm site see a direct benefit from the Project.
- Provide community grants through various initiatives and programs within the local community, including the education, arts, sporting, and culture sectors.
- Foster open communication with surrounding landowners in order to understand their concerns.
- As per the requirements of the SIA, locally source non-labour inputs to production where local producers can be cost and quality competitive.
- For visual amenity impacts, implement the mitigation measures recommended by Moir Landscape Architecture (2023) is required.

The proposed VPA would contribute a payment to Oberon Council that can then be directed to a range of community infrastructure needs and programs as part of the Community Enhancement Fund.

6.21 Capital Investment Value Report

The SEARs for the Project require the EIS to be accompanied by:

> *'a detailed calculation of the capital investment value (CIV) (as defined in the Dictionary of the Regulation) of the proposal, including any details of all assumptions and components from which the CIV calculation is derived.'*

Wilde & Woollard (W&W) has prepared a preliminary detailed estimate for the project in accordance with the Department of Planning and Environment's planning circular (PS21-020). The Capital Investment Value (CIV) has been calculated in accordance with NSW DPE '*Calculation of capital investment value*' circular dated 2 December 2021.

This section of the EIS should be read in conjunction with the CIV Report prepared by W&W.

Table 85. Cost Summary (GPGA 2022)

Item	Description	Amount $
1.0	Wind Farm Energy Harvesting Infrastructure	
1.1	Projects (Contractors) Preliminaries and Margin	$5,289,000
1.2	Wind Turbine Generators	$397,312,000
1.3	Wind Farm Civil Works	$57,658,000
1.4	Wind Farm Reticulation System	$23,234,000
1.5	Substation Structures	$82,235,000
1.6	Substation Control and Communication System	$603,000
	Construction Cost:	$566,331,000
2.0	Wind Farm Reticulation System	
2.1	Consultant Fees (Project Management, Engineers and the like)	$3,252,000
2.2	Hazardous Materials, Ground Water Control, Wind Monitoring and the like)	$4,208,000
2.3	Infrastructure Works	$4,464,000
2.4	Implementation and Mitigation Measures	$1,600,000
2.5	Escalation (Allowance)	$19,822,000
	Other Costs and Fees:	$33,346,000
TOTAL CAPITAL INVESTMENT VALUE		$599,677,000

Note: The above figures are taken from the CIV included in Appendix DD and are subject to the Assumptions, Inclusions and Exclusions as specified therein.

The construction and operation of the wind farm will result in an investment of approximately $599,677,000.00. This value has been calculated in accordance with GPGA's preliminary budget estimate dated 23 November 2022 and updated with additional items and reworked to suite the CIV requirements. Note that the above amounts and associated CIV was checked and confirmed during May 2023.

Refer to attached Appendix DD for a copy of the full report.

6.22 Health Assessment

Tract prepared a Health Impact Statement (HIS) in relation to the impacts of the Project. The HIS assesses the potential for negative impacts from the Project including:

- Low frequency noise impacts (due to wind turbine operation);

- Shadow flicker;
- The impacts of magnetic fields;
- Increased noise levels (due to traffic during construction and operation);
- Bushfire impacts;
- Blade throw events; and
- Biosecurity assessment and management.

The assessment recognises that wind farms can have a beneficial impact on human health, including:

- Short and long term employment opportunities;
- Positive impact on the regional NSW economy;
- Reduced greenhouse gas emissions;
- Sustainable source of energy;
- Voluntary Planning Agreement (VPA) with Oberon Council, which can then be directed to a range of community infrastructure needs and programs, including the establishment of a Community Enhancement Fund.

After assessing the potential impacts on human health, the HIA recommends several mitigation measures to reduce the potential adverse effects or to otherwise ensure positive impacts are achieved.

With respect to shadow flicker and blade glint, the following recommendations are made:

- Installation of screening structures or planting of trees to block shadows cast by the turbines.
- Using turbine control strategies to shut down turbines when shadow flicker is likely to occur.
- Relocation (or micro-siting) of turbines.
- Commitment to ensuring that turbine suppliers confirm they coat blades with non-reflective paint to address blade glint.

With respect to bushfire risk:

- Ensure the wind farm is controlled by a remote supervisor and the system allows the remote operation and shutdown of individual or all turbines, when required in an emergency.
- Cooperate with NSW RFS to review all access roads to enable safe access and egress to residents.
- Locate key assets outside of the flame zones.
- Prepare a Bushfire Emergency Management and Operations Plan in conjunction with relevant stakeholders.
- Ensure APZs around turbines (10m around each turbine and 20m around substation, switching station and operations & management building) and infrastructure.
- Provide for a minimum combined storage of 50,000 litres of water on the site.

In relation to noise mitigation, it is noted that:

- Noise Management Mode may be used for the 16 WTG's, closest to those receptors where exceedances were predicted, to reduce noise impacts, and achieve compliance with the relevant noise criteria.
- A construction noise management plan should be prepared to ensure that all reasonable steps are taken to reduce noise from construction sources.

To promote positive human health impacts within the local community as a result of the project, the following recommendations are made:

- Where possible, ensure local workforces and supplies are used to maximise benefits to the local community.
- Prior to construction, ensure that all reasonable and feasible mitigation measures have been considered, and the consent authority is satisfied that the economic, social and environmental benefit of the project outweigh its adverse impacts.

Should consent be granted by the NSW DPE, the following conditions should be applied to the Project:

- obligations to meet a performance outcome or objective;
- obligations to implement specific mitigation measures as identified in the supporting documents and specialist studies;

- obligations to monitor actual versus predicted impacts;
- obligations to monitor the effectiveness and outcomes of any mitigation strategies in accordance with agreed performance indicators and implement adaptive management strategies where required; and
- reporting and auditing requirements, including the reporting of data.

As prescribed in the guidelines, adaptive management frameworks can be implemented through conditions to require proponents to report against outcomes to the Department, and publicly.

Prior to construction, GPGA will prepare management plans or arrange monitoring programs to address the below potential environmental considerations. These management plans will include scheduled monitoring activities to ensure compliance with health and safety objectives.

Evidence gathered as part of this application, assessment of the supporting documents in relation to the HIA, and compliance with the recommendations outlined above, all indicate that potential impacts from noise, EMF, shadow flicker and blade glint associated with the proposed wind farm can be managed and would not give rise to adverse human health impacts. The level of risk to human life posed by blade throw and biosecurity associated with the project is considered to be very low. With respect to bushfire risk, it is noted that the project is located in a bushfire prone landscape and ongoing monitoring and management will therefore be required.

Refer to the attached Appendix EE for the full HIA.

6.23 Land Use Conflict Risk Assessment

Tract has prepared a Land Use Conflict Risk Assessment (LUCRA) in accordance with the *NSW Land Use Conflict Risk Assessment Guide 2011*. It has been prepared to assess the potential for the Project to conflict with pre-existing land use activities and the implications of any conflict. The assessment considers the impacts at all stages of development including the construction, operation and decommissioning phases of the project.

The LUCRA assesses the impacts of the following:

- Construction works
- Traffic / Transport and Access
- Visual Amenity
- Noise Amenity
- Shadow flicker
- Biodiversity
- Biosecurity
- Heritage considerations
- Social Impacts
- Economic Impacts

The assessment identified several potential sources of land use conflict and recommends that each impact is to be continuously monitored in accordance with the identified performance targets identified.

It is noted that the following activities may be sources of potential land use conflict:

- Agricultural land uses

  The proposed wind farm and sequential change of use would alter the existing agricultural landscape as its change of use would become primarily for electricity generating purposes.
- Traffic, Transport and Access.

  Increased traffic generation, particularly heavy vehicle movement will contribute to the degradation of local access roads.
- Biodiversity.

  Clearing and thus modification of native vegetation communities and fauna habitat such as removal of hollow-bearing trees would contribute to the disturbance of the existing Biodiversity within the site.

The LUCRA identified that the development would allow the surrounding existing land uses to remain largely unaffected, with potential of land use conflicts considered to be manageable with the application of the suggested mitigation and management measures.

All activities have undergone an evaluation within this EIS that ensures that the mitigation measures within the associated assessments can be implemented to ensure appropriate management.

Refer to the attached Appendix F for the full LUCRA report.

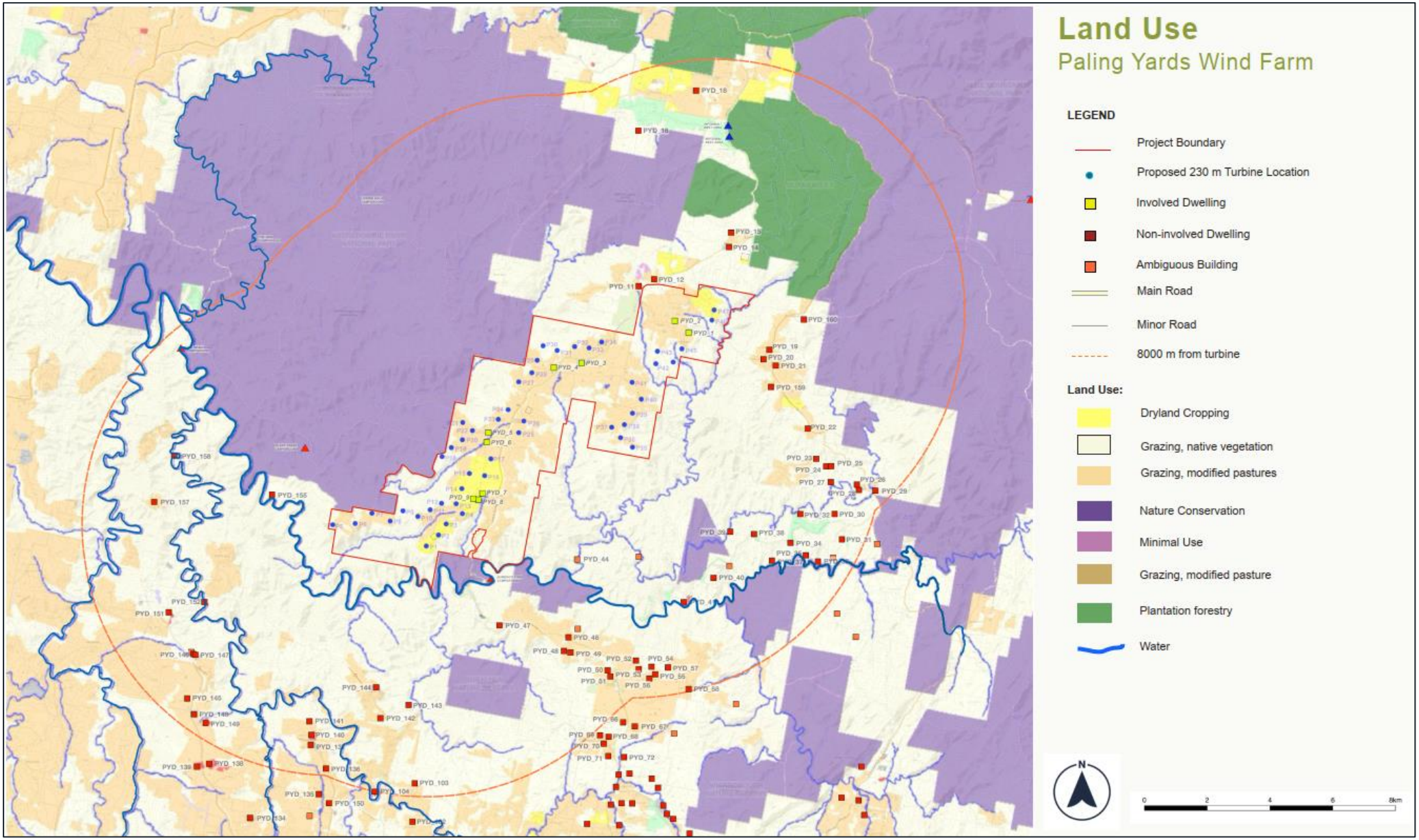


Figure 67. Land Use Plan - Paling Yards (Source: Moir LVIA, 2023)

6.24 Air Quality and Dust Control

This section reviews the potential air quality related impacts associated with the Project. GPGA will appoint a suitably qualified contractor to prepare procedures to manage air quality during construction activities in order to minimise environmental and social impacts. have been considered as part of this assessment.

6.24.1 Methodology

The *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016* (Approved Methods) lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in NSW. The Approved Methods lists two levels of assessment:

- Level 1 – screening-level dispersion modelling technique suing worst-case input data
- Level 2 – refined dispersion modelling technique using site-specific input data.

The assessment includes five main stages in air quality impact assessment:

- Input data collection
- Dispersion modelling
- Processing dispersion model output data
- Interpretation of dispersion modelling results
- Preparation of an impact assessment report.

The following methodology was undertaken to assess the impacts of the Project:

- Description of local air quality monitoring data and associated background information
- Identification of sensitive receivers
- Development of mitigation and management measures
- Waste management measures.

6.24.2 Local Air Quality

The Oberon LGA generally experience good air quality that meets the WHP annual air quality guideline. In most instances, potential causes of air pollution at the locality include:

- Localised dusts and odours caused mainly by farming and agricultural activities
- Particular matters, such as wood smoke, bushfires, controlled burns, dust storms, etc.)
- Gas emissions (CO2) caused by vehicles, equipment, industry (including forestry), etc.

According to NSW Health, particulate matter (PM) is a term that describes extremely small solid particles and liquid droplets suspended in the air[31]. The size of these particles affects their potential to cause health problems:

- PM10 (particles with a diameter of 10 micrometres or less): these particles are small enough to pass through the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects.
- PM2.5 (particles with a diameter of 2.5 micrometres or less): these particles are so small they can get deep into the lungs and into the bloodstream. There is sufficient evidence that exposure to PM2.5 over long periods (years) can cause adverse health effects.

[31] *NSW Health: https://www.health.nsw.gov.au/environment/air/Pages/particulate-matter.aspx*

Air quality monitoring stations located in Goulburn (Southern Tablelands) and Bathurst (Central Tablelands) provide pollutant concentration data, 24-hour summaries and quality ratings. Bathurst experiences 14 calendar days above the PM10 standard and 13 calendar days above PM2.5 at the station. Goulburn experiences 18 calendar days above the PM10 standard, while it also experienced 16 calendar days above the PM2.5 standard.

According to the 2020 report, most of the pollutants were caused by the black summer bushfires of 2019-2020. Drought and low rainfall also caused increased dust levels during high winds.

6.24.3 Mitigation and Management Measures

Particle emissions from the project are predominantly associated with the construction phase activities, associated with localised dust generation and exhaust emissions of vehicles and machinery.

Impacts and Considerations

Construction activities that can generate emissions such as dust and particulate matter, includes:

- Clearing and grubbing, including topsoil stripping
- Earthworks and spoil movements
- Vehicle emissions and travel on unsealed roads
- Loading and unloading of material
- Wind effects over stockpiles and exposed areas
- Managing impact to health and sensitive receivers.

Prior to construction, the Proponent should review the potential impacts the Project may have on air quality. This includes:

- Potential impacts of construction activities on air quality and dust generation, and the effect on ecological and local communities
- Contractual requirements regarding air quality and dust control
- Legal obligations regarding air quality and dust control using the company's legal obligations directories and reviewing applicable permits
- Controls to be implemented to minimise the impact on air quality and the generation of dust
- Risk will be assessed in accordance with legislative & contractual obligations.

When reviewing the likelihood and impact of dust emissions, the following should be considered:

- Activities that involve the movement of dry soils from activities such as excavation, clearing and general traffic movement
- Surrounding land uses and existing local flora and fauna
- Local water bodies
- Existing soil conditions of the site
- Timing of works (seasonal considerations)
- Exposure to workers
- Impact to sensitive receivers.

Management Measures

During the operation phase, the Project will generate electricity without directly emitting air pollutants that are known to affect the climate and human health. The Project will contribute the improvement of air quality through the displacement of emissions that would otherwise be generated through the burning of fossil fuels used to generate electricity from traditional coal fired power stations.

Section 17.4 of this EIS provides measures and controls that need to be implemented prior to construction. This includes:

- Community and stakeholder consultation
- Hazard identification
- Establish and communication air quality goals
- Determine emission monitoring and reporting requirements
- Review of all mitigation measures to ensure they are effective
- Setup air quality monitoring equipment, if required
- Minimise and manage dust generating works, particularly during periods of high wind.

Further assessment, in terms of the Approved Methods will be undertaken as part of the detailed design and the CEMP.

6.24.4 Waste Management

Section 16.18 of this EIS report reviewed the waste management plan (WMP) that's been prepared by WSP (Appendix X). The objectives of the WMP are as follow:

- Describe the processes to be applied in the handling, storage, reuse, transport, treatment, and disposal of wastes generated during the Project.
- Minimise risks to human health and the environment from the storage and handling of Project related wastes.
- Align with the waste management hierarchy to minimise waste generation and maximise reuse and recycling of materials.
- Meet the requirements of waste generators under the *Protection of the Environment Operations Act 1997 (POEO Act)*, *Protection of the Environment Operations Regulations 2014* and the *Waste Avoidance and Resource Recovery Act 2001 (WARR Act).*

The WMP details mitigation and management measures that will be employed during the construction, operation and decommissioning phases of the Project. The waste management measures have been designed to meet the environmental objectives outlined in the POEO Act by managing waste in a way that minimises environmental impacts and protects environmental values. Waste minimisation controls are designed to meet the objectives of the WARR Act through the implementation of the waste management hierarchy

Environmental Management and Mitigation Measures

7 Environmental Management and Mitigation Measures

A comprehensive assessment of the Project impacts has highlighted the land use risks which are associated with each identified activity. Risk reduction measures will be applied to mitigate the land use risks and to help minimise their impacts on surrounding land.

7.1 Environmental Management Strategy

Environmental management for the Project will be undertaken in accordance with the Project's environmental management system. This provides an overall framework for the management of environmental impacts that could potentially arise because of the Project. The management of environmental impacts during construction and operation will be documented in the CEMP and, if required, in the OEMP. Both plans are to form part of the overarching Environmental Management Strategy.

Mitigation measures identified throughout this EIS and summarised in section 7.4 will be incorporated into the management plans, and will provide:

- An environmental manual for staff and contractors throughout the construction, operation and decommissioning of the Project;
- Identification of the potential impacts of the Project and the measures identified to mitigate those impacts;
- Details of how environmental mitigation measures will be implemented and the timing thereof;
- Clearly defined allocation of environmental responsibilities for all staff members and contractors;
- Ongoing reporting and monitoring requirements to demonstrate compliance with licensing and approval requirements and whether any additional measures are required; and
- Procedures for review and updating of the management plans.

Adherence to the management plans will enable environmental safeguards and mitigation measures to be effectively implemented and sustainable work practices adopted for the duration of the Project. Where environmental controls are incorporated as part of the design development, there will be ongoing monitoring and review to ensure the controls comply with the determined objectives.

The plans will confirm the Proponent's intent to comply with conditions of consent, relevant environmental legislation, prevent negative impacts on the environmental and minimise the impact of the Project on the environment.

7.2 Construction and Operation

GPGA will submit a pre-construction compliance report for each stage of the Project to DPE at least two weeks prior to the commencement of construction of that stage (or such later time agreed to by the DPE). The report will include details of the compliance with all pre-construction conditions of approval that are relevant for the Project.

The construction contractor will develop a CEMP post approval to outline environmental management measures and procedures to be implemented during construction. The construction contractor will also prepare an OEMP to address the operational impacts of the Project. GPGA will implement the OEMP as approved by the DPE.

The CEMP and the OEMP will provide a structured approach to the management of environmental issues identified in this EIS during construction and operation of the Project. Implementing the CEMP and the OEMP will effectively ensure that the Project meets regulatory and policy requirements in a systematic manner and continually improves its performance.

7.3 Decommissioning and Rehabilitation

A Decommissioning and Rehabilitation Plan (DRP) has been prepared by WSP. The purpose of the DRP is to identify the methodology that GPGA will use to mitigate potential impacts resulting from the cessation of operation of the facility at the end of the Project's useful economic life. The plan provides an outline of the stakeholder and landowner consultation undertaken to date. It details the Project's expected operational life, proposed processes for dismantling Project infrastructure, approaches to land rehabilitation, funding arrangements, timeframes, allocation of responsibilities and ongoing monitoring and review. The report is attached as Appendix Y.

The plan further confirms that GPGA will commit to undertaking all decommissioning and rehabilitation works as outlined in the plan within a period of 18 months after the end of the operational phase of the Project.

The DRP will be reviewed and revised as required, every 5 years following the practical operation date. This is to ensure that the DRP is representative of the final as-built Project site which may be subject to modification prior to the start of construction phases (e.g., If micro-siting is required, new WTG technology is considered, or if revised access routes for roads or network are adopted etc).

GPGA will ensure that during each review of the DRP, the effectiveness of the plan will be re-assessed against its objectives. Cost estimates and funding arrangements will also be independently reviewed. Near completion of the Project's operating life, the DRP will be updated to detail on how the rehabilitation objectives and strategies will be implemented to return the study area to its pre-existing condition for agricultural land use. The DRP will include:

- rehabilitation objectives and strategies
- a description of the design criteria for the final land use and landform
- performance indicators to be used to guide the return of the land back to a condition suitable for agricultural production
- an expected timeline for the rehabilitation program.

The DRP and all subsequent reviews, will be made available to the public and posted on GPGA's website. GPGA will also provide a copy of any revised DRPs to the relevant consent authority at the time of amendment.

7.4 Summary Table

The final design of the wind farm layout will be submitted to DPE prior to the commencement of construction. Based on the final layout, mitigation measures will be incorporated into the management plans.

Below is a summary of the mitigation and environmental management measures that will be implemented during the construction and operation of the wind farm. Table 86 outlines the tasks and actions that the proponent is committed to

undertaking if the Project is approved. These measures and commitments seek to ensure that further details are provided on certain aspects of the wind farm and that relevant standards are met throughout the construction, operation, and decommissioning phases.

[Please refer to Table 86 on the next page]

Table 86. Statement of Commitments

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
General Requirements					
Micro-siting allowance	Minimise Impact	Ensure that micro-siting or any minor changes to the Project do not create any material increase in overall environmental impact. In the event of any significant changes to the proposed wind turbine layout, an updated noise assessment and visual impact assessment (and if required shadow flicker assessment) will be submitted. Micro-sited facilities will not result in any non-compliance with the development consent one granted.	Prior to construction	Proponent	GN01
Pre-construction Management Measures					
Prepare a Pre-construction Compliance Report	Minimise Impact	The proponent will submit a Pre-Construction Compliance Report for each stage of the Project to the DPE at least two weeks prior to the commencement of construction of that stage (or such later time agreed to by the DPE). The Pre-Construction Compliance Report will include details of the Project's compliance with all pre-construction conditions of approval that are relevant for the works.	Prior to construction	Proponent	MP01
Prepare a Construction Environmental Management Plan	Minimise Impact	The construction contractor will develop a Construction Environmental Management Plan (CEMP) to outline environmental management measures and procedures to be implemented during construction. The CEMP is to include air quality monitoring and dust management.	Prior to construction	Construction Contractor	MP02
Prepare an Operational Environmental Management Plan	Minimise Impact	The construction contractor will develop an Operational Environmental Management Plan (OEMP) to outline environmental management measures and procedures to be implemented during construction. The OEMP will address the operational impacts of the project including the specific matters set out below in this table. The proponent will implement the OEMP as approved by the DPE.	Prior to construction	Construction Contractor	MP03

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Air Quality Impact Assessment Report	Minimise Impact	The construction contractor will develop an Air Quality Impact Assessment Report in accordance with Section 9 of the Approved Methods. The assessment will include the following stages: · Input data collection · Dispersion modelling · Processing dispersion model output data · Interpretation of modelling results · Preparation of impact assessment report	Prior to construction	Construction Contractor	MP04
Landscape and Visual Impact					
Visual Amenity – Planting / screening requirements to reduce visual impacts	Minimise Impact	· Screening planting will be undertaken by the proponent in locations agreed between the proponent and neighbouring landowners where the planting is seen as effective and is desired by the landowner to limit the view to the proposed wind turbines. It will involve a variety of dense native vegetation, including both trees and shrubs, and will be carried out at no cost to the landowner. · Additional options for screening vegetation in the vicinity of nearby residences and along roadsides will be explored to screen potential views of turbines. · Strategic tree or shrub planting will be undertaken where necessary between view locations and the transmission line. · This mitigation measure will not apply where the Proponent has an agreement with the relevant landowners. · Revegetation of disturbed areas will be undertaken to ensure effective cover is achieved.	During and post construction	Proponent	LVI01
Visual Amenity – Potential impacts due to blade glint	Minimise Impact	· The wind generator blades, tower and nacelle will be treated / painted with the same non-reflective muted colour and matt finish to reduce glare and minimise blade glint.	Prior to construction and during construction	Proponent	LVI02

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Visual Amenity – Visual impacts caused by ancillary infrastructure	Minimise Impact	· Site control building and facilities will be designed and constructed sympathetically with the character of the locality · Suitable component materials with low reflective properties will be selected for the substation and transmission lines.	Prior to construction and during construction	Proponent	LVI03
Visual Amenity – Potential impacts caused by turbine and equipment llighting	Minimise Impact	· The wind farm (including the wind turbines) will not include unnecessary lighting, signage or logos.	Prior to construction and during construction	Proponent	LVI04
Noise and Vibration Impacts					
Construction noise exceedances and sensitive locations	Minimise Impact	· Construction works will be scheduled for less active times of day. · Quieter equipment with noise controls will be selected where possible. · The community will be kept informed about upcoming works. · GPGA will maintain detailed records regarding any complaints about construction noise and will respond accordingly.	During construction	Construction Contractor	NV01
	Compliance	The CMP will be developed to provide guidance on noise and vibration from construction activities and the mitigation strategies proposed.	During construction	Construction contractor	NV02
WTG operational noise exceedance at sensitive locations	Compliance	The predicted operational wind turbine noise levels will be updated with the final layout and sound power levels of the final turbine technology selected, to verify compliance with the criteria in accordance with the regulations.	Post construction	Proponent and construction contractor	NV03
	Compliance	Where the accepted WTG noise levels to dwellings are exceeded, the following strategies will be considered: · Sector Management – where individual turbines are turned off during certain meteorological conditions (best considered a reactive mitigation).	Post construction	Proponent and construction contractor	NV04

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		· Noise Management – The WTG speed of the rotor is reduced to lessen the sound power generated by the blades (best used for predictive compliance). · Landowner agreements will be offered to the impacted landowners.			
Biodiversity Impacts and Measures					
Potential loss of biodiversity due to construction of the wind farm	Minimise Impact	· In accordance with the BAM, measures to mitigate and managed biodiversity impacts at the development site will be documented in a biodiversity management plan. · The plan will include a bird and bat adaptive management plan (BBAMP) to address uncertainties around the potential for collision and barotrauma related mortalities. · A Fauna and Flora Management Plan (FFMP) must be prepared and implemented as part of the CEMP to detail mitigation measures related specifically to the construction phase of the Project.	Detailed design and prior to construction	Proponent and Project ecologist	BD01
Biosecurity concerns relating to the spread of weeds, animals, and diseases	Minimise Impact	The CEMP will contain mechanisms to prevent the spread of weeds and animals. Mechanisms may include: · Machinery wash downs · Staff training · Soil and fill screening · Other commonly used techniques · Coordinated management regimes managed by the wind farm developer · Installation of temporary fencing.	Prior to construction	Construction contractor	BD02
Clearing of native vegetation, resulting in injury and death to fauna	Limit disturbance and impact on vegetation / habitat	The following vegetation clearing protocols will be implemented:	During construction	Proponent and construction contractor	BD03

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		· The boundaries of vegetation removal are to be clearly defined on the ground to prevent unauthorised clearing and impacts from vehicular and / or foot traffic. · 'No go' zones will be clearly identified to protect areas of retained vegetation, riparian zones and any retained trees within the footprint. · Pre-clearance surveys and an inventory of trees and hollows for removal must be undertaken by a suitably qualified ecologist. · A qualified ecologist must be present during the removal of hollow-bearing trees to relocate / rescue any displaced or injured fauna. · If safe to do so without risk to plant operators, hollow-bearing trees should be knocked on the day prior to removal, to encourage fauna to vacate. · If practical, removal of hollow-bearing trees must be undertaken outside of the period of May – September which is the main breeding season for hollow-dependant fauna. · Ground timber, bush rocks and any salvaged tree hollows will be relocated from areas of vegetation clearing (including exotic grassland) into retained areas of vegetation.			
Offsets requirements	Compliance	· The proponent will develop a land based offset package in accordance with the principles for the use of biodiversity offsets in NSW. · The relevant credits will be confirmed and payment into the relevant fund will be made when required.	Prior to construction	Proponent	BD04
Potential impacts on water quality, water bodies and hydrological processes	Minimise Impact	· Appropriate sediment and erosion controls will be implemented. No excavated material or fill may be placed in flood prone areas. All stockpiles and material must be secure from a one-in-ten year flood event and have effective sediment control works to contain run-off.	During construction	Proponent	BD05

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Traffic and Transport Impacts					
Impacts to local roads and traffic because of the project construction and operation	Minimise Impact	A Construction Traffic Management Plan (CTMP) or equivalent will be prepared in consultation with Transport for NSW and the local council.	Prior to construction	Proponent and construction contractor	TT01
Construction impacts and OSOM Load impacts on roads	Minimise Impact	· Road surveys will be undertaken in accordance with the relevant guidelines and standards to confirm road conditions and the transport route. · Road infrastructure upgrade works will be undertaken as required to allow heavy vehicles and OSOM movements along the transport routes. All upgrades and works must be undertaken in consultation with the relevant authorities and as required under the Roads Act 1993. · An assessment of all vegetation to be trimmed / removed must be undertaken and if necessary, credits / offsets applied. · Access tracks will only intersect with government roads at nominated access points.	Prior to construction	Construction contractor	TT02
Impacts on heritage items or sites (historic heritage and Aboriginal heritage) as a result of roadworks associated with haulage.	Minimise Impact and Avoid	· It is recommended that works proceed under an Unexpected Finds protocol, which should form part of the project environmental management documentation. · Contractors engaged by GPG should prepare an Environmental Management Strategy, an Environmental Woks Method Statement and / or a Construction Environmental Management Plan that ensures that all onsite personnel are aware of their obligations and requirements in relation to the archaeological provisions of the Heritage Act 1977 through the attendance of a site-specific heritage induction.	During works / construction	Proponent and construction contractor	TT03
Geotechnical Considerations					

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Construction impacts on soil and water bodies	Minimise Impact	A Soil and Water Management Plan (SWMP) will be prepared to detail the measures and techniques to preserve soil resources.	Prior to construction	Construction contractor	GT01
Construction impacts potentially causing erosion	Minimise Impact	Progressive Erosion Sediment Control Plans (ESCP's) will be prepared within the SWMP throughout the project to address management requirements at individual working sites.	Prior to construction	Construction contractor	GT02
Hazards Protocols					
Aeronautical safety concerns	Minimise Risk	· Prior to the construction of any WTG or WMT, details of the planned installation (including coordinates, height, OLS, hazard lighting, etc.) will be provided to the relevant agencies (CASA, Department of Defence, NSW RFS, Oberon Council, Air Services Australia, and RFDS. · The rotor blades, nacelle and tower of the wind turbines should be painted white. The blades are coated with a non-reflective paint to reduce glint which is typical of most wind turbines operational in Australia. No additional marking measures are required for WTGs. · Consideration should be given to marking the temporary and permanent WMTs according to the requirements set out in the Manual of Standards 139, Section 8.10 (as modified by the guidance in National Airports Safeguarding Framework Guideline D.	During construction, operation, and decommissioning	Proponent	HZ01
Blade Throw concerns	Minimise Risk	· Wind turbine components will be manufactured and certified to current best practice Australian and international (IEC 61400-23) safety standards and will be equipped with sensors that can react to any imbalance in the rotor blades and shut down the turbine if necessary. · Contactors certified in the manufacture, delivery, build, inspection, maintenance and repair of turbine components will be employed.	During construction and operation	Proponent	HZ02

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Electro Magnetic Interference on existing towers and infrastructure in the vicinity of the site	Minimise Impact	· GPGA will consult with NSW Telco Authority, NSW Police Force, NSW Rural Fire Services and Telstra Corporation Limited regarding potential interference caused by any WTGs on point-to-point connections. · GPGA will consult with NSW Telco Authority, NSW Police Force, NSW Rural Fire Services and Telstra Corporation Limited regarding requested clearance zone around radiocommunication towers. · Bureau of Meteorology will be consulted on whether interference to their services / equipment is likely. · If interference to point-to-point or other links / signals is experienced by the operators / agencies, options to re-route the links, install of additional towers, or replace the affected links with alternative communications infrastructure will be explored. · Should the proposal result in potential impacts to communications after the above mitigation measures have been considered, it will be recommended that the selected turbines be relocated to outside of the required clearance zones. · In addition to the above, and pending final consultation, it might further be recommended that selected turbines be moved outside the diffraction exclusion zone. · Final layout plan to be submitted to all relevant Agencies post approval of this application.	Prior to construction, during construction and operation	Proponent	HZ03
Electro Magnetic Fields impacts on human health and wellbeing	Minimise Impact	The Proponent must use engineering and administrative controls to reduce the potential for EMF emissions in accordance with ICNIRP *Guidelines for Limiting Exposure to Time-Varying Electric Fields and Magnetic Fields (1-100 kHz) (2010)* and ARPANSA regulations.	During construction and operation	Proponent	HZ04
Fire protection measures to minimise bushfire risks	Minimise Risk	A Bushfire Emergency Management Plan and Bushfire Operations Plan will be prepared and form part of the CEMP and OEMP.	Prior to construction	Appointed contractor	HZ05

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
and fire risks as a result of the wind farm	Minimise Risk	Asset Protection Zone: · Minimum APZ of 10m is to be established around each WMT. · A minimum APZ of 20m is to be established on all sides of the substation, switching station and O&M Buildings. · APZs to be in accordance with the Planning for Bushfires Protection 2019.	During construction and operation.	Proponent	HZ06
	Minimise Risk	Wind Farm Construction: Ongoing measures must be implemented during entire period of construction, including: · The establishment of formal site access points, appropriate bunding around flammable fuels and oils to leak, and carry and maintain fire extinguishers and firefighting equipment in vehicles. · Preparation of an Emergency Management and Operations Plan · Construction and maintenance of safe access roads in accordance with the NSW RFS Fire Trail Standards and the NSW RFS Fire Trail Design, Construction and Maintenance Manual. · Design and maintenance of water supply to provide filling points for fire tanker units near the wind farm entrance and the O&M Compounds (final requirements to be confirmed by NSW RFS). · Adherence to Total Fire Ban days and regulations.	During construction, operation, and decommissioning	Proponent	HZ07
Air emissions controls to appropriately address dust emissions	Minimise Risk	The CEMP will be implemented and will mitigate construction related issues including: · Dust suppression. · Air quality monitoring. · Implementing air quality goals. · Ensure appropriate consultant has occurred with affected community members and key stakeholders prior to works commencing.	During construction	Construction contractor	HZ07

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		· Review dust mitigation measures to ensure they are effective.			
Heritage Requirements					
Heritage induction and protocols required prior to construction	Minimise Risk	· An Environmental Management Strategy (EMS), Environmental Work Method Statement (EWMS) and CEMP must be prepared for all staff and workers to ensure that all onsite personnel are aware of their obligations and requirements in relation to the archaeological provisions of the Heritage Act 1977. · Identified sites should be marked on site plans during operation and construction to ensure no inadvertent impact to the identified items.	Prior and during construction	Proponent and construction contractor	HR01
Unexpected Finds Protocol should any items be located / uncovered	Minimise Impact	· The Unexpected Finds Procedure should be included in the EMS / EWMS / CEMP. · Where a potential historic heritage item is found during works, all works within the vicinity of the item, or with the potential to impact the item should cease and a temporary exclusion zone established. · An appropriately qualified heritage consultant should examine the item to assess its significance and further archaeological potential. · Where a relic is found, the NSW Heritage Council should be notified, and approval will likely be required prior to the continuation of works. Other archaeological deposits should be recorded and assessed for significance and potential salvage by an appropriately qualified heritage consultant. · Works may only recommence when relevant approvals and an appropriate and an approved management strategy is instigated.	Prior and during construction	Proponent, construction contractor and qualified heritage consultant.	HR02
Micro-siting allowance to minimize impacts	Minimise Impact and Avoid	· To avoid the potential for harm to historic objects on unassessed adjacent landforms, all ground surface disturbing activities will be confined to the impact footprint outlined in this EIS. · The final micro-siting of the proposed infrastructure will consider upgrading and using existing farm access tracks where possible to	During construction	Proponent and construction contractor	HR03

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		achieve an overall site plan which minimises unnecessary new soil disturbance.			
Hydrology Considerations					
Construction impacts on soil and water	Minimise Impact	· A Soil and Water Management Plan (SWMP) will be prepared to detail the measures and techniques to preserve soil resources. · Progressive Erosion Sediment Control Plans (ESCP's) within the SWMP must be prepared throughout the Project to address management requirements at individual working sites. · Ensure appropriate collection, treatment, and recycling stormwater at the concrete batching plan in accordance with good practice and any requirements of the NSW Environmental Protection Authority. · Comply with Project mitigation management measures as listed within Section 6.1 of the ERM Hydrology Assessment (Appendix U). · Appropriate procedures will be in place for the transport, storage and handling of fuels, oils and other hazardous substances, including availability of spill clean-up kits.	Prior and during construction	Construction contractor	HD01
Water runoff management	Minimise Impact	· Site specific ESCPs will be prepared. · Project mitigation management measures as listed within Section 6.1 and 6.2 of the ERM Hydrology Assessment (Appendix U) will be complied with.	During construction	Construction contractor	HD02
Water usage on-site and water supply	Minimise Impact	· All necessary water access licences will be obtained.	Prior and during construction	Construction contractor	HD03
Waste and Resources Management					
Waste generation – General measures	Minimise Impact and Avoid	· Waste management locations will be kept tidy and well maintained. Staff will collect, or report, any litter generated on site, or any untidy waste storage area.	Through all phases / ongoing	Proponent	WR01

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		· Bins, receptacles, and storage areas will be clearly labelled to ensure wastes are appropriately source separated, stored and consolidated in their designated areas. · Staff will be briefed on waste management procedures as part of site induction processes and will be actively encouraged to undertake source separation of wastes to support re-use or recycling of materials. · Any unknown or suspected contaminated or hazardous materials will be quarantined and investigated. This material will be handled and disposed of in accordance with its relevant waste categorisation, and legislative requirements for that category of waste (e.g., apply EPA Waste Tracking requirements) where relevant.			
Waste generated and its management during construction		· All waste generated from the Project will be assessed, classified and managed in accordance with the Waste Classification Guidelines (EPA, 2014).	During construction	Construction contractor	WR02
Waste management – General measures	Minimise Impact and Avoid	· Records of waste generation and management rate will be kept via retention of waste receipts from contractors and maintained for a period of at least five years. · Waste collection areas and containers (bins, waste oil storage areas, stockpiles, and laydown areas) will be inspected by GPGA, or its representative, on a minimum six-monthly basis. · In the event of release of waste into the environment, an Environmental Incident Report and Corrective Action Report will also be completed by GPGA within 24-hours of the incident occurring. GPGA should consider whether it informs EPA of the incident.	Through all phases / ongoing	Proponent	WR03
Waste generation during decommissioning stage	Minimise Impact	· During decommissioning, all materials will be removed from the site and recycled appropriately.	Decommissioning	Proponent and contractor	WR04
Socio-Economic Measures					

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Planning agreements required with the Local Council	Compliance	The proponent will enter into a Voluntary Planning Agreement (VPA) with Oberon Council in accordance with Section 7.4 of Division 7.1of the EP&A Act.	Prior to construction	Proponent	SE01
Community Benefit Scheme to be established.	Compliance	A Community Benefit Scheme Framework will be developed to consolidate the various community benefit initiatives, including the: · VPA · Neighbouring property benefits scheme · Community grants · This will provide a framework for the distribution of benefit and mechanisms to track and monitor effectiveness and achieve the set targets of community benefits.	Prior to construction	Proponent	SE02
Community Consultation to be undertaken to develop and maintain engagement.	Compliance	The proponent will develop and maintain a community consultation and engagement program aimed at: · Providing the community with factual information about the Project. · Gathering feedback from the community and stakeholders about their concerns and interest, which can be subsequently addressed in the approvals process. · Participating, as appropriate, in business group meetings, events or programs in the regional community. · A dedicated email address, website and free call 1800 number will be available / maintained and responded to for the life of the Project.	Prior to construction and ongoing	Proponent	SE03
Economic Management Measures because of direct and indirect employment opportunities	Maximise Project Economic Regional Benefits	· Local or regional residents will be prioritised for employment on the Project where they have the required skills and experience and can demonstrate a cultural fit with the organisation. · The Proponent will source local non-labour inputs to production where local producers can be cost and quality competitive.	Prior to construction and during construction	Proponent	SE04

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		· Develop and implement a Local Employment Plan which includes local employment incentives. · Work with the relevant contractor during construction to achieve maximum local employment.			
Workers management as a result of the direct and indirect impacts of the wind farm on the locality	Minimise Impact	· An Accommodation and Employment Strategy will be developed for the construction workers accommodation within the area. · Monitor for skills shortages within the region and take this into consideration with recruitment objectives.	Prior to construction	Construction consultant	SE04
Construction environmental impacts, including noise, vibration, dust, visual and risk of fire	Minimize impact on health and wellbeing of host landowners and neighbours	· Develop and implement CEMP · Develop and implement a TMP · Develop and implement a stakeholder engagement plan.	Prior and during construction	Construction consultant	SE05
Spatial Services					
Potential impacts of construction on the NSW Spatial Services Trig Point of Defiance	Avoid or Minimise Impact	· NSW Spatial Services will be advised of any distance-related restrictions for working in proximity to a wind turbine that would prevent surveyors from accessing and using the trig point TS1797) and associated witness marks. · The trig point and any associated witness marks will be located and physically protected from disturbance during construction of the Project. Photographs of the trig point and any associated witness marks will be taken before and after construction and submitted to NSW Spatial Services. · A new submission will be lodged for assessment by NSW Spatial Services if there are any major variations to the Project proposal.	Prior to construction	Proponent and construction contractor	SP01
Decommissioning and Rehabilitation					
Decommissioning and Rehabilitation Plan requirements	Minimise Impacts and Avoid	· The Decommissioning and Rehabilitation Plan will be reviewed and updated every 5 years following the practical operation date.	Decommissioning	Proponent and contractor	DR01

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
		· The proponent commits to undertaking all decommissioning and rehabilitation works outlined in the DRP within the 18 months after the end of the wind farm's operational life.			
Stakeholder engagement requirements prior to decommissioning	Minimise Impact	· The proponent will consult and engage with the community and stakeholders prior to the decommissioning.	Prior to decommissioning	Proponent	DR02
Landscape impacts as a result of the wind farm and post-life of the wind farm	Minimise Impact	· At the completion of the wind farm's operating life, the turbines will either be replaced, or the land will be rehabilitated to its previous or similar condition. · Tracks considered surplus to the farmers' requirements will be rehabilitated and revegetated by introducing soil, mulch, and grass seeds of local prevenance.	Decommissioning	Proponent and contractor	DR023
Waste generation during decommissioning	Minimise Impact	During decommissioning, all materials will be removed from the site and recycled appropriately. All works must comply with the EPA NSW waste legislation such as: · POEO Act, · Protection of the Environment Operations Waste Regulation 2014, · WAAR Act, or · Any updated legislation or relevant guidelines available at the time of decommissioning.	Decommissioning	Proponent and contractor	DR04
Land Use Measures					
Impacts on existing land use and activities	Minimise Impact	· Consultation will continue to be undertaken with participating landholders to minimise disruption to agricultural activities during construction and operation. · Final wind turbine locations and details of Project infrastructure will be provided to the licence holders prior to construction. · Monitor for skills shortages within the region and take this into consideration with recruitment objectives.	Detailed design and prior to construction	Proponent	LU01

Impact	Objective	Description of Mitigation Measure	Timing	Commitment	ID
Cumulative Impacts					
Combined visual impact from the Project and other similar projects in the region.	Minimise Impact	Should obstacle lighting be required, the flashing of obstacle lights of wind farms within close proximity will be synchronised to each other (wherever possible) to minimise visual impact.	Prior to construction	Construction contractor	CI01
Community impacts because of the Project and other similar projects in the region.	Minimise Impact	A community and stakeholder engagement plan, which includes ongoing consultation with neighbouring operations, will be developed and implemented to manage and cumulative impacts.	Prior to construction	Proponent	CI02
Transportation and traffic impacts as a result of the Project.	Minimise Impact	· Ongoing consultation with Oberon Council and TfNSW will occur during the development of the TMP to coordinate construction and delivery vehicles. · Develop a stakeholder engagement plan to engage surrounding landowners and understand traffic movements and local road use patterns and preferences. · Repair damage to Council roads and / or upgrade roads as required in accordance with Council Engineering Standards.	Prior and during construction	Construction contractor	CI03

Justification of the Project

8 Project Justification

This chapter contains a comprehensive assessment of the Project and summarises its environmental, economic and social benefits, and noting how alternatives have been considered. Together, these considerations provide a strong justification of the Paling Yard Wind Farm project.

8.1 Justification for the Project

The primary objective of the Paling Yards Wind Farm is to produce renewable energy. The transition to this form of energy meets Federal, State and Local Government objectives to reduce greenhouse gas emissions to mitigate the impacts of climate change and is a direct response to the Commonwealth and State climate change commitments such as:

- The Paris Agreement (United Nations, 2015)
- The 2022 ISP (AEMO, 2022)
- COP27 (Sharm El-Sheikh Climate Change Conference, United Nations 2022)
- NSW Climate Change Policy Framework (State of NSW and OEH 2016)
- NSW Net Zero Plan Stage 1: 2020-2030 (DPIE 2020)
- Electricity Infrastructure Roadmap (DPIE, 2020).

The Project area is located in a highly suitable location, as demonstrated above and will deliver numerous environmental, economic and social benefits, as detailed in section 6.19 and section 6.20.

The Project will result in the multiple benefits. It will:

- Supply up to 287MW of clean renewable energy, or the equivalent to powering up to 100,000 average households per year;
- Displace up to 900,000 tonnes of CO2 per year;
- Enhance energy reliability in the region;
- Create local job opportunities and upskill the local workforce;
- Ensure regular payments and benefits sharing to involved landowners and other associated landowners, resulting in increased income streams to support current business and / or agricultural activities;
- Contribute to the growth and diversification of the local economy and provide opportunity for both local and regional investment; and

- Invest approximately $600million into the economy.

The layout and siting of the Project has been informed by detailed technical studies. This approach has ensured that Project components are sited to respond to the conditions and constraints of the site to achieve the most site responsive and appropriate layout. As the Project progresses, further micro-siting of turbines and infrastructure may be required to further refine the layout and minimise impacts.

The Project has been developed with consideration of community and stakeholder feedback, specialist assessments, technical inputs, and the potential for impacts on the environment.

8.2 Site Suitability

8.2.1 Locational Attributes

The Project is further justified at its current location due to:

- its proximity to existing transmission infrastructure;
- the availability of land through the commitment of key landowners;
- its location on agricultural land that is compatible with large scale wind energy generation facilities;
- the quality of available wind resources for a renewable energy facility;
- creation of employment opportunities, amongst other benefits, to the local economy; and
- the lack of significant negative biophysical, social or economic impacts.

The connection of the Project to the transmission grid has been carefully considered as it is to be located in very close proximity to an existing 500kV high voltage transmission line located to the east of the site.

The preferred transmission option has been selected based on the following criteria:

- length of transmission line connection route;
- orientation of the substation compound and existing topography; and
- minimisation of vegetation loss.

The preferred northern connection route represents a reasonable balance between the avoidance of native vegetation loss, minimisation of community impacts (considering both visual and noise impacts) avoidance of heritage items and the engineering and design aspects of the route.

The selected option and site layout was considered after careful consideration by GPGA, through workshops and discussions with the involved landowners, representatives from TransGrid, Local government, State government, the local (and wider) community, and the relevant Aboriginal Parties.

Not proceeding with the project would result in:

- loss of renewable energy supply and contribution to the Federal and State renewable targets;
- loss of opportunity to help reduce the impacts of climate change;
- loss of opportunity to displace up to 900,000 tonnes of greenhouse gases per annum;
- loss of opportunity to provide up to 900,000 MWh of renewable energy per year; and
- loss of social and economic benefits created through direct and indirect employment opportunities.
- loss of opportunity to inject a significant amount of power into a strong connection point of the NSW transmission network at a location which is close to areas of high demand (Sydney, Newcastle, South Coast). It would forfeit the opportunity to contribute to grid stability and security of electricity supply.

8.2.2 Policy Context

The NSW Government has recently set out an 'Electricity Strategy' to deliver five Renewable Energy Zones (REZs) across NSW. In addition to the Strategy, the *EnergyCo Electrical Infrastructure Roadmap* (the Roadmap) identifies the REZs across the State to channel investment in solar, wind, battery storage, and hydro projects. This will play a vital role in delivering affordable, reliable energy generation and help replace the State's existing power stations as they come to the end of their operational life[32].

These zones are seen as "modern day power stations" that will help NSW to capitalise on economies of scale to deliver cheap, reliable, and clean energy to the state. They will include:

- New renewable energy infrastructure, which includes wind farms
- Storage of electricity
- High-voltage transmission infrastructure.
- These REZs will help NSW to capitalise on economies of scale to deliver cheap, reliable and clean energy to the state.

The Roadmap currently lists the following regions:

- Central-West Orana
- New England
- South-west
- Hunter-central Coast
- Illawarra.

The Illawarra REZ has recently been madded and only includes a small area between Wollongong and Jamberoo, potentially included future Commonwealth Offshore Wind infrastructure. It was previously expected that this REZ should have been substantially bigger, potentially even including the Paling Yards locality and surrounding Crookwell and Taralga Wind Farms.

As per the Roadmap, the Project is to be located south-east of the Central-West Orana Renewable Energy Zone[33] and just to the north-western of the Illawarra REZ[34]. While not situated within one of the REZ's, given the availability of strong wind energy resources and the site's proximity to other existing and recent approved wind farms, it could be argued that the locality functions as a REZ in itself.

The Project Area is located within the Central Tablelands and the technical studies supporting the Project confirm that the wind profile in this location is sufficient to support the Project[35]. The proposed location presents a consistent wind resource as evidence based technical studies undertaken by GPGA and the number of wind farms planned, proposed, or built with the Southern Tablelands.

8.2.3 Wind Resource

Recent studies have shown that the average wind speed across the Paling Yards region is approximately 7.0 metres per second. This is generally considered a strong wind resource to effectively drive wind power generators.

Figure 68 was taken from the *Renewable Energy Resources of NSW Map – Wind Energy 2018* and illustrates the high wind speeds throughout the Central Tablelands region. This data remains relevant today as the wind energy sources in the areas have not significantly changed.

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[32] NSW Government 2022, Renewable Energy Zones, NSW Government, Reviewed 18 November 2022
https://www.energyco.nsw.gov.au/renewable-energy-zones
[33] EnergyCo NSW (2021) Central-West Orana Renewable Energy Zone, NSW Government, Reviewed 12 August 2022
https://www.energyco.nsw.gov.au/renewable-energy-zones/centralwest-orana-renewable-energy-zone
34 EnergyCo NSW (2021) Illawarra Renewable Energy Zone, NSW Government Reviewed 12 August 2022
https://www.energyco.nsw.gov.au/renewable-energy-zones/illawarra-renewable-energy-zone
[35] Regional NSW (2022) Renewable Energy, NSW Government, Reviewed 12 August 2022
https://www.regional.nsw.gov.au/meg/geoscience/products-and-data/renewable-energy

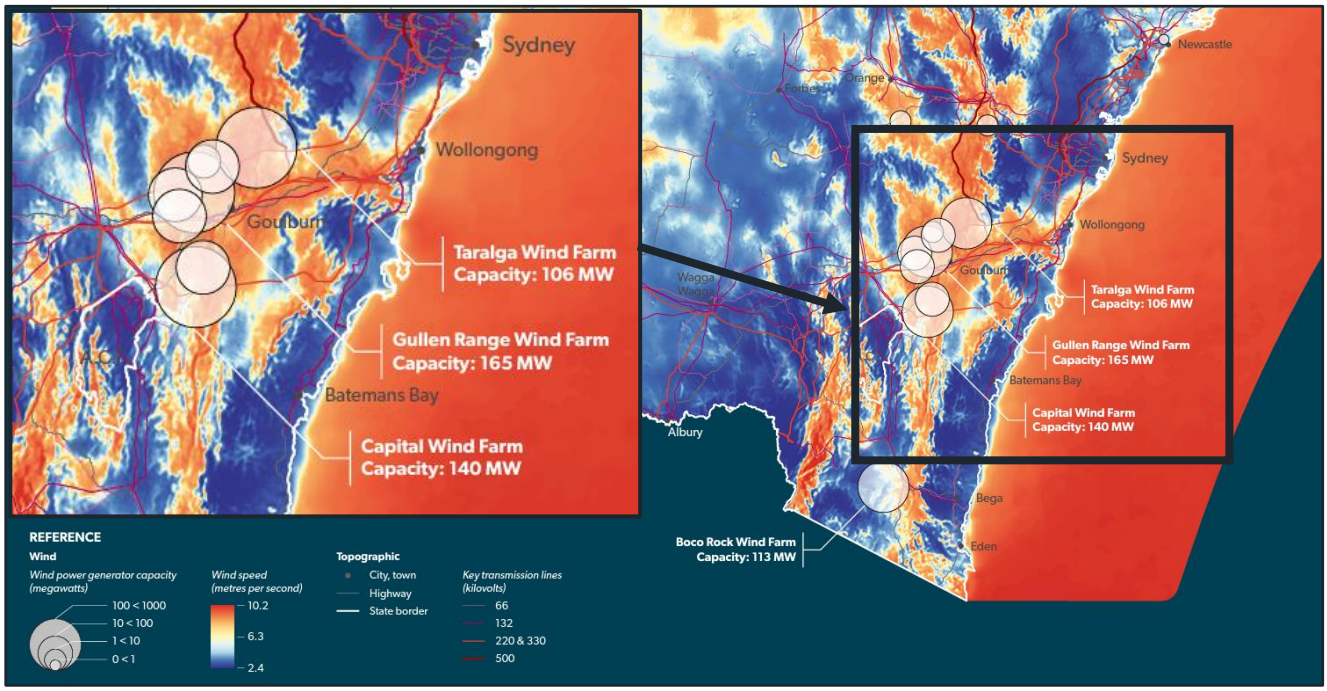

Figure 68. Renewable Wind Energy Resource of NSW (Source: NSW Government: Renewable Energy Resources 2018)

8.2.4 Established Credentials

GPGA has been active in the region and currently have one operating wind farm the (Crookwell 2) and another under construction (Crookwell 3) in the area. GPGA's involvement in the area is based on a long history of monitoring wind conditions and establishing relationships with local land holders, the Local Councils and State Government.

8.2.5 Physical Site and Contextual attributes

The Project Area largely comprises cleared land which is used predominantly for agricultural purposes. Some heritage items and sensitive locations have been identified on site however it is noted that the Project is not expected to impact any of the sites of historical significance. The turbine layout and ancillary infrastructure is proposed to be located and designed to maximise the use of existing disturbed areas to avoid and minimise impacts to cultural heritage values. Similarly, to the greatest extent possible, the Project layout avoids impacts to the biodiversity values within the site.

The Project is located within a rural setting, an area of low population density. The proposed wind farm layout provides suitable separation distances to non-associated dwellings and this will minimise noise impacts associated with the construction and operation of the Project.

Because the above attributes combine to form a site that is highly suitable for the proposed wind farm, no alternative locations were considered by GPGA for the Project.

8.3 Summary of Environmental, Social and Economic Impacts

The Project will bring numerous environmental, social and economic benefits to the Paling Yards locality, the wider region, and to the State of NSW. These benefits are detailed below.

8.3.1 Environmental

Wind energy plays a key role in reducing greenhouse gas emissions and mitigating climate change. The NSW State Government promotes the development of renewable energy as part of an approach to ensuring sustainable development in the NSW energy sector and reducing the state's greenhouse gas emissions.

The environmental benefits of wind energy projects such as the Paling Yards Wind Farm is clear:

- wind turbines produce electricity without generating greenhouse gas emissions; and

- minimal quantities of CO_2 are emitted during the construction phase and through the manufacture of the windfarm components.
    - By contrast, fossil fuels such as coal, gas and oil are major emitters of carbon dioxide.

Another key environmental benefit of wind power generation is energy security. An energy future based on conventional fuel sources is uncertain as oil, coal and gas are finite resources their supply will eventually be exhausted. The main fossil fuels used in power generation are becoming more expensive and more difficult to extract. In contrast, wind energy is a renewable energy source that is infinitely available across the globe.

The generation of wind power at Paling Yards Wind Farm will have a positive impact on regional air quality by displacing pollutants generated from coal fired power stations. As wind farms do not produce direct pollution, every MW of energy created displaces the production of energy from fossil fuels, representing an overall reduction in the emission of the pollutants.

Overall, the Project is expected to displace up to approximately 900,000 tonnes of greenhouse gases per annum and in doing so, assists in reducing the impacts of climate change. The Project will provide up to 900,000 Megawatt hours (MWh) of renewable energy per year and power the equivalent of up to 100,000 households per year.

Through the implementation of best practice management and procedures, the potential environmental impacts associated with the Project can be appropriately managed.

8.3.2 Social and Economic Impacts

The construction and operation of the wind farm will result in an investment of approximately $600M. It will create up to 152 full-time equivalent jobs in construction and up to 10 full-time equivalent jobs during operation. In addition to this, up to a further 10 contractors are anticipated to work on the site once every 10 to 15 years as part of scheduled major site maintenance and overhauls.

Other economic benefits of the Project include:

- Stimulation of the economy within the Oberon Council local government area as a result of greater income generation and subsequent expenditure in the region;
- Income generated from wind farm lease payments that can provide additional, stable, drought-proof income for farmers;
- Upgrades to local road infrastructure;
- Provision of flow-on economic benefits in terms of employment and commercial opportunities from the economic investment;
- Provision of community grants through various initiatives and programs within the local community, including the education, arts, sporting, and culture sectors;
- Support for regional economies through the use of a significant portion of locally sourced materials and employment; and
- Increases in the local tourism industry and in turn, increased expenditure on local services such as accommodation and retail in the Oberon LGA.

The Project will generate a number of social benefits and including the funding of community projects. GPGA is exploring further options to support the local community surrounding the site. This is likely to include the establishment of a community benefit scheme, to be known as the 'Oberon Community Enhancement Fund', which would make funds available for local community groups, organisations, non-profits and charities.

The Project will position the region as leading area within the state delivering renewable energy project and jobs created by the Project will help up-skill the local workforce, providing in-demand skills within a growing market.

8.4 Climate Change

Climate change can be described as an increase in global average temperatures as a result of an increase in the atmospheric concentrations of greenhouse gases such as carbon dioxide, methane and certain other trace gases in the atmosphere[36]. The Earth's climate has always changed however, the rate of change has increased since the industrial revolution and increased anthropogenic activities.

The latest Intergovernmental Panel on Climate Change (IPCC-57) released the sixth assessment report assessing the science related to climate change[37]. The report, recognised by the majority of scientists and all major scientific associations, identifies that human-induced global warming and its subsequent consequences are real, and must be mitigated. The United Nations IPCC reveals that the human-induced warming is set to increase to 1.5°C above pre-industrial levels within the next two decades. It confirms that drastic cuts in carbon emissions would help prevent an environmental disaster.

As the impacts of climate change become increasingly apparent, the role for innovative technology including renewable energy to address these concerns, has become urgent. Renewable energy harnesses the natural energies of the Earth. As energy demands continue to increase and non-renewable energy supplies are depleted, the need for clean sources of energy are becoming increasingly urgent. The adoption of renewable energy is acknowledged as a primary solution to ensuring energy security, reducing greenhouse gas emissions, and catering for future energy needs.

One of the greatest benefits of renewable energy is its potential to provide clean sources of electricity. Additionally, renewable energy produces little to no waste products such as chemical pollutants and, therefore has a minimal direct impact on the surrounding environment.

The Project is aligned with the relevant state and federal targets to provide clean energy and forms an important part of Australia's transition to renewable energy generation.

8.5 EP&A Act Objectives

The objectives of the EP&A Act are to:

(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,

(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,

(c) to promote the orderly and economic use and development of land,

(d) to promote the delivery and maintenance of affordable housing,

(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),

(g) to promote good design and amenity of the built environment,

(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,

(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,

(j)to provide increased opportunity for community participation in environmental planning and assessment.

[36] *https://www.epa.gov/climate-indicators/greenhouse-gases#:~:text=An%20increase%20in%20the%20atmospheric,atmosphere%20increased%20by%2045%20percent*

[37] *IPCC 2022, The Intergovernmental Panel on Climate Change IPCC-57, IPCC, Reviewed 25 August 2022, https://www.ipcc.ch/*

The Project promotes the orderly development and economic use of the site for the purposes of electricity-generating works (power generation). The location and layout of the site and associated infrastructure has taken into account setbacks to existing dwellings, native vegetation removal, heritage items, and other sensitive environments (i.e., waterways and creeks) in order to minimise the impacts on the local environment and the local community.

Throughout this EIS the objectives of the EP&A Act have been considered, including socio-economic impacts, natural resources and environment impacts, cultural heritage, amenity impacts and community values. In the few instances where potential impacts cannot be avoided, considerable effort has been made to minimise the impacts on the locality and its surrounds.

8.6 Ecologically Sustainable Development

Under the EP&A Act, sustainable development is defined as 'ecologically sustainable development' (ESD). ESD involves the effective integration of the following principles:

- The precautionary principle.
- Inter-generational equity
- Integration of economy and improved valuation
- Biodiversity principles.

The ESD principles are incorporated into the proposed development and align with the EP& Act 1979 and EP&A Regulation.

The summary below identifies how the Project has considered and responded to each of the key ESD principles.

Table 87. ESD Principles and its consideration in this EIS

ESD Principle	Project Response
The precautionary principle: If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In applying the precautionary principle, public and private decisions should be guided by: · Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment; and · An assessment of the risk-weighted consequences of various options.	This principle has been considered and adopted in the assessment of environmental impacts (16.1 – 16.24) The Project has considered various options to avoid environmental impacts and incorporates environmental sensitive design through the avoidance of areas with biodiversity values to the greatest extent practicable. Where a risk is present, mitigation measures have been included in this EIS. These are summarised in section 17.4.
Inter-generational equity: The present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.	The Project proposes the development of an energy generating facility that is powered by renewable resources and does not deplete existing finite resources. It provides investment in technology and infrastructure that will serve future generations. The Project will result in the sustainable generation of electricity, contributing to more reliable, clean and affordable energy in future. Water usage will be minimal and water usage agreements will be put in place. When the Project reaches the end of its lifespan, it can either be upgraded to continue operations or the land can be rehabilitated to return to exclusive use for agricultural purposes (section 16.24).
Integration of economy and improved valuation: Environmental factors should be included in the valuation of assets and services, such as:	Principles of economic integration are not strictly relevant to the Paling Yards Wind Farm Project because it is a project that

ESD Principle	Project Response
(i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement; (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; and (iii) environmental goals, having been established, should be pursued in the most cost-effective way by establishing incentive structures, including market mechanisms that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	provides a net environmental benefit the broader community, beyond immediate stakeholders. Those directly impacted by the Project will be compensated through neighbour and landowner agreements and a community benefit scheme will be developed for the project in recognition of broader impacts generated by the project.
Biodiversity principle: Conservation of biological diversity and ecological integrity should be a fundamental consideration.	The impacts of the Project on biodiversity values have been assessed through the BDAR attached as Appendix N and discussed at section 6.5 of this EIS. The Project responds to sensitive environmental values through the design of the wind farm so that it will minimise impacts on environmental communities.

An EMS will be developed to provide the overall framework for environmental management during the construction, operation, decommissioning and rehabilitation of the Project. This will ensure appropriate measures and processes are in place to manage environmental risks.

8.7 Project Commitments

To date, stakeholder engagement on the Project has been comprehensive and is reflective of the importance placed by GPGA on meaningfully engaging with the community.

As a member of the Clean Energy Council, GPGA upholds and commits to the standards set out in the *Best Practice Charter for Renewable Energy Projects.* These include:

- Engaging respectfully with the local community and Traditional Owners of the land;
- Providing timely information and being accessible and responsive in addressing feedback and concerns;
- Being sensitive to high biodiversity, cultural and landscape values;
- Minimising the impact on highly productive agricultural lands;
- Offering appropriate community benefits associated with the project;
- Supporting education and tourism opportunities where possible;
- Demonstrating responsible land stewardship over the life of the project; and
- Recycling waste materials where feasible over the life of the project.

GPGA's further commitments include:

- A community benefit scheme (Oberon Community Enhancement Fund);
- A VPA with Oberon Council;
- Landowner Agreements;
- Neighbour Agreements;
- An Environmental Construction Management Plan;
- An Environmental Management Strategy; and
- Ongoing long-term connection and engagement with the local community.

8.8 Conclusion

The Paling Yards Wind Farm has been designed to provide a balance between environmental conservation and design, electricity generation and land use management. Through this assessment, it has been demonstrated that the Project will not result in significant impacts to environmental, cultural, social and economic values that are not capable of being managed through the implementation of mitigation plans, measures or strategies.

The Project is consistent with the objects of the EP&A Act and the principles of ESD. This report highlights how the Project sits within a policy framework that seeks to achieve increased production of renewable energy. The Project will assist in meeting local, state and federal climate change objectives and targets and will result in the reduction of greenhouse gas emissions through the generation of clean renewable energy.

The Project Area is a highly suitable location for a wind generating facility. It benefits from a reliable wind resource, is appropriately zoned, and can provide for appropriate mitigation measures where local environmental, heritage or amenity values have potential to be impacted.

The Paling Yards Wind Farm will deliver long-term economic, social and environmental benefits to the local area, the immediate region and the State of NSW. Renewable energy projects such as the Paling Yards Wind Farm Project drive essential and urgent emissions reductions, to the benefit of future generations.

Based on the above and the Project's ability to contribute to meeting the national and State commitments to transitioning to renewable energy generation and greenhouse gas emission reduction, the Project should be approved under the EP&A Act.

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