Neoen Australia Pty Ltd

April 2025

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Tchelery Wind Farm

Environmental Impact Statement



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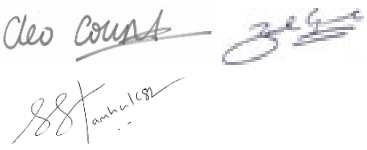
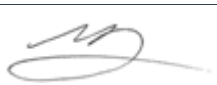
Tchelery Wind Farm
Environmental Impact Statement

Neoen Australia Pty Ltd

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WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Declaration

The project:	
Project name	Tchelery Wind Farm
Application numbers	SSD-59701722 EPBC 2023/09617
The land to which the infrastructure is to be carried out	46 Kerri East Road, Moulamein

Proponent:	
Name	Neoen Australia Pty Limited
Address	Level 21 570 George Street, Sydney, NSW, 2000

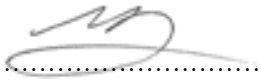
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Declaration:

The undersigned declares that this Environmental Impact Statement (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 of Planning, Housing and Infrastructure's (DPHI) State Significant Development Guideline – Preparing an Environmental Impact Statement (2024)
- contains 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
- contains an accurate summary of the detailed technical assessment of impacts of the project as a whole.

Signed: 

Date: 24/04/2025

Glossary

Aboriginal object	Defined in the *National Parks and Wildlife Act 1974* (NPW Act) as 'any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales (NSW), being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains'.
Aboriginal site	An Aboriginal object or Aboriginal place associated with past or contemporary Aboriginal occupation of NSW.
Aerodrome	A defined area on land or water (including any buildings, installations, and equipment) intended to be used either wholly or in part for the arrival, departure, and surface movement of aircraft.
Aeronautical Information Package (AIP)	Details of regulations, procedures, and other information pertinent to the operation of aircraft.
AHIMS	Aboriginal Heritage Information Management System – a database of known Aboriginal site records in NSW and a repository of Aboriginal heritage survey, assessment and investigation reports.
Alluvial	Sediments deposited by flowing water. Interchangeable with alluvium within this report.
Alluvium	A general term for unconsolidated deposits of inorganic materials (clay, silt, sand, gravel, boulders) deposited by flowing water. Interchangeable with alluvial within this report.
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Annual Exceedance Probability (AEP)	The probability that a design event (rainfall or flood) has of occurring in any 1-year period.
Applicant	The applicant for this State Significant Development (SSD) project seeking development consent is Neoen Australia Pty Limited (Neoen).
Aquifer	Rock or sediment in a formation, group of formations or part of a formation that is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs.
Archaeological site	A place or location with material traces or evidence of Aboriginal land use. The boundaries of an archaeological site may be defined by the spatial extent of visible Aboriginal objects, or direct evidence of their location; obvious physical boundaries where present; or identification by the Aboriginal community based on cultural information.
Artefact	Objects such as stone tools, and associated flaked material, spears, manuports, grindstones, discarded stone flakes, modified glass or shell demonstrating evidence of use of the area by Aboriginal people. Stone artefacts are the most common type of Aboriginal object and are usually the only remains left at the locations where Aboriginal people lived in the past.

Artefact scatter	A formerly used site type consisting of two or more stone artefacts situated in proximity to each other. Typically, this category did not include isolated finds. The use of the term 'scatter' was intended to be descriptive and did not infer the original human behaviour that formed the site. Now referred to as an 'artefact' site feature (see Artefact).
Asset Protection Zone (APZ)	A fuel-reduced area surrounding a built asset or structure which provides a buffer zone between a bushfire hazard and an asset. The APZ includes a defendable space within which firefighting operations can be carried out. The size of the required APZ varies with slope, vegetation and Forest Fire Danger Index.
A-weighting	A mathematical adjustment to the measured noise levels to represent the human response to sound. An A-weighted noise level is presented as dB(A) (A-weighted decibels).
Background noise	Background noise is the term used to describe the level of noise present in study area without contribution from the project. This is typically represented as the L_{90} noise level.
Beneficial use (category)	A general categorisation of groundwater uses based on water quality (salinity) and the absence of contaminants.
Bore	Artificially constructed or improved groundwater cavity used to access, measure or recharge water from an aquifer. Interchangeable with borehole, piezometer.
Brackish	Water with a salinity between 3,000 to 7,000 milligrams per litre (mg/L)
Burials	A traditional or contemporary (post-contact) burial of an Aboriginal person, that may occur outside designated cemeteries and may not be marked. Aboriginal ancestral remains are most frequently found in middens, sand dunes, lunettes, bordering dunes and other sandy or soft sedimentary soils.
Bushfire Attack Level (BAL)	A means of measuring the severity of a building's potential exposure to ember attack, radiant heat, and direct flame contact. The BAL is used as the basis for establishing the requirements for construction to improve protection of building elements and to articulate bushfire risk.
Candidate wind turbine generator (WTG)	Candidate WTG is used in the Operation noise impact assessment to indicate the ability of the project to comply with the Secretary's Environmental Assessment Requirements (SEARs). The candidate WTG is a contemporary make and model or a combination thereof which might be procured to serve the project at a future stage.
Catchment	The area drained by a stream or body of water or the area of land from which water is collected.
Civil Aviation Safety Regulations 1998	Contain the mandatory requirements in relation to airworthiness, operational, licensing, enforcement.
Clay	Deposit of particles with a diameter of less than 0.002 millimetres (mm), typically contains variable amounts of water within the mineral structure and exhibits high plasticity.

Construction footprint	The area that would be directly impacted by construction of the project, including (but not limited to) WTGs, access tracks, roads, switching stations, communications infrastructure, workforce accommodation camp, construction compounds and laydown and staging areas.
C-weighting	A mathematical adjustment to the measured noise levels to emphasise low frequency content. A C-weighted noise level is presented as dB(C) (C-weighted decibels).
Decibels (dB)	The logarithmic unit of measurement to define the magnitude of a fluctuating air pressure wave. Used as the unit for sound or noise level.
Detailed design	The stage of design where project elements are designed in detail, suitable for construction.
Development Application	A development application seeking consent for SSD under Division 4.7 of the *Environmental Planning and Assessment Act 1979 (*EP&A Act).
Draw-down	The change in groundwater level in a bore, or the change in water table elevation in an unconfined groundwater system, due to the extraction of groundwater.
Earthworks	All operations involved in loosening, excavating, placing, shaping, and compacting soil or rock.
Equivalent noise level	The A-weighted noise level which is equivalent to a noise level which varies over time.
Flood hazard	Potential loss of life, injury and economic loss cause by future flood events. The degree of hazard varies with the severity of flooding and is affected by flood behaviour (extent, depth, velocity, isolation, rate of rise of floodwaters, duration), topography and emergency management.
Floodplain	Area of land that is inundated by floods up to and including the probable maximum flood (PMF) event (ie flood prone land).
Formation	A general term used to describe a sequence of soil or rock layers.
Frequency	The repetition rate of a periodic vibration, per unit of time, determined by taking the reciprocal of the period (T). Frequency is expressed in three ways: Hz (how many cycles per second); Frequency is also the x-axis of the vibration spectrum.
Geomorphology	The geomorphology of watercourses and floodplains can be defined as the form that the landscape takes in response to long term dynamic interactions between catchment runoff processes, vegetation and underlying soils and geology. Sedimentation and erosion processes are the key catchment runoff processes that affect geomorphology.
Groundwater	Water found in the subsurface in the saturated zone below the water table or piezometric surface, ie the water table marks the upper surface of groundwater systems.
Groundwater dependent ecosystems (GDEs)	Groundwater dependent ecosystems (GDEs) are defined as ecosystems that require access to groundwater to meet all or some of their water requirements so as to maintain their communities of plants and animals, ecological processes and ecosystem services.
Groundwater resource	Groundwater available for beneficial use, including human usage, aquatic ecosystems, and the greater environment.

Hertz (Hz)	Vibration can occur over a range of frequencies extending from the very low, such as the rumble of thunder, up to the very high such as the crash of cymbals. The frequency of vibration and sound is measured in hertz (Hz). Once hertz is one cycle per second. Structural Vibration is generally measured over the frequency range from 1 Hz to 500 Hz (0.5 kHz).
Highly productive	Highly productive groundwater areas are characterised by bores having a yield rate of greater than 5 litres per second (L/s) and total dissolved solids (TDS) of less than 1,500 milligrams per litre (mg/L).
Hydrogeology	The study of the interrelationships of geological materials and processes with water, especially groundwater.
Hydrology	Term given to the study of the rainfall and runoff process, including surface and groundwater interaction; with particular focus on the evaluation of peak flows, flow volumes and the derivation of hydrographs for a range of floods.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
Isolated find	A formerly used site type defined as a single stone artefact, not located within a rock shelter, that occurs without any associated evidence of Aboriginal occupation. Isolated finds may represent single discard events, be constituent components of background scatter, or be indicative of a larger obscured, remnant or disturbed site. Now referred to as an 'artefact' site feature (see Artefact).
Local social locality	The area expected to experience direct impacts from the project. It includes landholders hosting project infrastructure and those adjacent to the project along Maude Road, as well as the Australian Bureau of Statistics (ABS) SA1 of Moulamein, Keri Keri, Booroorban and Hay.
Modified tree	Trees that show the marks of modification as a result of cutting of bark from the trunk for use in the production of shields, canoes, boomerangs, burial shrouds, for medicinal purposes, foot holds etc, or alternately intentional carving of the heartwood of the tree to form a permanent marker to indicate ceremonial use/significance of a nearby area. These carvings may also act as territorial or burial markers.
Monitoring bore	A bore used to monitor groundwater levels or quality.
National Airports Safeguarding Framework	The Framework has the objective of developing a consistent and effective national framework to safeguard both airports and communities from inappropriate on and off airport developments.
Operational footprint	The area that would be directly impacted by operation of the project, including (but not limited to) WTGs, access tracks, roads, switching stations and communications infrastructure.
Perched groundwater	Perched groundwater forms above a layer of lower permeability material within the unsaturated soil zone where the migration of percolating recharge is slowed to the extent that it saturates the porous material.
Planning for Bushfire Protection 2019	NSW Rural Fire Service publication effective from 1 March 2020 which is applicable to all new development on bushfire prone land in NSW.

Pollutant	Any measured concentration of solid or liquid matter that is not naturally present in the environment.
Potential archaeological deposit	An area where Aboriginal objects may occur below the ground surface.
Probable Maximum Flood (PMF)	The flood that occurs as a result of the probable maximum precipitation (PMP) on a study catchment. The PMF is the largest flood that could conceivably occur at a particular location, usually estimated from PMP coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land (ie the floodplain).
Project site	The area to which the development application applies. Located at 46 Kerri East Road, Moulamein and includes the lots and deposited plans described in Section 3.2 of the EIS.
Rating Background Level (RBL)	Defined by the NSW Environment Protection Authority as the median value of the (lower) tenth percentile of L_{90} ambient background noise levels for day, evening or night periods, measured over a number of days during the monitoring period.
Recharge	Groundwater recharge is a hydrologic process that involves the movement of water from the surface to the underground aquifers.
Regional social locality	The area expected to experience indirect or secondary benefits and/or impacts due to the project within a 100 kilometres buffer of the project. The regional social locality includes four LGAs across NSW and two in Victoria. The LGAs within NSW included are: Murray River, Edward River, Balranald and Hay. The two LGAs within Victoria include: Gannawarra and Swan Hill.
Regulated river	A regulated river is a river, stream or other watercourse, the flow of which is regulated by artificial structures such as dams, weirs, off-takes and storages. Releases are made to downstream users.
Renewable Energy Zone (REZ)	A geographic area with high-quality variable renewable energy resources (such as wind and solar), suitable topography and land use designations for development, and demonstrated interest from project developers.
Runoff	The amount of rainfall that ends up as streamflow, also known as rainfall excess.
Sensitive receivers	Land uses, landscape features, and activities that are sensitive to changes in the environment such as water quality and quantity, noise, vibration, air, and visual impacts. Sensitive receivers may include aquatic ecosystems, aquaculture areas, residential dwellings, schools, and recreation areas.
Shell	An accumulation or deposit of shellfish from beach, estuarine, lacustrine or riverine species resulting from Aboriginal gathering and consumption. Usually found in deposits previously referred to as shell middens. Must be found in association with other objects like stone tools, fish bones, charcoal, fireplaces/hearths, and burials. Would vary greatly in size and components.
Social locality	The geographical area where social impacts are likely to materialise. It includes the local and regional social localities.

Sound Power Level, Lw or SWL	The inherent noise of the source – this is the total power radiated by the source in decibels. Sound power level does not vary with distance from the noise source or within a different acoustic environment.
South West REZ	The South West REZ is a geographic area of around 27,842 square kilometres between Balranald to the west and Coleambally to the east and to Deniliquin in the south and Carrathool in the north, that will combine renewable energy generation, storage and high voltage transmission infrastructure to deliver energy to electricity consumers.
Standing water level	The height to which groundwater rises in a bore after it is drilled and completed, and after a period of pumping when levels return to natural atmospheric or confined pressure levels.
Stream order	A classification system that assigns an 'order' to watercourses according to the number of additional tributaries associated with each watercourse, to provide a measure of system complexity.
Study area	Describes the area investigated as part of this Environmental Impact Statement (EIS). References to study area varies according to the specific environmental issue under consideration (for example traffic, heritage and visual amenity) and is described within each relevant section of the EIS.
Survey area	Describes the area investigated during field surveys carried out as part of assessment of potential impacts of the project. References to survey area vary according to the specific environmental issue under consideration (for example biodiversity and Aboriginal heritage) and is described within each relevant section of the EIS.
Tchelery Homestead	Owned by host landholder (associated with the project).
Tchelery Woolshed	Owned by host landholder (associated with the project), uninhabited and regularly used for business purposes.
The project	The proposed Tchelery Wind Farm and associated infrastructure that would allow energy generation and storage and connection into Project EnergyConnect (NSW – Eastern Section) or the existing 220 kilovolt (kV) transmission line or similar electrical infrastructure. Fully constructed, the project would include up to 74 WTGs providing a total generation capacity of up to 577 megawatts (MW) and up to 350 MV Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh).
The applicant	Neoen Australia Pty Limited (Neoen)
The State	New South Wales (NSW)
Tonal noise	Noise containing a perceptible and objectively identified (using a recognised test) pitch component.
Unconfined	Where groundwater is in direct contact with the atmosphere through the open pore spaces of the overlying soil or rock.
Unregulated River	Unregulated rivers are rivers that are not controlled by releases from a dam or regulated via the use of weirs and gated structures (ie they are 'free flowing').

Water Access Licence (WAL)	A WAL for surface water is called an unregulated river access licence if the water is taken from an unregulated river, or a general security, high security or supplementary WAL if the water is taken from a regulated river. The type of licences defines the priority of the water access, such that a high security licence has first priority.
Water quality	Water quality refers to the chemical and physical quality of the water in all surface water features.
Water resource plan (WRP)	WRPs set rules on how much water can be taken from the Basin, ensuring that the sustainable diversion limit is not exceeded over time.
Water sharing plan (WSP)	WSPs are established under the *Water Management Act 2000* (WM Act) and are the primary tool for defining water-sharing arrangements in NSW. The plans establish rules for sharing water between water users and the environment, and rules for water trading.
Water supply work approval	Water supply work approvals are issued under the *Water Management Act 2000* (NSW), and allow the approval holder to construct and use a work that takes water from a river, lake or aquifer.
Water table	The surface in an unconfined aquifer or confining bed at which the pore water pressure is atmospheric; it can be measured by installing shallow wells extending a few feet into the zone of saturation and then measuring the water level in those wells.
Watercourse	Any flowing stream of water, whether natural or artificially regulated (not necessarily permanent).

Abbreviations

AAAA	Aerial Application Association of Australia
AAQ NEPM	National Environment Protection (Ambient Air Quality) Measure
ABS	Australian Bureau of Statistics
AC	Advisory Circular
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACMA	Australian Communications and Media Authority
ACT	Australian Capital Territory
AEMO	Australian Energy Market Operator
AEP	Annual Exceedance Probability
AFAC	Australasian Fire and Emergency Services Council
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHL	Aviation Hazard Lighting
AIP	NSW Aquifer Interference Policy 2012
AIS	Aviation Impact Statement
AMSL	Above Mean Sea Level
AQMS	Air Quality Monitoring Station
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASC	Australian Soil Classification
ASS	Acid Sulfate Soils
ASSMAC	Acid Sulfate Soil Management Advisory Committee
ATC	Air Traffic Controller
BAL	Basic Left Turn
BAM	Biodiversity Assessment Method
BAR	Basic Right Turn
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BGL	Below Ground Level
Biodiversity and Conservation SEPP	State Environmental Planning Policy (Biodiversity and Conservation SEPP) 2021

Biosecurity Act	*Biosecurity Act 2015*
BoM	Bureau of Meteorology
BRMP	Bushfire Risk Management Plan
BSAL	Biophysical Strategic Agricultural Land
BTEXN	Benzene, Toluene, Ethylbenzene, Xylenes and Naphthalene
BTOC	Below Top Of Casing
CASA	Civil Aviation Safety Authority
CBSS	Community Benefit Sharing Scheme
CEMP	Construction Environmental Management Plan
CEP	Community Engagement Plan
CGM	Conceptual Groundwater Model
CLM Act	*Contaminated Land Management Act 1997*
CNVG-R	Construction Noise and Vibration Guideline (Roads)
CNVMP	Construction Noise and Vibration Management Plan
CO_2	Carbon Dioxide
Conargo LEP	Conargo Local Environmental Plan 2013
CONCAWE	Conservation of Clean Air and Water in Europe
COP	Convention on Climate Change Conference of Parties
COP26	26th annual Convention on Climate Change Conference of Parties
COP27	27th annual Convention on Climate Change Conference of Parties
COP28	28th annual Convention on Climate Change Conference of Parties
CPHR	Conservation Programs, Heritage and Regulation
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CSP	Community Strategic Plan
CSSI	Critical State Significant Infrastructure
Cth	Commonwealth
Dangerous Goods Act	*Dangerous Goods (Road and Rail Transport) Act 2008*
DCCEEW (Cth)	Commonwealth Department of Climate Change, Energy, the Environment and Water (formerly Department of Agriculture, Water and the Environment)
DCCEEW (State)	NSW Department of Climate Change, Energy, the Environment and Water (State) (formerly Department of Planning and Environment)
DECC	Department of Environment and Climate Change
DITRDCA	Department of Infrastructure, Transport, Regional Development, Communications and the Arts

DoP	Department of Planning
DP	Deposited Plan
DPE	Department of Planning and Environment (formerly DPIE, now DPHI)
DPHI	Department of Planning, Housing and Infrastructure (DPHI) (formerly DPE)
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment (now DPHI)
EDC	Estimated Development Cost
EDM	Electronic Distance Measuring
EIA	Economic Impact Assessment
EIS	Environmental Impact Statement
EMF	Electric And Magnetic Field
EnergyCo	Energy Corporation of NSW
EP&A Act	*Environmental Planning and Assessment Act 1979*
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPHC	Environment Protection and Heritage Council
EPL	Environmental Protection Licence
ERSA	En Route Supplement Australia
ESD	Ecologically Sustainable Development
ESOO	Electricity Statement of Opportunities
EU	European Union
FCAS	Frequency Control Ancillary Services
FFDI	Forest Fire Danger Index
FHA	Final Hazard Analysis
FM	Frequency Modulation
FM Act	*Fisheries Management Act 1994*
FRNSW	Fire and Rescue NSW
FSI	Fatal and Serious Injury
FSS	Fire Safety Study
FTE	Full-Time Equivalent
GDE	Groundwater Dependent Ecosystem
GHG	Greenhouse Gas

GIS	Graphical Information System
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GVA	Gross Value-Added
GW	Gigawatts
GWh	Gigawatt Hours
ha	Hectares
HBT	Hollow Bearing Tree
HEVAE	High Ecological Value Aquatic Ecosystems
HIPAP	Hazardous Industry Planning Advisory Paper
HSU	Hydrostratigraphic Unit
HVAC	Heating, Ventilation, and Air Conditioning
IAQM	Institute of Air Quality Management
IBRA	Interim Biogeographic Regionalisation for Australia
ICNG	Interim Construction Noise Guideline
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICOMOS	International Council on Monuments and Sites
IEEE	Institute of Electrical and Electronics Engineers
IO	Input-output
ISP	Integrated System Plan
Km^2	Square kilometres
kV	Kilovolt
kWh	Kilowatt-hour
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LGC	Large-scale Generation Certificates
LIB	Lithium-Ion Battery
LLS	Local Land Services
LPG	Liquified Petroleum Gas
LRET	Large-Scale Renewable Energy Target
LSALT	Lowest Safe Altitude
LUCRA	Land Use Conflict Risk Assessment

LVIA	Landscape and Visual Impact Assessment
mAHD	metres Australian Height Datum
mBGL	metres Below Ground Level
MDB	Murray-Darling Basin
MDBA	Murray-Darling Basin Authority
mG	milliGauss
MLRA	Multi-Level Risk Assessment
MNES	Matters of National Environmental Significance
MOS	Manual of Standards
MSA	Minimum Sector Altitude
MVA	Megavolt amperes
MW	Megawatts
MWh	Megawatt-hours
NASF	National Airport Safeguarding Framework
Navin	Navin Officer Heritage Consultants
NCA	Noise Catchment Area
NEM	National Electricity Market
Neoen	Neoen Australia Pty Ltd
NEPC	National Environment Protection Council
NGIS	National Groundwater Information System
NHVR	National Heavy Vehicle Regulator
nm	Nautical Mile
NML	Noise Management Level
NOA	Naturally Occurring Asbestos
NOHC	Navin Officer Heritage Consultants
NPI	National Pollutant Inventory
NPW Act	*National Parks and Wildlife Act 1974*
NPWS	National Parks and Wildlife Service
NSW	New South Wales
NZALC	New Zealand and Australian Land Company Limited
O&M	Operation And Maintenance (Facility)
OCP	Organochlorine Pesticides
ODP	Optimal Development Path

OEH	Office of Environment and Heritage (now Heritage NSW)
OEMP	Operation Environmental Management Plan
OJD	Ovine Johne's disease
OOHW	Out of Hours Works
OPP	Organophosphorus Pesticides
OSOM	Oversize and Overmass
PAH	Polycyclic Aromatic Hydrocarbon
PASS	Potential Acid Sulfate Soils
PBP	Planning for Bushfire Protection 2019
PCB	Polychlorinated Biphenyls
PCT	Plant Community Type
PEA	Preliminary Environmental Assessment
PFAS	Per- and Polyfluoroalkyl Substances
pH	Unit Of Measurement for Acidity and Alkalinity
PHA	Preliminary Hazard Analysis
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
PMF	Probably Maximum Flood
PMST	Protected Matter Search Tool
POEO Act	*Protection of the Environment Operations Act 1997*
Primary Production SEPP	State Environmental Planning Policy (Primary Production) 2021
PURP	Place of Usual Residence
RAP	Registered Aboriginal Party
RCI	River Condition Index
REAP	Registered Environmental Assessment Practitioner
Resilience and Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RF Act	*Rural Fires Act 1997*
RF Regulation	Rural Fires Regulation 2022
RFS	Rural Fire Service
RNE	Register of National Estate
ROL	Road Occupancy Licence
SA	South Australia

SAII	Serious and Irreversible Impact
SCADA	Supervisory Control and Data Acquisition
SEARs	Secretary's Environmental Assessment Requirements
SEPPs	State Environmental Planning Policies
SHR	State Heritage Register
SIA	Social Impact Assessment
SSAL	State Significant Agricultural Land
SSD	State Significant Development
SSI	State Significant Infrastructure
SWMP	Soil and Water Management Plan
TDS	Total Dissolved Solids
TECs	Threatened Ecological Communities
TMP	Traffic Management Plan
Transport and Infrastructure SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
TRH	Total Recoverable Hydrocarbons
TSRs	Travelling Stock Reserves
ULP	Unleaded Petrol
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change
UXO	Unexploded Ordnance
VIZ	Visual Influence Zones
VRE	Variable Renewable Energy
Wakool LEP	Wakool Local Environment Plan 2013
WAL	Water Access Licence
WaQI	Water Quality Index
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
WM Act	*Water Management Act 2000* (NSW)
WMT	Wind Monitoring Towers
WTG	Wind Turbine Generator

Executive summary

Overview

Neoen propose to construct and operate the Tchelery Wind Farm (the project), a utility scale renewable energy development near Keri Keri in the Riverina Murray region of New South Wales (NSW). Fully constructed, the project would include up to 74 Wind Turbine Generators (WTGs) providing a total generation capacity of up to 577 megawatts (MW) and up to 350 MW Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh). The project would be connected into the National Electricity Market (NEM) through Project EnergyConnect (NSW – Eastern Section) or the existing 220 kilovolt (kV) transmission line (both of which run through the project site) or similar electricity network infrastructure.

Objectives of the project

The project supports the NSW Government's objectives to increase renewable energy generation, storage and investment in the South West Renewable Energy Zone (REZ) under the Electricity Infrastructure Roadmap (Department of Planning, Industry and Environment (DPIE), 2020a). More specifically the project aims to:

- provide a source of affordable, reliable power to NSW consumers and assist in reducing greenhouse gas (GHG) emissions
- make a positive contribution towards achieving both NSW and Commonwealth renewable energy targets
- make a positive contribution towards achieving the target of 2.5 gigawatts (GW) of renewable energy generation for the South West REZ
- contribute towards creating local and First Nations employment opportunities during construction and operation
- collaborate with members of the local community and other stakeholders to minimise environmental and social impacts
- construct and operate the project to high quality, safety and environmental standards
- construct and operate the project in an environmentally sustainable manner.

Project description

The key components of the project include:

- up to 74 WTGs with a generating capacity of up to 577 MW, with a maximum hub height of 170 metres and maximum tip height of 270 metres
- up to 350 MW BESS with up to 395 containers and a maximum energy storage capacity of 1,450 MWh
- permanent electrical infrastructure for connection directly into Project EnergyConnect (NSW – Eastern Section) or the existing 220 kV transmission line or similar electricity network infrastructure including:
  - one switchyard
  - three collector substations
  - underground 33 kV transmission lines connecting the WTGs to the collector substations
  - overhead 33 kV transmission lines connecting the WTGs to the collector substation
  - overhead and underground 330 kV transmission lines connecting the collector substations to the switchyard

- operation and maintenance facility
- fibre-optic communications lines between each WTG and the operation and maintenance facility
- internal access tracks from the site entrances to each WTG
- up to six meteorological masts
- ancillary works required to facilitate the construction of the project including construction workforce amenities, concrete batching plants, a laydown area, a construction compound, internal access tracks and a workforce accommodation camp.

Timing of construction

Construction of the project is expected to commence in early 2027, subject to relevant planning approvals. The project is estimated to take about three years to construct and it is anticipated that the project would be operational in early 2030.

The applicant

The project is being developed by and would be carried out by Neoen Australia Pty Limited (Neoen). Neoen is a specialist independent power producer with a long term vision to produce renewable, competitively priced energy, that is both sustainable and on a large scale. As of January 2025, Neoen has over 8.9 GW of solar, wind and storage capacity in operation or under construction globally, of which 4.36 GW is in Australia. Neoen has been operating in Australia since 2012 and is one of the largest renewable energy companies in the country.

Project need and benefits

The Australian Government is committed to coordinated global action to reduce GHG emissions in line with the Paris Agreement and has set targets to reduce emissions by 43 per cent below 2005 levels by 2030 and to net zero by 2050. Electricity generation is currently Australia's largest source of emissions, accounting for 33 per cent of Australia's total annual emissions (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2023d).

The NSW Government has also identified a need to facilitate the delivery of new generation infrastructure to replace the remaining four coal fired power stations that are scheduled to close within the next 15 years. Eraring power station is scheduled for closure in 2027, Bayswater and Vales Point B in 2033 and Mt Piper in 2040. Development of renewable energy infrastructure would replace the existing coal fired power generators as they are phased out and contribute to an electricity generation network with lower associated carbon emissions.

The project represents an investment in new large-scale renewable energy, with total generation capacity of about 577 MW and an up to 350 MW BESS with a usable energy storage capacity of up to about 1,450 MWh, providing a significant contribution to the volume of renewable energy needed to transition away from coal-fired power generation.

The project would be located in the South West REZ, an area identified by the NSW Government as strategically advantageous for energy generation, storage and transmission. Developing the project within the South West REZ provides local community benefits through strategic planning, best-practice engagement and formalised benefit sharing arrangements.

The project would also provide opportunities for local and regional investment including opportunities for local contractors, suppliers and businesses, increased employment opportunities, and contributions to a community benefit fund.

Statutory planning

The project meets the definition of State Significant Development (SSD) under Schedule 1, Clause 20 of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). Approval for the project is sought under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), that outlines the approval pathway for SSD.

The project is declared a controlled action and requires approval from the Commonwealth Minister for the Environment and Water (or its delegate) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project would be assessed under the NSW Assessment Bilateral Agreement under Part 9 of the EPBC Act, and the EPBC assessment requirements have been included in the Secretary's Environmental Assessment Requirements (SEARs) issued for the project.

This Environmental Impact Statement (EIS) has been prepared in accordance with the requirements of Section 4.39 of the EP&A Act and Part 8 Division 5 of the Environmental Planning and Assessment Regulation 2021. It has been prepared with regard to the 'State significant development guidelines – preparing an environmental impact statement' (DPIE, 2021b).

Consultation

Neoen understands that the success of the project depends to a large extent on the development of genuine, open and ongoing relationships with key stakeholders and members of the local community. Neoen recognise the importance of ensuring a 'no surprise' dynamic with the local community and are committed to developing and nurturing long term relationships between the Neoen team and the various project stakeholders.

A Community Engagement Plan (CEP) for the project has been developed in line with the International Association of Public Participation (IAP2) Public Participation Spectrum, the Undertaking Engagement Guidelines for State Significant Projects (Department of Planning, Housing and Infrastructure (DPHI), 2024c), the Community Participation Plan (DPHI, 2024d) and consultation requirements detailed in the NSW Wind Energy Visual Assessment Bulletin (Department of Planning and Environment (DPE), 2016).

A variety of engagement tools have been established for the project to seek input from the community and stakeholders, from a dedicated project phone number, email address and website to local media advertising, community information sessions and agency consultation. The feedback and suggestions received from the community and stakeholders have been considered in combination with engineering and environmental studies, to further refine the project and development of this EIS.

Key issues raised by the community and stakeholders include:

- environmental impacts including noise, visual, traffic and cumulative impacts within the South West REZ
- socio-economic impacts including community benefit-sharing, local employment and local supply chain.

Engagement for the project is further addressed in Chapter 5 (Engagement).

Assessment of impacts

Biodiversity

Potential impacts to biodiversity from the project were assessed in a Biodiversity Development Assessment Report (BDAR) prepared by WSP. The BDAR was prepared in accordance with the NSW Biodiversity Assessment Methodology (BAM) (DPIE, 2020d) and *Biodiversity Conservation Act 2016* (BC Act). Field surveys were carried out by WSP ecologists between June 2022 and February 2025.

Residual direct impacts of the project would impact:

- 602.83 hectares (ha) of Plant Community Types (PCTs) and habitat for various threatened fauna species
- 35.06 ha of three BC Act listed Threatened Ecological Communities (TECs) within the construction footprint, including the port to site haulage route
- 258.3 ha of habitat for seven candidate species credit species including *Brachyscome papillosa* (Mossgiel Daisy), *Eleocharis obicis* (Spike-rush), *Lepidium monoplocoides* (Winged Peppercress), *Litoria raniformis* (Southern Bell Frog), *Maireana cheelii* (Chariot Wheels), *Pilularia novae-hollandiae* (Austral Pillwort) and the *Swainsona murrayana* (Slender Darling Pea).

Where a significant residual impact has been identified, offsets are required to compensate for the residual impacts. Offset for threatened species and ecological communities have been determined in accordance with the NSW BAM and would be delivered in accordance with the NSW Biodiversity Offset Scheme. The Matters of National Environmental Significance (MNES) species which require species credits to offset residual impacts associated with the project include:

- flora
  - *Brachyscome papillosa,* Mossgiel Daisy
  - *Eleocharis obicis*, Spike Rush
  - *Lepidium monoplocoides*, Winged Pepper-cress
  - *Maireana cheelii*, Chariot Wheels
  - *Swainsona murrayana*, Slender Darling-pea
- fauna
  - *Litoria raniformis*, Southern Bell Frog.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a Threatened Ecological Community (TEC) under the EPBC Act. The project would impact on approximately 0.83 hectares of this TEC, marginally increasing fragmentation at the local scale and resulting in a small reduction in the extent of this TEC within the locality. However, given the small area of clearing required and the previously disturbed habitat present, the project is considered unlikely to have a residual significant impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Indirect impacts to biodiversity would include:

- inadvertent impact on adjacent habitat or vegetation
- reduced viability of adjacent habitat due to edge effects, noise dust or light spill
- transport of weeds, pests and pathogens from the site to adjacent vegetation
- increased risk of starvation, exposure, loss of shade or shelter, fire, collision with WTGs and transmission lines
- loss of breeding habitats
- trampling of threatened flora.

Prescribed impacts, those that may affect biodiversity values in addition to, or instead of, impacts from clearing vegetation, would include:

- impacts to human-made structures that are known to support populations of threatened entities
- connectivity of habitat for threatened species
- man-made waterbodies, water quality and hydrological processes
- WTG strikes on protected animals
- vehicle strikes on threatened species or animals that are part of a TEC.

Key mitigation measures to address potential biodiversity impacts from the project include:

- avoidance of threatened species and TECs through micro-siting and demarcation of 'no go areas'
- inclusion of measures to reduce biosecurity risk in the Construction Environmental Management Plan (CEMP)
- carrying out of pre-clearing surveys prior to construction
- ecology inductions for the construction workforce
- measures to ensure effective management during operation including rehabilitation of vegetation and management of vegetation offset requirements
- implementation of a species unexpected finds protocol
- measures to minimise impacts from WTG blade and vehicle strikes.

Biodiversity offsets would be required for impacts to PCTs, threatened species or populations. The offset obligation for the project has been calculated to require the following credits:

- 14,945 ecosystem credits within the Murrumbidgee subregion
- 28 ecosystem credits within the Inland slopes subregion
- 3 ecosystem credits within the Lower slopes subregion
- 11,815 species credits in the Murrumbidgee subregion.

A qualitative risk assessment was conducted as part of the Bird and Bat Adaptive Management Plan (BBAMP) to consider the risk from either collision with turbines or disturbance/avoidance from operating turbines. The risk assessment was based on two years of bird survey and flight height observations (447 Bird Utilisation Surveys (BUS) surveys) at repeated locations representative of WTG locations on the project site. The risk assessment identified three species as having a moderate risk rating including of *Falco cenchroides* (Nankeen Kestrel), *Falco berigora* (Brown Falcon) and *Circus assimilis* (Spotted Harrier). The remaining species assessed were determined to have a low risk rating. WTG 1, 7, 19, 30, 33 and 52 were identified as higher risk due to their proximity to woodland patches or scattered trees and will be prioritised for carcass searches.

Aboriginal heritage

The project site is located within the Deniliquin Local Aboriginal Land Council (LALC), and borders the Wamba Wamba, Balranald and Hay LALC areas. An Aboriginal Cultural Heritage Assessment (ACHA) report was prepared by Navin Officer Heritage Consultants (NOHC) to assess the potential impacts of the project on Aboriginal cultural heritage. The methodology adopted for assessment of Aboriginal cultural heritage values at the project site involved a desktop assessment including an Aboriginal Heritage Information Management System (AHIMS) search, ongoing consultation, field surveys, and development of an archaeological sensitivity predictive model. Representatives of Deniliquin LALC, Wakool Indigenous Corporation, Yarkuwa Indigenous Knowledge and Barrap Wamba attended the field surveys.

A total of 73 new Aboriginal sites, including 12 areas of potential archaeological deposit (PAD), were recorded at the project site. Of the 89 previously known and newly identified Aboriginal sites:

- 66 would not be impacted by the project at all
- seven sites have potential to be impacted if not properly managed through implementation of mitigation measures
- 13 sites would be directly impacted by the project and three sites would be partially impacted.

Proposed key mitigation measures to mitigate impacts to the identified Aboriginal sites include:

- all portions of artefact scatters and isolated finds that are to be directly impacted require surface collection and salvage prior to construction commencement in those areas
- retrieved archaeological materials will be stored in appropriate, secure facilities confirmed in consultation with the relevant Aboriginal stakeholders. The strategy for the long term conservation of salvaged or collected Aboriginal objects will be determined in consultation with the Registered Aboriginal Parties (RAPs)
- Aboriginal heritage exclusion zones will be established to protect sites, including known features/items of significance that have been identified to remain in situ throughout construction
- Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the RAPs prior to the commencement of construction at each location. Suitable controls include temporary site fencing and, where required, sediment control. Fencing will consist of high visibility construction style machine proof fencing that is not able to be removed or altered during all works. Signage will be included to indicate no-go areas.

Historic heritage

A Historic Heritage Assessment was prepared by NOHC to assess potential impacts to historic heritage at the project site. The historic heritage study area is associated with the pastoral history of the Riverina region and the former Travelling Stock Routes and Reserves (TSRs). Methodology adopted for this assessment involved a desktop assessment and a site investigation.

It was determined that the project would directly impact on a pastoral landscape associated with early pastoral practices and TSRs in the Riverina region. However, the project would not directly or indirectly impact on any known items or places of historic heritage significance at the project site.

Mitigation measures are proposed to mitigate impacts to historic heritage during ground disturbance and in the event historical archaeological relics not assessed or anticipated are found.

Land

The project site is zoned RU1 – Primary Production. Potential impacts to agriculture were assessed in an Agricultural Impact Assessment prepared by Tremain Ivey Advisory. The methodology adopted for the assessment involved a desktop assessment, consultation with landholders and a site investigation. The assessment determined magnitude of impacts of the project on agriculture would be small considering the following:

- a relatively small amount of agricultural land would be permanently removed from production compared to the total project site and the total regional agricultural land
- grazing would continue on most of the project site during operation
- a lack of impact on irrigated cropping land
- low relative biosecurity risk (through implementation of mitigation measures) and agricultural productivity at the project site
- minimal predicted cumulative impacts
- effective proposed mitigation measures.

The project would also have a negligible impact on agricultural support services, processing and value adding industries.

Landscape character and visual amenity

A Landscape and Visual Impact Assessment (LVIA) was prepared by Iris to determine potential impacts of the project on landscape character and visual amenity. During development of the project design, consultation was completed with the community by both Neoen and Iris. During consultation, no particular landscape features or vantage points were identified by the local community for further consideration.

The LVIA was completed in accordance with the NSW Wind Energy: Visual Assessment Bulletin (the Bulletin) (DPE, 2016) and considered potential impacts to sensitive receivers within eight kilometres of the outermost WTGs. This assessment identified four dwellings within eight kilometres of the WTGs, of which only one was determined to require mitigation measures.

An assessment of potential shadow flicker impacts was prepared by WSP. This assessment determined no receivers would be impacted by shadow flicker.

Key mitigation measures proposed to mitigate potential impacts to landscape character and visual amenity include:

- screening vegetation will be offered to Dwelling 3 (Everslee) at 4026 Maude Rd, , Moulamein to supplement the existing intervening vegetation
- lighting at temporary construction compounds and the temporary workforce accommodation camp will be designed and operated in accordance with Australian and New Zealand Standard AS/NZ 4282:2023 Control of the obtrusive effects of outdoor lighting
- any operational lighting at the BESS will be designed in accordance with the Australian and New Zealand Standard AS/NZ 4282:2023 Control of the obtrusive effects of outdoor lighting, be minimised and use sensors where practicable to minimise light spill and skyglow.

Social

A Social Impact Assessment (SIA) was prepared by WSP to assess potential social impacts from construction and operation of the project and develop mitigation measures to address these impacts. The key findings from the SIA include:

- the local social locality comprises a population of 1,037 people, and the regional social locality comprises a population of 58,482 people (with Swan Hill comprising the highest population (21,403) followed by the Murray River Local Government Area (LGA) (12,850))
- major regional urban centres such as Swan Hill, Balranald, Deniliquin, Hay and Berrigan serve as hubs for education, health, and shopping for surrounding communities
- agriculture dominates the local economy, shaping the community's identity, with residents valuing their pastoral heritage, farming lifestyle, and natural surroundings, while also actively engaging in volunteering activities
- potential benefits expected to result during the project construction and operation include improvements to socio-economic conditions from the benefit sharing program and improvements to the local economy from increased income and employment opportunities
- potential negative impacts during construction include:
  - medium unmitigated impact to community cohesion, sense of safety, capacity of health, food, short term accommodation, social services and local workforces
  - high unmitigated impact to the capacity of health, food, short term accommodation and social services due to increased project workforce
  - low unmitigated impact on emergency services
  - host landholders and adjacent properties may experience a low unmitigated impact to their agricultural income due to interruption of agricultural activities
- during operation a high unmitigated impact of diminished sense of place and aesthetics due to changes to landscape and environmental values are for host landholders and adjacent properties.

Mitigation measures proposed to manage social impacts during construction and operation include continued implementation of the CEP as well as preparation and implementation of an Accommodation and Employment Strategy, an Emergency Response Strategy, an Australian Industry Participation Plan (AIPP), a complaints management system, and a benefit sharing program. These management plans would be prepared in consultation with relevant stakeholders. Mitigation measures proposed for social impact would maximise the project benefits and reduce all impacts to Low, with the exception of diminished sense of place and aesthetics values due to changes to landscape during operations that would result in a Medium residual impact.

Economic

An Economic Impact Assessment was prepared by WSP to determine potential impacts of the project on local and regional economies, and provided mitigation measures to address these impacts, where relevant.

The project would contribute to the local, regional and State economy through gross-value added (GVA) and full-time equivalent (FTE) employees during the development, construction, operation and decommissioning stages. The economic study area consists of six LGAs, namely Balranald, Hay, Murray River and Edward River in NSW and Gannawarra and Swan Hill in Victoria. Additionally, Neoen has committed to a benefit sharing program that would operate for the lifespan of the project.

During development the project would support:

- $520,000 in GVA in the economic study area and $11.01 million in GVA to NSW
- up to 0.63 FTE employees per year in the economic study area and up to 11.75 FTE employees per year in NSW.

During construction the project would support:

- $65.60 million in GVA in the economic study area and $521.14 million in GVA to NSW
- up to 134.30 FTE employees per year from the economic study area and up to 984.31 FTE employees per year from NSW.

During operation the project would support:

- $133.62 million in GVA to the economic study area and $283.33 million in GVA to NSW
- up to 29.98 FTE employees per year in the economic study area and up to 49.14 FTE employees per year in NSW.

During decommissioning the project would support:

- $13.23 million in GVA to the economic study area and $77.71 million in GVA to NSW
- up to 34.13 FTE employees per year in the economic study area and up to 163.46 FTE employees per year in NSW.

Hydrology, flooding and water

A Hydrology, Flooding and Water Impact Assessment was prepared by WSP to determine potential impacts to the geomorphology, water quality, water quantity and flooding from construction and operation of the project.

Potential impacts relevant to hydrology, flooding and water from construction and operation of the project include minor changes to local overland flow paths and local flood behaviour. Impacts to water quality and water quantity are expected to be negligible during construction and operation.

Key measures proposed to avoid, manage and/or mitigate impacts to hydrology, flooding and water include:

- water supply options and management will be carried out with agreements between landholder and the contractor
- preparation of a Soil and water management sub-plan (SWMP) as part of the CEMP
- spoil stockpiles will be located away from areas subject to flooding
- construction infrastructure will be located as far as practicable away from areas subject to flooding
- flood emergency management mitigation measures will be prepared and incorporated into safety documentation
- works will be designed to minimise flood impacts to watercourses in the area.

Air quality and greenhouse gases

Potential impacts to air quality from generation of dust and emission of GHGs were assessed by WSP through a desktop assessment. Five sensitive receivers were identified based on the existing environment at the project site, including topography, climate and weather conditions and ambient air quality.

During construction and operation of the project, local air quality at the project site may be temporarily impacted by dust and emission of GHG from the following activities:

- earthworks
- stockpile management
- concrete batching plants
- access track construction
- vegetation clearing
- maintenance and use of vehicles, plant and equipment.

Following implementation of proposed mitigation measures, the project is anticipated to result in a low to negligible impact on air quality.

Noise and vibration

Noise and vibration were assessed through a Construction Noise and Vibration Impact Assessment (NVIA) prepared by WSP, and an Operation Noise Impact Assessment prepared by Echo Acoustics. Assessment of potential noise and vibration impacts was carried out in accordance with the Wind Energy: Noise Assessment Bulletin (DPE and Environment Protection Authority (EPA), 2016). The Construction NVIA was based on the predicted worst case scenario where all construction activities are occurring simultaneously anywhere within the project site.

The outcomes of the Construction NVIA are as follows:

- a minor exceedance of noise management levels is predicted at one sensitive receiver during out of hours work
- no vibration or road traffic noise impacts are predicted from construction of the project.

The Operation Noise Impact Assessment determined the predicted operational noise levels of WTGs are less than or equal to the base equivalent noise level (35 A-weighted decibels (dBA) at all non-associated (those without agreements with the project) sensitive receivers. Noise criteria related to the operational noise of the BESS and ancillary infrastructure is expected to be achieved at all sensitive receivers.

The Construction NVIA determined there is potential for cumulative noise impacts at one sensitive receiver from construction timeline overlap with Baldon Wind Farm that will be mitigated through the measures outlined.

Traffic and access

A Transport Impact Assessment (TIA) was prepared by WSP to assess potential impacts to traffic and access during construction and operation of the project. The traffic and access study area included transport networks that may be impacted by construction movements to and from the project site, in addition to movements from Port of Newcastle and Port of Adelaide, or by the operation of the project. Key roads in the traffic and access study area include the Sturt Highway, the Cobb Highway, Maude Road, Swan Hill Road, Booroorban-Tchelery Road, Dry Lake Road, Kerri East Road and Baldon Road.

The outcomes of the TIA include:

- construction and operation of the project would have a minimal impact on the capacity and efficiency of the road network, intersections and rail crossings
- all construction routes in the traffic and access study area and the intersections at Sturt Highway and Maude road, and Maude Road and Booroorban-Tchelery Road would continue to operate the same level of service as they under existing conditions
- access intersections would meet all relevant requirements and do not require upgrade
- stringing of transmission lines across roads would require localised, short term road closures
- impacts of heavy vehicle movements on road condition during construction and operation are anticipated to be minor and would depend on existing conditions
- modifications are required at pinch points along the Port of Newcastle to project site route prior to construction
- during construction the impact of driver fatigue to road safety is considered moderate
- impact of other key aspects of road safety including road network capacity, project access points, road conditions, and oversize and overmass (OSOM) haulage are considered to be low during construction and operation.

Hazards and risk

Aviation

An Aviation Impact Assessment was prepared by Aviation Projects to assess potential impacts to aviation safety. The Aviation Impact Assessment determined the grid and air route lowest safe altitude would need to be raised to 2,200 feet (ft). The project is not anticipated to impact upon nearby aerodromes, controlled or designated airspace, aviation facilities, aviation communication systems, or air traffic control radar installation.

A qualitative risk assessment was completed to assess the need for obstacle lighting that determined identified risks as tolerable and acceptable without obstacle lighting. The Aviation Impact Assessment would be provided to Civil Aviation Safety Association and Airservices Australia for review and comment.

Bushfire

A Bushfire Risk Assessment was prepared by Blackash Bushfire Consulting to assess the risk associated with bushfire relevant to construction and operation of the project. The Bushfire risk assessment determined that while there is possibility of bushfire behaviour occurring at the project site during operation, the risk to life and project infrastructure can be mitigated through good project planning requirements and ongoing emergency management planning.

Key mitigation measures include preparation of Bushfire Emergency Management and Evacuation Plan.

Electric and magnetic fields

An Electric and magnetic fields assessment was prepared by Middleton Group Engineering. Electric and magnetic fields (EMFs) are part of the natural environment with electric fields present in the atmosphere in ionospheric currents, thunderstorms and lightning while static magnetic fields are created by the earth's core. EMF is also produced wherever electricity or electrical equipment is in use. Parts of the project site contain existing transmission lines (one 220 kV transmission line running on north south direction and 330 kV Project EnergyConnect transmission line running west to east that is under construction).

EMF is not expected to be an issue during construction as the WTGs and ancillary structure would not be energised. During commissioning and operation, electric field strength from 33 kV transmission line and aboveground 330 kV transmission line would be within the permissible limits.

Telecommunications

A Telecommunications Impact Assessment was prepared by Middleton Group Engineering. Telecommunications systems used for radio, radar, broadcast, television, mobile networks as well as mobile and fixed radio transmission sites transmit electromagnetic signals (radio waves). These work best when there is a clear, unobstructed sight along the path from the transmitter to the receiver. WTGs have the potential to impact on point-to-point Australian Communications and Media Authority (ACMA) communication links through near field effects, reflection or scattering effects or diffraction.

There are no communication links found transversing the project site. Additionally, no communication site registered with ACMA is detected within the project site. The project has been designed, located and sited to avoid, or minimise and mitigate telecommunications impact to the pre-existing television, radar and radio transmission. Stakeholder correspondences are being collated regarding impact on their services and any final assessment should be performed with consideration of stakeholder feedback.

State Environmental Planning Policy (Resilience and Hazards) 2021

State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP), a preliminary risk screening of a proposed development is required to determine the need for a Preliminary Hazard Analysis (PHA). A PHA was prepared by Umwelt. The storage, handling and use of dangerous goods and hazardous substances would be carried out in accordance with the NSW *Work Health and Safety Act 2011*, relevant Australian Standards and mitigation measures developed for the project. As such, potential for impacts to construction workers and the environment is considered to be low. The risk of potential toxic impacts to first responders can be limited by limiting the quantity of lithium-ion battery (LIB) cells involved in a thermal incident and selecting an appropriate location for the LIB BESS with first responder access and egress to the LIB BESS from alternate directions.

Blade throw

Blade throw was assessed as part of the PHA prepared by Umwelt. The assessment considered blade drop/fragmentation impact on the BESS, blade drop/fragmentation impact on transmission lines and blade drop/fragmentation impact on adjoining land users. Based on the separation distances from the WTGs to the BESS, transmission lines and the project site boundary, the consequence of blade drop and or tower collapse do not require further evaluation in terms of land use risk impacts. The final design and equipment selection for the project will be subject to a Final Hazard Analysis (FHA).

Soils and contamination

A Soil and Contamination Impact Assessment was prepared by WSP to determine potential impacts of the project associated with soil and contamination. The assessment considered both potential impacts to the project from existing sources of contamination, as well as potential contamination impacts to the soil and water as a result of construction and operation of the project.

The soil and contamination impact assessment identified the project site does not appear to be affected by broad-scale contamination. Potential sources of contamination identified at the project site include existing transmission infrastructure, residential properties, cleared agricultural land, farm dams, Tchelery Woolshed and a potential quarry. Of these locations the Tchelery Woolshed and the potential quarry were assessed to have low/medium risk, with all other areas assessed as low risk for contamination. However, following the implementation of recommended mitigation measures, it is anticipated that the identified medium risk rankings would ultimately present a low risk of exposure and would be effectively managed through controls in place in the CEMP and unexpected finds protocol.

Key mitigation measures to mitigate potential impacts associated with soil and contamination include:

- disturbance to areas of medium risk (Tchelery Woolshed and potential quarry) of contamination will be avoided or minimised where practicable during construction. This includes the position of WTG foundations and 33 kV underground transmission line. Where disturbance cannot be avoided, further investigations will be carried out in accordance with National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013

- the discovery of previously unidentified contaminated material will be managed in accordance with a contamination unexpected finds protocol
- all chemicals, fuels or other hazardous substances will be stored in accordance with the supplier's instructions and relevant legislation, Australian Standards and applicable guidelines. The location of the bunded enclosure/s will be shown on site plans.

Groundwater

A Groundwater Impact Assessment was prepared by WSP to assess potential impacts to groundwater. The assessment determined the project would have minimal impact on the underlying groundwater environment. Further, potential impacts would be short term, localised and limited to areas with a shallow water table or perched system.

Key mitigation measures to mitigate potential impacts to groundwater include:

- in the event that groundwater is encountered during excavations, any dewatering volumes will be recorded and managed in accordance with the *Water Management Act 2000*
- emergency spill procedures will be implemented to avoid and manage accidental spillages of fuels, chemicals or fluids during operation and maintenance activities in accordance with the Neoen Health, Safety and Environment Guideline. Environmental spill kits will be provided at strategic, accessible locations, and staff will be trained in spill response procedures
- all chemicals or other hazardous substances at the substation will be stored in bunded and weatherproof facilities away from drainage lines, and in accordance with supplier's instructions and relevant legislation, Australian Standards and applicable guidelines.

Waste management and resource use

Potential impacts from waste management and resource use from the project were assessed by WSP through a desktop assessment. The anticipated waste streams from construction and operation of the project include:

- vegetation waste
- excess spoil
- contaminated soil or spoil
- general construction waste such as cut-offs, packaging and excess construction material (ie concrete, timber, plastic and metal)
- waste oils, grease and lubricants
- wastewater
- domestic waste including food scraps, glass and plastic bottles, paper and plastic containers.

Waste produced from the project will be assessed, classified, managed and disposed of in accordance with the Waste Classification Guidelines (EPA, 2014b).

Key materials and resources required for the project include soil, water and wastewater, electricity, gravel, sand, metal and chemicals including bitumen cement, concrete, diesel fuels, gases, herbicides, oils, greases and lubricants, paints and epoxies. While the project would result in some increased demand on local and regional resources, it would be unlikely that the project alone would result in any resource becoming scarce or in short supply.

Cumulative impacts

Potential cumulative impacts were assessed by WSP in accordance with the Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2022a). The assessment considered incremental impacts, combined incremental impacts, issue-specific cumulative impacts and combined cumulative impacts. Incremental impacts are assessed within chapters 7 to 21.

Combined incremental impacts consider the combined effect of the identified incremental impacts on a sensitive receiver or area. Potential combined incremental impacts include:

- noise and visual impacts may be experienced by Sensitive receiver 3 (Everslee), that is associated with the project, during construction. This receiver may also experience lighting impacts during operation
- positive and negative social and economic impacts may be experienced by local communities and residents during construction and operation
- there is potential for minor cumulative impacts associated with groundwater and contamination
- landholders within and nearby to the project site may experience cumulative impacts from loss of agricultural land and changes to aerial application operations.

Issue-specific cumulative impacts include impacts on a relevant matter, such as biodiversity, that may result from simultaneous construction or operation of the project and other nearby relevant future projects. Key potential issue-specific cumulative impacts include:

- negative and positive social and economic cumulative impacts such as changes to social cohesion and decreased sense of safety as well as improvements to local and regional economies
- minor cumulative impacts to wildlife connectivity, habitat corridors, and bird and bat impacts
- minor cumulative impacts related to sourcing materials, labour and accommodation
- minor cumulative construction noise impacts at Sensitive receiver 1 (Tchelery Homestead) that is associated with the project.

Combined cumulative impact assessment considered the combined effect of different issue-specific cumulative impacts of the project and other relevant future projects on a sensitive receiver or area. Local communities and road users may experience cumulative traffic and land use impacts such as increased presence of heavy and OSOM vehicles and reduced agricultural land. Additionally, as other relevant future projects, in particular wind farms, become operational local communities, and road users would likely experience cumulative impacts associated with changes to land use and landscape character. Local communities and residents within Edward River, Hay, Balranald and Murray River LGA in NSW, and Gannawarra and Swan Hill LGAs in Victoria have potential to experience cumulative social and economic impacts. Potential positive impacts include increased employment opportunities and improvement in local economies through implementation of benefit sharing programs. Potential negative social and economic cumulative impacts include changes to community cohesion, reduced sense of safety and reduced availability of services such as healthcare. The project is not anticipated to contribute to contribute to potential cumulative impacts associated with accommodation of construction workforces, as the project would have a workforce accommodation camp.

Potential cumulative impacts are anticipated to be appropriately mitigated through effective implementation of mitigation measures within chapters 7 to 21 and cumulative mitigation measures in Chapter 22 (Cumulative impacts).

Part A – Background and project information

1 Introduction

This chapter provides an overview and background to the proposed Tchelery Wind Farm project (the project). This chapter provides a summary of the project details, outlines the proposed infrastructure and the purpose and structure of this Environmental Impact Statement (EIS).

1.1 The applicant

The project is being developed by and would be carried out by Neoen Australia Pty Ltd (Neoen).

Founded in 2008, Neoen is a specialist independent power producer with a long-term vision to produce renewable, competitively priced energy, that is both sustainable and on a large scale. As at January 2025, Neoen has over 8.9 gigawatts (GW) of solar, wind and storage capacity in operation or under construction globally, of which 4.36 GW is in Australia. Neoen has been operating in Australia since 2012 and is one of the largest renewable energy companies in the country.

Table 1.1 Applicant details

Item	Detail
Company name	Neoen Australia Pty Ltd (Neoen)
Address	Level 21, 570 George Street, Sydney, NSW 2000, Australia
ABN	57 160 905 706

1.2 Project overview

1.2.1 Tchelery Wind Farm

Neoen propose to construct and operate the Tchelery Wind Farm, a utility scale renewable energy development near Keri Keri in the Riverina Murray region of NSW. The project site is located at 46 Kerri East Road, Moulamein, within Edward River Local Government Area (LGA). The project site is approximately 790 kilometres (by road) west of Sydney, 35 kilometres (by road) east of Keri Keri, and 79 kilometres (by road) east of Balranald. The project site is traversed by Maude Road (north-south) and Boorooban-Tchelery Road (east-west) and south of the Sturt Highway. Existing land uses of the project site and surrounds are predominately livestock grazing and some areas of cropping.

Fully constructed, the project would include up to 74 wind turbines providing a total generation capacity of up to 577 megawatts (MW) and up to 350 MW Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh). The project would be connected into the National Electricity Market (NEM) through Project EnergyConnect (NSW – Eastern Section) or the existing 220 kilovolt (kV) transmission line (both of which run through the project site) or similar electricity network infrastructure.

The project was unsuccessful in the NSW Roadmap – South West Renewable Energy Zone Access Rights Tender Round 5, the result of which was announced on 23 April 2025. In the event additional capacity on Project EnergyConnect or similar electricity network infrastructure is released in future, then the project retains this as a potential alternative connection option.

The Wind Turbine Generator (WTG) and BESS technologies for the project are yet to be identified and would be confirmed during the detailed design phase. The WTG MW rating is subject to change based on technological advancements The WTG would have a hub height of up to 170 metres and tip height of up to 270 metres. The project's estimated development cost (EDC) is approximately AUD 1.59 billion.

It is expected that construction of the project would commence in early 2027 and take approximately three years to complete. It is anticipated that the project would be operational in early 2030.

1.2.2 Project objectives

The project would deliver a total generation capacity of up to 577 MW and a BESS with a maximum energy storage capacity of 1,450 MWh. The project supports the NSW Government's objectives to increase renewable energy generation, storage and investment in the South West Renewable Energy Zone (REZ) under the Electricity Infrastructure Roadmap (Department of Planning, Industry and Environment (DPIE), 2020a).

The core objectives of the project include to:

- provide a source of affordable, reliable power to NSW consumers and assist in reducing greenhouse gas (GHG) emissions
- make a positive contribution towards achieving both NSW and Commonwealth renewable energy targets
- make a positive contribution towards achieving the target of 2.5 GW of renewable energy generation for the South West REZ
- contribute towards creating local and First Nations employment opportunities during construction and operation
- collaborate with members of the local community and other stakeholders to minimise environmental and social impacts
- construct and operate the project to high quality, safety and environmental standards
- construct and operate the project in an environmentally sustainable manner.

The project would provide long term, strategic benefits to NSW, including:

- an EDC of approximately 1.59 billion AUD
- supporting around 134 full-time equivalent (FTE) employees per year from the economic study area and around 984 FTE employees per year from NSW during the three-year construction phase
- supporting around 30 FTE employees per year from the economic study area and around 49 FTE employees per year from NSW over the 30-year operational phase
- providing revenue certainty to host landowners and neighbouring property owners through rent and financial contributions, resulting in further financial contributions to the local community
- contributing towards local council and community projects and initiatives through the implementation of proposed Community Benefit Sharing Scheme.



Tchelery Wind Farm

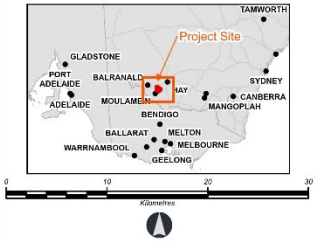
Figure 1.1
Regional context

Legend

- Project site
- Local government area boundaries
- Existing 220 kV transmission line and proposed Project Energy Connect - eastern section

Context

- Existing road
- Watercourse



Coordinate system: GDA 1994 MGA Zone 55

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1.3 Background

The project would provide a significant contribution to Australia's transition to renewable energy and contribute to NSW's objective to halve its emissions by 2030 (Office of Environment and Heritage (OEH), 2016).

The project site was selected due to the high natural wind resource availability, creating the ideal location for new infrastructure for wind turbines. The project site is suitable for use as a wind farm since it is within the boundaries of the South West REZ and its proximity to Project EnergyConnect to enable connection to the NEM. The project site is easily accessible with access to the Sturt Highway (A20) directly to the north and the project is compatible with other land uses likely to occur within the South West REZ.

Neoen considered several alternatives to developing the wind farm. However, other alternatives considered were not chosen due to several factors including topography and proximity to existing or proposed transmission lines. The project site provides an area where potential impacts can be minimised through specialist assessment and design refinements to improve outcomes for local, regional and national communities.

1.3.1 Key strategies to avoid, minimise or offset impacts

The preliminary site layout and number of WTGs proposed are based the outcomes of a preliminary constraints assessment that was completed in 2021. The key environmental constraints identified included:

- biodiversity including threatened ecological communities, areas of high abundance of hollow bearing trees, raptor nests, candidate species habitat, riparian and wetland areas, bird strike and ecological connectivity
- areas of inundation and riparian corridors
- Aboriginal heritage including areas of high archaeological potential and known sites
- the nearby Yanga State Conservation Area, including potential impacts to cultural heritage.

The project site layout has been refined during the specialist impact assessments prepared for this EIS that identified further opportunities to refine the design in response to identified values and constraints, as well as strategies to mitigate potential impacts on these.

1.4 Related development

In addition to this State Significant Development (SSD) application, Neoen have sought development consent for two 185 metre high meteorological masts (met masts) within the project site. The development application (PAN-371313) was approved by the Edward River Council on 05 February 2024.

The project is located within the South West REZ and adjacent to the Project EnergyConnect transmission line easement. The project would likely connect to the existing Project EnergyConnect or the existing 220 kV transmission line or similar electricity network infrastructure.

The project is located on land zoned RU1 Primary Production under the Wakool Local Environmental Plan (LEP) 2013 and Conargo LEP 2013. Land use within the project site is primarily dominated by agricultural activities, including livestock grazing and small areas of irrigated agriculture. These developments are considered complementary to the project and continuing uses related to the project site are discussed further in Chapter 10 (Land).

1.5 Structure of the EIS

The structure and content of this EIS is as follows:

- Chapter 1 – Introduction: outlines the background and need for the project
- Chapter 2 – Strategic context: presents the strategic context of the project site and project within the current policy environment
- Chapter 3 – Project description: provides an outline of the key features of the project
- Chapter 4 – Statutory context: provides an overview of the relevant statutory approvals framework for the project, including applicable legislation and planning policies
- Chapter 5 – Engagement: provides an overview of the stakeholder engagement and consultation activities that have occurred and are proposed
- Chapter 6 – Approach to assessment of impacts: summary of proposed assessment for each environmental issue
- Chapter 7 – Biodiversity
- Chapter 8 – Aboriginal heritage
- Chapter 9 – Historic heritage
- Chapter 10 – Land
- Chapter 11 – Landscape character and visual amenity
- Chapter 12 – Social
- Chapter 13 – Economic
- Chapter 14 – Hydrology, flooding and water
- Chapter 15 – Air quality and greenhouse gases
- Chapter 16 – Noise and vibration
- Chapter 17 – Traffic and access
- Chapter 18 – Hazards and risk
- Chapter 19 – Soils and contamination
- Chapter 20 – Groundwater
- Chapter 21 – Waste management and resource use
- Chapter 22 – Cumulative impacts
- Chapter 23 – Justification and conclusion: outlines the justification for the project and key conclusions of this EIS
- Chapter 24 – References: identifies the key reports and documents used to generate this EIS.

Appendices to this report include:

- Appendix A – Secretary's Environmental Assessment Requirements (SEARs) compliance table
- Appendix B – Statutory compliance
- Appendix C – Construction Environmental Management Plan (CEMP) Outline
- Appendix D – Community Engagement Plan
- Appendix E – First Nations Engagement Plan
- Appendix F – Mitigation measures.

Technical papers include:

- Technical paper 1 (Biodiversity development assessment report)
- Technical paper 2 (Aboriginal cultural heritage assessment)
- Technical paper 3 (Historic heritage assessment)
- Technical paper 4 (Agricultural impact assessment)
- Technical paper 5A (Landscape and visual impact assessment)
- Technical Paper 5B (Shadow flicker assessment)
- Technical paper 6 (Social impact assessment)
- Technical paper 7 (Economic impact assessment)
- Technical paper 8 (Hydrology, flooding and water impact assessment)
- Technical paper 9A (Construction noise and vibration impact assessment)
- Technical paper 9B (Operation noise impact assessment)
- Technical paper 10 (Transport impact assessment)
- Technical paper 11 (Aviation impact assessment)
- Technical paper 12 (Bushfire risk assessment)
- Technical paper 13A (Telecommunications impact assessment)
- Technical paper 13B (Electric and magnetic fields assessment)
- Technical paper 14 (Preliminary hazards analysis)
- Technical paper 15 (Soils and contamination impact assessment)
- Technical paper 16 (Groundwater impact assessment)
- Technical paper 17 (Port to site due diligence archaeological assessment)
- Technical paper 18 (Intersection concept design).

2 Strategic context

This chapter presents an overview on the strategic context and need for this project. The chapter details the feasible options and alternatives considered during the project development. The relevant SEARs, together with a reference to where they are addressed in this Environmental Impact Statement (EIS), are provided in Appendix A.

2.1 Strategic justification

Electricity generation is currently Australia's largest source of emissions, accounting for 33 per cent of Australia's emissions (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2023d). Renewables that include solar, wind and hydro, comprised over 40 per cent of the total electricity generated in 2024 , ((DCCEEW), 2024c). The Australian Government's Net Zero Plan would provide the government's current emissions reduction policies to achieve net zero by 2050 and an emissions reduction target of 43 per cent by 2030. To achieve these targets, Australia must invest in alternative sources of energy that are clean, accessible, affordable, sustainable, and reliable.

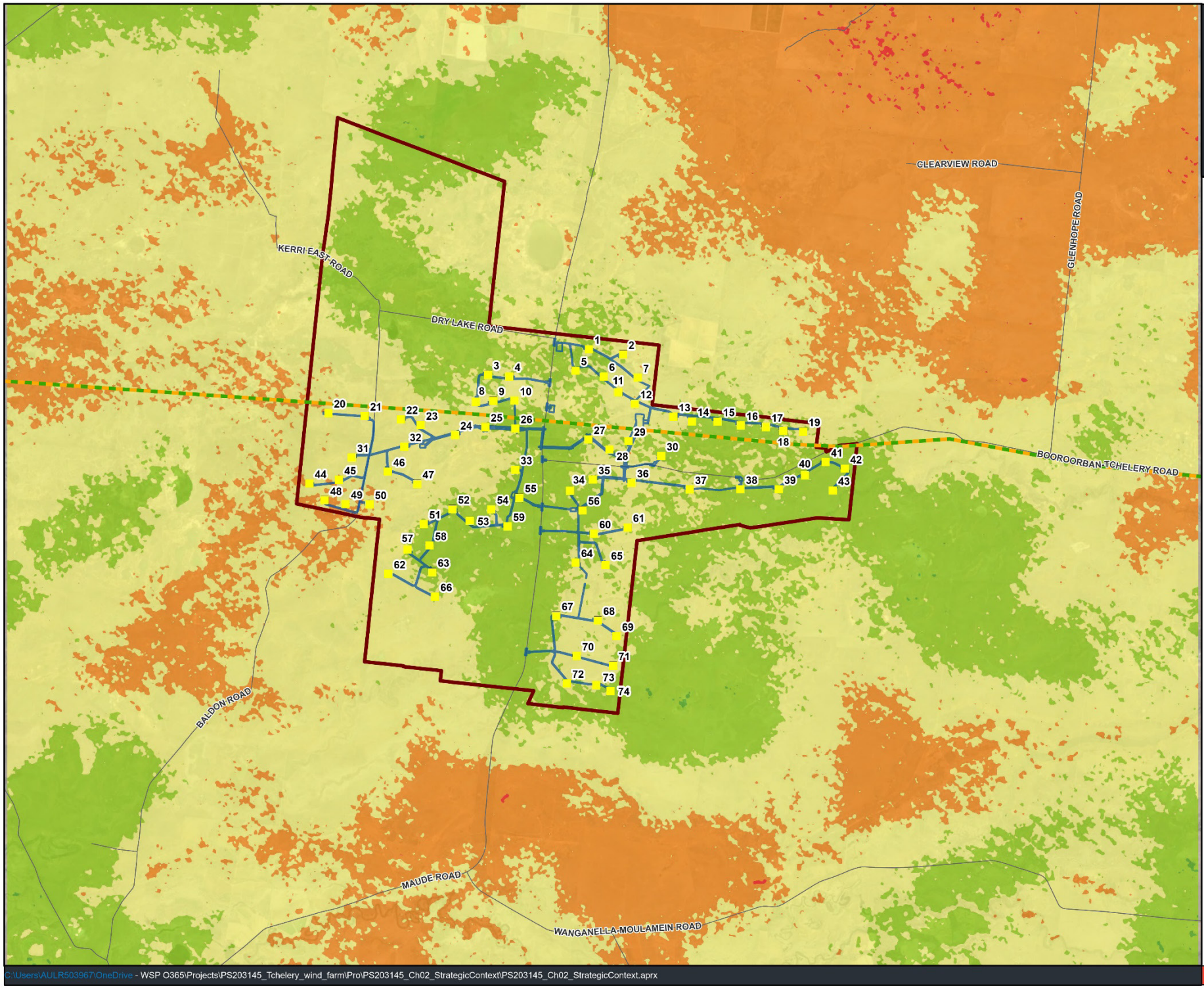
The NSW Government has also identified a need to facilitate the delivery of new generation infrastructure to replace the remaining four coal fired power stations that are scheduled to close within the next 15 years. Eraring power station is scheduled for closure in 2027, Bayswater and Vales Point B in 2033 and Mt Piper in 2040. The development of renewable energy infrastructure would replace the existing coal fired power generators as they are phased out and contribute to an electricity generation network with lower associated carbon emissions.

The project represents an investment in new large-scale renewable energy, with total generation capacity of about 577 megawatts (MW) and an up to 350 MW Battery Energy Storage System (BESS) with a maximum energy storage capacity of up to about 1,450 megawatt-hours (MWh), providing a significant contribution to the volume of renewable energy needed to transition away from coal-fired power generation.

The project would be located in the South West REZ, an area identified by the NSW government as strategically advantageous for energy generation, storage and transmission. Developing the project within the South West REZ provides local community benefits through strategic planning, best-practice engagement and Community Benefit Sharing Scheme (CBSS).

In NSW, there is an abundant supply of rooftop solar power generation during the day, and this impacts the wholesale price of energy. The use of wind power as the predominant generation type for the project has been driven by the requirement to harness energy and charge batteries at night, complementing the generation that comes from solar power during the day. Wind resource monitoring from the existing meteorological mast on the project site indicates that wind speeds are relatively consistent at the project site and in the surrounding region, which contributes to the viability of the project (refer to Figure 2.1). This project would contribute to meeting Australia's commitments to reduce greenhouse gas (GHG) emissions through generation of renewable wind energy.

The project would also provide opportunities for local and regional investment including opportunities for local contractors, suppliers and businesses, increased employment opportunities, and contributions to a CBSS.



Tchelery Wind Farm

Figure 2.1
Wind data at the project site

Legend

- Project site
- Construction footprint
- Wind turbine generator

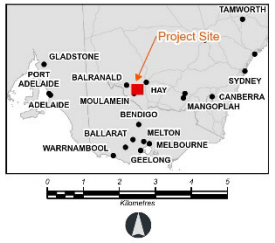
Wind speed (164 m height)

Metres per second (m/s)

- > 8.2 - 8.25
- > 8.25 - 8.3
- > 8.30 - 8.35
- > 8.35 - 8.4
- > 8.40 - 8.45

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - NSW Eastern Section
- Existing road



Coordinate system: GDA 1994 MGA Zone 55

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1:210,000 Date: 8/04/2025

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2.2 Strategic planning response

2.2.1 *International policy context*

The project contributes to, and aligns with the following internation policies:

- United Nations Paris Agreement (United Nations (UN), 2015) (Paris Agreement): the Paris Agreement aims to limit global emissions to net zero and provides a framework for countries, including Australia, to take climate action from 2020. The project would contribute to meeting Australia's emissions reductions goals committed to as part of the Paris Agreement.
- United Nations Framework Convention on Climate Change (UNFCCC): in 2022, Australia lodged an updated Nationally Determined Contribution (NDC) with the UNFCCC secretariat which committed to a more ambitious emissions reduction target of 43 per cent below 2005 levels. In 2023, at the UNFCCC 28th Conference of Parties (COP 28) Australia, along with 129 other countries made a pledge to triple the world's renewable energy capacity and double its energy efficiency by 2030 (Australian Office of Financial Management, 2022). The project would contribute to Australia's emissions reduction and renewable energy capacity targets.

2.2.2 *Australian Government policy context*

The project contributes to, and aligns with Australian Government policies and strategies, including the:

- 2024 Electricity Statement of Opportunities (ESOO) (Australian Energy Market Operator (AEMO), 2024): the project would help meet increasing demand for energy in the National Electricity Market (NEM) through production of renewable energy.
- 2024 Integrated System Plan (ISP) (AEMO, 2024): the ISP identifies the need for a mix of solar and wind energy projects to reach emissions reduction targets. The project is located within the South West REZ, identified as an actionable project in the ISP, which is important for enabling efficient and effective transformation of the electricity system for consumers.
- Annual Climate Change Statement (DCCEEW, 2024d): the Annual Climate Change Statement provides an overview of Australia's progress to net zero emissions and reports on initiatives, programs and plans to support Australia's transition. The project would contribute to meeting Australia's commitment to reach 82 per cent renewable electricity in the NEM by 2030.
- Large Scale Renewable Energy Target (LRET): incentivises development of renewable electricity generation in Australia, through a market involving the creation and sale of certificates known as Large-scale Generation Certificates (LGCs). The project would have a capacity of approximately 577 MW and contribute to the generation of renewable energy.

2.2.3 *NSW Government policy context*

The project contributes to, and aligns with NSW Government policies and strategies, including the:

- State Infrastructure Strategy 2022–2042 (Infrastructure NSW, 2022): the project is aligned with this strategy as it would provide investment in renewable energy generating projects within the South West REZ in NSW.
- NSW Electricity Infrastructure Roadmap (Department of Planning, Industry and Environment (DPIE), 2020a): the project aligns with the development of the South West REZ and would support regional growth and investment in renewable energy in NSW.
- NSW Electricity Strategy (DPIE, 2019b): the project is consistent with this strategy as it provides renewable energy generation that, together with a mix other renewable generation projects, is expected to result in lower cost of power for consumers.

- Net Zero Plan – Stage 1: 2020 – 2030 (DPIE, 2020b): the project is aligned with this strategy and would generate renewable energy to aid NSW in reducing dependence on high emission technologies for electricity.
- NSW Transmission Infrastructure Strategy (Department of Planning and Environment (DPE), 2018): the project aligns with the development of the South West REZ, by contributing to the renewable energy generation capacity in the region.
- NSW Climate Change Policy Framework (Office of Environment and Heritage (OEH), 2016): the project is aligned with this framework, as it would provide a key piece of strategic generation and storage infrastructure that would support the transition to a lower emissions economy.
- Riverina Murray Regional Plan 2041 (RMRP) (DPE, 2023): the project is aligned with this framework as it supports the transition from fossil fuels to renewable energy industries, and the overall transition to net zero by 2050.

2.2.4 *Capability of the project to contribute to the security and reliability of the National Electricity Market*

Neoen has provided advice on the capability of the project to contribute to the security and reliability of the NEM. The project is in the early stages of the connection process to the NEM and has received a Connection Enquiry Response (CER). The wind profile at the project site is complementary to the solar profile of NSW, meaning that as rooftop solar generation reduces, on average, the generation at the project is increasing. This increase also coincides with times of high pricing as the capacity in the region is stretched. While this trait is not exhibited by the project alone, an average hub height wind speed of over 8.2 metres per second (m/s) would enable a turbine selection that not only ensures a high capacity factor but, more importantly, is able to generate energy at times of low regional wind speed. This increases the reliability benefit of the project as well as the project economics within a high renewable percentage market.

The project is well aligned with the needs of the NSW system. AEMO's August 2024 Update to the Electricity Statement of Opportunities (ESOO) outlined a forecasted reliability shortfall in 2025 to 2026 for NSW, specifically between 2 pm and 11 pm on workdays. While the ESOO identifies wind generation as contributing a lower overall reliability benefit compared to that of long-duration storage or gas, with unserved energy likely to occur in periods of low wind and solar resources, the project is well placed to contribute positively to system reliability due to its complimentary daily profile and wind resource.

The project would be registered to participate in frequency control ancillary services (FCAS) markets, leveraging Neoen's expertise in registering several wind and solar assets, and providing further depth in the market for the provision of these critical services.

2.3 Key features of the project site

The project is located at 46 Kerri Road, Moulamein, approximately one kilometre east of Keri Keri within the Edward River Local Government Area (LGA). The project site is mapped within land zoned RU1 Primary Production under both the Wakool and Conargo LEPs.

Land use within the project site is primarily for agricultural activities, including livestock grazing and small areas of irrigated agriculture. Areas in the southeast portion of the project site are classified as 'marsh and wetlands', including the Abercrombie Creek and The Forest Creek, which, are utilised by livestock for grazing. Host landholders would continue to use the project site for agricultural and business activities on their land unaffected by the project, excluding the areas hosting infrastructure. Surrounding land uses are consistent with the land uses at the project site and are dominated by agricultural activities.

Existing infrastructure within the project site is limited to the existing Transgrid 220 kV transmission line. No major rail or pipeline infrastructure is located near the project site. The closest major road is the Sturt Highway.

The closest regional population centre is the township of Hay, located approximately 58 kilometres northeast of the project site. Smaller towns, villages and localities near the project site include:

- Moulamein, located approximately 19 kilometres to the southwest
- Maude, located approximately 33 kilometres to the north
- Keri Keri, located 35 kilometres (by road) to the east
- Balranald, located about 55 kilometres to the northwest
- Coleambally, located approximately 137 kilometres to the east
- Darlington Point, located approximately 152 kilometres to the northeast.

2.4 Likelihood of cumulative impacts

The project site is located within the South West REZ. As such, there is the potential for cumulative impacts in relation to the project, as several renewable and transmission infrastructure projects are proposed within 100 kilometres of the project site, and include:

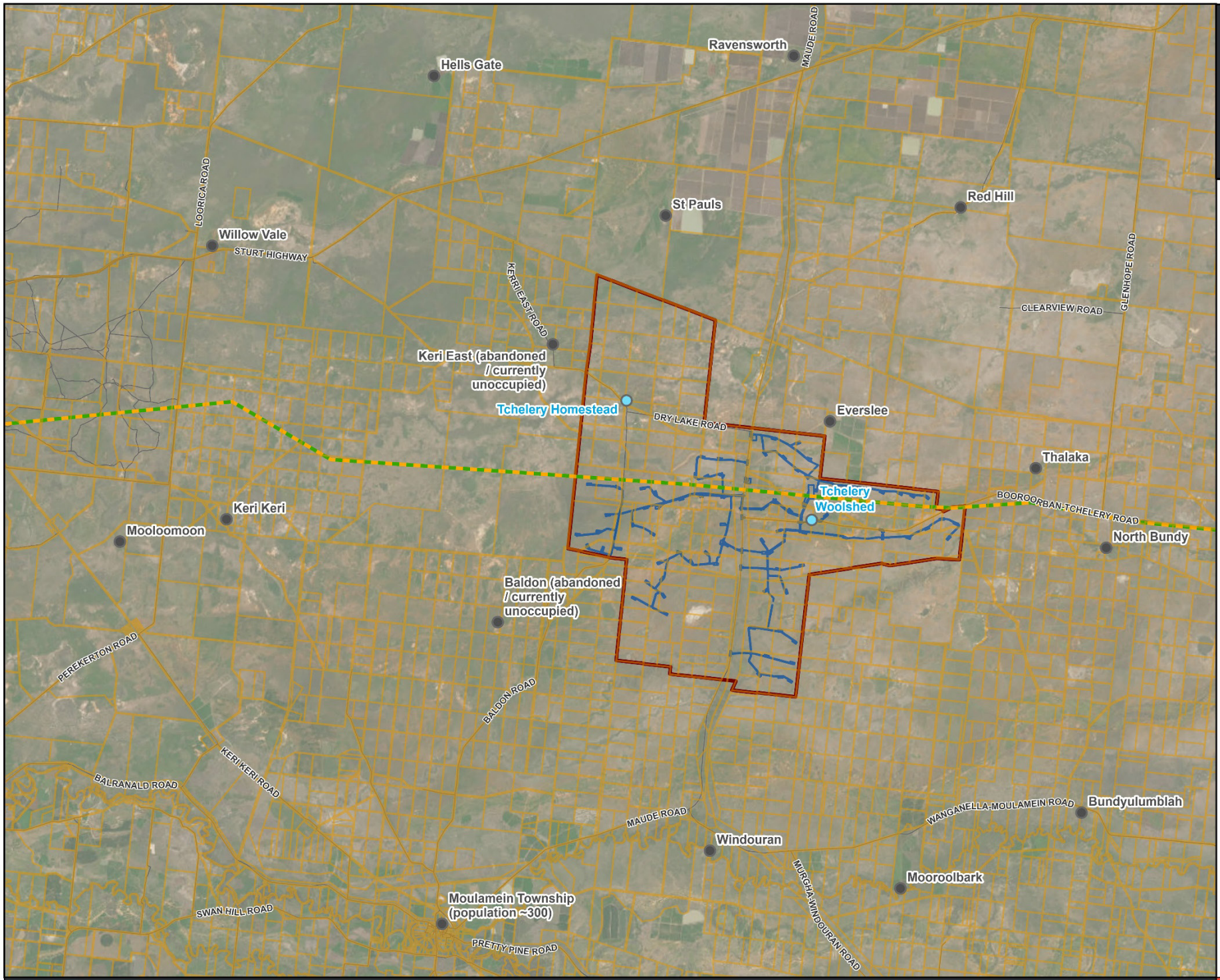
- Project EnergyConnect (NSW – Eastern Section)
- Baldon Wind Farm
- Keri Keri Wind Farm
- Romani Solar Farm
- Abercrombie Wind Farm
- Wilan Wind Farm
- Junction River Wind Farm (former Burrawong Wind Farm)
- West Nyangay Solar Farm
- Booroorban (Saltbush) Wind Farm
- Limondale Solar Farm
- Pottinger Wind Farm
- Wanganella Wind Farm
- The Plains Wind Farm (proposed)
- The Plains Solar Farm
- Hay Solar Farm
- Sunraysia Solar Farm
- Pottinger Solar Farm
- Balranald Mineral Sands Mine
- Bullawah Wind Farm
- Deniliquin East Battery Energy Storage System
- Deniliquin Battery Energy Storage System
- Currawarra Solar Farm
- Victoria to NSW interconnector West.

Cumulative impacts are considered in Chapter 22 (Cumulative impacts).

2.5 Land ownership and agreements

The majority of the project would be located on private property. Neoen has entered into confidential commercial agreements with the host landholder. The project site also includes portions of Maude Road, that is a Crown Land reserve designated as a Travelling Stock Reserve (TSR), managed by Local Land Services under the *Local Land Services Act 2013*. Neoen are in discussions with the Local Land Services, Deniliquin Local Aboriginal Land Council (LALC) and NSW Crown Lands to seek easement and construction licence for works on Crown Land reserve prior to commencement of construction.

The location of dwellings and their association with the project are shown in Figure 2.2.



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Tchelery Wind Farm

Figure 2.2
Location of dwellings associated with the project

Legend

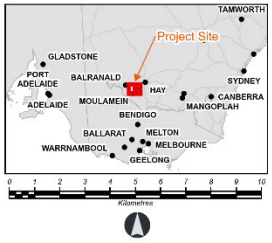
- Project site
- Cadastre lot
- Construction footprint

Nearby Structures

- Dwelling or building associated with the project
- Non-associated dwelling

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - NSW Eastern Section
- Existing road



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Further to the above, proposed road upgrades are required to facilitate the transportation of oversize and overmass (OSOM) materials and equipment. Neoen is in discussion with impacted land holders along the port to site haulage route. Further details relating to proposed road upgrades and relevant road authorities are provided in Chapter 3 (Project description).

Neoen has begun negotiations on a planning agreement with Edward River Council. This would include annual contributions to a CBSS that would be spent on community projects across the LGA. The planning agreement would be in place prior to construction.

2.6 Analysis of feasible options and alternatives

The following options and alternatives were considered by Neoen to meet the project objectives:

- Option 1: Do nothing
- Option 2: Alternate project site
- Option 3: Alternate site layout
- Option 4: Alternate energy source.

The analysis of the options and alternatives considered is summarised in the following sections.

2.6.1 Do nothing

The alternative of not progressing with the project (the 'do nothing' option) would result in the loss of a total generation capacity of up to 577 MW that would contribute to the 2.5 gigawatt (GW) capacity target in the South West REZ. This option would lead to missed opportunities in supporting NSW and Australia in the transition away from a fossil fuel dependent electricity grid.

Without the project going ahead, the local and wider region would not realise the benefits of the project including:

- economic benefits to the local and regional community during both construction and operation of the project
- estimated development cost (EDC) of approximately $1.59 billion creating direct and indirect employment during construction and operations
- contribution to renewable energy including lower-cost form of new electricity production and lower GHG emissions.

As such, the 'do nothing' option is not preferred as it would not meet the project objectives.

2.6.2 Alternate project site

A project of the proposed scale requires significant land area, proximity to existing or proposed transmission networks, and available network capacity. The project site has been identified as a highly suitable site for the development of a wind farm, since it provides a substantial land area, is located within the South West REZ, is in close proximity to Project EnergyConnect and is easily accessible from the Sturt Highway. As such, the project site provides an optimal location for a wind farm.

Alternative sites may be limited in providing these elements. As such, consideration of an alternate site is not the preferred option.

2.6.3 Alternate site layout

The Wind Turbine Generator (WTG) and BESS layout and infrastructure design assessed in this EIS has been subject to a number of iterations during the feasibility and scoping phases of the project in response to stakeholder consultation and environmental investigations. The key environmental issues identified during early investigation included:

- biodiversity, including threatened ecological communities, areas of high abundance of hollow bearing trees, raptor nests, candidate species habitat, riparian and wetland areas, bird strike and ecological connectivity
- areas of flooding and riparian corridors
- Aboriginal heritage including areas of high archaeological potential and known sites.

The site layout has been optimised to minimise environmental and community impacts. As such, consideration of alternate site layouts is not the preferred option.

2.6.4 Alternate energy source

NSW, and Australia more broadly, is currently reliant on the continued use of fossil fuels, including coal and natural gas, for electricity generation. Continued reliance on these forms of electricity would result in the generation and emission of GHGs into the atmosphere, contributing further to climate change.

Large-scale wind technology is considered the optimal form of energy generation at the project site, due to the high natural wind resource availability in the area. This has been confirmed by data collected from the meteorological mast on the project site. Large-scale wind technology is also a lower-cost form of energy generation, reducing cost pressures on consumers while reducing GHG emissions. The development of a non-renewable energy project at the site would not meet the project objectives and has not been considered further.

2.6.5 Preferred option

The preferred option for the project is the development of a large-scale wind farm within the project site to best meet the project objectives.

The project site is suitable for the proposed wind farm due to its proximity to the Project EnergyConnect corridor, location within the South West REZ, easy access via the Sturt Highway (A20), compatibility with existing land uses of the project site and surrounding areas, and natural wind resource availability. The proposed layout has been optimised through consultation and environmental investigations to minimise environmental and community impacts and improve outcomes for the wider community.

The project site and concept layout considered throughout this EIS is the preferred option.

3 Project description

This chapter describes the project during construction, operation and decommissioning. This includes the project site, physical layout and design, uses and activities during construction and operation, and timing and sequencing of the project.

The Secretary's Environmental Assessment Requirements (SEARs) together with a reference to where they are addressed in the Environmental Impact Statement (EIS) is provided in Appendix A.

3.1 Project overview

Table 3.1 Project overview

Project element	Description
Project site address	46 Kerri East Road, Moulamein
Project site area	About 288 square kilometres
Construction footprint	About 650.2 hectares
Operational footprint	About 505 hectares
Project site access	— Maude Road (north of Dry Lake Road) — Boorooban-Tchelery Road (west of the project site) — Maude Road (south of the project site).
Wind turbine generators (WTG)	— up to 74 Wind Turbine Generators (WTGs) with a generating capacity of up to 577 megawatts (MW) — maximum hub height of 170 metres — maximum tip height of 270 metres.
Battery Energy Storage System (BESS)	— up to 395 containers with up to 350 MW Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh) — located within the eastern construction facilities area (described below).
Permanent electrical infrastructure	Connection directly into Project EnergyConnect or the existing 220 kilovolt (kV) transmission line or similar network infrastructure via the following infrastructure: — one switchyard located within the eastern construction facilities area (described below) — up to three collector substations — underground 33 kV transmission lines connecting the WTGs to the collector substations — overhead 33 kV transmission lines connecting the WTGs to the collector substations — overhead and underground 330 kV transmission lines connecting the collector substations to the switchyard.
Operational ancillary facilities	— operation and maintenance facility — fibre-optic communications lines between each WTG and the operation and maintenance facility — access tracks from the site entrances to each WTG — up to six meteorological masts.

Project element	Description
Construction ancillary facilities	— western construction facilities area including: — construction workforce amenities — concrete batching plant — laydown area for temporary storage of plant, equipment and materials — eastern construction facilities area, including: — construction workforce amenities — concrete batching plant — laydown area for temporary storage of plant, equipment and materials — construction compound on Maude Road — workforce accommodation camp on Maude Road, south of the site access location near the intersection with Dry Lake Road — access tracks from the site entrances to each WTG.
Timing	— construction: 2027–2029 — operation: 2030–2060.
Hours of operation	— construction: seven days per week during both standard and non-standard construction hours (refer to Section 3.5) — operation: 24 hours per day, seven days per week.
Workforce	— construction: — estimated daily average: 300 Full-Time Equivalent (FTE) workers — project peak: 530 FTE workers — operation: up to 20 FTE workers.
Public infrastructure work	modifications and/or upgrades to the road network to facilitate oversize overmass (OSOM) transport to the project site are outlined in Section 3.3.1.7.
Capital investment	approximately $1.59 billion AUD.

3.2 Project site

The project site is located at 46 Kerri East Road, Moulamein, within Edward River Local Government Area (LGA) in the Riverina Murray region, NSW. The project site is south of the Sturt Highway and is traversed by Maude Road (north-south) and Boorooban-Tchelery Road (east-west). The project site is comprised of an area around 288 square kilometres and is approximately 790 kilometres (by road) west of Sydney, 35 kilometres (by road) east of Keri Keri, and 79 kilometres (by road) east of Balranald.

The site is relatively flat with low relief, at an elevation of approximately 70 metres to 80 metres above sea level. Existing land use of the project site and surrounds is predominately sheep grazing and cropping. However, the landscape is likely to change due to future renewable energy projects within the South West REZ.

The lots and deposited plans (DPs) within which the site is located are detailed in Table 3.2. The project site also includes all public roads within the project site. The lots and DPs for the port to site haulage route are detailed in Table 3.3.

Table 3.2 Project study area Lot and DP details

Lot	DP
Freehold	
3, 4	41547
1, 2, 3 ,4	133879
1	133882
1, 2, 3, 4, 5, 6, 7, 8, 9, 10	455152
4, 5, 6, 7, 8, 9, 10, 12, 57, 58, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 89, 90, 91, 92,	756506
6, 32, 33, 35, 45	756523
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 48, 49, 51, 52, 125	756542
1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 15, 16, 28, 29, 30, 38, 39, 40, 41, 51, 52, 53, 55	756578
2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34	756581
1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 43,	756582
11	1079009
1	1098854
1, 2	1133563
Crown Parcels	
7301	1158623
7004	1025393
7300	1158651

Table 3.3 Port to site haulage route Lot and DP details

Lot	DP
Haulage route	
41, 42 (pinch point 1)	1191982
1, 3, 4, 5 / Section 20 (pinch point 7)	758642
109 (pinch point 8A)	754557
4, 5, 6 / Section 18 (pinch point 8B)	758642
7301 (pinch point 15)	1158623
Within road easement (pinch points 3, 4, 5, 6, 10, 11, 12, 13 and 14)	–

3.2.1 Land acquisition

3.2.1.1 Project site

The majority of the project would be located on private property. Neoen has entered into commercial agreements with the host landholder. These payments are confidential between Neoen and the landholder and address the project related impacts on these land holdings and residences. Host landholders would continue to carry out agricultural and business activities on their land unaffected by the project (excluding the areas hosting infrastructure). The impacts of the project on the landholder residences, while noted in the technical assessments as relevant, are addressed by the agreements in place. Neoen are in discussions with the Local Land Services, Deniliquin Local Aboriginal Land Council (LALC) and NSW Crown Lands to seek easement and construction licence for works on Crown Land reserve prior to commencement of construction.

3.2.1.2 Transport route

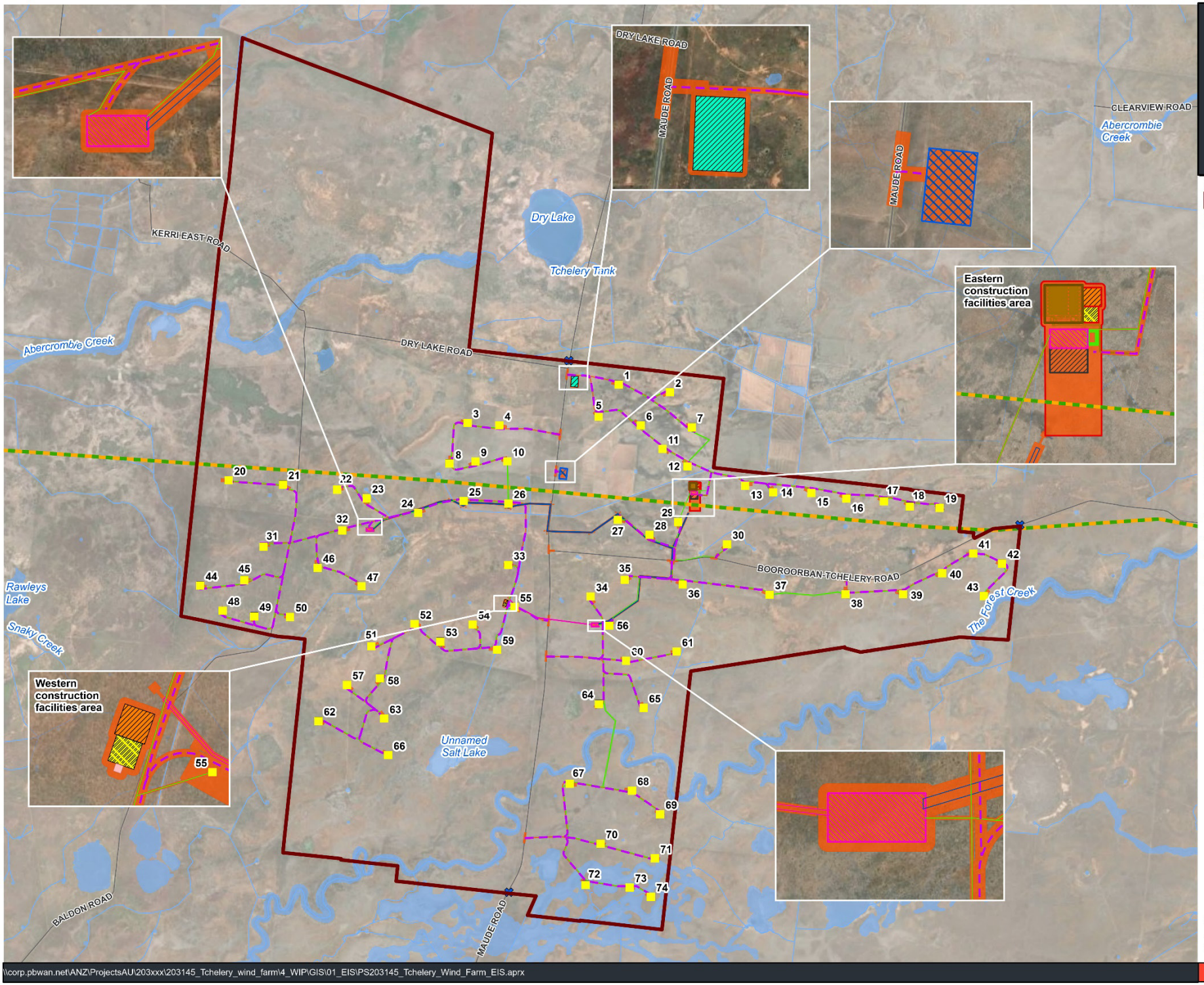
Neoen is negotiating commercial agreements with the landholders along the transport route from the Port of Newcastle to the project site where works are required to enable OSOM vehicle access. These payments are confidential between Neoen and landholders and address the project related impacts on these land holdings and residences. These landholders would continue to undertake activities on their land unaffected by the project (excluding the areas hosting infrastructure). The impacts of the project on these landholder residences, while noted in the technical assessments as relevant, are addressed by the agreements in place.

Neoen does not anticipate any impact to any private landholders on the route from Port Adelaide requiring commercial agreement for access. However, if a need arises, Neoen would engage with the relevant landholders.

3.3 Physical layout and design

3.3.1 Construction

The construction footprint includes land that is subject to temporary alteration from the project (until the operational phase) and also includes the operational footprint. The key components of the construction footprint are shown in Figure 3.1 and described in the following sections.



Tchelery Wind Farm

Figure 3.1
Construction footprint

Legend

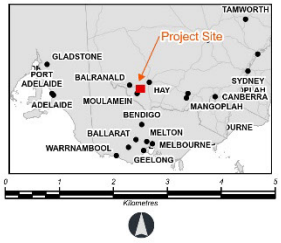
- Project site
- Construction footprint
- Site access points
- Wind turbine generator
- Internal access track
- Construction compound
- Workforce accommodation camp
- Workforce amenities
- Operational facilities area
- Battery energy storage system
- Collector substation
- Concrete batching plant
- Operations and maintenance facility
- Laydown areas
- Switchyard

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 16/04/2025

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3.3.1.1 Western construction facilities area

The western construction facilities area would cover about three hectares and be located to the west of WTG 55. The area includes the following facilities:

- construction workforce amenities
- concrete batching plant (refer to Section 3.3.1.3)
- laydown area for temporary storage of plant, equipment and materials.

3.3.1.2 Eastern construction facilities area

The eastern construction facilities area would cover about 25 hectares and be located to the southeast of WTG 12. The area would include the following facilities:

- construction workforce amenities
- concrete batching plant
- laydown area for temporary storage of plant, equipment and materials
- operations and maintenance facility (refer to Section 3.3.2.6).

The BESS, switchyard and one of the three collector substations would also be located within the eastern construction facilities area.

3.3.1.3 Concrete batching plant

Two concrete batching plants would be used during construction to produce the concrete required for construction of hardstand areas and other ancillary infrastructure. Each concrete batching plant would be about one hectare in size and include loading bays and hardstand areas, materials storage, stockpiles of gravel and sand, and water storage. Indicative locations are shown in Figure 3.1.

3.3.1.4 Hardstand areas

The footprint for construction each of the 74 WTG foundations would comprise an area of 270 metres by 100 metres at each WTG site. While indicative hardstand areas have been provided, the shape and exact size of the hardstand area would depend on the WTG model selected. Filling and regrading would occur to provide a level hardstand area for construction and maintenance of the WTGs. The detailed design and construction requirements of each WTG hardstand area would depend on topography. The hardstand areas would initially be used for assembly and erection of a WTG and serve as a storage area for construction components used to install the WTG.

3.3.1.5 Construction compound

A central construction compound would be erected and used throughout construction for the central storage of plant, equipment and materials. The construction compound would be located off Maude Road, east of WTG 10, with the indicative location shown in Figure 3.1. The construction compound would be up to six hectares and would include a site office, car park area, storage and equipment laydown areas.

The central construction compound would be dismantled following construction.

3.3.1.6 Workforce accommodation camp

A workforce accommodation camp would be constructed and used throughout construction. The workforce accommodation camp would be located on Maude Road, south of the site access location near the intersection with Dry Lake Road. The workforce accommodation camp would be self-contained and fully catered including kitchen, dining, amenities and living quarters. It is anticipated that the camp would have a maximum capacity of 384 people.

The workforce accommodation camp would be dismantled following construction.

3.3.1.7 Access

Internal access

About 106 kilometres of internal access tracks would provide access to and from the WTGs and construction facilities and operational infrastructure as required. Where practicable, existing tracks would be utilised to avoid further disturbance. Where necessary, tracks would be cleared of vegetation and stabilised; however, would not be paved or asphalted unless required by and in negotiation with landholders. Track maintenance would occur as necessary throughout the construction and operations phase of the project. If access tracks are not required for operational purposes, they would be reinstated (to its pre-construction conditions) following construction.

Public road access route

Access to the project site would be provided at three locations, including via Maude Road (north of the intersection with Dry Lake Road), and Boorooban-Tchelery Road (west of the project site) and Maude Road (south of the project site) (refer to Figure 3.2). Access would involve upgrades to existing roads in accordance with relevant guidelines.

The WTG components are expected to be shipped to the Port of Newcastle and the Port of Adelaide and then transported to the project site via the road network. OSOM vehicles would be required to deliver the turbine components to the project site. Further information on OSOM routes is provided in Chapter 17 (Traffic and access).

Public road and infrastructure upgrades

An OSOM route assessment was conducted to identify potential issues and pinch points on the proposed OSOM haulage routes from the Port of Newcastle and the Port of Adelaide to the project site. In addition, a series of swept path assessments of intersections were prepared to identify locations where civil work or modifications would likely be required to facilitate the delivery of OSOM components to the project.

Table 3.4 outlines the proposed road and intersection upgrade work for the OSOM route from the Port of Newcastle. No upgrades are proposed for the route from the Port of Adelaide. Route assessment and upgrades are discussed further in Chapter 17 (Traffic and access).

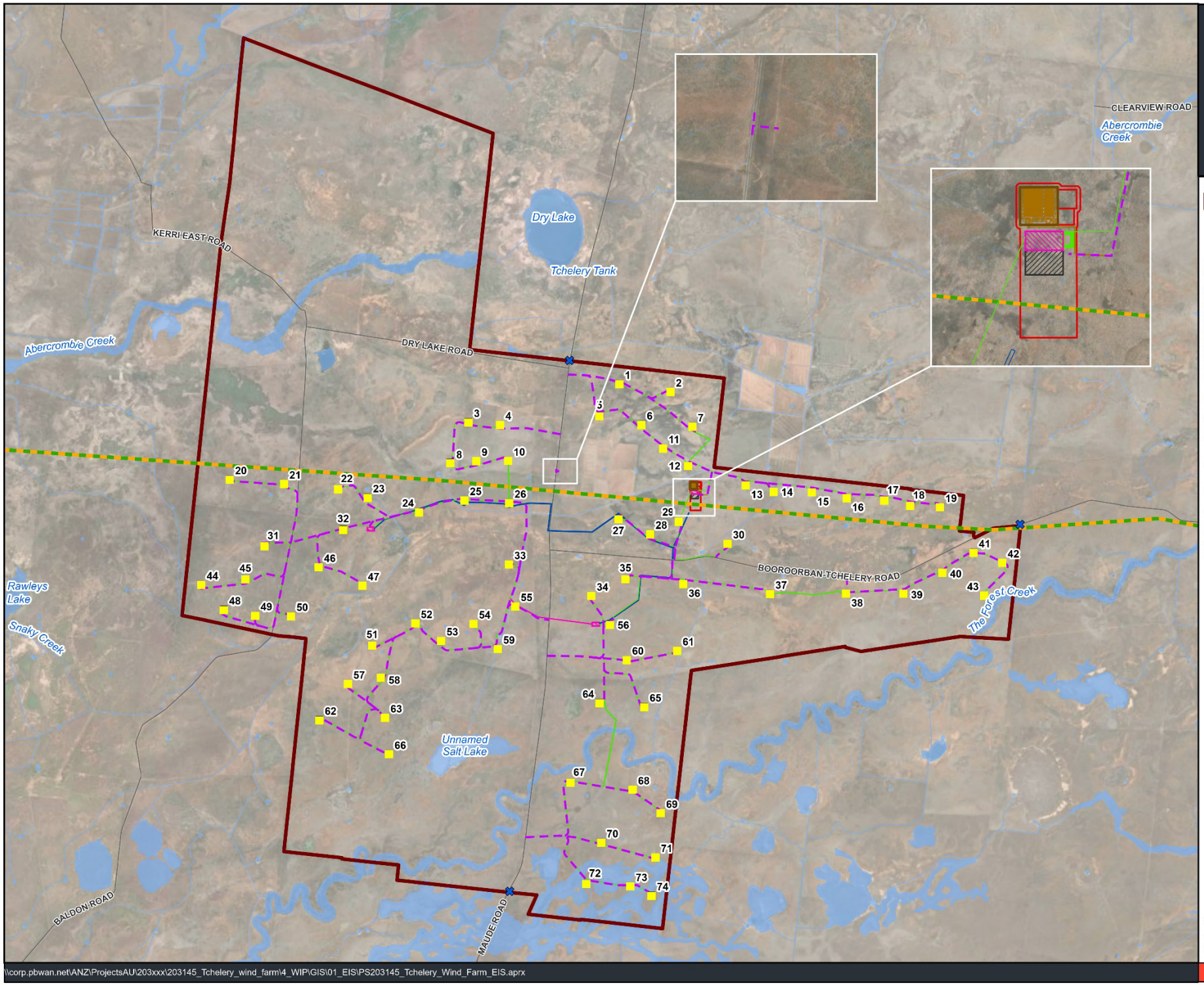
Table 3.4 Proposed road upgrades

Intersection/road	Proposed upgrade
Quayside Close and Selwyn Street, Mayfield North	— temporary hardstand (about 340 square metres (m^2)) — guard rail to be removed.
Selwyn Street and Industrial Drive, Mayfield	— temporary hardstand (about 170 m^2) — two light poles to be relocated or removed.
John Renshaw Drive and M1 Motorway, Beresfield	— temporary hardstand (about 90 m^2) — two signs to be made removeable — one light pole to be relocated.
Hume Highway and Rankins Lane, Holbrook	— temporary hardstand (about 1,210 m^2) — tree removal required.

Intersection/road	Proposed upgrade
Rankins Lane and Holbrook Wagga Road, Holbrook	— temporary hardstand (about 1,180 m^2).
Kyeamba Street and Cox Street, Mangoplah	— property acquisition and demolition of house required — one tree to be removed — temporary hardstand (about 1,300 m^2).
Holbrook Road and Tywong Street, Mangoplah	— temporary hardstand (about 580 m^2) — tree removal required.
Tywong Street and Henty Street, Mangoplah	— temporary hardstand (about 1,160 m^2) — tree removal required.
Cox Street and The Rock-Mangoplah Road, Mangoplah	— temporary hardstand (about 930m^2) — two trees to be removed — one sign to be made removeable.
The Rock-Mangoplah Road and Olympic Highway, The Rock	— temporary hardstand (about 2,080 m^2) — one tree to be removed — one light pole to be relocated — two signs to be made removeable.
Olympic Highway and Sturt Highway, Wagga Wagga	— new slip lane required in existing road reserve.
Sturt Highway, Narrandera	— one light pole to be relocated — two signs to be made removeable.
Sturt Hwy, Hay South	— temporary hardstand (about 580 m^2) — two light poles to be relocated — one sign to be made removeable.
Maude Road and Booroorban-Tchelery Road, Moulamein	— temporary hardstand (about 1,940 m^2) — one sign to be relocated.

3.3.2 Operation

The operational footprint includes land that is subject to permanent alteration from the project (until the decommissioning phase). The key components of the operational footprint are shown in Figure 3.2 and described in the following sections.



Tchelery Wind Farm

Figure 3.2
Operational footprint

Legend

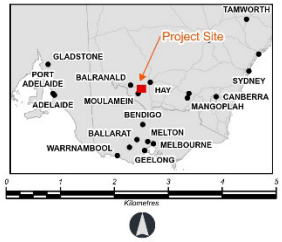
- Project site
- Site access points
- Wind turbine generator
- Internal access track
- Operational facilities area
- Battery energy storage system
- Collector substation
- Operations and maintenance facility
- Switchyard

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

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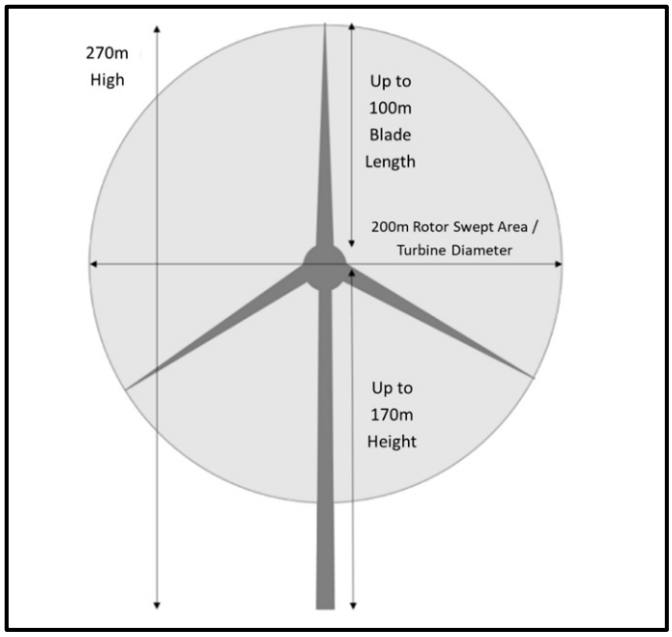
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3.3.2.1 Wind turbine generators

The project would comprise up to 74 wind turbine locations with a combined capacity of up to 577 MW. The WTG MW rating is subject to change based on technological advancements. The WTG would have a hub height of up to 170 metres and a tip height of up to 270 metres. The final turbine design would be decided during the detailed design stage.

The components of a typical WTG are shown in Figure 3.3 and the proposed layout of WTGs across the project site are shown in Figure 3.2.



Source: Neoen, 2024

Figure 3.3 Typical wind turbine components

The WTGs would be painted white, and the surface of the WTGs would be treated or painted to minimise the potential for glare and reflections. WTGs would include lighting and marking in line with best practice.

WTGs would be fitted with lightning conductors that direct lightning strikes into the ground. Lightning conductors reduce risk of damage to the WTG and fire by providing a safe path to earth for lightning strikes. Operation of the WTG would be able to be managed remotely including the ability to shut down the WTG as a safety precaution.

During detailed design and construction, WTGs may need to be micro-sited up to 100 metres from the locations identified in this EIS due to potential technical, geotechnical or environmental requirements. Other project elements, including cabling and access tracks, may also be micro-sited. It is not anticipated that micro-siting would materially increase the environmental impacts of the project; however, the potential variability of environmental impacts from micro-siting has been considered throughout this EIS.

3.3.2.2 Hardstand areas

The hardstand areas described in Section 3.3.1.4 would initially be used for assembly and erection of a WTG and serve as a storage area for construction components used to install the WTG. During operation, the hardstand would be used for the maintenance, repowering and decommissioning of a WTG.

3.3.2.3 Access

Internal access

Additional access tracks, as described in Section 3.3.1.7, would be developed to provide access to operational infrastructure to allow for maintenance.

Public road access route

Access to the project site during construction would be via Maude Road and Boorooban-Tchelery Road as described in Section 3.3.1.7.

3.3.2.4 Battery Energy Storage System (BESS)

The project would include a BESS to provide firming capability for the wind energy being produced by the project. The BESS would cover a footprint of up to four hectares and would be built next to the switchyard, southeast of WTG 12. The BESS would consist of up to 395 containers with a capacity of up to 350MW, with a maximum energy storage capacity of 1,450 MWh. It is common for BESS projects to be slightly overbuilt to account for electrical losses/ degradation and to manage this additional installed power and energy capacity by limiting the energy output at the point of connection. The BESS would connect to the substations and the grid via underground and/or overhead transmission lines.

An example of a BESS is shown in Figure 3.4. The most commercially suitable type would be chosen depending on the detailed design and financial modelling process.



Source: Neoen, 2024

Figure 3.4 Example of a BESS

3.3.2.5 Permanent electrical infrastructure

Switchyard and collector substations

The primary switchyard for the project would be located directly south of the BESS, near WTG 12. Due to the size of the project site, the switchyard would be supported by three collector substations, located near WTG 12, WTG 32 and WTG 56 respectively (refer to Figure 3.2). The primary purpose of the substations would be the receipt, transformation and transmission of the electricity generated by the WTGs and/or stored in the BESS. The substations would house transformers, switches and electrical equipment for the transformation and distribution of electricity.

An example of a typical substation is shown in Figure 3.5 for illustration purposes.



Source: WSP, 2023

Figure 3.5 Example of a typical substation

The substation components would be located on hardstand foundations and would be surrounded by bunds and/or sumps. These would have sufficient capacity to retain the full volume of oil contained within each transformer in the unlikely event of a spill.

Connections to the required telecommunications services would be facilitated through transmission lines, optical fibres and/or electromagnetic transmissions.

The substations would be contained within fenced enclosures to prevent unauthorised access. To reduce the risk of fires, an appropriate Asset Protection Zone (APZ) would be established around each substation in accordance with Planning for Bush Fire Protection (NSW Rural Fire Service (RFS), 2019) as described in Chapter 18 (Hazards and risk).

Lighting would be installed at the substations to enable critical maintenance work to be undertaken safely at night. These lights would be of low intensity and directed downwards in accordance with relevant Australian Standards.

Transmission lines within the project site

There would be two types of transmission lines within the project site:

- underground or overhead transmission lines connecting WTGs to each other and to the collector substations
- overhead transmission lines connecting each collector substation to the switchyard.

Each WTG would have a medium voltage transformer to transform the voltage of the electricity produced by the WTG for efficiency of transfer. The transformer would be housed either within the nacelle or a separate enclosure within the WTG hardstand area. The transformed electricity would be transmitted to the closest collector substation via 33 kV transmission lines, that run between each WTG. About 125 kilometres of underground transmission lines would be required for the project, the majority of which would be along proposed access tracks (where practicable). About six kilometres of 33 kV overhead transmission lines would be required to connect a WTGs to the substation.

Overhead 330 kV transmission lines would then connect each collector substation to the switchyard and BESS. About 30 kilometres of overhead 330 kV transmission lines would be required for the project. These would be single circuit or double circuit transmission lines. Where practicable, overhead transmission lines would be designed to minimise visual impacts and would follow access tracks.

Construction of underground transmission lines would require excavation of trenches about 0.5 metres in width and 1.2 metres in depth. Trenching would be micro-sited during design refinement to avoid and/or minimise impacts to surrounding areas. Underground transmission lines would require a cleared easement of up to 14 metres to enable construction. Overhead transmission lines would require the installation of transmission towers of up to 70 metres in height between 200–400 metres apart, and construction would require a 60 by 60 metre disturbance area around each transmission line structure. Easements of up to 60 metres wide would be required for the 330 kV overhead transmission infrastructure. Vegetation under four metres in height would be retained within parts of the easement under the transmission lines in accordance with Transgrid guidelines (refer to Chapter 6 (Approach to assessment of impacts)). Adjustment of transmission line locations may be required to enable micro-siting of WTGs or other constraints identified during detailed design or construction.

Connection to National Electricity Market

The project would connect directly into Project EnergyConnect or the existing 220 kV transmission line that transect the project site north of WTG 29, or similar network infrastructure. The connection would be subject to approval by the energy regulator.

3.3.2.6 Permanent ancillary infrastructure

Operation and maintenance facility

Up to 20 operational staff would be required to oversee the operation of the project and carry out routine inspections and maintenance. An operation and maintenance facility would be constructed to act as an administrative office and control room for these workers during both the construction and operation of the project. An indicative location for the operation and maintenance facility is shown in Figure 3.2.

The operation and maintenance facility would include:

- main control room
- offices and amenities for staff
- storage and laydown areas for equipment and materials
- water tanks and a septic system
- car park for workers.

Night lighting would be installed at the operation and maintenance facility to enable critical maintenance work to be undertaken safely at night. These lights would be of low intensity and directed downwards in accordance with relevant Australian Standards.

Communications

Fibre-optic communications lines would be installed between each WTG and the operations and maintenance facility to allow for remote operation of each WTG. These lines would be parallel with the transmission lines described in Section 3.3.2.5 to minimise ground disturbance.

A communications tower would be established within the substation compound to enable data transfer between the project site and Neoen and the Australian Energy Market Operator's remote operation centre.

An external communications network for operational workers may also be established. This network could consist of equipment mounted on masts to allow for radio and microwave transmissions and improve mobile phone reception.

3.4 Uses and activities

3.4.1 Construction

3.4.1.1 Activities

Construction activities for the project are summarised in Table 3.5.

Construction works would be subject to mitigation measures in this EIS and the Construction Environmental Management Plan (CEMP) for the project. The CEMP would consolidate all relevant mitigation measures and controls to be implemented during the construction phase. It is not expected that the project would result in demolition of any farm structures, including the current homestead and woolshed.

Table 3.5 Construction activities

Construction activity	Description
Site establishment	— install environmental controls — public road upgrades required to facilitate site access and OSOM delivery — vegetation clearance — construction of workforce accommodation camp — construction of access tracks to accommodate safe access of construction machinery and materials to the relevant locations on the project site — establishment of construction facilities areas and central construction compound.
Civil works for WTGs	— delivery of construction materials, including OSOM components — construction of footings, foundations and hardstands for each WTG and BESS including boring and/or excavation, steel fabrication works and concrete pours — erection of the WTG structure using cranes — installation of permanent electrical infrastructure — installation of earthing conductors.
Civil works for BESS	— construction of footings, foundations and hardstands — installation of permanent electrical infrastructure.

Construction activity	Description
Civil works for the permanent electrical infrastructure	switchyard and collector substations: — earthworks and slab construction — electrical fit out with substation equipment — testing and commissioning of the substation equipment.
	transmission line infrastructure: — overhead infrastructure: — earthworks and establishment of construction pads for each transmission line structure — construction of footings and foundation works for the transmission line structures including boring and/or excavation, steel fabrication works and concrete pours — erection of the transmission line structures using crane(s) and/or drone(s). — stringing of the conductors and overhead earth wires and optical ground wire — installation of earthing conductors. — underground infrastructure: — excavation of trenches about 0.5 metres in width and 1.2 metres in depth — horizontal directional drilling under Forest Creek to avoid trenching works in the creek bed — installation of transmission lines.

3.4.1.2 Plant and equipment

An indicative list of construction plant and equipment required for the project is provided below.

- bob cats
- bulldozers
- concrete agitator
- concrete batch plants
- concrete pump
- cranes (various sizes)
- dozer
- drill and blast units and associated support plant/equipment
- dumper trucks
- elevated work platform
- excavators (various sizes)
- fuel trucks
- front end loader
- generators
- graders
- low loader
- mobile crushing and screening plant
- piling rigs
- pneumatic jackhammers
- rigid tippers
- rollers
- scraper
- semi-trailers
- tilt tray trucks
- tipper truck
- trenchers
- transport trucks
- truck-mounted concrete pump
- watercarts.

3.4.1.3 Resources and materials

Key resources and materials for construction of the project are outlined in Table 3.6. Further discussion on resources and materials is provided in Chapter 21 (Waste management and resource use).

Table 3.6 Resources and materials during construction

Resources and materials	Description
Spoil	There may be some spoil generated by cut and fill activities and movement of soil across the project site. Volume of spoil to be generated would be determined during detailed design; however, would be minimised as far as practicable.
Water	Water supply would be required during construction for the following activities: — soil and fill conditioning — dust suppression — concrete production — concrete washout — vehicle and equipment wash down — amenities. The majority of potable water would be imported for the construction compound and amenities and is likely to be sourced through a commercial arrangement with Edward River Council. The most substantial water demand is expected to be non-potable water for dust suppression, followed by concrete batching and soil conditioning for road construction. The total water demand is estimated at 180 megalitres per year during construction. Sources for non-potable water demands may include: — surface water under existing Water Access Licence (WAL) arrangements — groundwater from licenced bores (refer to Technical paper 8 (Hydrology, flooding and water impact assessment). The above water sources would need to be with harvestable water rights and water access licencing conditions, in agreement with host or local landowners.
Hazardous materials and chemicals	Based on indicative construction methods and maintenance requirements, the likely dangerous goods and hazardous substances required for the project include: — bitumen — cement and concrete — diesel fuels — gases (oxy-acetylene) — herbicides — oils, greases and lubricants — paints and epoxies.
Other resources and materials	Materials used for construction would be sourced in situ where practicable. Where required, materials such as gravel and sand for concrete production would be obtained from the nearest appropriate material providers.

3.4.1.4 Hours of construction and workforce

The *Interim Construction Noise Guideline* (Department of Environment and Climate Change (DECC), 2009) (ICNG) recommends standard hours for construction work as outlined in Table 3.7. This would be used for the project, except where an exemption is granted by the relevant authority.

Table 3.7 ICNG recommended standard hours

Work type	Recommended standard hours
Normal construction	— 7 am to 6 pm on weekdays — 8 am to 1 pm on Saturdays — no work on Sundays or public holidays — additional activities may be subject to an 'Out of Hours Protocol'.

Based on the geology within the project site, blasting is not anticipated for the project.

The ICNG (DECC, 2009) recognises there are some situations where construction may need to be carried out outside of the recommended standard construction hours. This is relevant for wind farm construction, as the cranes used for installation of WTGs cannot operate in high winds. In order to minimise delays to the construction program, work outside of standard construction hours would be required to make up for time lost during high wind days. Other activities that may be carried out outside of the standard daytime construction hours or extended hours (including night time hours) may include:

- work determined to comply with the relevant noise management level at the nearest sensitive receiver
- delivery of materials outside approved hours as required by the NSW Police or other authorities for safety reasons
- works on the intersection with the highway to minimise impact on traffic
- pouring of concrete for foundations where the length of time for the pour is longer than the standard construction hours or where climate conditions for correct curing of the concrete cannot be achieved during the day
- emergency situations where it is required to avoid the loss of lives and properties and/or to prevent environmental harm
- situations where agreement is reached with project landowners and neighbours.

It is estimated that the project would have a daily average workforce during construction of about 300 FTE workers. However, the construction workforce at any one time would vary depending on the stage of construction and associated activities, with a peak workforce of up to 530 (FTE) construction workers on-site.

A temporary workforce accommodation camp would be established within the project site (refer to Section 3.3.1.6). Operation of the camp would be 24 hours a day, seven days a week. It is anticipated that the camp would have a maximum capacity of 384 people with local workforce and other local accommodation allowing for the peak FTE of 530 construction workers.

These works (outside of standard construction hours) would be subject to a formal notification and consultation process with any landholders potentially affected by noise-related impacts and would be carried out in accordance with the CEMP to be prepared for the project.

3.4.1.5 Transport and access

Key transport and access requirements for construction of the project are outlined in Table 3.8. Further discussion on transport and access is provided in Chapter 17 (Traffic and access).

Table 3.8 Construction transport and access

Requirement	Description
Site access	Refer to Section 3.3.1.7.
Parking	Car parking for construction workers would be provided at the workforce accommodation camp. Vehicle parking would also be provided at the construction compound off Maude Road and the operations and maintenance facility within the eastern construction facilities area.
Port to site haulage routes	OSOM components would be transport to the site from the Port of Newcastle and the Port of Adelaide as described in Section 3.3.1.7. Haulage routes for the project are shown in Figure 3.6 and Figure 3.7.

3.4.1.6 Post-construction site rehabilitation

When construction is complete, disturbed areas not required for operation of the project would be rehabilitated to allow for future agricultural land use. This would include reinstatement of fencing, access tracks or other infrastructure temporarily impacted during construction activities.



Tchelery Wind Farm

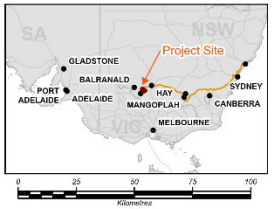
Figure 3.6
Port of Newcastle to site haulage route

Legend

- Project site
- Port of Newcastle to project site haulage route

Roads

- Dual carriageway
- Principal road
- Secondary road

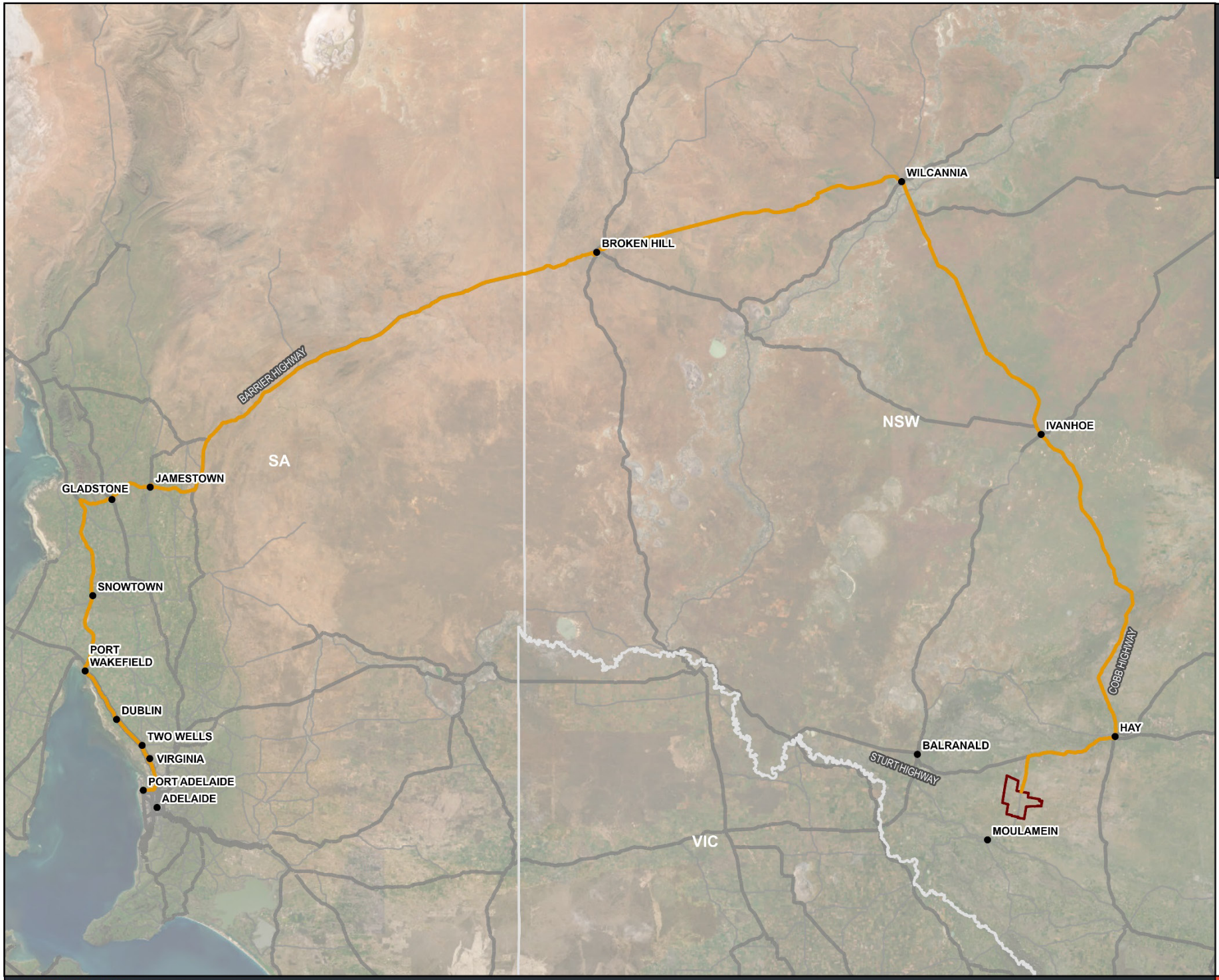


Coordinate system: GDA2020 NSW Lambert

Scale ratio correct when printed at A4

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Tchelery Wind Farm

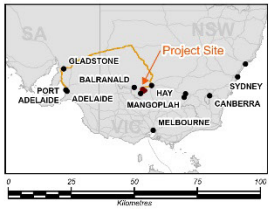
Figure 3.7
Port Adelaide to site haulage route

Legend

- Project site
- Port Adelaide to project site haulage route

Roads

- Dual carriageway
- Principal road
- Secondary road



Coordinate system: GDA2020 MGA Zone 54

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3.4.2 Operation

3.4.2.1 Activities

Wind farms are designed to generally operate without intervention. The majority of maintenance activities would be for preventative maintenance and would include:

- regular inspection (ground and aerial) and maintenance of access tracks every six months
- wind turbine blade inspection (and replacement if applicable) every five years
- fire detection system inspection and maintenance
- stormwater maintenance.

Operational activities would be based out of the operations and maintenance facility located southeast of WTG 12.

3.4.2.2 Subdivision

Land associated with the switchyard within Lot 35 DP 756582 would be subdivided from the project site to allow for it to be transferred to Transgrid for ongoing management and maintenance as shown in Figure 3.8.

3.4.2.3 Workforce

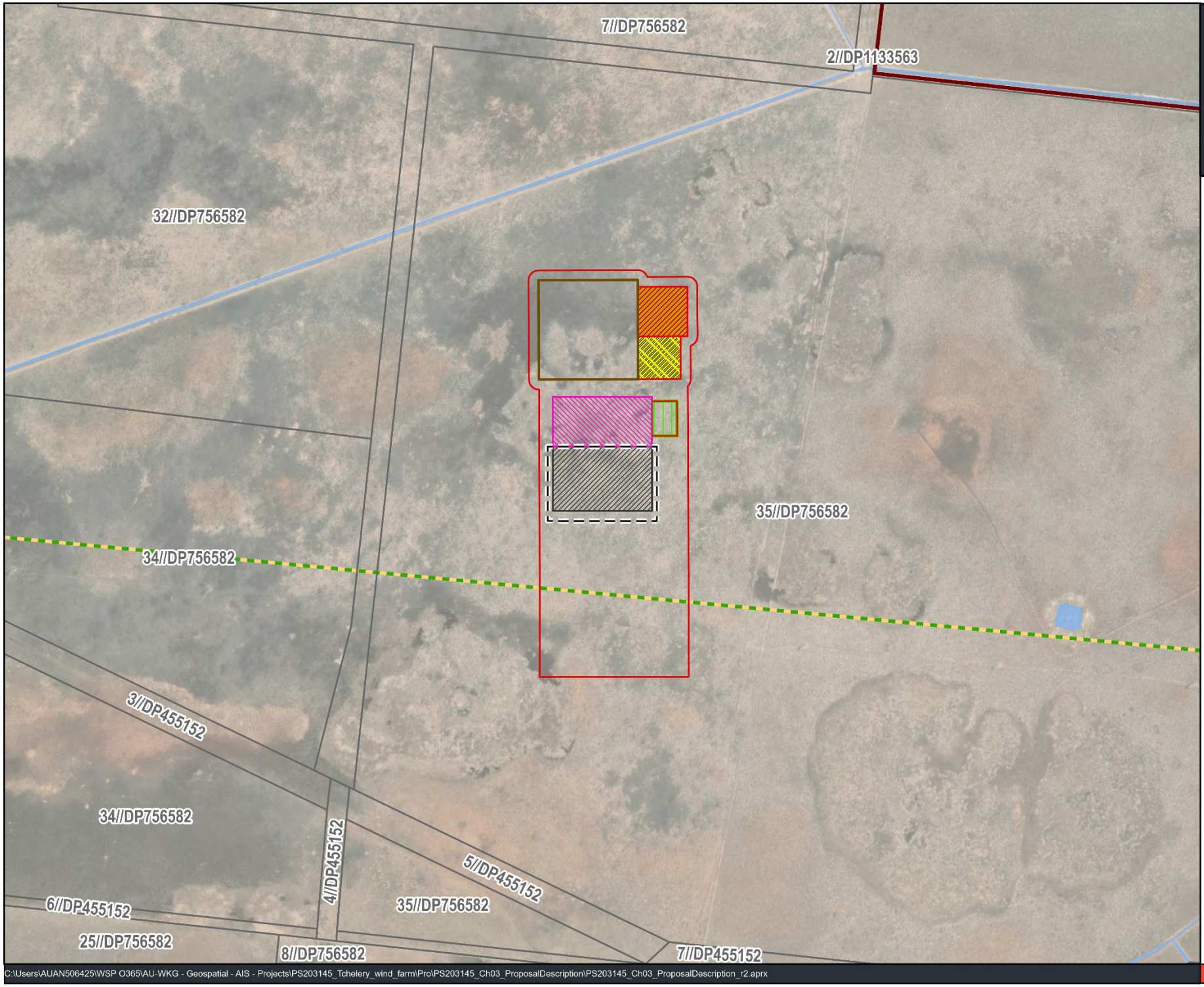
During operation, the project would have up to 20 FTE workers to undertake general operational maintenance activities as required.

3.4.2.4 Transport and access

Site access during operation is expected to be limited to the site access points and internal access routes described in Section 3.3.2.3. Vehicle movements would be associated with the activities described in Section 3.4.2.1 with car parking provided at the operations and maintenance facility.

3.4.2.5 WTG blade tip height

Maximum blade tip heights of the WTG blades to Australian Height Datum (AHD) are shown in Figure 3.9. Based on the project design and maximum blade tip height of up to 270 metres above ground level, the blade tip elevation of the highest WTG (WTG 19) would not exceed about 374.2 metres AHD.



Tchelery Wind Farm

Figure 3.8
Preliminary plan of proposed subdivision

Legend

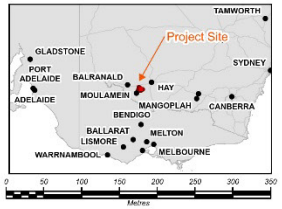
- Project site
- Indicative subdivision boundary
- Cadastre lot (lot number and DP identifier labelled)

Project Design

- Construction compound
- Workforce accomodation camp
- Workforce amenities
- Operational facilities area
- Battery energy storage system
- Collector substation
- Concrete batching plant
- Operations and maintenance facility
- Laydown area
- Switchyard

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section
- Watercourse
- Waterbody

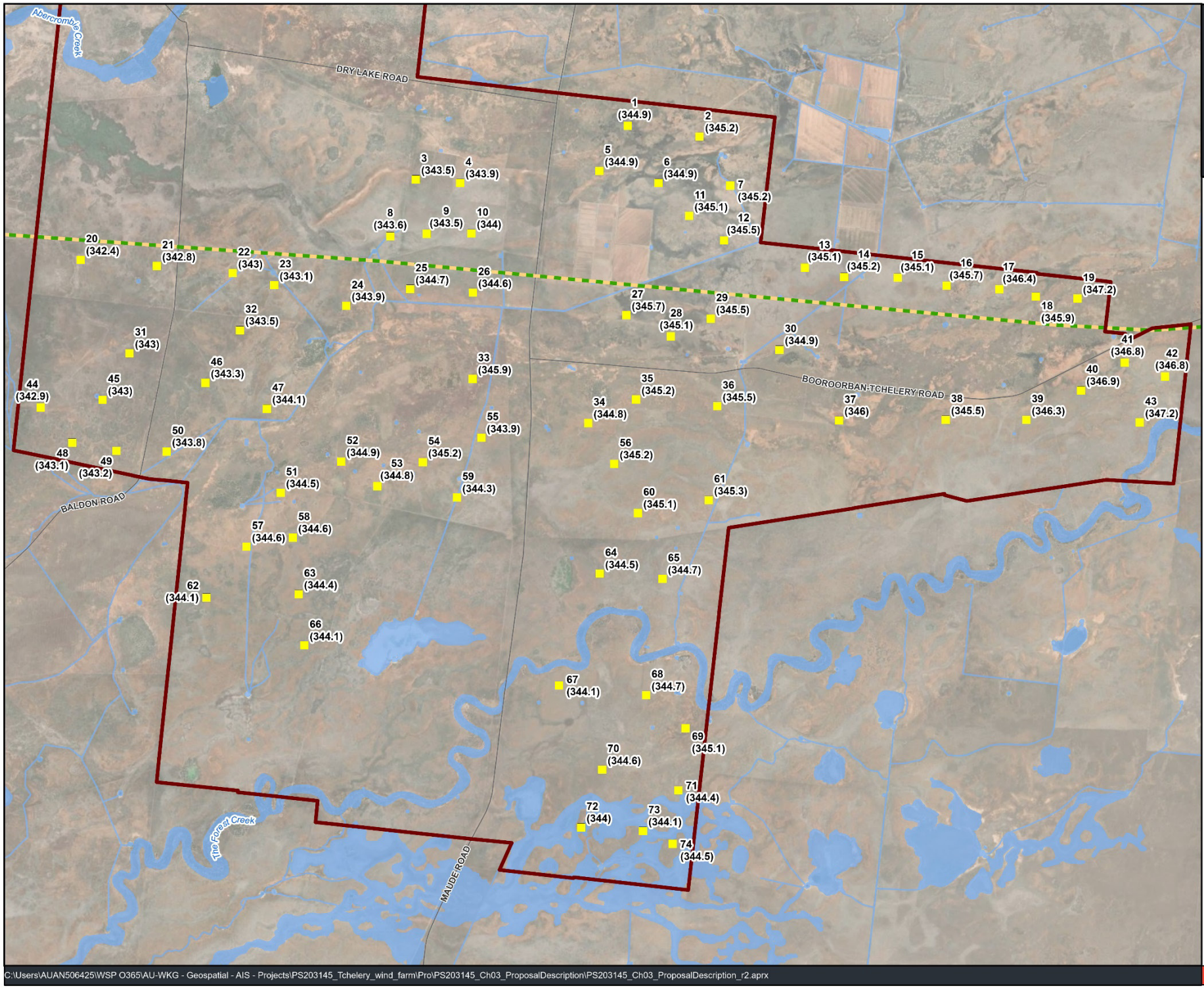


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1:10,000 Date: 11/04/2025

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Tchelery Wind Farm

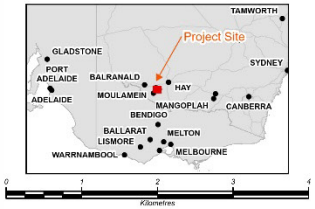
Figure 3.9
Project wind turbine generator tip heights

Legend

- Project site
- Wind turbine generator (ID and blade tip approximate elevation in mAHD labelled)

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section
- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:100,000 Date: 7/04/2025

Data sources: Geoscience Australia, Necen, NSW State Government, WSP Australia, World Imagery: Earthstar Geographics. Elevation data: NSW State Government 2011

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3.4.3 Refurbishment and/or decommissioning

Following the end of economic life, the project would either be decommissioned or refurbished with upgrades to power generation infrastructure.

Individual WTGs are expected to have an operational lifespan of about 30 years. Depending on the model of WTG selected, some or all of the major components would be replaced to ensure its ongoing safe operation. Wherever practicable, the concrete foundations and towers would be reused for the refurbished WTGs.

Access tracks established during construction would continue to be used and maintained during operation and for any required refurbishment work. The refurbishment process would be similar to the original construction of the WTGs. WTGs that are not refurbished would be decommissioned.

When decommissioned, the project site would be rehabilitated to its pre-construction conditions. The decommissioning process would generally involve removal of above ground infrastructure, including WTGs, electrical infrastructure and maintenance buildings unless required for the future land use. If a future use is identified for any above ground infrastructure associated with the project, that infrastructure may be retained in agreement with the interested stakeholders. Otherwise, all above ground electrical infrastructure would be removed during project decommissioning.

Underground infrastructure (such as cables and footings) would be removed to a depth of 500 millimetres below ground surface and would otherwise remain in situ. Some infrastructure, such as access tracks and laydown areas, may be retained in situ following an agreement with the landholders.

During decommissioning, existing access tracks would generally be used for equipment access and removal of materials from the project site. The dismantled infrastructure components would generally be sold as parts or scrap materials. All waste would be recycled where practicable, or, where necessary, disposed of in a licenced facility as described in Chapter 21 (Waste management and resource use).

Disturbed areas would be rehabilitated to meet the intended final land use and be comparable with pre-construction conditions in consultation with landowners.

The decommissioning process for the project is summarised in Table 3.9.

Table 3.9 Decommissioning process

Component	Decommissioning activity
WTGs	— disconnection — drainage of liquids, including oils and lubricants, and safe disposal of drained liquids — disassembly of components using a crane — remove all items to ground level — foundations would be left below ground and covered with topsoil — transportation of components.
WTG hardstand areas	— reduced to access track size or left if requested by the landholders.
BESS	— deactivation and disassembly of components — foundations would be left below ground and covered with topsoil.
Substations	— deactivation of transformer and other infrastructure — drainage of liquids, including oils and lubricants, and safe disposal of drained liquids — disassembly of components.

Component	Decommissioning activity
Permanent electrical infrastructure	— the overhead portion of the transmission line infrastructure would be dismantled and removed unless retained in agreement with an interested stakeholder for the future land use of the area — underground infrastructure would be removed to a depth of 500 millimetres below ground surface and would otherwise remain in situ.
Access tracks	— access tracks would be retained if requested by a landowner — if not retained, gravel and underlying layers of the access tracks would be removed and either used as fill in the rehabilitation of the area or transported off-site, and culverts, crossings and drainage structures would be removed.
Operation and maintenance facility and other buildings	— buildings would be retained in agreement with an interested landholder for the future land use of the area — if not retained, buildings would be demolished in accordance with relevant standards in agreement with landowner.

3.5 Program

3.5.1 Construction

Construction of the project is expected to commence in early 2027, subject to relevant planning approvals. The project is estimated to take about three years to construct and follow the indicative program outlined in Table 3.10.

3.5.2 Operation

The project is expected to become operational and commence energy generation in 2030. The project would have an operational life of about 30 years.

3.5.3 Decommissioning

It is expected decommissioning of the project would take about two years.

Table 3.10 Construction program

Staging	Duration (months)	2027												2028												2029											
		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Design and site establishment	6																																				
Construction	24																																				
Peak construction	12																																				
Commissioning, site rehab and demobilisation	6																																				

4 Statutory context

This chapter describes the statutory context for the project including relevant approval pathway. Environmental planning approval for the project is required in accordance with *Environmental Planning and Assessment Act 1979* (EP&A Act), *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and other relevant statutory requirements in accordance with the State Significant Development Guideline – Preparing an Environmental Impact Statement (Department of Planning, Housing and Infrastructure (DPHI), 2024).

The Secretary's Environmental Assessment Requirements (SEARs) relevant to the statutory context, together with a reference to where they are addressed in the Environmental Impact Statement (EIS), are provided in Appendix A.

4.1 EP&A Act and EP&A Regulation

The EP&A Act and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) are the primary pieces of legislation regulating land use planning and development assessment in NSW. Approval for the project is sought under Part 4, Division 4.7 of the EP&A Act, that outlines the approval pathway for State Significant Development (SSD). This EIS has been prepared for the project in accordance with Section 4.39 of the EP&A Act and Part 8 Division 5 of the EP&A Regulation.

Relevant State Environmental Planning Policies (SEPPs) include State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP).

The project meets the definition of SSD under Schedule 1, Clause 20 of the Planning Systems SEPP.

Likewise, the project is characterised as electricity generating works under Clause 2.35 of the Transport and Infrastructure SEPP, that defines electricity generating works as:

'electricity generating works means a building or place used for the purpose of –

(a) making or generating electricity, or

(b) electricity storage'

The Transport and Infrastructure SEPP is a key environmental planning instrument that can determine the permissibility of infrastructure development and subsequently under which part of the EP&A Act it is assessed. Clause 2.36 of the Transport and Infrastructure SEPP permits 'development for the purpose of electricity generating works' to be carried out with development consent on land within a prescribed non-residential zone. The project area is zoned RU1 – Primary Production under the Wakool Local Environment Plan 2013 (Wakool LEP) and Conargo Local Environment Plan 2013 (Conargo LEP) that is a prescribed rural zone.

The project involves electricity generating works (wind power) that has a capital investment value of more than $30 million and as such is considered SSD.

4.1.1 Ecologically sustainable development

Part 8, Division 5 (Clause 193) of the EP&A Regulation and Section 6 (2) of the *Protection of the Environment Administration Act 1991* outline the four principles of ecologically sustainable development (ESD). The four ESD principles comprise the precautionary principle; intergenerational equity; conservation of biological diversity and ecological integrity; and improved valuation, pricing, and incentive mechanisms.

Neoen has considered the principles of ESD in design refinement of the project. A discussion of how ESD principles have been considered is included in Chapter 23 (Justification and conclusion).

4.2 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act, proposed actions with the potential to significantly impact matters protected by the EPBC Act must be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) to determine whether they are controlled actions and require approval from the Australian Government Minister for the Environment and Water (Minister). Under Part 3 of the EPBC Act, approval from the Minister is required for:

- an action that is likely to have a significant impact on Matters of National Environmental Significance (MNES)
- an action taken by any person on Commonwealth land that is likely to have a significant impact on the environment
- an action taken by any person outside of Commonwealth land that is likely to have a significant impact on the environment on Commonwealth land
- an action taken by a Commonwealth agency anywhere in the world that is likely to have a significant impact on the environment.

Neoen is not a Commonwealth agency and the project is not likely to affect Commonwealth land. A referral was submitted for this project and it was determined to be a controlled action on 2 March 2023 on the basis of potential impacts to listed threatened species and ecological communities. The project would require assessment and approval under the EPBC Act before it can proceed. The project would be assessed under the assessment bilateral agreement with NSW Government.

A summary of potential impacts to MNES as a result of the project is presented in Appendix B – Statutory compliance and Technical paper 1 (Biodiversity development assessment report).

4.3 Other relevant legislation

The following NSW and Commonwealth legislation that may be applicable regardless of the project being declared SSD:

- *Aboriginal Land Rights Act 1983*
- *Biodiversity Conservation Act 2016*
- *Biosecurity Act 2015*
- *Civil Aviation Regulation 1988*
- *Contaminated Land Management Act 1997*
- *Crown Land Management Act 2016*
- *Dangerous Goods (Road and Rail Transport) Act 2008*
- *Electricity Infrastructure Investment Act 2020*
- *Electricity Supply Act 1995*
- *Fisheries Management Act 1994*
- *Heritage Act 1977*
- *Land Acquisition (Just Terms Compensation) Act 1991*
- *Local Land Services Act 2013*
- *National Parks and Wildlife Act 1974*

- *Native Title Act 1993 (Commonwealth)*
- *Native Title Act 1994 (NSW)*
- *Protection of the Environment Operations Act 1997*
- *Radiocommunications Act 1992*
- *Roads Act 1993*
- *Rural Fires Act 1997*
- *Soil Conservation Act 1938*
- *Waste Avoidance and Resource Recovery Act 2001*
- *Water Act 2007 (Commonwealth)*
- *Water Management Act 2000*
- *Work Health and Safety Act 2011.*

The application of this legislation to the project is detailed in Appendix B (Statutory compliance).

4.4 Local Environmental Plans

The project is located at 46 Kerri Road, Moulamein, approximately one kilometre east of Keri Keri within the Edward River Local Government Area (LGA). The project site is mapped within land zoning RU1 Primary Production under both the Wakool and Conargo LEPs.

There are a number of national parks and reserves (zones C1 National Parks and Nature Reserves) within proximity to the project site, including:

- Yanga National Park (about 30 kilometres west)
- Kalyarr National Park (about 47 kilometres north)
- Oolambeyan National Park (about 84 kilometres east).

While the LEP guides local development within the LGA, the EP&A Act indicates that LEPs are not applicable to SSD projects. Therefore, the remaining provisions of the LEPs have not been further considered in this EIS. However, the EIS has provided consideration of heritage items listed under the LEPs in Chapter 9 (Historic heritage) and Technical paper 3 (Historic heritage assessment) and has considered potential impacts to land use in Chapter 10 (Land).

4.5 Identification of statutory requirements

Table 4.1 identifies the statutory requirements for the project.

Table 4.1 Summary of statutory requirements for the project

Category	Action required
Power to grant approval	The NSW Minister for Planning and Public Spaces or their delegate is the consent authority for the project and an EIS is required to be lodged to the DPHI. Section 4.15 of the EP&A Act is addressed in Appendix B (Statutory compliance).
Permissibility	The project involves development for the purpose of electricity generating works using wind power that has a capital investment value more than $30 million and as such is permissible with consent and is considered SSD. The Transport and Infrastructure SEPP is a key environmental planning instrument that can determine the permissibility of infrastructure development and subsequently under which part of the EP&A Act it is assessed. Clause 2.36 of the Transport and Infrastructure SEPP permits 'development for the purpose of electricity generating works' to be carried out with development consent on land within a prescribed non-residential zone. The project area is zoned RU1 – Primary Production under the Wakool LEP and Conargo LEP that is a prescribed rural zone.
Other approvals	Section 4.41 of the EP&A Act states the following approvals, permits etc. are not required for an approved SSD, including: — *Fisheries Management Act 1994:* potential impact on key fish habitat has been considered in Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report). — *Heritage Act 1977:* Potential impact on historic heritage has been considered in Chapter 9 (Historic heritage) and Technical paper 3 (Historic heritage assessment). The nearest item is the Old Courthouse and Footbridge located approximately 30 kilometres away from the project site. — *National Parks and Wildlife Act 1979*: the project would impact on Aboriginal cultural heritage as discussed in the Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared as part of the EIS (refer to Technical paper 2 (Aboriginal cultural heritage assessment). The ACHAR involved consultation with Aboriginal communities. — *Rural Fires Act 1997*: a bushfire risk assessment has been prepared for this EIS (refer to Chapter 18 (Hazards and risk) and Technical paper 12 (Bushfire risk assessment)). — *Water Management Act 2000*: potential impact on water quality has been considered in Chapter 14 (Hydrology, flooding and water) and Technical paper 8 (Hydrology, flooding and water impact assessment). Section 4.42 of the EP&A Act lists legislation that must be consistently applied to SSD projects. For the project, Section 4.42 approvals include: — Environment Protection Licence under the *Protection of the Environment Operations Act 1997* — work in or over a public road approval under the *Roads Act 1993*.
Pre-condition to exercising the power to grant approval	This EIS has been prepared to address the SEARs and the form and content requirements set out in Part 8 Division 5 of the EP&A Regulation. During the exhibition period, the public and agencies would be invited to make submissions. After the exhibition period closes, DPHI may ask the Applicant to respond to issues raised in the submissions and prepare a Submissions Report.

Category	Action required
Mandatory matters for consideration	The consent authority is required to consider a range of matters when deciding whether to grant consent for the project. These are referred to as mandatory considerations and include: — *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) The Planning Systems SEPP identifies development that is SSD. The project is characterised as electricity generating works under Clause 2.36 of the Transport and Infrastructure SEPP. — *State Environmental Planning Policy (Primary Production) 2021* (Primary Production SEPP) The Primary Production SEPP aims to facilitate orderly economic use and development of land for primary production and reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources. The SEPP is also intended to identify land that has been declared to be State Significant agricultural land. An Agricultural Impact Assessment has been prepared in Chapter 10 (Land) and Technical paper 4 (Agricultural impact assessment) to consider potential impact on primary production. — *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP) The Resilience and Hazards SEPP provides a state-wide approach to the remediation of contaminated land for the purpose of minimising risk of harm to health of humans and the environment. The object of Chapter 3 (Hazardous and offensive development) of the Resilience and Hazards SEPP is to ensure that measures are used to reduce the impact of a development that is potentially hazardous or offensive. An assessment of hazards is provided in Technical paper 14 (Preliminary hazard analysis) and Chapter 18 (Hazards and risk). In accordance with Clause 4.6 (1) of the Resilience and Hazards SEPP, a consent authority must consider potential contamination and proposed use. Identification and assessment of potential risk and impacts to the project in relation to contaminated land management is provided in in Chapter 19 (Soils and contamination) and Technical paper 15 (Soils and contamination impact assessment). — *State Environmental Planning Policy (Biodiversity and Conservation) 2021* (Biodiversity and Conservation SEPP) The Biodiversity and Conservation SEPP contains provisions for the conservation and management of natural vegetation areas that provide habitat for koalas. Potential impacts on koala populations have been considered in Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report).

4.6 Statutory compliance

Appendix B identifies the relevant statutory requirements for the project and indicates where they have been addressed in the EIS.

5 Engagement

This chapter provides a summary of the stakeholder engagement carried out for the project. It provides an overview of the engagement process, the findings that have been incorporated into the EIS, and the commitments to ongoing and future engagement.

The Secretary's Environmental Assessment Requirements (SEARs) relevant to engagement, together with a reference to where they are addressed in this Environmental Impact Statement (EIS), are provided in Appendix A.

5.1 Approach to engagement

5.1.1 Engagement approach and objectives

Neoen understands that the success of the project depends to a large extent on the development of genuine, open and ongoing relationships with key stakeholders and members of the local community. Neoen recognise the importance of ensuring a 'no surprise' dynamic with the local community and are committed to developing and nurturing long term relationships between the Neoen team and the various project stakeholders.

Neoen have a vertically integrated business model, meaning that they 'develop to own' their projects. This model is unusual in the industry as Neoen's starting point is clear understanding of the need for long term neighbours and participants in the local community for the lifetime of the project. As such, Neoen seek to establish and nurture relationships, embrace partnerships and innovation, confident that Neoen would see projects and benefits to fruition.

The objectives of the Community Engagement Plan (CEP) (refer to Appendix D (Community Engagement Plan)) for the project include to:

- foster a transparent and open approach to development of Tchelery Wind Farm and ensure 'no surprises' for the local community
- keep the community and stakeholders informed about Tchelery Wind Farm through provision of accurate, timely and factual project information
- identify and address community and stakeholder concerns and maintain transparency in the project design, implementation and ongoing operations
- involve stakeholders and community regarding key decisions
- identify opportunities for local business involvement and local employment in construction and operation of the project and where appropriate develop a Local Participation Plan
- identify opportunities for Indigenous Participation and employment in the construction and operation of the project and where appropriate co-develop and implement an Indigenous Participation Plan
- co-design, develop and deliver a Community Benefit Sharing Scheme (CBSS) in collaboration with the community, and in partnership with local stakeholders where possible
- develop long term relationships and partnerships with community and stakeholders.

Neoen has developed a First Nations Engagement Plan (refer to Appendix E (First Nations Engagement Plan)) in association with the CEP.

5.1.2 Community Engagement Plan

A CEP for the project has been developed in line with the International Association of Public Participation (IAP2) Public Participation Spectrum, the Undertaking Engagement Guidelines for State Significant Projects (Department of Planning, Housing and Infrastructure (DPHI), 2024c), the Community Participation Plan (DPHI, 2024d) and consultation requirements detailed in the NSW Wind Energy Visual Assessment Bulletin (Department of Planning and Environment (DPE), 2016).

The CEP describes the overall approach for engagement and communication for the project during the planning and approval phase, but also engagement more broadly. It outlines:

- how stakeholders and community members would be provided with information about the project and via what engagement methods
- how stakeholders and community members would be presented with the opportunities to provide input
- how this stakeholders and community feedback would be considered and responded to.

The CEP identifies the stakeholders with an interest in the project and who are likely to be impacted (refer to Section 5.2). It includes early engagement activities that have occurred to date, while also providing a detailed plan on how engagement would be carried out into the future. The engagement activities undertaken and proposed, including community information sessions and face-to-face briefings, have actively sought to present the community and stakeholders with an introduction and understanding of the project and provide them with the opportunity to provide feedback.

In the initial phases of the project, engagement has focused on key stakeholders. This includes landholders within the project site, adjacent neighbours, government representatives, Aboriginal representatives, and energy industry organisations and businesses. During preparation of this EIS, engagement has been extended to focus on engaging with the wider stakeholders and community, while continuing to build relationships with key stakeholders.

5.1.3 Community benefit sharing

Benefit sharing with the local community is integral to Neoen's approach to community engagement. To ensure both short and long term benefits flow through to the community as a result of the establishment and operation of the project, Neoen have established a CBSS.

Neoen's financial contributions to a CBSS would be consistent with the Benefit-Sharing Guideline (DPHI, 2024). In the case of Tchelery Wind Farm, the total contribution will be $1,050 per megawatt per annum based on actual installed capacity, paid over the life of the development, and indexed to the greater of Consumer Price Index, and 2.5 per cent.

Neoen considers that it is important as part of maintaining the project's social licence that the allocation of funds takes into account the feedback Neoen has had from the community on what they wish the monies to be spent on. As a result, Neoen's contribution to the CBSS would be distributed into two streams:

- a Community Benefit Fund, administered by the council(s) under a Planning Agreement
- Community Initiatives, including legacy initiatives, to be tailored to local feedback and administered by Community Enterprise Foundation (the philanthropic arm of Bendigo & Adelaide Bank). These decisions would be made by a Local Advisory Committee, which would consist of representatives from the council(s), community and Neoen.

The CBSS would be designed to deliver benefits to stakeholders in the community in a way that aims to meet their needs and aspirations. The objectives include:

- deliver significant and meaningful improvements to the community surrounding the project
- ensure a wide range of different stakeholder groups benefit from the project
- empower the community to shape the design and implementation of different initiatives
- build support for renewable energy in the project area.

Majority of initiatives would be delivered during the construction and operational phases. In alignment with Neoen's vision, it is important that the benefit be tailored to meet each distinct communities' needs. Community input would be sought during the ongoing and future engagement opportunities outlined in Section 5.4.

5.2 Stakeholder identification

Table 5.1 provides a list of key government and organisation stakeholder groups that have been and would continue to be engaged throughout development of the project by Neoen. Consultation with the wider community has also commenced and would continue during development of the project. Aboriginal stakeholder engagement conducted by cultural heritage specialists, Navin Officer Heritage Consultants, is summarised in Section 5.3.2 and detailed in Technical paper 2 (Aboriginal cultural heritage assessment).

Table 5.1 Key stakeholder groups for the project

Stakeholder group	Description
Host landholders	Residents who are hosting wind farm on their land
Neighbours	Residents owning land adjacent to the project site Residents owning land up to eight kilometres from the project site Moulamein township.
Government – Commonwealth	Department of Climate Change, Energy, the Environment and Water
Government – State	Department of Planning, Housing and Infrastructure NSW Department of Climate Change, Energy, the Environment and Water Department of Primary Industries and Regional Development Energy Corporation of NSW NSW Environment Protection Authority Investment NSW Office of Environment and Heritage (within DPHI).
Government – Local	Edward River Council Murray River Council (neighbouring LGA) Hay Shire Council (neighbouring LGA)
Government – Political representatives	**Commonwealth** Relevant Federal Members of Parliament Ministers for Climate Change, Energy, the Environment and Water Relevant Shadow Ministers, and Shadow Assistant Ministers for Climate Change, Energy, the Environment and Water Federal Member for Farrer: The Hon. Sussan Ley MP **State** NSW Minister for Energy Member of Legislative Assembly for Murray: Ms Helen Dalton MP **Local** Mayor of Edward River Council

Stakeholder group	Description
Education	Local schools
Community	**Advocacy groups** Moulamein Community Development Group **Community organisations** Rotary club Lions club
Media	Tchelery Wind Farm's community information session was advertised to the public via local media including: — Wongi: — 14 and 21 February 2023 — 18 and 25 February 2025, 4 March 2025 — Swan Hill Guardian: — 14 and 17 February 2023 — 14, 25 and 28 February 2025, 4 March 2025 — Gannawarra: — 18 and 25 February 2025, 4 March 2025 — North West Farmer: — 21 February 2025 — Koondrook Barham Bridge Newspaper: — 2 and 16 February 2023 — 13, 20 and 27 February 2025 — Riverine Grazier: — 19 and 26 February 2025 — Deniliquin Pastoral Times: — 4 March 2025.

5.3 Engagement carried out

5.3.1 Opportunities for stakeholder participation prior to and during the preparation of the EIS

Engagement with the community commenced in early 2019 after the project site was first identified. The project was placed on hold until late 2021 to confirm the progress of Project EnergyConnect. Following confirmation of Project EnergyConnect, consultation with host landholders recommenced, resulting in the host landholders confirming their involvement in the project in 2022.

Since then, a wide-ranging engagement program has been developed to consider the range of stakeholders that may potentially be impacted by or interested in the project. Specific engagement activities that have been undertaken to date for the project are outlined below in Table 5.2.

Table 5.2 Engagement activities

Activity/consultation method	Summary
Website	The Tchelery Wind Farm project website was set up at www.tchelerywindfarm.com.au during the early stages of development to provide clear and accessible information about the project to the community. The project website would be regularly updated with project updates throughout the full lifecycle of project. This is currently managed and overseen by the Tchelery Wind Farm's Project Manager. The project website also provides information on other project contact points and suggests a number of ways for people to provide comment on the project. These include, but are not limited, to: — email us contact@tchelerywindfarm.com.au or call 1800 966 030 — complete a feedback survey — details about community events (including the project Community Information Session) — a complaints page that is added once the project receives development consent — a 'visit us' would be included on the page, once the project is constructed and under operation — see project documents, including project maps (Concept Plan and location).
Email	The project's e-mail is contact@tchelerywindfarm.com.au. The e-mail remains with the project for its lifetime. E-mails sent to this address can be accessed from the e-mail domain and are also forwarded to the e-mail of the Project Manager.
Contact number	The project's 1800 number is 1800 966 030. The number remains with the project for its lifetime. Calls to this number are forwarded to mobile of the Project Manager. They are forwarded during office hours Mon-Friday 9 am–5.30 pm, with a project specific recorded answering message at other times. Messages are sent to the project email address.
Local media advertising	The Tchelery Wind Farm's community information session was held on 23 February 2023. The project was advertised to the general public in local media via the Wongi on 14 and 21 February 2023; the Swan Hill Guardian on the 3, 14 and 17 of February 2023; and Koondrook Barham Bridge Newspaper on the 2 and 16 of February 2023.
Host landholder consultation	The project site was first identified in late 2018 and engagement with landholders commencing soon thereafter. The project was on hold until late 2021 to confirm the progress of Project EnergyConnect. The contract negotiations were finalised in mid-2022. Neoen initiated work on this project in early 2022 and commenced initial discussions with the host landholders. The consultation involved one-on-one meetings to discuss the project. Project managers have been in regular contact with the landholders to provide updates on the progress and the development via emails, in-person meetings and phone calls.

Activity/consultation method	Summary
Agency consultation	Neoen, with WSP's support, has consulted and sought advice from relevant government agencies in preparation of the Scoping Report. Neoen presented the project in front of the planning teams at Edward River Council and Hay Shire Council. The Murray River Council has been informed of the proposed development and efforts have been made to provide a briefing to the planning team. Neoen would continue to be in regular contact with the relevant councils with the project updates. Neoen is aiming to provide a briefing to the councillors of all three councils as the project progresses. Ms Helen Dalton MP, Member of Legislative Assembly for Murray and The Hon. Sussan Ley MP, Federal Member for Farrer have been notified about the project and would be kept up to date as the project progresses. Neoen has informed the Local Aboriginal Land Councils (LALCs), local schools and NSW Rural Fire Service (RFS) about the project. Neoen aim to engage with the local schools to explore opportunities to work with them to support education and training in renewable energy generation, the electricity grid and electricity market. They would continue engaging and consulting with LALCs, RFS and relevant agencies about the project.
Community information session	On 23 February 2023, Neoen hosted a Community Information Session with an open invite to the general public. The Community Information Session was held at the Moulamein Bowling Club in Moulamein. A total of nine people attended, including a few of key stakeholders and representatives from the local area. A Community Information Booklet was distributed at the Community Information Session, with a largescale map of the project location and concept plan also provided to the community. After the event, the community was invited to provide comments and feedback on the project via the project's SurveyMonkey feedback form, as also shared on the website. A link to the feedback form was shared via email to the participants on a voluntary basis. The second community information session was held on 4 and 5 March 2025 in Hay, Deniliquin and Moulamein. The members of the community who attended were interested in the project and how it was going to bring local employment and investment in the region.

5.3.2 Community feedback

Overall, the participants of the community sessions outlined in Table 5.2 indicated a moderate to high level of interest for the project that was primarily a result of their interest in renewable energy development and employment. Due to the presence of other renewable energy projects and given that this area is part of the South West REZ, there is a higher than usual community awareness of the impacts and benefits of renewable energy projects.

Key themes and feedback received to date via the engagement activities outlined in Section 5.3.1 are summarised in Table 5.3.

Table 5.3 Summary of issues raised

Category	Feedback	Neoen response
Community benefit sharing	Stakeholder views were canvassed through a survey and at the community event. There was strong support for benefit sharing ideas relating to aged care and education.	Neoen would continue to explore opportunities to collaborate with the schools and aged care homes. Neoen would continue to engage with community members and councils to develop the community benefit sharing scheme.
Economic, environmental, and social impacts	The stakeholders were positive towards the economic benefits that the project would bring to the region. There were concerns about the environmental and social impact such as from noise, visual, traffic and cumulative impact from the multiple projects in the area.	Detailed environmental assessment has occurred during the preparation of this EIS. Neoen would continue to work closely with the project's neighbours, community and councils to address concerns.
Local employment and supply chain	The community is interested in local employment and supply chain to boost the local economy.	A job registration form has been created on the project website to register interest in the supply chain.
Renewable energy	The community is positive and overall supportive of renewable energy projects in the region. There was some disgruntlement expressed that the NSW Government had not consulted with the community about the establishment of a REZ in their region.	Neoen would continue to engage with the community to maintain positive support for the project.

5.3.3 *Engagement with Aboriginal representatives*

Aboriginal stakeholder engagement for the project has been led by cultural heritage specialists, Navin Officer Heritage Consultants (refer to Technical paper 2 (Aboriginal cultural heritage assessment)).

The Aboriginal cultural heritage consultation requirements for proponents 2010 (Department of Environment, Climate Change and Water, 2010) establish the requirements for consultation with Aboriginal people as part of the heritage assessment process. The aim of undertaking the consultation is to understand cultural heritage values present in the subject area, and views and concerns of Aboriginal people about the project.

The requirements specify four stages of consultation:

- Stage 1 – Notification of project and registration of interest
- Stage 2 – Presentation of information about the project
- Stage 3 – Gathering information about cultural significance
- Stage 4 – Review of draft cultural heritage assessment report.

The actions for each stage of consultation are summarised below. A summary of issues raised during Aboriginal community consultation activities is provided in Technical paper 2 (Aboriginal cultural heritage assessment).

5.3.3.1 Stage 1 – Notification of project and registration of interest

An advertisement was placed in The Guardian that invited registration of interest by 17 June 2022. Letters were sent to:

- Deniliquin LALC
- Edward River Council
- Murray Local Land Services
- Heritage NSW
- Native Title Services Corporation Ltd; and
- Office of the Registrar *Aboriginal Land Rights Act 1983*.

A search was made of the National Native Title Tribunal registers on 31 May 2022.

Following advice received from Heritage NSW and the native title search results, letters were sent to all groups/individuals identified. The closing date for expressions of interest was 22 June 2022.

Four registrations of interest were received from the following Aboriginal parties:

- Wakool Indigenous Corporation (Gary Pappin)
- Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation
- Barap Wamba
- Deniliquin LALC.

Additional registrations were received over the life of the project from the following Aboriginal parties:

- Dennis Charles (5/02/2024)
- Pappin Family Aboriginal Corporation (5/07/2024).

5.3.3.2 Stage 2 and 3 – Presentation of information about the project and gathering information about cultural significance

A copy of the survey methodology and cultural information request was sent to registered groups on 22 August 2022. No responses were received regarding the methodology.

A copy of the test excavation methodology was sent to registered groups on 11 June 2024. No comments were received regarding the methodology.

5.3.3.3 Stage 4 – Review of draft cultural heritage assessment report

A draft copy of the survey report was provided to the Registered Aboriginal Parties (RAPs) for their input and comment. Comments were received from one RAP group – Wakool Indigenous Corporation (Gary Pappin), and they have been addressed in the report.

5.4 Ongoing and future engagement

Ongoing engagement with the community and stakeholders would be continued during the EIS exhibition and assessment phase. This engagement would include:

- community drop-in session during exhibition of the EIS to inform the wider community of project benefits, impacts and proposed management measures
- tailored consultation with host and surrounding landowners to ensure residents are informed of the nature and magnitude of predicted impacts; measures to mitigate predicted impacts and to ensure provision of timely access to project staff to discuss the findings if required
- distribution of information on benefits generated by the project via regular updates and documentation on the project website and community newsletters
- the process for receiving and responding to community complaints, including the management response, would be detailed prior to construction in the Construction Environmental Management Plan
- regular announcements that notify impacted stakeholders of upcoming work activity during project construction
- ongoing meetings and updates with council, local businesses and other special interest groups.

6 Approach to assessment of impacts

This chapter outlines the approach that has been adopted in assessing the potential impacts of the project.

6.1 Assessment approach

The assessment of potential environmental impacts as part of this Environmental Impact Statement (EIS) has, for the most part, occurred by assessing impacts on a 'worst case' basis. Conducting the impact assessment this way was intended to ensure rigorous level of assessment, while also leaving open the possibility of further reducing impacts to sensitive receivers and the surrounding environment through design refinements.

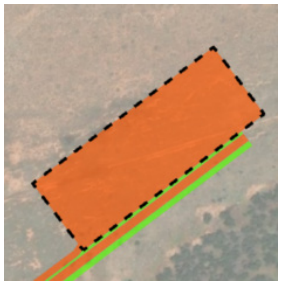
The project as presented in this EIS has been developed to avoid and minimise impacts where practicable and has been designed to a level where the potential impacts of the project can be appropriately identified and assessed. Some flexibility has been factored into the design of the project as described in this EIS to allow for certain design elements and construction methods to be refined. Neoen would seek to reduce environmental impacts and improve environmental outcomes through continued refinement of the project design and construction method, where practicable.

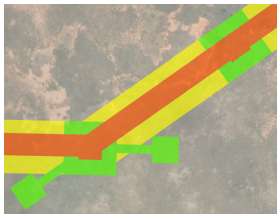
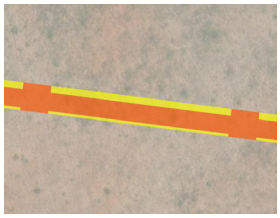
Likewise, certain mitigation measures identified in this EIS require impacts to be further considered during the detailed design and construction planning processes to, where practicable, further minimise or avoid impacts.

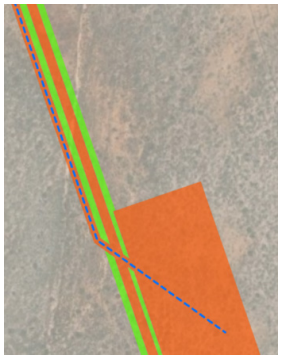
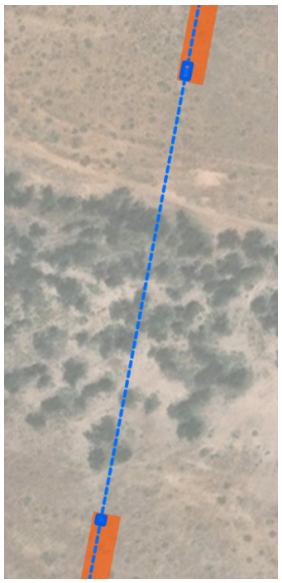
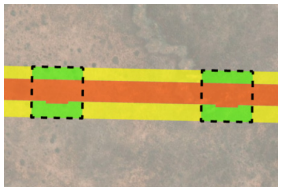
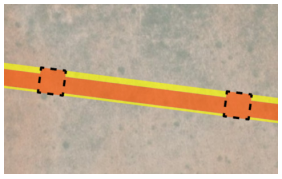
6.1.1 Key terms

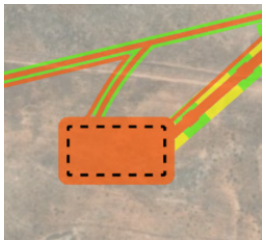
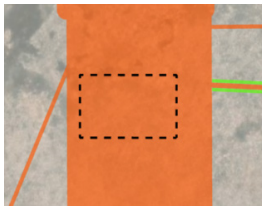
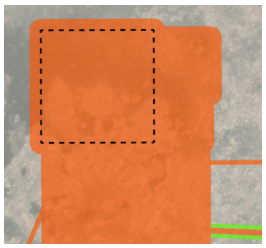
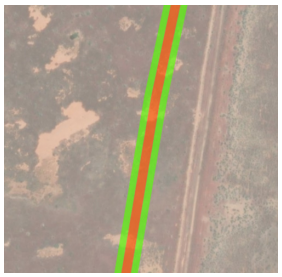
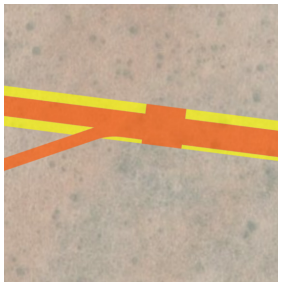
Key terms used in the EIS to describe areas that would be disturbed during construction and operation are presented in Table 6.1.

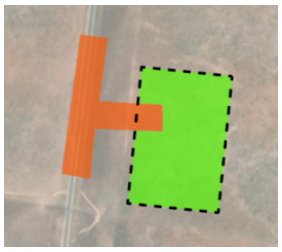
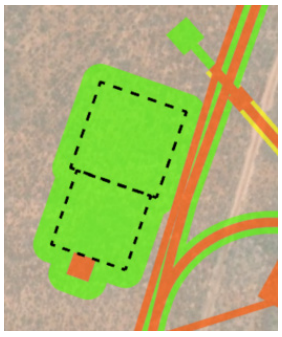
Table 6.1 Indicative construction and operation disturbance areas

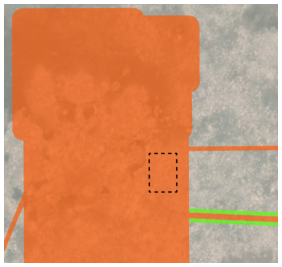
Disturbance areas used for impact assessment	Indicative design	Construction footprint	Operational footprint
Wind Turbine Generators (WTG)			
WTG foundations		The footprint for construction of 74 WTG foundations would comprise an area of 270 metres by 100 metres at each WTG site.	The footprint of 74 WTG foundations would comprise an area of 270 metres by 100 metres.

Disturbance areas used for impact assessment	Indicative design	Construction footprint	Operational footprint
Transmission lines			
330 kV transmission line (60 metre transmission line easement)		The fully disturbed corridor includes a fully cleared stringing corridor of 20 metres and up to 6 metre wide access track. Where a bend in the 330 kV transmission line is greater than 30 degrees, a brake and winch site would be required. The brake and winch site would include a 30 by 30 metre foundation pad and a 70 by 10 metre stringing corridor (away from the transmission line structure).	The fully disturbed corridor between each tower includes a stringing corridor of 20 metres and up to 6 metre wide access track for operation. Vegetation would be maintained under four metres within the transmission line easement.
33 kV transmission line (above ground) (20 metre transmission line easement)		The fully disturbed corridor between the towers includes a stringing corridor of 10 metres and up to 6 metre wide access track. Where a bend in the 33 kV transmission line is greater than 30 degrees, a brake and winch site would be required. There would be 30 brake and winch sites (30 by 30 metres) and a 30 by 10 metre stringing corridor (away from the transmission line structure).	The fully disturbed corridor between the towers includes a stringing corridor of 10 metres and up to 6 metre wide access track for operation. Vegetation would be maintained under four metres within the transmission line easement.

Disturbance areas used for impact assessment	Indicative design	Construction footprint	Operational footprint
33 kV transmission line (underground)	 	Construction of underground transmission lines would require excavation of trenches about 0.5 metres in width and 1.2 metres in depth. Two different widths would be disturbed during construction: — eight metre corridor (when following an access track) — 14 metre corridor (where no access track to allow access). An entry pit of five metres by five and an exit pit five metres by 10 metres is required for horizontal directional drilling under The Forest Creek for underground transmission lines.	A 14 metre disturbed corridor would be required for below ground transmission lines that were not along existing access tracks. Entry and exit pits would be maintained as part of the footprint (entry pit of five metres by five metres for the entry and an exit pit five metres by 10 metres).
Transmission line structures			
Structures for 330 kV transmission line		There would be 73 transmission line structures installed for the 330 kV transmission line. A 60 x 60 metre footprint would be fully disturbed.	A 26 x 26 metre footprint would be maintained during operation for each of the 73 transmission line structures.
Structures for 33 kV transmission (above ground)		There would be 18 transmission line structures installed for the 33 kV transmission line. A 20 x 20 metre footprint would be disturbed.	A 20 x 20 metre footprint would be maintained during operation for each of the 18 transmission line structures.

Disturbance areas used for impact assessment	Indicative design	Construction footprint	Operational footprint
Electrical infrastructure			
Collector substations		Three collector substations with an area of 20,000 square metres (m^2) each would form part of the 60,000 m^2 footprint.	Three collector substations with an area of 20,000 m^2 each would form part of the 60,000 m^2 footprint.
Switchyard		A disturbance area of 26,000 m^2 would be required for the switchyard.	A footprint of 26,000 m^2 would be required for the switchyard.
Battery Energy Storage System (BESS)		A disturbance area of 40,000 m^2 would be required for the BESS.	A footprint of 40,000 m^2 would be required for the BESS.
Access tracks			
Access tracks		A 25 metre wide footprint (12.5 metres on each side of centreline) would be disturbed).	A 10 metre wide footprint (five metres on each side of centreline) would be maintained.
Transmission line access tracks		Access tracks within the footprint for the above ground transmission lines would be established to provide access (where not already present).	A six metre disturbance area would be maintained for access tracks (where not already present).

Disturbance areas used for impact assessment	Indicative design	Construction footprint	Operational footprint
Port to site haulage routes			
Port to site haulage routes	 	Proposed road and intersection upgrade work for the oversize overmass (OSOM) route from the Port of Newcastle is provided in Table 3.4 and Chapter 17 (Traffic and access). No upgrades are proposed for the route from the Port of Adelaide.	Refer to Table 3.4 and Chapter 17 (Traffic and access).
Ancillary infrastructure			
Temporary worker accommodation camp		A worker accommodation camp with a footprint of 240 by 340 metres would be established.	N/A
Construction compound and laydown area	 	There would be three concrete batching plants (200 by 300 metres), three laydown areas (86 by 86 metres) and two construction compounds (25 by 25 metres).	A general laydown area of about 7,400 m^2 would be retained. The four construction workforce amenities would be retained (about 2,500 m^2).

Disturbance areas used for impact assessment	Indicative design	Construction footprint	Operational footprint
Operation and maintenance (O&M) facility		A disturbance footprint of 3,500 m^2 (70 by 50 metres) would be required for the O&M facility.	A footprint of 3,500 m^2 would be maintained for an O&M facility.

6.2 Identification of key issues

To identify the potential environmental, social and economic impacts that may arise as a result of the project and to determine the required level of assessment of these impacts in accordance with the State Significant Development Guidelines – Preparing a Scoping Report (Department of Planning, Industry and Environment, 2022) (Scoping Report guidelines), a preliminary environmental risk analysis was completed as part of the Tchelery Wind Farm Scoping Report (WSP, 2023) (Scoping Report). The preliminary environmental risk analysis was based on a preliminary design for the project and limited environmental information available at that time.

The preliminary environmental risk analysis has been updated to reflect the design refinement since the Scoping Report, the Secretary's Environmental Assessment Requirements, the results of field investigations and feedback from property owners, community and stakeholders.

Impacts have been categorised as 'key' or 'other' issues, based on the consequence of each potential impact (minor, moderate or major) and likelihood of the impact (unlikely, likely or certain). In determining the consequence, the scale of the impact (severity, geographical extent and duration) and sensitivity of the receiving environment has been considered (including values held by stakeholders and vulnerability to change).

Having regard to these categorisations, 'key issues' for the project were identified where impacts had potential to be of a major or moderate nature and where further detailed investigation was required to better understand the impact and potential mitigation measures. 'Other' issues were identified where there were minor impacts as a result of construction and/or operation of the project. The categorisation of issues assessed in this EIS is provided in Table 6.2.

Table 6.2 Categorisation of issues for the project

Category	Aspect
Key issues	Biodiversity
	Aboriginal heritage
	Historic heritage
	Land use and property, including agricultural land uses
	Landscape character and visual amenity
	Social
	Economic
	Hydrology, flooding and water
	Noise and vibration
	Traffic and access
	Hazards and risk
	Soils and contamination
	Groundwater
	Cumulative impacts
Other issues	Air quality and greenhouse gases, incorporating climate change
	Waste management and resource use

Part B – Environmental assessment

7 Biodiversity

This chapter provides an assessment of potential impacts to biodiversity associated with the project, identifies mitigation measures to address these impacts and the requirements to offset these impacts. This chapter summarises information in Technical paper 1 (Biodiversity development assessment report) (BDAR) prepared by WSP.

7.1 Summary of key findings

The key findings from the assessment of impacts to biodiversity are:

- direct impacts of construction of the project include vegetation clearing for project features such as Wind Turbine Generators (WTGs), ancillary facilities, access tracks and transmission lines
- residual direct impacts of the project would be as follows:
  - 602.83 hectares of Plant Community Types (PCTs) and habitat for various threatened fauna species
  - 35.06 hectares of three *Biodiversity Conservation Act 2016* (BC Act) listed Threatened Ecological Communities (TECs) within the disturbance footprint
  - 258.23 hectares of habitat for seven threatened species credit species including *Brachyscome papillosa* (Mossgiel Daisy), *Eleocharis obicis* (Spike-rush), *Lepidium monoplocoides* (Winged Peppercress), *Litoria raniformis* (Southern Bell Frog), *Maireana cheelii* (Chariot Wheels), *Pilularia novae-hollandiae* (Austral Pillwort) and the *Swainsona murrayana* (Slender Darling Pea)
  - expected impact from the Port of Newcastle to site haulage route to 0.83 hectares of White Box Yellow Box Blakely's Red Gum Woodland that is listed as a Serious and Irreversible Impact (SAII) entity. The TEC is previously disturbed roadside vegetation and direct and indirect impact would be managed through mitigation measures provided in the project BDAR
- indirect impacts associated with the project include (but are not limited to):
  - inadvertent impacts on adjacent habitat or vegetation including impact to habitat surrounding known aquatic locations of threatened frog species
  - reduced viability of adjacent habitat due to edge effects, noise, dust or light spill
  - transport of weeds, pests and pathogens from the site to adjacent vegetation
  - increased risk of starvation, exposure and loss of shade or shelter
  - loss of breeding habitats
  - trampling of threatened flora species
  - increased risk of fire
  - increased risk of collision with WTGs and transmission lines
- prescribed impacts of the project include:
  - impacts to human-made structures that are known to support populations of threatened entities
  - connectivity of habitat for threatened species
  - man-made waterbodies, water quality and hydrological processes
  - WTG strikes on protected animals
  - vehicle strikes on threatened species or animals that are part of a TEC
  - an adaptive management plan would be required to manage impacts that are difficult to anticipate or evaluate before the start of a development project.

A qualitative risk assessment was conducted as part of the Bird and Bat Adaptive Management Plan (BBAMP) to consider the risk from either collision with WTGs or disturbance/avoidance from operating WTGs. The risk assessment identified three species as having a moderate risk rating including of *Falco cenchroides* (Nankeen Kestrel), *Falco berigora* (Brown Falcon) and *Circus assimilis* (Spotted Harrier). The remaining species assessed were determined to have a low risk rating. WTG 1, 7, 19, 30, 33 and 52 were identified as higher risk due to their proximity to woodland patches or scattered trees and will be prioritised for carcass searches.

The assessment of biodiversity impacts addresses the proposed port to site haulage routes. No biodiversity impacts are expected along the South Australia (SA) haulage route and therefore that route was not considered in the assessment. The blade components of the WTGs require transport along the New South Wales (NSW) route between the Port of Newcastle and the project site. The NSW Port to Site Haulage Route Assessment (Appendix I in Technical paper 1 (Biodiversity development assessment report)) includes assessment of 16 pinch points identified along the haulage route, where upgrades or modifications are proposed. Impacts associated with vegetation removal are limited to seven pinch points.

The biodiversity offset scheme (BOS) for this project includes two primary options to fulfill credit obligations:

- creating a Biodiversity Stewardship Agreement (BSA) on local land, including the potential for a BSA created within the project site
- purchasing and retiring biodiversity credits from the biodiversity credit register.

Preliminary investigations have already been undertaken within project site in areas not affected by the project to assess potential suitability as a BSA site. The identification and creation of a BSA site within the project site would be based on the presence of specific biodiversity values being impacted by the project.

The project's offset liability determined in accordance with NSW Biodiversity Assessment Methodology (BAM) is a worst case upper limit based on indicative disturbance footprints only, as design finalisation for the project has not yet been completed. Accordingly, the final biodiversity offset liability is subject to the timing of finalisation of the project design and would be determined at that stage.

Biodiversity offsets would be required for impacts to PCTs, threatened species or populations. The offset obligation for the project has been calculated to require the following credits:

- 14,945 ecosystem credits within the Murrumbidgee subregion
- 28 ecosystem credits within the Inland slopes subregion
- 3 ecosystem credits within the Lower slopes subregion
- 11,815 species credits in the Murrumbidgee subregion.

No additional credit liability is required for residual indirect and prescribed impacts.

7.2 Setting the context

7.2.1 Statutory requirements

Potential impacts to biodiversity associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Environment Planning and Assessment Act 1979* (EP&A Act)
- *Biodiversity Conservation Act 2016* (BC Act)
- *Fisheries Management Act 1994* (FM Act)
- *Local Land Services Act 2013* (LLS Act)
- Biodiversity Conservation Regulation 2017 (BC Regulation)
- Bionet Threatened Biodiversity Data Collection (TBDC) Guidelines (NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2024e)
- NSW Biodiversity Assessment Methodology (BAM) (Department of Planning, Industry and Environment (DPIE, 2020d)
- NSW Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities (Working Draft) (Department of Environment and Conservation, 2004)
- Planning Systems State Environmental Planning Policy (SEPP) 2021
- Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method Survey Guide (Department of Planning and Environment (DPE, 2022d)
- NSW Survey Guide for Threatened Frogs: a guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE, 2020f)
- Surveying threatened plants and their habitat NSW survey guide for the BAM (DPIE, 2020e)
- Survey Guidelines for Australia's Threatened Birds (Department of Environment Water Heritage and the Arts (DEWHA) 2010)
- 'Species credit' threatened bats and their habitats NSW guide for the Biodiversity Assessment Method (DPIE, 2021d).

7.3 Assessment method

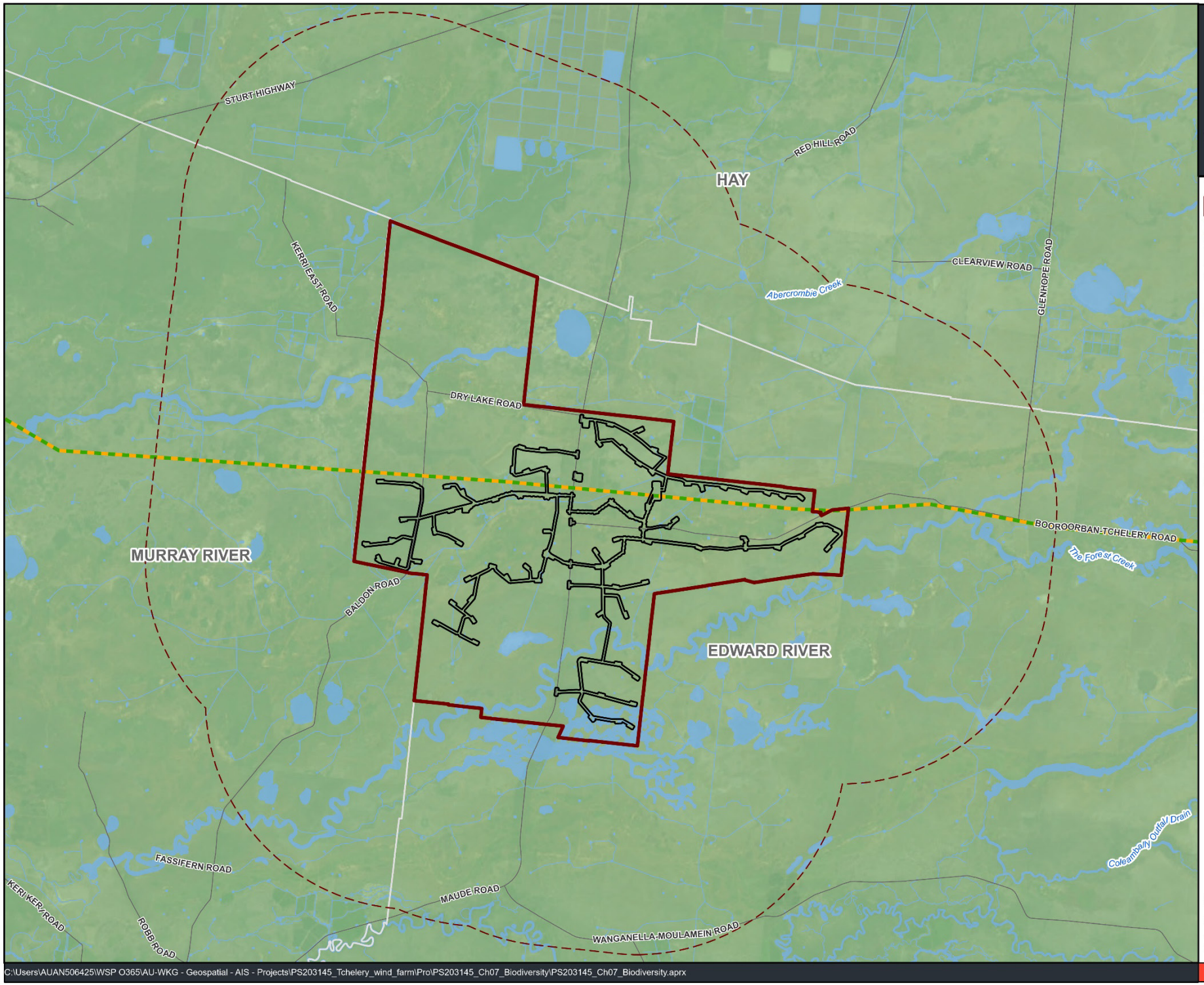
The assessment method for biodiversity has been conducted in accordance the Biodiversity Assessment Method (BAM) (DPIE, 2020d) and involved the following:

- a desktop assessment, including a review of relevant databases, vegetation maps, aerial photography, published literature and species expert assessments, to identify threatened species, populations, communities and their habitats with a likelihood of occurrence in areas that may be impacted by the project
- field surveys conducted from June 2022 to February 2025 within the project area (referred to as 'subject land' in Technical paper 1 (Biodiversity development assessment report)) including:
  - random meander surveys and BAM vegetation integrity plots
  - rapid vegetation assessments
  - targeted flora surveys including parallel field traverses, two-phase grid-based systematic surveys, and rapid data point assessment of threatened flora microhabitats
  - regular opportunistic threatened flora and fauna observations
  - targeted fauna surveys including diurnal Bird Utilisation Surveys (BUS), microchiropteran bat surveys, spotlighting, call playback, herpetological surveys and Plains-wanderer surveys
- assessment of potential impacts from construction and operation of the project including direct, indirect, prescribed and residual impacts, and SAII
- identification of mitigation measures to avoid, minimise and mitigate identified impacts
- identification of offset requirements for the project.

Key terms used in assessment of impacts to biodiversity include:

- **disturbance footprint:** the disturbance footprint is comprised areas of both the construction and operational footprint that represent the total area of land that would be physically disturbed by development of the project
- **locality:** includes the project site and a 10 kilometre buffer around the project site for database searches to inform the environmental assessment
- **subject land:** the disturbance footprint and a nominal 50 metre buffer where field survey in accordance with the BAM have been applied. The subject land incorporates all project features including those for the port to site haulage route
- **assessment area:** the assessment area includes the subject land and the area of land within the 1,500 metre buffer zone surrounding the subject land that is determined as per Subsection 3.1.2 of the BAM
- **port to site haulage route (haulage route):** refers to the NSW haulage route between Port of Newcastle and the project site.

The areas referred by these terminologies are shown in Figure 7.1 and Figure 7.2.



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Tchelery Wind Farm

Figure 7.1
Landscape features of the project site

Legend

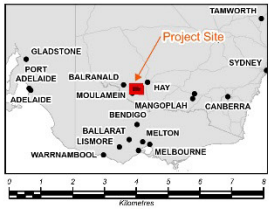
- Project site
- Locality
- Subject land

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section
- Road
- Watercourse
- Waterbody
- Local government area boundary

IBRA 7 Subregions

- Murrumbidgee



Coordinate system: GDA 1994 MGA Zone 55

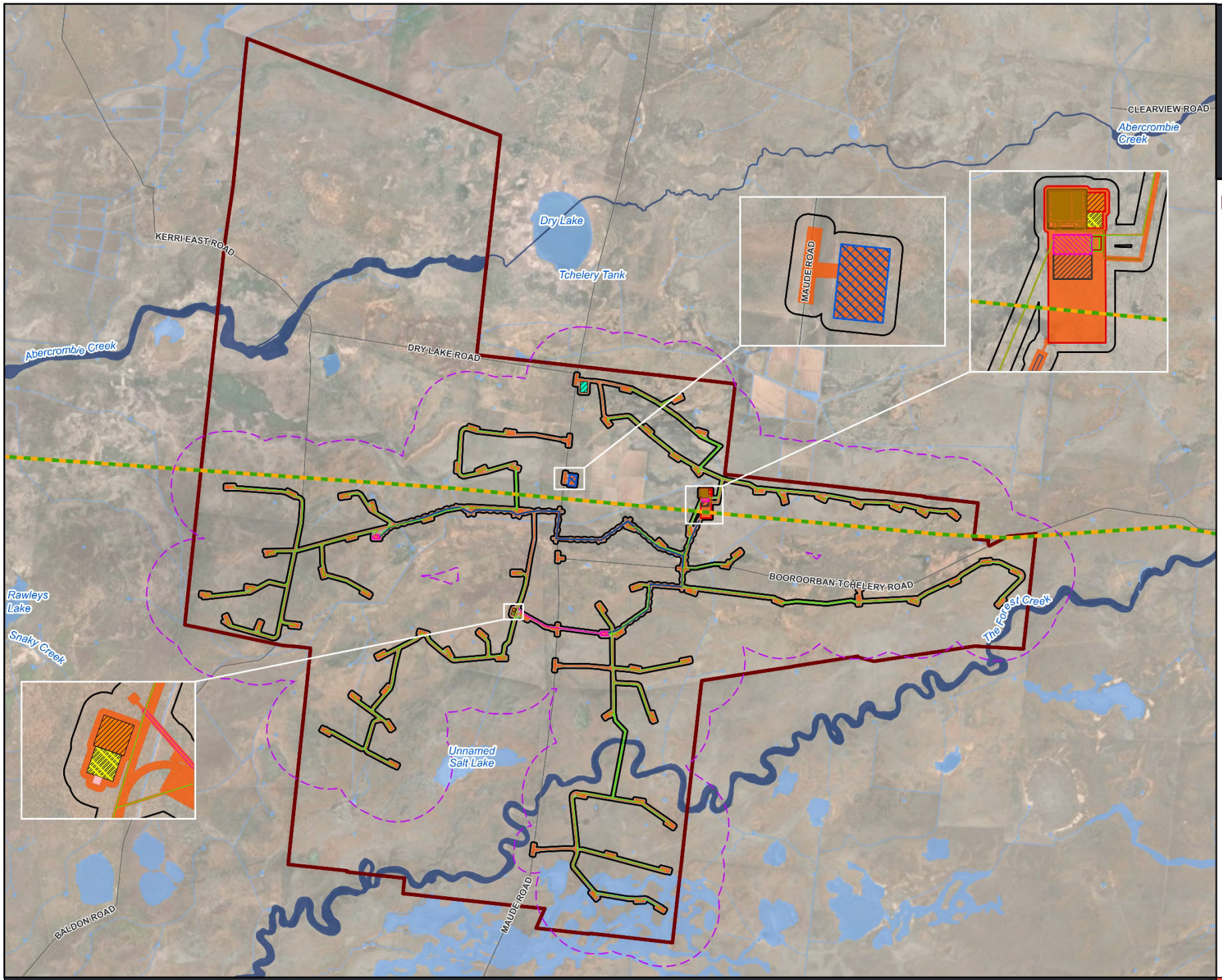
Scale ratio correct when printed at A4

1:237,500 Date: 23/04/2025

Data sources: Geoscience Australia, Neoen, NSW State Government, WSP Australia, World Imagery: Earthstar Geographics

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Tchelery Wind Farm

Figure 7.2
Project site location

Legend

- Project site
- Subject land
- Native vegetation assessment extent
- Habitat connectivity feature

Project Design

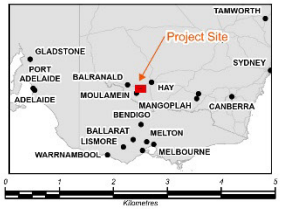
- Disturbance footprint
- Construction compound
- Workforce accomodation camp
- Workforce amenities
- Operational facilities area
- Battery energy storage system
- Collector substation
- Concrete batching plant
- Operations and maintenance facility
- Laydown area
- Switchyard

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Context

- Road
- Watercourse
- Ephemeral water body



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 23/04/2025

Data sources: Geoscience Australia, Neoen, NSW State Government, WSP Australia, World Imagery: Source: Esri, Maxar, Earthstar Geographics, and the GIS
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7.4 Description of existing environment

7.4.1 Landscape features

Field surveys were conducted throughout the project study area to ground-truth the landscape features. Ground-truthing informed updated project site maps and estimates of native vegetation cover to locate more significant features that are difficult to discern from aerial imagery such as per cent native vegetation within exotic paddocks.

Landscape features identified within the subject land and assessment area are shown on Figure 7.1 and Figure 7.2 and discussed in Section 7.4.1.1 to 7.4.1.6.

7.4.1.1 NSW Interim Biogeographic Regionalisation of Australia bioregions and subregions

The project study area falls within the Riverina Interim Biogeographic Regionalisation of Australia (IBRA) bioregion and the Murrumbidgee IBRA subregion (Thackway and Cresswell, 1995). The subregion consists of Quaternary alluvial sediments along with clay and sand. An alluvial fan with distributary channels and floodplains, and undulating plains with depressions are the typical landforms of the subregion. Red brown earths, grey and brown clays are present and deep siliceous sands occur on dunes. River red gum and river cooba occur on channels. Black box, lignum and old man saltbush is present on floodplains. Myall and old man saltbush with other saltbush and grasses were formerly widespread on backplains. White cypress pine occurs on dunes (Office of Environment and Heritage (OEH), 2025).

7.4.1.2 Rivers, streams, estuaries and wetlands

Murrumbidgee River and Edward River are two major river systems in the vicinity of subject land. They are about 30 kilometres north and 30 kilometres south of the subject land respectively. Abercrombie Creek and The Forest Creek are two tributaries of the larger riverine systems that flow through the subject land. Both of these creeks are ephemeral and did not contain water during the field surveys. However, these watercourses are lined with Black Box (*Eucalyptus largiflorens*) woodland.

Only three dams were found to fall within the project study area, and two of these dams were dry with no evidence of recent water (presence of encroaching terrestrial vegetation) during the field surveys. The remaining dam with standing water was assessed for potential habitat features for threatened candidate species. Dams were connected by buried irrigation pipes and excavated irrigation canals. Canals were inundated at different times of the year to facilitate the replenishing of dams and watering of crops.

Dry Lake, that sits on the northeast of the project study area holds no water for very long periods of time. It more recently filled in the second half of 2022 when the Riverina district experienced record breaking floods but prior to this it had not held any water for well over 20 years. The lake is last known to have flooded in 1974, the 1930s and the 1800s.

7.4.1.3 Habitat connectivity

The subject land is connected in all directions to similar chenopod shrublands providing significant connectivity and dispersal opportunities for terrestrial fauna to move across the project study area. Terrestrial fauna may see impediments to connectivity in the form of fence lines and roadways. The subject land is traversed by Maude Road (north-south) and Boorooban-Tchelery Road (east-west) and smaller maintained dirt access tracks.

Remnant woodland fragments within the subject land have little inter-patch connectivity particularly for fauna species that are less capable of traversing open landscapes. Black Box (*Eucalyptus largiflorens*) stands are generally isolated from significant stands of vegetation within the locality. The Forest Creek in the south of the project site represents the only linkage to larger patches of woodland vegetation. Although it does so with meagre but relatively continuous canopy elements (there is a 2.5 kilometre break in the canopy at one point) to the Edward River some 30 kilometres to the south of the subject land.

Given the lack of waterbird habitat in the project study area, it is unlikely that the project site is part of any regular migratory route. Birds may incidentally fly over the project site *en route* to more suitable habitat, but when doing so are likely to fly well above Rotor Swept Area (RSA) (refer to Figure 3.3 of Chapter 3 (Project description)). The project site is not a habitual flight path for nomadic or migratory species, so it is not possible to produce a meaningful map of the flight paths.

Two species of water bird were observed to fly in flocks through the study area at elevations within the RSA, being Australian Pelican and Little Pied Cormorant. These observations found that flocks of waterbirds are travelling through the subject land when there is no suitable habitat to attract them, suggesting that the area occurs within a region that waterbirds periodically move through. There is no evidence to suggest that a single corridor exists through the project study area, in preference to the surrounding region, but there is likely a regional exchange of birds between significant drainage lines (Murrumbidgee River and Lachlan River to the north and Murray River to the south) and wetlands locally, particularly during those times when local wetlands are recharged and attracting coastal waterbird populations to inland areas.

7.4.1.4 Karst, caves, crevices, cliffs, rocks or other geological features of significance

The subject land does not contain any karst, caves, crevices, cliffs, rocky areas or geological features of significance apart from the distribution of different soil types, some of which encourage the production of gilgais and others deep cracks that may be suitable as refuges for reptiles and amphibians.

7.4.1.5 Areas of outstanding biodiversity value

No areas of outstanding biodiversity value have been identified within the subject land.

7.4.1.6 NSW (Mitchell) landscape

Four NSW (Mitchell) landscapes occur within the subject land that are outlined in Table 7.1 and shown on Figure 7.2.

Table 7.1 Summary of NSW (Mitchell) landscapes within the subject land

NSW (Mitchell) landscape	Subject land (ha)	Disturbance area (ha)
Murrumbidgee Channels and Floodplains	74	0
Murrumbidgee Depression Plains	22,922	469
Murrumbidgee Lakes, Swamps and Lunettes	87	182
Murrumbidgee Scalded Plains	5,709	0

7.4.1.7 Port to site haulage route

The haulage route pinch point sites fall within the following IBRA subregions:

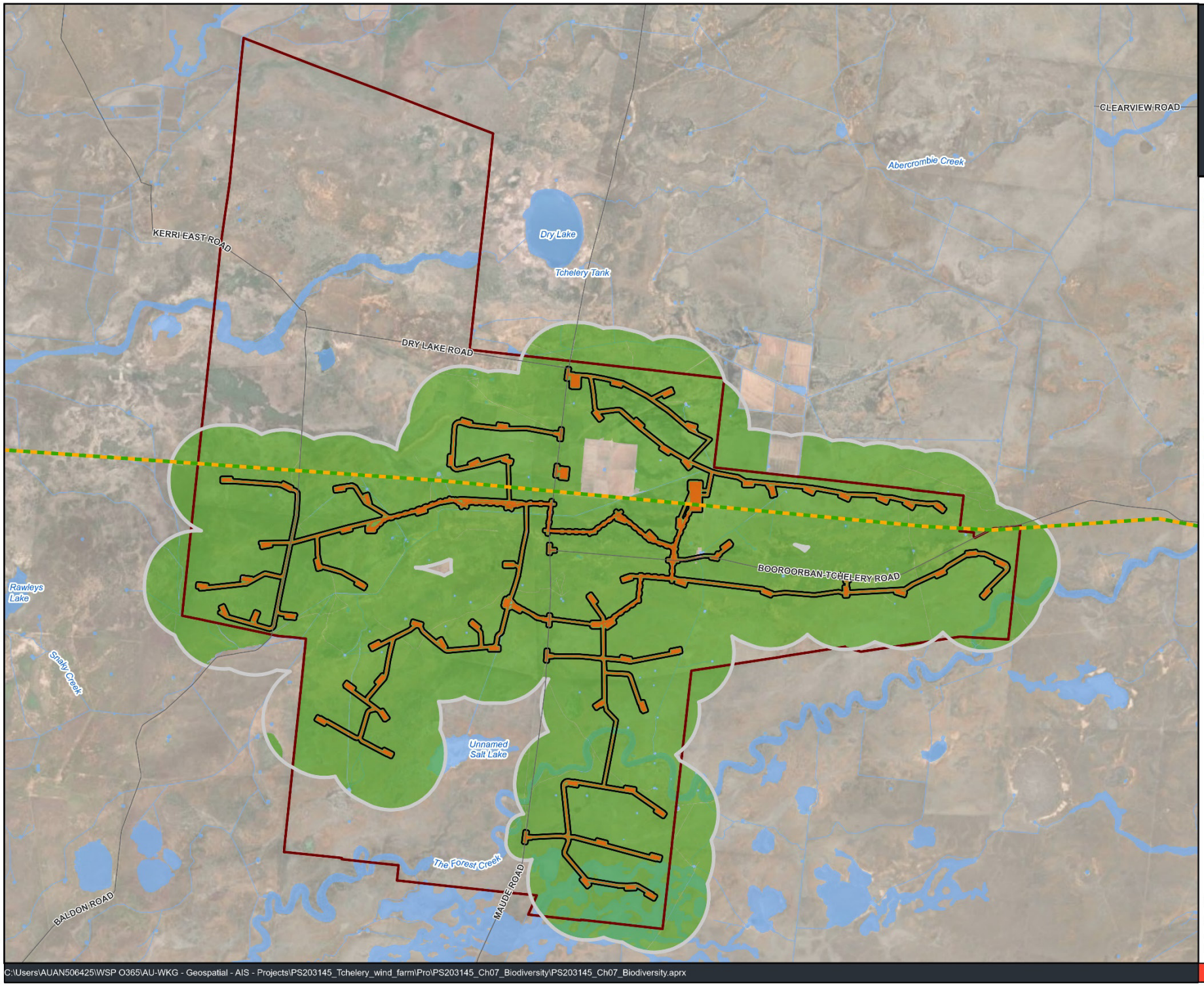
- Hunter IBRA subregion (pinch points 1, 2, 3 and 4)
- Inland Slopes IBRA subregion (pinch points 5, 7, 8A, 8B, 9, 10 and 11)
- Lower Slopes IBRA subregion (pinch points 6 and 12)
- Murrumbidgee IBRA subregion (pinch points 13, 14 and 15).

Vegetation impacts are only expected to occur within the Inland Slopes and Lower Slopes IBRA subregions. Therefore, both of these subregions were added to the Biodiversity assessment method calculator (BAM-C) for haulage route calculations. Overall, no significant landscape features were identified within any pinch point sites.

7.4.2 Native vegetation extent

Native vegetation extent within the subject land is shown in Figure 7.3. Native vegetation covers about 96 per cent of the subject land. The project study area contains areas of non-native vegetation that consists of Category 1 land, pre-existing infrastructure and miscellaneous ecosystems (for example dams). These areas have been allocated PCT 0 for the purpose of mapping.

Native vegetation cover associated with the port to site haulage route is largely limited to small patches of retained vegetation within an otherwise disturbed landscape. However, under a conservative approach, native vegetation cover was included in each BAM-C case as greater than 70 per cent class.



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Tchelery Wind Farm

Figure 7.3
Native vegetation assessment

Legend

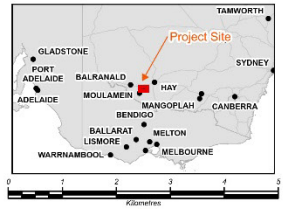
- Project site
- Subject land
- Disturbance footprint

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section
- Road
- Watercourse
- Ephemeral water body

Native Vegetation Assessment

- Native vegetation cover
- Native vegetation assessment extent



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

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Data sources: Geoscience Australia, Neoen, NSW State Government, WSP Australia, World Imagery: Earthstar Geographics

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7.4.3 Plant community types

Native vegetation recorded within the project study area has been assigned to five vegetation formations being:

- Arid Shrublands (Chenopod sub-formation)
- Freshwater Wetlands
- Saline Wetlands
- Semi-arid Woodlands (Grassy sub-formation)
- Semi-arid Woodlands (Shrubby sub-formation).

The five recorded native vegetation formations have been assigned to six vegetation classes, 16 PCTs and 15 vegetation zones. An overview of each vegetation formation, class and PCT is presented in Table 7.2.

Table 7.2 PCTs identified within the subject land

PCT ID	PCT name	Condition classes	BC Act[1]	SAII	EPBC Act[2]	Area (ha)
15	Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray-Darling Depression Bioregion)	Derived	–	–	–	0.23
17	Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray-Darling Depression Bioregion)	Moderate – good	–	–	–	0.79
23	Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Moderate	E[3]	–	–	1.23
		Derived	E[3]	–	–	26.57
24	Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Moderate – good	–	–	–	8.38
28	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Moderate	E[4]	–	–	1.29
		Derived	E[4]	–	–	5.14
153	Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones	Moderate – good	–	–	–	14.82
157	Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Moderate – good	–	–	–	104.42
160	Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Moderate – good	–	–	–	1.35
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Moderate – good	–	–	–	155.67
164	Cotton Bush open shrubland of the semi-arid (warm) zone	Moderate – good	–	–	–	259.56
166	Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	Moderate – good	–	–	–	21.68

PCT ID	PCT name	Condition classes	BC Act[1]	SAII	EPBC Act[2]	Area (ha)
236	Derived Giant Redburr low shrubland on alluvial plains of the semi-arid (warm) climate zone	Moderate – good	–	–	–	0.86
Port to site haulage route						
79	River Red Gum shrub/grass riparian tall woodland or open forest wetland mainly in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion*	Good	–	–	–	0.01
266	White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion*	Good	CE	Yes	CE	0.24
277	Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*	Good	CE	Yes	CE	0.55
278	Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion*	Good	CE	Yes	CE	0.04
Total						**602.83**

* Associated with the haulage route only

(1) BC Act; V = vulnerable, E = endangered, CE = critically endangered

(2) EPBC Act; V = vulnerable, E = endangered, CE = critically endangered

(3) *Acacia melvillei* shrubland in the Riverina and Murray-Darling Depression bioregions endangered ecological community (EEC)

(4) Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions EEC

7.4.4 Vegetation zones and integrity scores

A vegetation zone is defined in the BAM as ‘an area of native vegetation on the project site that is the same PCT and has the same broad condition state’. Based on the project site conditions, the PCTs have been divided into 14 vegetation zones. Ninety-one vegetation integrity plots were completed during the survey from June 2022 to July 2024 over 43 team days to determine the vegetation integrity scores that are outlined in Table 7.3. As plot-based assessments were not required for the haulage route, the precautionary principle has been applied. Moderate-good condition class and a vegetation integrity score of 100 was assigned to all vegetation present, as shown in Table 7.3.

Table 7.3 Vegetation integrity scores

Vegetation zone ID	Vegetation zone name	Composition condition score	Structure condition score	Function condition score (where relevant)	Vegetation integrity score	Hollow bearing trees present?
1	15_derived	88.3	54.2	3.6	25.8	No
2	17_mod-good	99.1	100	–	99.6	–
3	23_moderate	81.5	89.3	11.8	44.1	No
4	23_derived	95.6	100	4.2	34.4	No
5	24_mod-good	99.6	90.3	–	94.8	–
6	28_moderate	81.6	100	1.9	24.9	No
7	28_derived	68.5	75.6	0.5	17.3	No
8	153_mod-good	100	96.9	–	98.4	–
9	157_mod-good	97.6	98.9	–	98.2	–
10	160_mod-good	100	67.3	–	82	–
11	163_mod-good	99.9	100	–	99.9	–
12	164_mod-good	99.3	99.9	–	99.6	–
13	166_mod-good	95.1	86.7	–	90.8	–
14	236_mod-good	80.3	81.6	–	81	–
15*	277_mod-good	100	100	100	100	Yes
16*	278_mod-good	100	100	100	100	Yes

* Associated with the haulage route only

7.4.5 Threatened ecological communities

Three BC Act listed TECs were identified within the subject land (including the port to site haulage route) being:

- *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions
- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions
- 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, NSW South Western Slopes, South East Corner and Riverina bioregions.

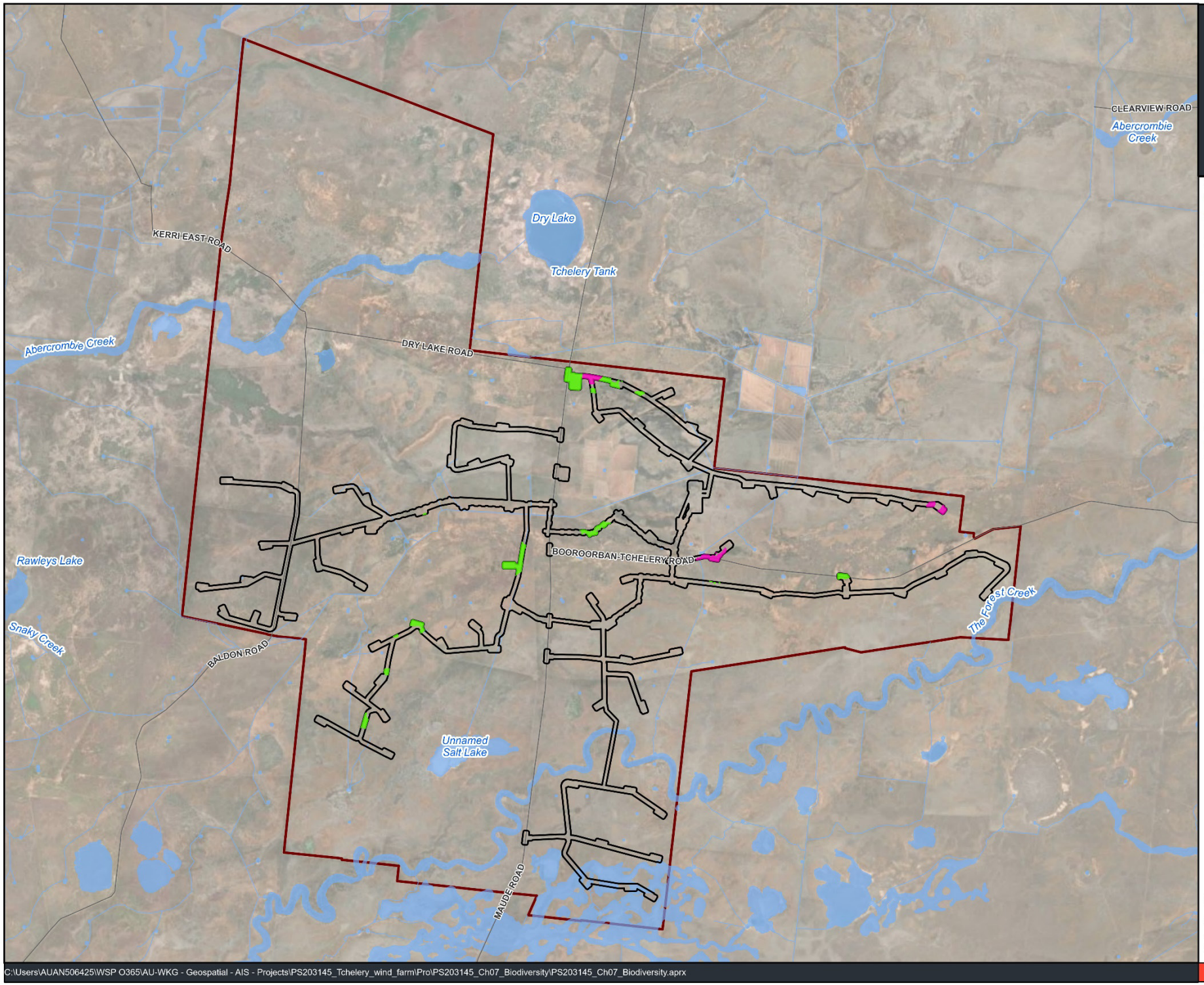
Associated PCTs are listed in Table 7.4 with the extent of each TEC within the disturbance area shown on Figure 7.4.

Areas of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland (BC Act) is only associated with the haulage route. Further details of this TEC is provided in the NSW Port to Site Haulage Route Assessment (refer to Appendix I in Technical paper 1 (Biodiversity development assessment report)).

One additional PCT, being PCT 28, has recently undergone EPBC Act TEC nomination and in the future could also be associated with an EPBC Act TEC.

Table 7.4 BC Act and EPBC Act listed TECs within the project site

TEC name	BC Act status	EPBC Act status	SAII	Associated vegetation zones within the project site	Area within disturbance footprint (ha)
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	Endangered	–	No	PCT 23_moderate	1.23
				PCT 23_derived	26.57
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	Endangered	–	No	PCT 28_moderate	1.29
				PCT 28_derived	5.14
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, NSW South Western Slopes, South East Corner and Riverina bioregions	Critically Endangered	Critically Endangered	Yes	PCT 266_mod-good	0.24
				PCT 277_mod-good	0.55
				PCT 278_mod-good	0.04



Tchelery Wind Farm

Figure 7.4
Threatened ecological communities

Legend

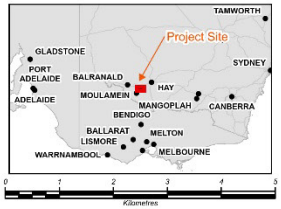
- Project site
- Subject land

Threatened Ecological Communities

- Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions - Endangered
- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions - Endangered

Context

- Road
- Watercourse
- Ephemeral water body



Coordinate system: GDA 1994 MGA Zone 55

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7.4.6 Habitat suitability of threatened species

Geographic and habitat constraints assessments were done for threatened flora and fauna species to focus the assessment and exclude species based on geographic and/or habitat constraints outlined in the TBDC (refer to Table 7.5).

Table 7.5 Predicted ecosystem credit species within subject land

Species	Listing status			Dual credit species	Sensitivity to gain class
	BC Act[1]	SAII[2]	EPBC Act[3]		
Birds					
Magpie Goose (*Anseranas semipalmata*)	V	No	–	No	Moderate
Southern Whiteface (*Aphelocephala leucopsis)*	V	No	V	No	Low
Dusky Woodswallow (*Artamus cyanopterus cyanopterus)*	V	No	–	No	Moderate
Australasian Bittern (*Botaurus poiciloptilus)*	E	No	E	No	Moderate
Curlew Sandpiper (*Calidris ferruginea)*	E	Yes	CE Migratory	Yes	High
Pied Honeyeater (*Certhionyx variegatus)*	V	No	–	No	Moderate
Spotted Harrier (*Circus assimilis)*	V	No	–	No	Moderate
Varied Sittella (*Daphoenositta chrysoptera)*	V	No	–	No	Moderate
White-fronted Chat (*Epthianura albifrons)*	V	No	–	No	Moderate
Grey Falcon (*Falco hypoleucos)*	V	No	V	No	Moderate
Black Falcon (*Falco subniger)*	V	No	–	No	Moderate
Painted Honeyeater (*Grantiella picta)*	V	No	V	No	Moderate
Brolga (*Grus rubicunda)*	V	No	–	No	Moderate
White-bellied Sea Eagle (*Haliaeetus leucogaster)*	N	No	–	Yes	High
Little Eagle (*Hieraaetus morphnoides)*	V	No	–	Yes	Moderate
White-throated Needletail (*Hirundapus caudacutus)*	–	–	V	n/a	High
Swift Parrot (*Lathamus discolor)*	E	Yes	CE	Yes	Moderate
Black-tailed Godwit (*Limosa limosa)*	V	No	E Migratory	Yes	High
Pink Cockatoo (*Lophochroa leadbeateri)*	V	No	E	Yes	Moderate
Square-tailed Kite (*Lophoictinia isura)*	V	No	–	Yes	Moderate
Hooded Robin (southeastern form) (*Melanodryas cucullata cucullata)*	E	No	E	No	Moderate
Blue-winged Parrot (*Neophema chrysostoma)*	V	No	V	No	Low
Blue-billed Duck (*Oxyura australis)*	V	No	–	No	Moderate
Gilbert's Whistler (*Pachycephala inornata)*	V	No	–	No	Moderate

Species	Listing status			Dual credit species	Sensitivity to gain class
	BC Act[1]	SAII[2]	EPBC Act[3]		
Plains-wanderer (*Pedionomus torquatus)*	E	Yes	CE	Yes	High
Flame Robin (*Petroica phoenicea)*	V	No	–	No	Moderate
Regent Parrot (eastern subspecies) (*Polytelis anthopeplus monarchoides)*	E	No	V	Yes	Moderate
Superb Parrot (*Polytelis swainsonii)*	V	No	V	Yes	Moderate
Grey-crowned Babbler (Eastern subspecies) (*Pomatostomus temporalis temporalis)*	V	No	–	No	Moderate
Redthroat (*Pyrrholaemus brunneus)*	V	No	–	No	Moderate
Australian Painted Snipe (*Rostratula australis)*	E	No	E	No	Moderate
Diamond Firetail (*Stagonopleura guttata)*	V	No	V	No	Moderate
Freckled Duck (*Stictonetta naevosa)*	V	No	–	No	Moderate
Mammals					
Little Pied Bat (*Chalinolobus picatus)*	V	No	–	No	High
Yellow-bellied Sheathtail Bat (*Saccolaimus flaviventris)*	V	No	–	No	High
Inland Forest Bat (*Vespadelus baverstocki)*	V	No	–	No	High
Reptiles					
Western Blue-tongued Lizard (*Tiliqua occipitalis)*	V	No	–	No	High

(1) BC Act; CE = Critically Endangered, E = Endangered, V = Vulnerable

(2) SAII under the BC Act

(3) EPBC Act; CE = Critically Endangered, E = Endangered, V = Vulnerable

7.4.6.1 Species credit species within subject land

Table 7.6 and Table 7.7 outlines the list of species credit species likely to occur on or use the subject land.

Table 7.6 Predicted flora species credit species

Species	Listing status		
	BC Act[1]	SAII[2]	EPBC Act[3]
A spear grass (*Austrostipa wakoolica)*	E	No	E
Mossgiel Daisy (*Brachyscome papillosa)*	V	No	V
Sand-hill Spider Orchid *Caladenia arenaria)*	E	Yes	E
A Burr-daisy (*Calotis moorei)*	E	Yes	E
Bindweed (*Convolvulus tedmoorei)*	E	Yes	–
Spike-Rush (*Eleocharis obicis)*	V	No	V
Yellow Gum (*Eucalyptus leucoxylon* subsp. *pruinose)*	V	No	–

Species	Listing status		
	BC Act[1]	SAII[2]	EPBC Act[3]
Winged Pepper-cress (*Lepidium monoplocoides)*	E	No	E
Lanky Buttons (*Leptorhynchos orientalis)*	E	No	–
Chariot Wheels (*Maireana cheelii)*	V	No	V
Austral Pillwort (*Pilularia novae-hollandiae)*	E	No	–
Menindee Nightshade (*Solanum karsense)*	V	No	V
Slender Darling-pea (*Swainsona murrayana)*	V	No	V
Silky Swainson-pea (*Swainsona sericea)*	V	No	–

* *Calotis* sp. *Zara* is a newly identified species that is yet to be described in its entirety and is not currently listed under either the BC Act or EPBC Act.

(1) BC Act; CE = Critically Endangered, E = Endangered, V = Vulnerable

(2) SAII under the BC Act

(3) EPBC Act; CE = Critically Endangered, E = Endangered, V = Vulnerable

Prasophyllum sp. Wybong is associated with the port to site haulage route only. It has been excluded from assessment due to geographic limitations. The species is described as being found in the Hunter/Sydney, but the project site is too far west of the Hunter/Sydney, and therefore out of the potential habitat of the species.

Table 7.7 Predicted fauna species credit species within subject land

Species	Listing status			Dual credit species
	BC Act[1]	SAII[2]	EPBC Act[3]	
Amphibians				
Southern Bell Frog (*Litoria raniformis*)	E	No	V	No
Birds				
Regent Honeyeater (*Anthochaera phrygia*)	CE	Yes	CE	No
Australian Bustard (*Ardeotis australis*)	E	No	–	No
Bush Stone-curlew (*Burhinus grallarius*)	E	No	–	No
Curlew Sandpiper (*Calidris ferruginea*)	E	Yes	CE Migratory	Yes
White-bellied Sea Eagle (*Haliaeetus leucogaster*)	V	No	–	Yes
Little Eagle (*Hieraaetus morphnoides*)	V	No	–	Yes
Swift Parrot (*Lathamus discolor*)	E	Yes	CE	Yes
Black-tailed Godwit (*Limosa limosa*)	V	No	E Migratory	Yes
Pink Cockatoo (*Lophochroa leadbeateri*)	V	No	E	Yes
Square-tailed Kite (*Lophoictinia isura*)	V	No	–	No
Barking Owl (*Ninox connivens*)	V	No	–	No
Plains-wanderer (*Pedionomus torquatus*)	E	Yes	CE	Yes

Species	Listing status			Dual credit species
	BC Act[1]	SAII[2]	EPBC Act[3]	
Regent Parrot (eastern subspecies) (*Polytelis anthopeplus monarchoides*)	E	No	V	Yes
Superb Parrot *Polytelis swainsonii*	V	No	V	Yes
Masked Owl (*Tyto novaehollandiae*)	V	No	–	No
Mammals				
Koala (*Phascolarctos cinereus*)	E	No	E	No
Reptiles				
Pink-tailed Legless Lizard (*Aprasia parapulchella*)	V	No	V	No
Grey Snake (*Hemiaspis damelii*)	E	No	E	No

(1) BC Act; CE = Critically Endangered, E = Endangered, V = Vulnerable

(2) SAII under the BC Act

(3) EPBC Act; CE = Critically Endangered, E = Endangered, V = Vulnerable

7.4.6.2 Port to site haulage route – identification of threatened species for assessment

Threatened species, both ecosystem and candidate species credit species, identified within the port to site haulage route have been identified and discussed in detail in Appendix I of Technical paper 1 (Biodiversity development assessment report). No candidate species credit species are considered to be impacted by the port to site haulage route.

7.4.7 Threatened species surveys

7.4.7.1 Detailed candidate threatened flora survey effort

Reference sites for more cryptic threatened flora species were utilised to assist in survey optimisation and to determine likely detectability at the time of survey. As threatened flora survey effort occurred across multiple survey sessions and years, previously recorded threatened flora populations within the project site were used as reference sites for more cryptic threatened flora species to assist in survey optimisation and to determine likely detectability at the time of survey. Species subject to reference site checks included:

- Spike-rush (*Eleocharis obicis*)
- Winged Pepper-cress (*Lepidium monoplocoides*)
- Austral Pilwort (*Pilularia novae-hollandiae*)
- Slender Dalring-pea (*Swainsona murrayana*).

These reference sites were also used to train field observers in identification of a species before surveys began. Where a reference site for a species was not available and flowering status could not be determined, a cautious approach was taken to the surveys and assessment as outlined in the BAM whereby presence of a species was assumed.

Thirteen threatened species were surveyed for candidate flora species on the project site (refer to Table 5.6 in Technical paper 1 (Biodiversity development assessment report)). Six of those were identified to require further assessment:

- Mossgiel Daisy (*Brachyscome papillosa*)
- Spike-Rush (*Eleocharis obicis*)
- Winged Pepper-cress (*Lepidium monoplocoides*)
- Chariot Wheels (*Maireana cheelii*)
- Austral Pilwort (*Pilularia novae-hollandiae*)
- Slender Dalring-pea (*Swainsona murrayana*).

Refer to Figure 14.11 in Technical paper 1 (Biodiversity development assessment report) for the results of threatened flora survey efforts carried out within the project site.

7.4.7.2 Detailed candidate threatened fauna survey effort

Ten threatened species were surveyed for candidate fauna species on the project site and none were identified to require further assessment. Survey effort undertaken for threatened fauna species in the project site to date with detailed descriptions of the survey effort and results for targeted fauna species shown in Table 5.7 to Table 5.14 in Technical paper 1 (Biodiversity development assessment report)). Refer to Figure 14.12 in Technical paper 1 (Biodiversity development assessment report) for the results of threatened fauna survey efforts carried out within the project site.

7.4.7.3 Justification for survey outside if specified timeframes

Some surveys for threatened species were undertaken outside of the specified timeframes outlined for the species in the TBDC. Justification for the surveys being done outside of the specified timeframes outlined for the species in the TBDC are provided in Table 5.15 Technical paper 1 (Biodiversity development assessment report).

7.4.7.4 Presence of candidate species credit species

Twenty four candidate species credit species including 13 flora species, one amphibian, eight birds, one mammal and one reptile were determined to be present within the project site accordance with BAM Subsection 5.2.4 based on:

- targeted threatened species surveys
- assumed presence within the project site
- important habitat map (for dual credit species)
- an expert report.

Refer to Section 5.4 of Technical paper 1 (Biodiversity development assessment report) for a detailed description of the candidate species credit species found within the project site.

7.4.8 *Area or count, and location of suitable habitat for a species credit species (a species polygon)*

For species credit species either assumed to be present, or determined to be present, or likely to use suitable habitat on the project site, species polygons were determined with reference to the various species survey guidelines published by the department (and the TBDC), including:

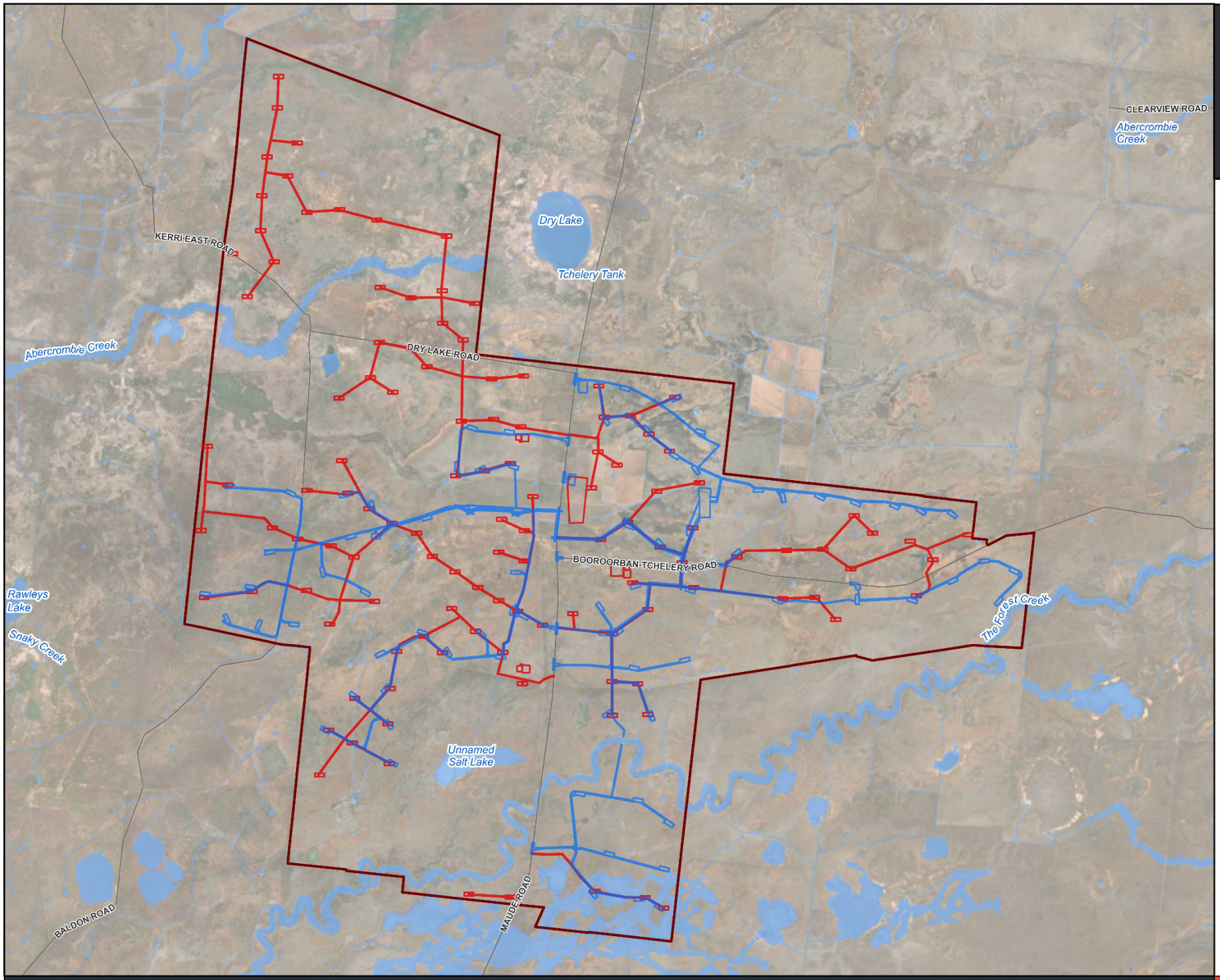
- Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method (DPIE, 2020e)
- NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE, 2020f).

Refer to Table 5.27 and Table 5.28 and Figure 14.11 and 14.12 in Technical paper 1 (Biodiversity development assessment report) for a summary of the species polygons for each recorded species credit species.

7.5 Assessment of potential impacts – construction

7.5.1 *Direct impacts*

Since conception, the project design has evolved through consideration of several factors, one of which is biodiversity and the measures outlined in Section 7.1.1 of the BAM. Initial survey and background searches identified several biodiversity constraints within the project site including TECs, threatened flora species and threatened fauna species. Additionally, directly adjacent to the subject site, an ephemeral lake (Dry Lake) was identified to host migratory avifauna during a very rare inundation event. While risk of bird strike for migratory avifauna is considered a prescribed impact, avoidance measures have occurred to reduce the risk to individuals. During mid-2023, the project was subjected to design refinements taking into account critical biodiversity findings discovered while implementing BAM Stage 1 surveys including proximity to Dry Lake. Design updates included a reduction in WTG numbers from 120 to 74 WTGs that involved the removal of WTGs and associated infrastructure at locations of identified TECs and areas of threatened flora and fauna habitat. Subsequent minor design refinements have occurred to minimise residual impacts to biodiversity through micro-siting.



Tchelery Wind Farm

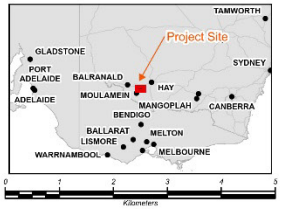
Figure 7.5
Project layout iterations

Legend

- Current disturbance footprint (28/01/2025)
- Former disturbance footprint (14/06/2023)
- Project site

Context

- Road
- Watercourse
- Ephemeral water body



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 23/04/2025

Data sources: Geoscience Australia, Neoen, NSW State Government, WSP Australia, World Imagery: Earthstar Geographics

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Clearing footprints expected for construction of each project feature are detailed in Table 7.8. Vegetation associated with overhead transmission line easements that fall outside of the fully cleared stringing corridor but within the area required to be maintained (refer to Section 1.1.1 of Technical paper 1 (Biodiversity development assessment report)) are subject to the selective removal of shrubs and trees that exceed four metres in height. However, as no vegetation types assessed to occur within the vegetation maintenance areas exceed four metres in height, clearing associated with overhead transmission easements has been limited to the fully cleared stringing corridor only.

Table 7.8 Expected clearing areas for project features

Project feature	Area to be cleared (metres)
WTGs	A disturbance footprint of 270 by 100 metres at each of the 74 WTGs
330 kV overhead transmission line	— a 60 metre easement would be established including a fully cleared stringing corridor of 20 metres — brake and winch sites that include a 30 by 30 metre foundation pad and a 70 by 10 metre stringing corridor — 73 transmission line towers with a 60 by 60 metres disturbance footprint.
33 kilovolt (kV) overhead transmission line	— a 20 metre easement would be established including a fully cleared 10 metre stringing corridor — about 30 brake and winch sites that include a 30 by 30 metre foundation pad and a 30 by 10 metre stringing corridor — 18 transmission line towers required with 20 by 20 metre disturbance footprint.

33 kV underground transmission line	— a varied disturbance footprint where:
	  — an eight metre corridor for underground transmission lines that follow an access track or internal road, or
	  — a 14 metre corridor for underground transmission lines that do not follow an access track or internal road
	— a 20 by 10 metre disturbance footprint for all horizontal directional drilling for underground transmission lines at the entry and exit of all underground sections.

Collector substations	A total disturbance footprint of 60,000 square metres (m^2)
Switchyard	A disturbance footprint of 26,000 m^2
Battery energy storage system (BESS)	A disturbance footprint of 40,000 m^2
Access tracks	A varied disturbance footprint where: — a 25 metre wide disturbance footprint where tracks are not co-located with transmission lines, or — are included in disturbance footprints described above where co-located with transmission lines.
Workforce accommodation camp	A disturbance footprint of 240 by 340 metres
Construction compound and laydown area	— three concrete batching plants with a disturbance footprint of 200 by 300 metres — three laydown areas with a disturbance footprint of 86 by 86 metres — two construction compounds with a disturbance footprint of 25 by 25 metres.

Project feature	Area to be cleared (metres)
Operation and maintenance facility	A disturbance footprint of 3,500 m^2
Port to site haulage route	A disturbance footprint of 69,320 m^2

7.5.1.1 Residual direct impacts

Plant community types and habitat for threatened species

The overall direct impacts to PCTs and habitat for the various threatened species is estimated at about 602.83 hectares (refer to Table 7.9) with the final impacts likely to occur on the project site being shown in Figure 7.5.

Table 7.9 Summary of residual direct impacts to PCTs identified within the project site

PCT ID number and name	Condition	Extent (ha)
15 – Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray-Darling Depression Bioregion)	Derived	0.23
17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray-Darling Depression Bioregion)	Moderate-good	0.79
23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Moderate	1.23
	Derived	26.57
24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	Moderate-good	8.38
28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	Moderate	1.29
	Derived	5.14
79 – River Red Gum shrub/grass riparian tall woodland or open forest wetland mainly in the upper slopes sub-region of the NSW South Western Slopes Bioregion and western South Eastern Highlands Bioregion*	Moderate-good	0.01
153 – Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones	Moderate-good	14.82
157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	Moderate-good	104.42
160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Moderate-good	1.35
163 – Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones	Moderate-good	155.67
164 – Cotton Bush open shrubland of the semi-arid (warm) zone	Moderate-good	259.56
166 – Disturbed annual saltbush forbland on clay plains and inundation zones mainly of south-western NSW	Moderate-good	21.68
236 – Derived Giant Redburr low shrubland on alluvial plains of the semi-arid (warm) climate zone	Moderate-good	0.86

PCT ID number and name	Condition	Extent (ha)
266 – White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion*	Moderate-good	0.24
277 – Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion*	Moderate-good	0.55
278 – Riparian Blakely's Red Gum – box – shrub – sedge – grass tall open forest of the central NSW South Western Slopes Bioregion*	Moderate-good	0.04
Total		**602.83**

* Associated with the haulage route only

Refer to Table 8.2, Table 8.3 and Table 8.4 in Technical paper 1 (Biodiversity development assessment report) for details of the change in vegetation integrity associated with direct impacts to PCTs and habitats for threatened species.

Threatened ecological communities

The residual direct impact to BC Act listed TECs are outlined in Table 7.10 with final impacts likely to occur on the project site being shown in Figure 7.5.

Table 7.10 Residual direct impact to BC Act listed TECs within the disturbance footprint

TEC name	Profile ID (from TBDC)	BC Act status	SAII	Associated PCT and vegetation zones within the disturbance footprint	Impact (ha)
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	20094	Endangered	No	23_moderate (1.23 ha) 23_derived (26.57 ha)	27.8
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	20083	Endangered	No	28_moderate (1.29 ha) 28_derived (5.14 ha)	6.43
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, NSW South Western Slopes, South East Corner and Riverina Bioregions[1]	10837	Critically Endangered	Yes	266_mod-good (0.24 ha) 277_mod-good (0.55 ha) 278_mod-good (0.04 ha)	0.83

(1) Associated with the port to site haulage route only

Species credit species

The residual direct impacts to candidate species credit species are outlined in Table 7.11 with final impacts likely to occur on the project site being shown in Figure 7.5.

Table 7.11 Residual direct impacts to candidate species credit species

Scientific name	Common name	BC Act status[1]	EPBC Act status[2]	SAII	Impact (ha)
Brachyscome papillosa	Mossgiel Daisy	V	V	No	95.13
Eleocharis obicis	Spike-rush	V	V	No	2.66
Lepidium monoplocoides	Winged Pepper-cress	E	E	No	21.56
Litoria raniformis	Southern Bell Frog	E	V	No	74.27
Maireana cheelii	Chariot Wheels	V	V	No	53.52
Pilularia novae-hollandiae	Austral Pillwort	E	–	No	3.21
Swainsona murrayana	Slender Darling Pea	V	V	No	7.88

(1) V = Vulnerable, E = Endangered, CE = Critically Endangered under the BC Act

(2) V = Vulnerable, E = Endangered, CE = Critically Endangered under the EPBC Act

Where a significant residual impact has been identified, offsets are required to compensate for the residual impacts. Offset for threatened species and ecological communities have been determined in accordance with the NSW BAM and would be delivered in accordance with the NSW Biodiversity Offset Scheme. The Matters of National Environmental Significance (MNES) species which require species credits to offset residual impacts associated with the project include:

- flora
  - *Brachyscome papillosa,* Mossgiel Daisy
  - *Eleocharis obicis*, Spike Rush
  - *Lepidium monoplocoides*, Winged Pepper-cress
  - *Maireana cheelii*, Chariot Wheels
  - *Swainsona murrayana*, Slender Darling-pea
- fauna
  - *Litoria raniformis*, Southern Bell Frog.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a TEC under the EPBC Act. The project would impact on approximately 0.83 hectares of this TEC, marginally increasing fragmentation at the local scale and resulting in a small reduction in the extent of this TEC within the locality. However, given the small area of clearing required and the previously disturbed habitat present, the project is considered unlikely to have a residual significant impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

7.5.2 Indirect impacts

Indirect impacts, as defined in the BAM, are impacts that occur when the project affects native vegetation and threatened species habitat beyond the disturbance footprint or within retained areas. This includes impacts from activities related to the construction or operational phase of the project.

Indirect impacts associated with the project include (but are not limited to):

- inadvertent impacts on adjacent habitat or vegetation including impact to habitat surrounding known aquatic locations of threatened frog species
- reduced viability of adjacent habitat due to edge effects
- reduced viability of adjacent habitat due to noise, dust or light spill
- transport of weeds, pests and pathogens from the site to adjacent vegetation
- increased risk of starvation, exposure and loss of shade or shelter
- loss of breeding habitats
- trampling of threatened flora species
- increased risk of fire
- increased risk of collision with WTG and transmission lines.

Residual indirect impacts (likely to occur on native vegetation, threatened entities and their habitat beyond the project site) are provided in Table 8.7 of Technical paper 1 (Biodiversity development assessment report).

7.5.3 Prescribed impacts

An assessment of prescribed biodiversity impacts has been prepared in accordance with Section 8.2 of the BAM and is presented in Table 7.12. Residual prescribed impacts that cannot be avoided or mitigated, would be addressed through retiring additional biodiversity credits. This would be determined in consultation with NSW Department of Conservation Programs, Heritage and Regulation. Refer to Section 8.3.1 to Section 8.3.7 in Technical paper 1 (Biodiversity development assessment report) for further details on prescribed impacts of the project.

Table 7.12 Prescribed impacts within the project site

Prescribed biodiversity impacts	Nature (ie relevance of the Project)	Extent	Duration	Consequence
(a) impacts of development on the habitat of threatened species or ecological communities associated with karst, caves, crevices, cliffs and other geological features of significance, or rocks.	No areas of geological features of significance occur.	Not applicable.	Not applicable.	Not applicable.
(b) impacts of development on the habitat of threatened species or ecological communities associated with: (i) human made structures, or (ii) non-native vegetation	The project would directly impact human-made structures that are known to support populations of threatened entities including Spike-Rush (*Eleocharis obicis*) and the Southern Bell Frog. The port to site haulage route would directly impact non-native vegetation identified in State Vegetation Type Map (SVTM).	Expected direct impact to a maximum of 1.65 hectares of man-made infrastructure in the form of irrigation channels, farm dams and table drains. The expected direct impact to non-native vegetation for the haulage route is considered negligible. Threatened entities at risk of SAII are not considered to utilise habitat associated with non-native vegetation.	Short and long term	The consequence of the impacts would be minor and non-significant as a result of mitigation measures outlined in Section 7.11.

Prescribed biodiversity impacts	Nature (ie relevance of the Project)	Extent	Duration	Consequence
(c) impacts of development on habitat connectivity	The project has the potential to impact on connectivity for habitat of threatened species that facilitates movement across species' ranges. The nature of the potential impacts to connectivity primarily relate to impacts to aerial species such as birds or bats through interaction with WTGs in the RSA or the proposed electrical towers or associated transmission lines. Generally, terrestrial connectivity would not be substantially affected. Additionally, the haulage route is not considered to impact habitat connectivity for species at risk of SAII.	Terrestrial connectivity and habitat connectivity associated with the haulage route is not considered to be impacted by the project. Aerial habitat connectivity discussed in detail in BBAMP.	Long term	Terrestrial connectivity and habitat connectivity associated with the haulage route is not considered to be impacted by the project. Impacts to aerial species caused by increased bird and bat strike within the RSA and interactions with overhead transmission lines assessed in detail in BBAMP.

Prescribed biodiversity impacts	Nature (ie relevance of the Project)	Extent	Duration	Consequence
(d) impacts of development on water bodies, water quality and hydrological processes that sustain threatened species and threatened ecological communities	The project would directly affect man-made waterbodies known to support threatened entities. The project has the potential to affect water quality and hydrological processes within the project site.	The project would require the direct trenching of several irrigation channels to facilitate the construction of underground transmission lines. Construction of project features including WTG, transmission lines, temporary and permanent ancillary facilities and access tracks have the potential to cause bank erosion and sedimentation reducing water quality across the project site. Construction and operation of project features including WTG, transmission lines, temporary and permanent ancillary facilities and access tracks have the potential to alter hydrology in key habitats known to support threatened flora species.	Short and long term	The consequence of the impacts would be minor and non-significant as a result of mitigation measures outlined in Section 7.11.
(e) impacts of WTG strikes on protected animals	Impacts on bird and bat species that regularly fly through the wind farm at heights within the RSA.	Predicted extent of impacts of wind turbine strikes on protected animals is outlined in the BBAMP and would be subject to operation phase monitoring.	Long term	Extent of impacts of wind turbine strikes on protected animals outlined in BBAMP.

Prescribed biodiversity impacts	Nature (ie relevance of the Project)	Extent	Duration	Consequence
(f) the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community	The project has the potential to impact on animals through vehicular strike.	The extent of vehicular strike is expected to be minor in context.	The most vehicular movements would be generated during construction. Once construction is completed, vehicular movements are not expected to significantly increase compared to the existing situation.	The consequence of the predicted level of impact is expected to overall be minor with mitigation measures outlined in Section 7.11. Particular focus would be required during the construction phase to manage vehicle and animal interaction.

7.6 Assessment of potential impacts – operation

7.6.1 Wind turbine generator risk assessment

A qualitative risk assessment was conducted as part of the BBAMP to consider the risk from either collision with turbines or disturbance/avoidance from operating turbines. Risk is determined as a combination of likelihood (of an event occurring) and consequence (the consequences for the species). The qualitative risk assessment was conducted following two years of bird survey and flight height observations (447 BUS surveys) at repeated locations representative of WTG locations on the project site. The risk assessment identified three species as having a moderate risk rating including of *Falco cenchroides* (Nankeen Kestrel), *Falco berigora* (Brown Falcon) and *Circus assimilis* (Spotted Harrier) (refer to Table 7.13). The remaining species assessed were determined to have a low risk rating.

The 74 proposed WTGs at the project site are spread across a relatively flat, uniform and treeless landscape. No WTG appears to pose any greater risk to birds and bats. However, a qualitative analysis of risk was undertaken looking at several factors that could influence the level of bird or bat activity near a given WTG and hence the risk of collision. Higher risk WTGs are defined as those located where bird and bat collisions are considered more likely to occur. The following factors were considered in the risk assessment:

- distance to nearest woodland patch (woodland within 200 or 500 metres) (note the current Wind Energy Guidelines (DPHI, 2024a) suggest WTGs should be placed at least 100 metres from woodland edges)
- number of raptor species recorded at repeat bird monitoring sites (BMS) (lumped in three by three kilometre grids)
- number of threatened raptors recorded at repeat BMSs (lumped in three by three kilometre grids)
- number of surveys in which raptors were recorded at a given WTG
- proximity of Wedge-tailed Eagle nests and other raptor stick nests.

Of the 74 proposed WTGs, six had woodland within 200 metres (WTG1, 7, 19, 30, 33 and 52). Proximity to woodland could be considered a surrogate for higher activity of bats and thus higher risk of collision with blades and mortality.

Sixty turbines had no woodland within 500 metres and could be considered low risk. WTG proximity to woodland vegetation for all proposed WTGs is provided in Table A.6 of the BBAMP (refer to Appendix J of Technical paper 1 (Biodiversity development assessment report)).

Table 7.13 Risk rankings for threatened species and raptors at the project site

Species	BC Act status	EPBC Act status	Risk component			Justification for risk rating
			Likelihood	Consequence	Risk rating	
Black Kite (*Milvus migrans)*	n/a	n/a	Potential	Low	Low	A widespread and common raptor recorded frequently on the project site but rarely flies within the RSA (13 per cent of observations). Gathers in flocks around fires and carrion. Recorded often during BUS surveys (173 observations).
Nankeen Kestrel *(Falco cenchroides)*	n/a	n/a	Potential	Low	Moderate	Only two per cent of observations within RSA suggest collisions are unlikely. Fast agile flier able to avoid WTGs.
Brown Falcon *(Falco berigora)*	n/a	n/a	Potential	Low	Moderate	Moderately common in surveys (71 observations) but rarely recorded flying within RSA.
Black-shouldered Kite *(Elanus caeruleus)*	n/a	n/a	Unlikely	Low	Low	Never recorded within RSA height. Agile flier able to avoid WTGs.
Whistling Kite *(Haliastur sphenurus)*	n/a	n/a	Unlikely	Low	Low	Not commonly recorded in surveys (28 observations). Rarely recorded in RSA (seven per cent).
Spotted Harrier** *(Circus assimilis)*	V	n/a	Unlikely	Low	Moderate	Occurs in grassy open woodland including Acacia and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland, but also occurs in agricultural land, foraging over open habitats including edges of inland wetlands (OEH, 2025). Not a common species on the site but does fly within RSA.
Black Falcon** *(Falco subniger)*	V	n/a	Highly unlikely	Minor	Low	Forage by diving from above into flocks of small, ground dwelling/lower strata birds, unlikely to fly often within RSA. Agile and likely able to avoid WTGs.
Australian Hobby *(Falco longipennis)*	n/a	n/a	Low	Minor	Low	Rarely recorded on site.

Species	BC Act status	EPBC Act status	Risk component			Justification for risk rating
			Likelihood	Consequence	Risk rating	
Peregrine Falcon *(Falco peregrinus)*	n/a	n/a	Low	Minor	Low	Fast agile flier – likely able to avoid WTGs. Only recorded once on site in 447 surveys over two and a half years.
Wedge-tailed Eagle *(Aquila audax)*	n/a	n/a	Probable	Low	Low	Wedge-tailed Eagles have been recorded present and nesting on the project site. Collision risk for this species is high and has been observed frequently at other wind farms (J. Coughlan *pers. obs.*). The overall risk to the species is considered to be low. Habitat loss through avoidance is unlikely to of the turbine envelope as the species is known to best within as close as 200 metres from operating WTGs (Coughlan *pers. obs.*).
White-fronted Chat* *(Epthianura albifrons)*	V	n/a	Highly unlikely	Insignificant	Low	Occupy ground and lower shrub strata.
Flame Robin* *(Petroica phoenicea)*	V	n/a	Highly unlikely	Minor	Low	Ground and lower strata inhabitant. Rarely recorded on site.

Species	BC Act status	EPBC Act status	Risk component			Justification for risk rating
			Likelihood	Consequence	Risk rating	
Fork-tailed (Pacific) Swift* *(Apus pacificus)*	n/a	M	Highly unlikely	Minor	Low	Recorded once in 447 surveys. The Fork-tailed Swift is a non-breeding migrant to Australia. It is widespread across Australia and territories arriving in northwest Australia in October and November. From this entry point birds expand through southern Western Australia (WA) and much of mainland Australia, typically arriving in Victoria in December and January and departing in April, to return to northern breeding areas (east Asia from Siberia to Japan and South to Indochina and northern Thailand). Habitat is almost exclusively aerial from less than one metre to 1000 metres. Most observed over inland plains in Australia Forages aerially for insects, sometimes in mixed feeding flocks with other aerial foragers. Believed to roost on the wing. For the subspecies *A.p.pacificus* in Australia during the non-breeding season, recent counts vary from single birds up to counts of 1,500 population of *A.p.pacificus* visits during the Australian summer. It is widespread throughout Australia. Although individuals could fly at RSA height their occurrence on site is not expected to be in large numbers. There are no database records from the locality.
Little Eagle** *(Hieraaetus morphnoides)*	V	n/a	Unlikely	Minor	Low	The Little Eagle is distributed throughout the Australian mainland except in the most densely forested parts of the Great Dividing Range (Marchant and Higgins, 1993). WTG strikes of this raptor species could occur. It is expected that regular collision is unlikely in NSW given its very low population densities.
Pink Cockatoo* *(Lophochroa leadbeateri)*	V	E	Possible	Minor	Low	Recorded at four BUS sites (BMS_03, BMS_29, BMS_T2, BMS_T3) All turbines are located more than 200 metres from woodland patches and most are more than 500 metres. Sites where Pink Cockatoos were recorded are more than 300 metres from WTGs. During localised movement the species is unlikely to be flying at RSA height. It may fly at RSA height when dispersing, but it is mostly resident in a large home range. The species is most active when moving between foraging locations, woodland patches and waterbodies.

Species	BC Act status	EPBC Act status	Risk component			Justification for risk rating
			Likelihood	Consequence	Risk rating	
Southern Whiteface* *(Aphelocephala leucopsis)*	V	V	Highly unlikely	Insignificant	Low	Inhabits ground and lower tree and shrub strata. Does not fly at RSA height.
Grey-crowned Babbler* *(Pomatostomus temporalis temporalis)*	V	–	Rare	Insignificant	Low	Grey-crowned Babblers are ground dwelling birds that never fly more than a few metres above the ground. Inhabit dry woodlands and forests with a shrub layer and a groundcover of leaf litter and fallen timber. In NSW it is found in woodlands and forests with box-ironbark eucalypts, cypress pine and other eucalypts. They are not at risk of collision with WTGs.
Curlew Sandpiper* *(Calidris ferruginea)*	CE	CE, M	Highly unlikely	Minor	Low	This species is a migratory shorebird that occurs along the coast and in a variety of inland wetlands (Marchant & Higgins, 1993). It was recorded on a single occasion at Dry Lake north of the site during a very rare inundation event. It was sedentary and did not fly across the project site. No suitable habitat is present on the site. The risk of collision with WTGs or any indirect impact is considered extremely low.

*Threatened species

**Threatened raptor

7.7 Adaptive management strategy

Some impacts are difficult to anticipate or evaluate before the start of a development project. Managing these uncertain impacts require adaptive management that allows for adjustments based on monitoring results, with the goal of achieving specific outcomes for biodiversity.

An adaptive management plan would be developed as part of the Operation Environmental Management Plan (OEMP) to address uncertain impacts. The adaptive management plan would develop trigger levels and mitigation measures designed to manage such impacts through the operation phase.

As outlined in the BAM, the adaptive management plan would identify and describe the following:

- threatened species and/or TECs likely to be impacted
- monitoring program of sufficient scope and duration to provide data that can inform when direct and indirect impacts on biodiversity occur
- thresholds or triggers associated with the monitoring program that identify when a prescribed impact has occurred or is likely to occur. The adaptive management plan should include justification for which of these would trigger the implementation of adaptive management actions
- suite of potential adaptive management actions would be implemented during the construction or operational phases. The management actions can be targeted at minimising or mitigating the prescribed impact, or in response to meeting or exceeding a threshold or trigger.

A comprehensive biodiversity monitoring program would be developed post-approval as an integral part of the OEMP and would include the following impacts that are not well understood, being:

- changes to waterbody, water quality and hydrological processes in areas known to support threatened entities, and
- residual impacts to protected avifauna species.

As a wind energy project, the realised impacts to protected avifauna can only be predicted during the impact assessment. The accuracy of these predictions has been underpinned by extensive bird and bat monitoring programs in the two years prior to Environmental Impact Statement (EIS) submission. However, impacts relating to barotrauma are still considered uncertain and a separate BBAMP (refer to Appendix J of Technical paper 1 (Biodiversity development assessment report) has been developed to monitor these impacts.

7.8 Biodiversity offset scheme

The BOS for this project includes two primary options to fulfill credit obligations:

- creating a BSA on local land, including the potential for a BSA created within the Project site.
- purchasing and retiring biodiversity credits from the biodiversity credit register.

The BOS aims to directly match the credit liabilities of the project by setting up a BSA on local land and/or buying existing credits on the open market. Any outstanding credit liabilities would be addressed through contributions to the Biodiversity Conservation Fund.

Preliminary investigations have already been carried out within project site in areas not affected by the project to assess potential suitability as a BSA site. The identification and creation of a BSA site within the project site would be based on the presence of specific biodiversity values being impacted by the project.

The project's offset liability determined in accordance with BAM is a worst case upper limit based on indicative disturbance footprints only, as design finalisation for the project has not yet been completed. Accordingly, the final biodiversity offset liability is subject to the timing of finalisation of the project design and would be determined at that stage.

7.9 Serious and irreversible impacts

Clause 6.7 of the BC Regulation outlines that an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

- it would cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline (known as SAII Principle 1), or
- it would further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size (known as SAII Principle 2), or
- it is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution (known as SAII Principle 3), or
- the impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable (known as SAII Principle 4).

It should be noted that the approach taken to this SAII section and to the calculation of impacts is likely to lead to an overestimate rather than an underestimate of impacts. Impacts have been calculated as being permanent when some impacts would be temporary and a level of natural regeneration in disturbed areas is highly likely. Nevertheless, this assessment assumes a worst case scenario in relation to SAII TECs and species.

PCTs 266, 277 and 278 are considered to form part of the BC Act listed 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, NSW Southern Western Slopes, South East Corner and Riverina bioregions TEC. This TEC is listed as a Critically Endangered Ecological Community (CEEC) under the BC Act and a threatened TEC under the EPBC Act. This TEC is associated with the port to site haulage route, with about 0.83 hectares expected to be impacted by the project. Given the small area of clearing required and the previously disturbed habitat present, the project is considered unlikely to have a residual significant impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. A SAII assessment has been completed for this TEC and is provided in Appendix B of Appendix I of Technical paper 1 (Biodiversity development assessment report).

7.10 Biodiversity credits report

Biodiversity offsets would be required for impacts to PCTs, threatened species or populations. The offset obligation for the project has been calculated to require the following credits:

- 14,945 ecosystem credits within the Murrumbidgee subregion
- 28 ecosystem credits within the Inland slopes subregion
- 3 ecosystem credits within the Lower slopes subregion
- 11,815 species credits in the Murrumbidgee subregion.

Refer to Table 11.1 to Table 11.7 in Technical paper 1 (Biodiversity development assessment report) for a summary of ecosystem and species credits required for the project including TEC association, hollow bearing tree (HBT) credit profile, like for like trading options and trading groups for vegetation within the project site and port to site haulage route. Full BAM calculator credit report is provided in Appendix D of Technical paper 1 (Biodiversity development assessment report).

No additional credit liability is required for residual indirect and prescribed impacts. No credit requirements for species credits have been generated by the port to site haulage route.

7.11 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to biodiversity associated with the project are detailed in Table 7.14.

Table 7.14 Biodiversity mitigation measures

Ref	Mitigation measures	Timing	Applicable location (s)
B1	The locations of threatened ecological communities and habitat for threatened species will be considered and potential impacts avoided or minimised to the greatest extent practicable during finalisation of the detailed design and construction methodology. This will include micro-siting of infrastructure, including wind turbine generators, within the subject land. Sensitive areas to be avoided during detailed design and sensitive areas (including species polygons, buffered threatened species locations and areas of Threatened Ecological Communities) will be identified on sensitive area plans using spatial data.	Detailed design Pre-construction	Identified sensitive areas
B2	Micro-siting of temporary construction infrastructure (including site offices, compounds and access tracks) will be carried out to minimise vegetation clearing and disturbance of watercourses within the Subject land to the extent practicable. This will include: — prioritising areas of low biodiversity value — utilising existing access tracks, where feasible — locating waterway crossings at narrow width locations.	Pre-construction Construction	All locations
B3	Biosecurity impacts will be addressed as part of the Construction Environmental Management Plan and will include measures to protect against: — movement and introduction of exotic species into the subject land, and — movement and introduction of pathogens into the subject land.	Pre-construction Construction	All locations
B4	Biodiversity management will be developed as part of the Construction Environmental Management Plan and implemented for the duration of construction. The plan will include (as a minimum): — location and extent of areas of vegetation clearance and habitat disturbance, and how these will be suitably demarcated on site if required — location and extent of areas to be protected (for example retained vegetation, hollow bearing trees, nests, burrows and other habitat features (including applicable buffers to habitat features) located inside the construction area or in close proximity to the clearing areas — measures to be implemented on site to clearly demarcate areas to be retained as ‘no go areas’.	Pre-construction Construction	All locations

Ref	Mitigation measures	Timing	Applicable location (s)
	'No go area' demarcation devices will be established prior to the commencement of clearing works in each construction area and be maintained throughout the construction phase.		
B5	Pre-clearing surveys will be completed by a suitability qualified ecologist prior to clearing at each location. The proposed clearing extents will be marked out on site prior to the pre-clearing surveys. Pre-clearing surveys will be carried out within 48 hours prior to the commencement of clearing works in each construction area. During the surveys, the ecologist will: — survey the proposed clearing extent — identify any fauna that will require relocation prior to clearing, including inspection of any built structures and wooden fence posts to be demolished — confirm that biodiversity exclusion zones are demarcated — confirm that hollow bearing trees within and adjacent to the clearing extents are prominently marked/tagged. The results of the pre-clearing survey will be used to update and confirm the accuracy of sensitive area maps.	Pre-construction Construction	All locations
B6	All relevant project personnel, including relevant sub-contractors will be trained on biodiversity management protocols and requirements for the project, through inductions, toolbox talks and targeted training, and provided with sensitive area maps (showing clearing boundaries and exclusion zones) and updates as required. Inductions and training will be completed prior to commencement of work for all relevant personnel.	Construction	All locations
B7	The predicted clearing of native vegetation by the project identified in the Biodiversity Development Assessment Report will be monitored against the recorded clearing. A revised Biodiversity Assessment Method (BAM-C) calculation on the project's final disturbance to biodiversity post construction will be completed. Any additional credit liability identified will be met as part of the biodiversity offset requirements within the biodiversity offset package.	Construction	Construction area
B8	A species unexpected finds protocol will be implemented if threatened ecological communities or flora and fauna species, not assessed in the biodiversity assessment, are identified in the disturbance area.	Construction	Construction area

Ref	Mitigation measures	Timing	Applicable location (s)
B9	Guidelines and procedures for maintenance of the project will be developed prior to and implemented during operation as part of the Operation Environmental Management Plan or equivalent. These guidelines and procedures will cover the following: — vegetation clearing and maintenance commitments in the Biodiversity Development Assessment Report and Environmental Impact Statement — avoiding access and disturbance in areas of high biodiversity conservation significance; outside of the areas required for construction — avoiding maintenance of vegetation that does not need to be maintained during operation.	Prior to operation	Operation area
B10	Vegetation rehabilitation will be completed in all areas of temporary construction through seedbank protection protocols, including: — retainment and stockpiling of topsoil during construction in a manner that does not caused degradation to seed viability — spreading of stockpiled top soil in all temporary construction areas as soon as practicable.	Construction Post-construction	Construction areas
B11	Construction activities within features known to support Southern Bell Frog will be avoided during breeding season where practicable.	Construction	Irrigation channels and farm dams known to support breeding populations of Southern Bell Frog.
B12	Lighting designs will be in accordance with the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023e).	Detailed design	Operation area
B13	Guidelines and procedures to reduce risk to waterbodies water quality and hydrology within the project site will be developed and implemented and will include measures that: — control the erosion of the banks of irrigation channels during and following construction — control the sedimentation of waterbodies including human-made structures like irrigation channels, farm dams and table drains — limit changes in hydrology within the project site through micro-siting project features away from gilgai complexes where practical, demarcating gilgai outside of the development footprint as ‘no go zones’ and limit vehicle movement during excessively wet periods to reduce risk of vehicle rutting.	Detailed design, construction, post-construction	Areas associated with waterbodies.

Ref	Mitigation measures	Timing	Applicable location (s)
B14	Mitigation and monitoring measures will be developed and included in the Bird and Bat Adaptive Management Plan.	Detailed design Pre-construction Operational phase monitoring	Aerial habitats within the Rotor Swept Area
B15	Impacts to threatened and non-threatened fauna species will be mitigated through strict site policies including: — vehicle speed limited to 40 kilometres per hour within the project site — vehicle speed further reduced during wet weather and any required night works, to reduce the risk of vehicle strike with the threatened Southern Bell Frog — vehicle movements will be restricted to the final development footprint and established tracks only to reduce off-track impacts — construction activities will be limited to daylight hours to reduce risk to nocturnal fauna species.	Construction	Construction area

7.11.1 Interaction between measures

Mitigation measures in other chapters that are relevant to biodiversity include:

- Chapter 14 (Hydrology, flooding and water); specifically measures that address surface runoff impacts
- Chapter 15 (Air quality and greenhouse gases); specifically measures that address dust impacts
- Chapter 18 (Hazards and risk); specifically measures that address bushfire risk
- Chapter 19 (Soils and contamination); specifically measures that address contaminant pollution impacts.

7.11.2 Managing key uncertainties

Key uncertainties include impacts that are difficult to anticipate or evaluate before the start of a development project. These impacts are expected to be appropriately managed through implementation of the adaptive management strategy that would be developed as part of the OEMP (refer to Section 7.7).

7.11.3 Managing residual impacts

Residual impacts are discussed in Section 7.5.1.1. Residual impacts are anticipated to be mitigated through mitigation measures in Section 7.11 and through mitigation measures that would be included in the Construction Environmental Management Plan and OEMP.

7.12 Limitations

7.12.1 PCT allocation and mapping

The PCTs and vegetation zones assessed in the BDAR have been mapped as best as practicable based on patterns observed on aerial photography and verified by observations made during the field survey (where practicable).

The NSW SVTM release C1.1.M1 provides a guide to the occurrence and distribution of PCTs, Vegetation Classes, and Vegetation Formations. As with all maps, the SVTM is subject to error including:

- PCT attribution errors
- spatial errors or omissions (for example gaps and slithers or mapping linework inaccuracies)
- eastern NSW PCT classification topologies differ from central and western NSW classification topologies
- some PCTs mapped as part of earlier regional coverages have since been discontinued.

These limitations were considered when using the SVTM to aid in mapping native vegetation extent within the project study area.

7.12.2 Biodiversity surveys

The conclusions in the BDAR are based upon previous studies, data acquired for the subject land and the biodiversity field surveys and are, therefore, indicative of the environmental condition of the subject land at the time of preparing the report, including the presence or otherwise of species. The results of the survey program are extrapolated across the subject land to form an overview and scientific opinion about overall conditions and likelihood of species occurrence. The mapping of PCTs and species polygons is a subjective interpretation of on ground conditions at a particular location, made by trained personnel. The interpretation may be limited by the method of investigation and cannot always be definitive.

7.12.3 Reliance on available data

The assessment is based on the assumption that threatened species data published in the TBDC, BioNet Atlas, BioNet Vegetation Information System, SPRAT database, and any other Government databases is correct and current. The accuracy or completeness of the data has not been verified. The statements, opinions, facts, information, conclusions and/or recommendations in the EIS are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the available data.

7.12.4 Weather conditions

At times, weather condition during scheduled survey periods limited the survey capacity. Severe flooding in the Riverina occurred at various times, that impacted the ability to complete surveys and resulted in some surveys being shortened and/or postponed.

8 Aboriginal heritage

This chapter summarises potential impacts to Aboriginal heritage associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 2 (Aboriginal cultural heritage assessment) report (ACHAR) and Technical paper 17 (Port to site due diligence archaeological assessment) prepared by Navin Officer Heritage Consultants (NOHC).

8.1 Summary of key findings

The key findings from the assessment of impacts to Aboriginal heritage are as follows:

- a total of 16 previously Aboriginal recordings were listed on the Aboriginal Heritage Information Management System (AHIMS) within the project site
- during the field assessment:
  - a total of 73 new Aboriginal heritage sites, including 12 areas of potential archaeological deposit (PAD), were recorded in the survey area
  - one PAD was tested during the works program, TWF PAD12
  - a total of 14 test pits were excavated across two transects
  - no archaeological material was located from subsurface testing
- of the 89 Aboriginal heritage sites (previously and newly identified), and PADs within the project site, 66 would not be impacted at all by the project
- a further seven identified sites would be avoided by the project if the mitigation measures proposed in Section 8.6 are followed
- all areas of PAD have been avoided by the project, as well as all sites of high and moderate-to-high significance
- 13 sites would be directly impacted by the project, three sites would be partially impacted
- no new Aboriginal heritage sites were identified at the pinch points along the port to site haulage route and potential for Aboriginal heritage is considered low within the study area at the pinch points.

8.2 Setting the context

8.2.1 Statutory requirements

Potential impacts to Aboriginal heritage associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth)* (EPBC Act)
- *Native Title Act 1993*
- *Environmental Planning and Assessment Act 1979 (NSW)* (EP&A Act)
- *National Parks and Wildlife Act 1974*
- *Aboriginal Land Rights Act 1983*
- Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment, Climate Change and Water (DCCEW), 2010a)

- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010b)
- Australian International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (also known as the Burra Charter (Australia ICOMOS, 2013)
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage (OEH), 2011b)
- Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (DCCEW, 2010c).

8.3 Assessment method

8.3.1 Overview

The assessment of Aboriginal heritage is based on:

- heritage study area: area within and around the project site that was used for searches of relevant databases
- heritage survey area: area determined for completion of a field work program (discussed further below), developed prior to the design being refined from 120 WTGs (Wind Turbine Generators) to 74 WTGs (Figure 8.1).

The methodology adopted for the Aboriginal heritage assessment included the following key tasks:

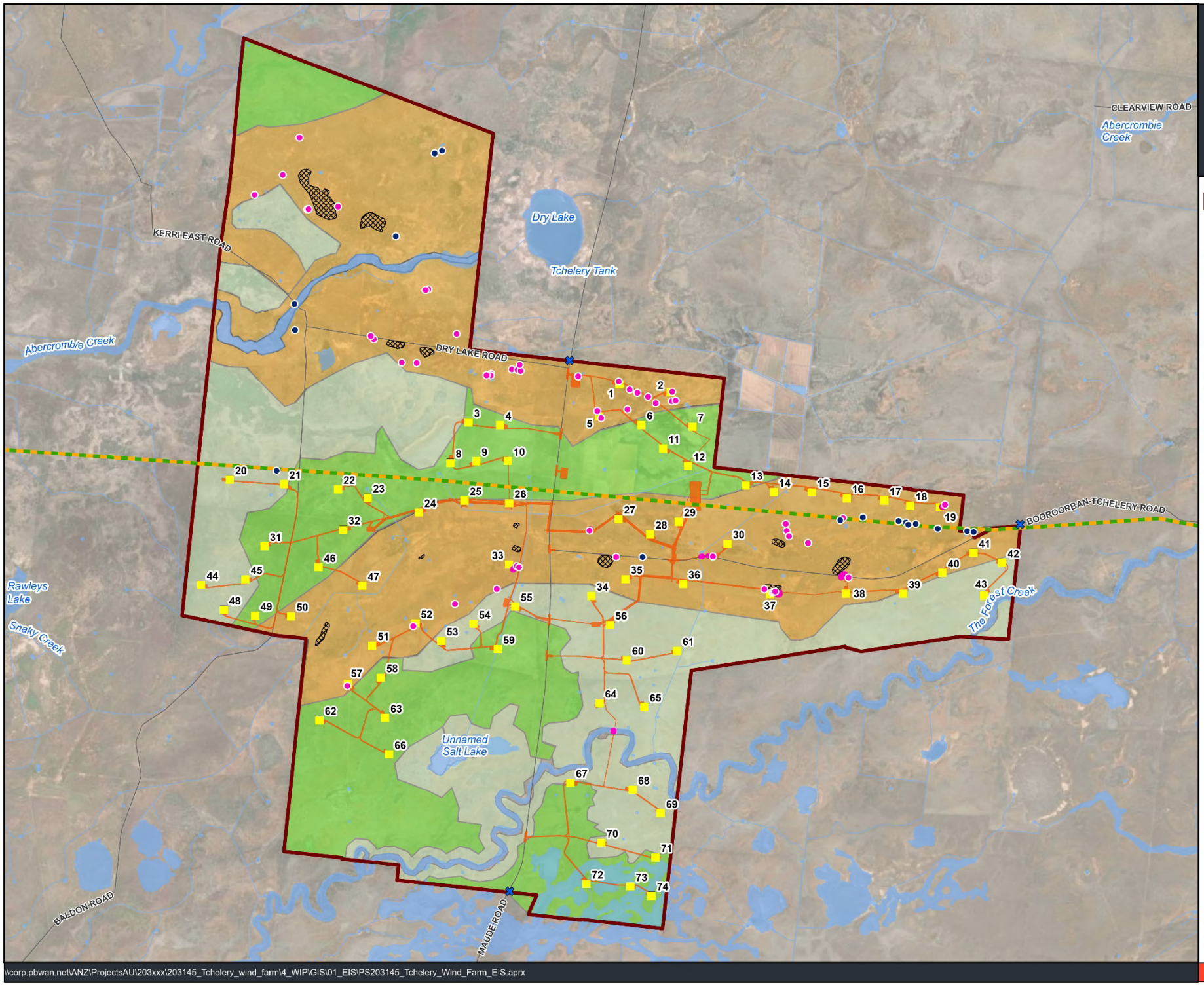
- reviewing the legislative and policy context including relevant guidelines and procedures for assessing Aboriginal heritage impacts
- reviewing existing data to identify known Aboriginal sites, including the AHIMS database, World Heritage list, National Heritage list and archaeological reports. The results of these searches were used to develop a preliminary predictive model to assess the likelihood of Aboriginal site locations in the landscape. Additional searches were made during ongoing refinement of the project's design
- consulting with Registered Aboriginal Parties (RAPs) at various stages in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a)
- initial field survey between 19 and 28 June 2023 with additional field surveys carried out between 5 and 8 February 2024 and between 15 and 19 July 2024.
- developing a predictive model based on known regional and local site patterns within the project site
- assessing potential direct and indirect impacts on Aboriginal heritage within the project site
- identifying mitigation measures to minimise the potential impacts identified.

8.3.2 Field survey methodology

Initial surveys focused on 120 areas as these were potential WTG locations , as well as proposed access tracks and associated infrastructure. This design was further refined, and additional surveys were conducted to investigate areas of disturbance that were not covered by previous surveys. The area covered by all survey efforts for the project is shown in Figure 8.1.

The aims of the survey were to:

- identify any archaeological sites and areas of PADs not previously recorded
- assess all areas of identified archaeological sensitivity
- locate, inspect and assess the condition of known Aboriginal sites recorded on the AHIMS database.



wsp

Tchelery Wind Farm

Figure 8.1
Heritage survey areas, sites and sensitivity modelling

Legend

- Project site
- Site access points
- Wind turbine generator
- Construction footprint

Heritage survey

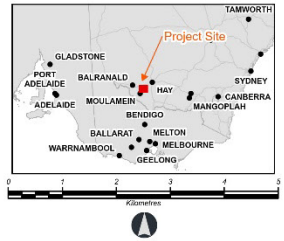
- Previously recorded site within study area
- Heritage survey (approximate locations)
- Surface site (polygon)
- Potential archaeological deposit

Heritage sensitivity modelling

- High
- Moderate
- Low

Context

- Existing road
- Existing 220 kV transmission line (Project EnergyConnect – NSW Eastern Section)
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 7/04/2025

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The archaeological field survey was completed on foot by 4–10 people walking selected traverses, spaced a regular distance apart between about five metres and 20 metres apart. Additional focus was applied to locations of previously recorded sites and areas yielding high ground surface visibility/exposures. During the survey, the RAP representatives were encouraged to communicate knowledge regarding the cultural heritage values of the project site, archaeological and cultural sites, and the overall landscape. All encountered surface archaeological objects, sites, PADs and places of Aboriginal cultural value were documented.

Further detail of the methodology carried out for the Aboriginal heritage assessment is presented in Chapter 3 of Technical paper 2 (Aboriginal cultural heritage assessment).

8.3.3 Consultation with Aboriginal communities

As part of the development of the project, ongoing consultation has been carried out with representatives of the various Aboriginal communities in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010a). Consultation with the RAPs was carried out in a series of stages as follows:

- notification of the project and registration of interest
- presentation of information about the project
- gathering information about cultural significance
- archaeological test excavation program carried out by NOHC and representatives of:
  - Deniliquin Local Aboriginal Land Council (LALC)
  - Wakool Indigenous Corporation (Gary Pappin)
  - Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation
  - Barrap Wamba
  - Dennis Charles Pappin Family
  - Aboriginal Corporation.
- review of draft cultural heritage assessment report.

The consultation period to provide comments on the ACHAR was between May 2022 and March 2025. Further detail of consultation with Aboriginal representatives is presented in Chapter 4 of Technical paper 2 (Aboriginal cultural heritage assessment). Neoen would continue to consult with the Aboriginal community throughout the project, including (but not limited to) if any Aboriginal objects are unexpectedly found during construction.

8.3.4 Assessment of potential archaeological deposits

Test excavation of TWF PAD 12 occurred during field survey between 15 to 19 July 2024 (refer to Figure 13-3-173-176 of Technical paper 2 (Aboriginal cultural heritage assessment).

8.3.5 Port to site haulage route

The assessment of potential Aboriginal heritage impacts to pinch points along the port to site haulage route involved a desktop assessment that took into account proposed impacts, prior disturbance and proximity to previously recorded AHIMS sites and water. Field assessment was carried out for pinch points that are proposed to have hardstand required or tree removal and, based on current and historical aerial imagery, have not been previously significantly disturbed (pinch point 05, 07, 08A, 08B, 09, 10 and 11). The field investigation involved a walk over the identified pinch point locations and the previously known sites in the area to assess previously recorded sites and determine whether any other Aboriginal or historical sites were evident in the area.

Refer to Chapter 3 in Technical paper 17 (Port to site due diligence archaeological assessment) for further information on the assessment of potential Aboriginal heritage impacts along the port to site haulage route.

8.4 Description of existing environment

8.4.1 Geology, soils and land use

The project is within the Murrumbidgee subregion of the Riverina bioregion. The subregion is generally comprised of a relatively flat landscape largely comprised of cracking clays, silts and sands (National Parks and Wildlife Service (NPWS), 2003). Over time modern waterways have intersected earlier palaeochannels and these landscape features provide complexity to an assessment of archaeological sensitivity within the region that may not be identified through the predictive features of the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DCCEEW, 2010c)

Much of the geology of the Riverina Bioregion is similar the Darling Riverine Plains Bioregion. The upper catchment landscape is a series of overlapping, low gradient alluvial fans. The lower tract of the river is a floodplain with overflow lakes. The project site contains five sedimentary units:

- alluvial floodplain deposits
- alluvial channel deposits
- aeolian lunette
- source-bordering dunes
- claypan and lacustrine deposits.

In considering the previously recorded AHIMS sites contained within the project site (refer to Section 1.1.1), the sites are located only within two of the five geological units (alluvial floodplain deposits and source-bordering dunes). This suggests there might be a relationship between the underlying geology and the presence of a preserved archaeological record, or conversely, factors such as archaeological visibility and exposure.

Three soil types are found in the project site that make up most of the outcropping surface within its boundary: siliceous sands; grey, brown and red clays; and red-brown earths. Previously recorded AHIMS sites within the project site are evenly split between grey, brown and red clays and siliceous sands.

Previously recorded AHIMS sites within the project site are largely confided to semi-arid woodlands (shrubby sub-formation, grassy sub-formation) and grasslands, with a very small number located in saline wetlands and arid shrublands. No sites listed on AHIMS have been recorded in fresh wetlands or grassy woodlands.

8.4.2 AHIMS search results

The AHIMS database contains information on recorded Aboriginal sites and items in NSW. An extensive search of the AHIMS database for the heritage study area was conducted on 17 April 2023. An updated search was conducted on 17 January 2025 that did not result in additional sites. The AHIMS database search details are provided in Table 8.1 and the results are summarised in Table 8.2. The recorded sites are shown in Figure 8.2 along with new identified sites as discussed in Section 8.4.3.

Table 8.1 AHIMS database search details

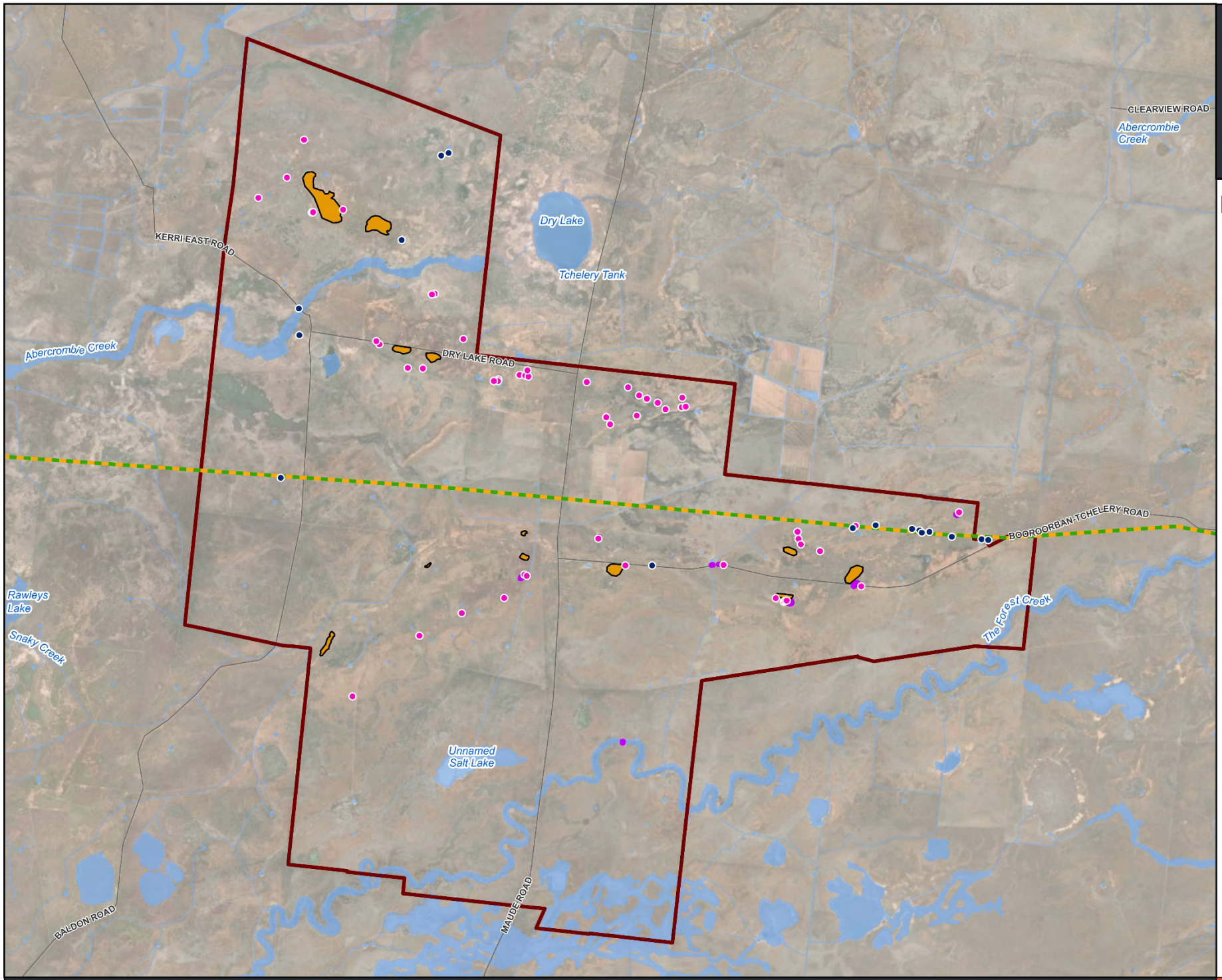
Item	Detail from 17 April 2023	Detail from 17 January 2025
Client service ID	773509	966523 and 966543
Latitude	-35.0057 to -34.724	-34.85339 to -34.74198 and -34.9782 to -34.84028
Longitude	143.9988 to 144.4932	144.14899 to 144.28949 and 144.13068 to 144.36724
Number of sites	80	80

Table 8.2 AHIMS sites within the project site

Site features	Number of sites	Site ID
Artefact	22	48-4-0530; 48-4-0532; 48-4-0533; 48-4-0546; 48-4-0527; 48-4-0529; 48-4-0542; 48-4-0398; 48-4-0549; 48-4-0552; 48-4-0395; 48-4-0076; 48-4-0397; 48-4-0541; 48-4-0544; 48-4-0550; 48-4-0551; 48-4-0528; 48-4-0536; 48-4-0543; 48-4-0545; 48-4-0182
Artefact – Earth Mound PAD	3	48-4-0317; 48-4-0318; 48-4-0386
Artefact – Earth Mound – Hearth	16	48-4-0104; 48-4-0105; 48-4-0106; 48-4-0109; 48-4-0113; 48-4-0110; 48-4-0111; 48-4-0114; 48-4-0112; 48-4-0107; 48-4-0108; 48-4-0103; 48-4-0102; 48-4-0067; 48-4-0101; 48-4-0068
Artefact – Hearth	3	48-4-0531; 48-4-0534; 48-4-0535
Burial	16	48-4-0011; 48-4-0012; 48-4-0540; 48-4-0117; 48-1-0018; 48-4-0115; 48-4-0539; 48-4-0443; 48-4-0007; 55-6-0014; 48-4-0014; 48-4-0116; 48-4-0010; 48-4-0013; 48-4-0015; 48-1-0016
Burial – Art	1	48-1-0017
Burial – Earth Mound	8	48-4-0442; 48-4-0075; 48-4-0017; 48-4-0018; 48-4-0080; 48-4-0078; 48-4-0069; 48-4-0019
Earth Mound	4	48-4-0193; 48-4-0098; 48-4-0099; 48-4-0444
Earth Mound – Hearth	1	48-4-0008
Earth Mound – Shell Midden	1	48-4-0002
Hearth	3	48-4-0100; 48-4-0553; 48-4-0097
Modified Tree (Carved or Scarred)	2	48-4-0537; 48-4-0538

8.4.3 *Field survey results*

Archaeological field survey identified 73 new Aboriginal sites, including 12 areas of PAD. The Aboriginal sites are further divided into 25 artefact scatter, four hearth, seven hearth with artefact and 25 isolated artefact sites. PAD areas are further divided into four PADs with surface artefacts and eight PADs with hearths and surface artefact sites. These sites are shown in Figure 8.2. Details of these sites are provided in Appendix 3 of Technical paper 2 (Aboriginal cultural heritage assessment).



Tchelery Wind Farm

Figure 8.2
Aboriginal sites within the project site

Legend

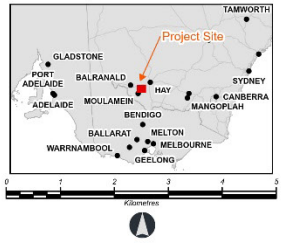
Project site

Heritage survey

- Previously recorded site within study area
- All surface site (points)
- All surface site (polygon)
- Potential archaeological deposit

Context

- Existing road
- Existing 220 kV transmission line (Project EnergyConnect – NSW Eastern Section)
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 22/04/2025

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8.4.4 Previously recorded sites

8.4.4.1 Dry Lake, Tchelery

The first archaeological sites to be recorded near the project site were burials at Dry Lake, being locations described in 1993 by the Hay LALC and NPWS (Johnston and Littleton, 1993), continuing the long tradition of focusing on burials in the Western Riverina region.

The recorded Aboriginal heritage sites are:

- Dry Lake East: an artefact scatter and a possible tool manufacturing workshop on the eastern side of Dry Lake, not located within the project site (Pardoe cited by Johnston and Littleton, 1993).
- Northeast area of Dry Lake: earth mound complex, not located within the project site (Pardoe cited by Johnston and Littleton, 1993).
- Tchelery Mound 1-3: earth mounds two kilometres northwest of Dry Lake contained burials and hearths, located within the project site (AHIMS ID 48-4-0008 and ID 55-6-0014).
- Dry Lake West: just west of the shore of dry lake and comprising eight earth mounds of varying size (smallest = 11.5 metres x 7.5 metres; largest = 80 metres x 70 metres), a hearth scatter and shell deposits, with at least 12 burials recorded in them, not located within the project site.
- Dry Lake 10: located southeast of dry lake are two earth mounds contained three burials as well as several hearths (heat retainers) and 64 surface artefacts made of quartz, silcrete, quartzite and chert, not located within the project site.

Subsequently, 23 more sites were recorded around Dry Lake. Except for Tchelery 1-3 (AHIMS ID 48-4-0008), these other Dry Lake sites are located outside the project site about two kilometres northwest of Dry Lake.

8.4.4.2 Abercrombie Creek

Three Aboriginal heritage sites have been recorded near Abercrombie Creek with the project site:

- Tchelery Station Moulamein (48-4-0002): an earth mound located about 250 metres west of the Tchelery Homestead containing a large midden (about 91 metres x 46 metres) with mussel shells, ash, charcoal and artefacts.
- Tchelery/Abercrombie Creek (48-4-0014): three earth mounds containing at least three burials recorded by the Hay LALC and recorded by Littleton (NPWS) in 1994. Mound 1 (20 metres x 20 metres) contained cremated human bone fragments and a burial, hearths, burnt animal bone and artefacts. Mound 2 (30 metres x 45 metres) human remains, river mussel shells and artefacts. Mound 3 (20 metres x 15 metres) contained hearth remains.
- Tchelery #4 (48-2-0015): eight burials located within a scald (eroded surface) recorded by the Hay LALC and recorded by Littleton (NPWS) in 1995.

8.4.4.3 Tchelery Mound Complex 1

The Tchelery Mound Complex 1 is located in the north of the project site that was investigated by Martin (Martin, 2006). The Aboriginal heritage site is located about 5.5 kilometres northeast of the Tchelery Homestead and two kilometres northwest of Dry Lake, close to Tchelery Mound 1-3.

8.4.5 Site sensitivity analysis and modelling

A landform archaeological sensitivity model was built in order to predict potential areas of cultural and archaeological sites. The model was built on the combination of several criteria including topography, previously recorded AHIMS sites data, hydrology, and soil type. The results predict three areas of high archaeological sensitivity in the centre and north of the project site as well as a buffered alignment of The Forest Creek (refer to Figure 8.1).

The model uses three broad categories as defined below.

- **Low sensitivity**: Areas that are low sensitivity are generally categorised as low-lying landforms, with a tendency to be water logged and swampy. They do not meet any of the criteria utilised for moderate and high sensitivity areas. They also include areas where the landform has been extensively disturbed for farming practises such as manufactured irrigated fields There is a very low chance of finding archaeological material in this zone.
- **Moderate sensitivity**: Areas that are moderate sensitivity are classified in the model as occurring within 350 metres of a major water source, areas of relative height and dryness in comparison to low-lying and waterlogged adjacent areas. There is a low-to-moderate chance of finding archaeological material in this zone.
- **High sensitivity**: Areas that are high sensitivity are classified in the model as areas that occur within the siliceous sands soil type, easily accessible areas that are within 200 metres of a major water source, areas containing clay pan exposures and areas of high relative topography in relation to the surrounding area. There is a high chance of finding archaeological material in this zone.

Principal component analysis was carried out to assess in greater detail the relationships between site location, site type, and landscape using the following variables: geology, soil type, land use, and vegetation type. Erosion was not included because it was found to be strongly correlated with soil type.

Overall, the analysis concludes that for the survey of Aboriginal objects to be effective in these areas a combined moderate–high amount of visibility or a moderate–high reduction in vegetation cover and a large degree of sub-surface exposure from extensive erosion was required.

8.4.6 Port to site haulage route

8.4.6.1 AHIMS search results and previous Aboriginal archaeological research

A total of 19 Aboriginal recordings were listed on the AHIMS database during searches for the pinch point location study areas. A total of four sites were located within 200 metres of the pinch point study areas, two at pinch point 04 and two at pinch point 05. Refer to Figure 4.2 to Figure 4.5 in Technical paper 17 (Port to site due diligence archaeological assessment) for mapping of the previously recorded sites at the pinch point locations.

The archaeological background for pinch points with listed AHIMS sites is discussed in Section 4.2 of Technical paper 17 (Port to site due diligence archaeological assessment).

8.4.6.2 Past land use

The majority of the land within the study areas at the pinch points is transportation ways, including highways, sealed and unsealed roads, and road verges. A small portion of the study area is made up of private property. Pinch points within the City of Newcastle Local Government Area (LGA) are located within industrial areas and on major transportation routes, these areas have been subject to considerable disturbance from development impacts and road construction. Pinch points 05, 11, 12, 13, and 14 are located along highways and major intersections and have also been subject to considerable disturbance associated with the construction of these roads and intersections. Refer to Chapter 5 and Figure 5.2 to Figure 5.12 in Technical paper 17 (Port to site due diligence archaeological assessment) for further information on landscape context at the pinch points and historic aerial imagery detailing past disturbance, respectively.

8.5 Assessment of potential impacts

8.5.1 Construction

The project has aimed to avoid impacts to all heritage items as a first principle, where this is not practical to achieve, the avoidance/minimisation of impacts and harm at locations of moderate and above scientific significance, as well as moderate and high archaeological potential has been prioritised.

The placement of some WTGs as well as access tracks, transmission routes and ancillary facilities has been modified to reduce impacts to Aboriginal heritage sites, and areas of high archaeological sensitivity as discussed in Section 8.4. Design features have also been moved to avoid impact to PADs, with preference for areas of low and moderate sensitivity.

All areas of PAD have been avoided by the project, as well as all identified sites of high and moderate-to-high significance. Impacts from the project against significance of the Aboriginal heritage sites are presented in Table 8.3. Direct impact refers to disturbance to all surface and/or subsurface features at an item. Partial direct impact refers to impacts where only some surface and/or subsurface features would be disturbed. Potential indirect impact refers to when direct impacts are occurring adjacent to sites, or where vegetation clearance/maintenance requires the use of heavy machinery to be active near sites.

Table 8.3 Categorisation of project impact against Aboriginal significance

Significance	Impact			Avoided	Total
	Direct	Partial direct	Potential indirect		
High	0	0	0	6	6
Moderate-to-high	0	0	0	1	1
Moderate	1	1	3	23	28
Low	12	2	4	36	54
Total	**13**	**3**	**7**	**66**	**89**

Of the 89 Aboriginal heritage sites (previously and newly identified), and PADs within the heritage survey area, 66 would not be impacted at all by the project, and a further seven may be subject to indirect harm if not properly managed. Following the management recommendations as outlined in Section 8.6, a total of 73 sites would be avoided by the project. The sites that would be affected during construction are detailed in Table 8.4 and shown in Figure 11.1-1 to Figure 11.1-7 of Technical paper 2 (Aboriginal cultural heritage assessment).

Table 8.4 Aboriginal sites impacted by the project

Site name	Feature(s)	Scientific significance	Impact zone	Impact type	Potential loss of significance
TWF Site06	Isolated artefact	Low	20 metres from the construction footprint	Potential indirect	Total loss if not mitigated appropriately
TWF Site08	Isolated artefact	Low	Within access track adjacent to WTG 5	Direct	Total loss
TWF Site19	Isolated artefact	Low	Within construction footprint at WTG 57	Direct	Total loss
TWF Site31	Hearth	Moderate	Three metres from underground transmission line construction footprint and access track to WTG 52	Potential indirect	Total loss if not mitigated appropriately
TWF Site33	Isolated artefact	Low	Within construction footprint for underground transmission line and access track to WTG 33	Direct	Total loss
TWF Site34	Isolated artefact	Low	Within construction footprint for underground transmission line and access track to WTG 33	Direct	Total loss
TWF Site35	Isolated artefact	Low	Within construction footprint at WTG 5	Direct	Total loss
TWF Site36	Isolated artefact	Low	Within access track construction footprint adjacent to WTG 1	Direct	Total loss
TWF Site37	Isolated artefact	Low	Within construction footprint at WTG 2	Direct	Total loss
TWF Site43	Hearth with artefacts	Moderate	Within WTG 19 construction footprint	Direct	Total loss
TWF Site45	Hearths	Moderate	Four metres from the construction footprint	Potential indirect	Total loss if not mitigated appropriately
TWF Site46	Isolated artefact	Low	Six metres from the construction footprint	Potential indirect	Total loss if not mitigated appropriately
TWF Site49	Artefact scatter	Low	Within construction footprint at the workforce accommodation camp	Direct	Total loss
TWF Site52	Artefact scatter	Low	Within construction footprint adjacent to the underground transmission line	Direct	Total loss
TWF Site53	Isolated artefact	Low	12 metres from the construction footprint	Potential indirect	Total loss if not mitigated appropriately
TWF Site54	Hearth with artefacts	Moderate	Within construction footprint adjacent to the overhead transmission line	Partial direct	Partial loss
TWF Site55	Artefact scatter	Low	Within construction footprint adjacent to the overhead transmission line	Partial direct	Partial loss

Site name	Feature(s)	Scientific significance	Impact zone	Impact type	Potential loss of significance
TWF Site56	Artefact scatter	Low	Within intersection widening construction footprint	Direct	Total loss
TWF Site57	Artefact scatter	Low	Within intersection widening construction footprint	Direct	Partial loss
TWF Site58	Artefact scatter	Low	Within intersection widening construction footprint	Direct	Partial loss
TWF Site59	Isolated artefact	Low	Eight metres from the construction footprint	Potential indirect	No loss
TWF Site60	Hearth with isolated artefact	Moderate	Within one metre of construction footprints for overhead transmission line	Potential indirect	Total loss if not mitigated appropriately
TWF Site61	Artefact scatter	Low	Within construction footprint for the overhead transmission line	Partial direct	Partial loss

Indirect impacts, depending on the site type, site context, and its archaeological and cultural significance, may not result in a loss of heritage value. Indirect impacts may occur to areas beyond the indicative disturbance area; however, the impact would be dependent on several factors, including:

- spatial extent of the site
- depth of deposits
- works being conducted adjacent to these areas.

Current impacts from ongoing agricultural land uses include continued sheep grazing, surface erosion, weed coverage and vehicle use. It is likely that the continued sheep grazing, erosion, disturbance by weeds and vehicle damage over time would have a similar attrition and disturbance rate to the archaeological resource at the project site compared to the impacts from the project.

Construction planning and management for the project would eliminate or reduce the potential indirect impacts that could potentially result in a loss of heritage values due to physical disturbance.

8.5.1.1 Port to site haulage route

Field survey of the identified pinch points did not identify any new Aboriginal heritage sites. Potential for Aboriginal heritage is considered low within the study areas at the pinch points. No further Aboriginal archaeological assessment is considered to be required for the port to site haulage route.

8.5.2 Operation

Operation of the project would not require any disturbance outside of the construction footprint. Therefore, no additional operational impacts have been identified at this stage.

8.6 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to Aboriginal heritage associated with the project are detailed in Table 8.5.

Table 8.5 Aboriginal heritage mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
AH1	All portions of artefact scatters and isolated finds that are to be directly impacted require surface collection and salvage prior to construction commencement in those areas.	Pre-construction	All locations
AH2	Hearths that are to be directly impacted will be subject to photographic recording and sampling of hearth material prior to disturbance.	Pre-construction	All locations
AH3	No areas of potential archaeological deposits will be impacted by the project.	Construction and operation	All locations
AH4	Retrieved archaeological materials will be stored in appropriate, secure facilities confirmed in consultation with the relevant Aboriginal stakeholders. The strategy for the long term conservation of salvaged or collected Aboriginal objects will be determined in consultation with the Registered Aboriginal Parties.	Construction and operation	All locations
AH5	Construction planning and management will make sure that indirect impacts that could potentially result in a loss of known heritage values due to harm will not occur. Indirect harm could result from physical disturbance from surface water drainage or construction workers driving over sites that are to be protected.	Construction and operation	Operation and maintenance facility
AH6	Aboriginal heritage exclusion zones will be established to protect sites, including known features/items of significance that have been identified and will remain in situ throughout construction	Pre-construction	All locations
AH7	Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the Registered Aboriginal Parties prior to the commencement of construction at each location. Suitable controls include temporary site fencing and, where required, sediment control. Fencing will consist of high visibility construction style fencing that is not to be removed or altered during all works. Signage will be included to indicate no-go areas.	Pre-construction and construction	All locations
AH8	Aboriginal Cultural heritage awareness training will be carried out for all personnel working on the project prior to the personnel participating in construction activities. The training will cover features of heritage significance within and adjacent to project locations and project protocols that must be complied with to minimise and manage potential impacts to those features.	Pre-construction, construction and operation	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
AH9	If at any time during construction, any items of potential Aboriginal archaeological or cultural heritage significance outside previously recorded sites or potential archaeological deposits, or human remains are discovered, they will be managed in accordance with the Aboriginal Heritage Unexpected Finds Protocol in Appendix 5 of Technical paper 2 (Aboriginal cultural heritage assessment).	Construction	All locations
AH10	If at any time during construction, any items of potential Aboriginal archaeological or cultural heritage significance outside previously recorded sites are discovered at pinch points along the port to site haulage route, the unanticipated discovery protocols outlined in Appendix 2 of Technical paper 17 (Port to site due diligence archaeological assessment) will be followed.	Construction	Pinch points along the port to site haulage route.

8.6.1 Interaction between measures

Mitigation measures in other chapters that are relevant to Aboriginal heritage include:

- Chapter 12 (Social) specifically measures that address the consultation of Aboriginal stakeholders.

8.6.2 Managing key uncertainties

There are no key uncertainties associated with Aboriginal heritage that would require further management beyond the implementation of mitigation measures.

8.6.3 Managing residual impacts

Residual impacts associated with Aboriginal heritage following the implementation of mitigation measures are negligible in during both construction and operation of the project. As such, further management would not be required.

9 Historic heritage

This chapter summarises potential impacts to historic heritage associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 3 (Historic heritage assessment) prepared by Navin Officer Heritage Consultants (NOHC).

9.1 Summary of key findings

The key findings from the assessment of impacts to historical heritage are as follows:

- the project site is associated with the pastoral history of the Riverina region and the former Travelling Stock Routes and Reserves (TSRs). The project would directly impact on a pastoral landscape associated with early pastoral practices and TSRs in the Riverina region
- this assessment has determined that the project would not directly or indirectly impact on any known items or places of heritage significance.

9.2 Setting the context

9.2.1 Statutory requirements

Potential impacts to historical heritage associated with project were assessed in line with the following legislation, policies and guidelines:

- State Heritage and Conservation (Section 170) registers
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Heritage Act 1977*
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- Conargo Local Environmental Plan 2013 (Conargo LEP)
- The Burra Charter: The Australia International Council on Monuments and Sites (ICOMOS) Charter for Places of Cultural Significance (2013)
- Guidelines for Preparing a Statement of Heritage Impact (New South Wales (NSW) Department of Planning and Environment's (DPE), 2023f)
- Assessing Heritage Significance: Guidelines for assessing places and objects against the Heritage Council of NSW criteria (DPE, 2023g)
- Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Council, 2009).

9.3 Assessment method

The methodology for the assessment of historical heritage included the following key tasks:

- review of relevant historical information including desktop searches of relevant heritage registers, regional and local histories, heritage studies and theses, historical maps to understand the historical heritage context
- field investigation of the project site
- analysis of physical evidence and validating results of desktop searches of the project site based on the results the field investigation
- discussion of evidence of any historical heritage values in the project site
- assessment of historical heritage significance and potential direct and indirect impacts to historical heritage during construction and operation of the project
- identification of mitigation measures.

9.3.1 Study area

The study area for assessment of historic heritage is the project site (refer to Figure 3.1 in Chapter 3 (Project description)) with desktop searches extending several kilometres beyond the project site.

9.3.2 Assessment of historic heritage significance

The current assessment evaluates the heritage significance of the historic heritage sites identified within the project site area in accordance with the Assessing Heritage Significance: Guidelines for assessing places and objects against the Heritage Council of NSW criteria (DPE, 2023g). A historic heritage site must satisfy at a minimum one of the following criteria to be assessed as having heritage significance:

- criterion (a): An item is important in the course, or pattern, of NSW's cultural or natural history (or the cultural or natural history of the local area)
- criterion (b): An item has a strong or special association with the life or works of a person, or group of persons, of importance in NSW's cultural or natural history (or the cultural or natural history of the local area)
- criterion (c): An item is important in demonstrating aesthetic characteristics and/or a high degree of creative or technical achievement in NSW (or the local area)
- criterion (d): An item has strong or special association with a particular community or cultural group in NSW (or the local area) for social, cultural or spiritual reasons
- criterion (e): An item has potential to yield information that will contribute to an understanding of NSW's cultural or natural history (or the cultural or natural history of the local area)
- criterion (f): An item possesses uncommon, rare or endangered aspects of NSW's cultural or natural history (or the cultural or natural history of the local area)
- criterion (g): An item is important in demonstrating the principal characteristics of a class of NSW's cultural or natural places; or cultural or natural environments (or a class of the local area's cultural or natural places; or cultural or natural environments).

These criteria are used to assess the heritage significance of each item including at a local and State level. Each item is also given a statement of significance that summarises the significance of that item.

9.4 Description of existing environment

9.4.1 Historical context

9.4.1.1 Historical overview

European occupation of the Riverina Bioregion

From the late 1830s to the 1850s, large tracts of land along the Murrumbidgee and Murray Rivers began to be taken up by European settlers who followed the rivers inland. Pastoral runs were established along river and creek frontages, followed by the less well-watered 'back blocks' (O'Gorman, 2012; Beissel, 2008). This pattern of settlement is shown in an 1860 Reuss and Browne map showing pastoral runs in NSW (refer to Figure 3.1 in Technical paper 3 (Historic heritage assessment)).

The management of pastoral runs was changed by the Crown Lands Act of 1884, that decentralised land administration and divided NSW into the Eastern, Central and Western District. Each district had a local land board to administer leases and permits (Hanson, 1889; National Museum of Australia, 2022; NSW Land Registry Services, 2020). Pastoral runs were divided into leasehold areas, for which a pastoral lease could be granted to a squatter, and resumed areas, that could be leased under an annual occupation license but were available for selection (Hanson, 1889; Stuart, 2007). The leased areas had usually undergone improvements such as tanks, drains, wells and pumps, paddocks, yards and fencing (NSW Land & Property Information, 2013).

Steamboat navigation of the Murray and Murrumbidgee River commenced in the 1850s, completely changing the landscape of transport and trade in the region (Beissel, 2008; Bayley, 1979). Between 1861 and 1870 the river boat or steamer trade encouraged growth in the region with settlements established at points of exchange (Hassell Planning Consultants Pty Ltd and Pardoe, 1989). The importance of river transport declined following the advent of railways.

Cattle was the Riverina's primary stock by the 1840s, overtaken by sheep in the 1860s (Eardley, 1999). When the steamer trade commenced, local timber became an important industry as well (Heritage Office and Department of Urban Affairs and Planning, 1996). The replacement of riverboats with rail meant river water could now be utilised for irrigation (Eardley, 1999). Several dams were created for crop farming that became a primary focus in the region.

Travelling Stock Routes and reserves

An important associated element in the pastoral landscape of the project site is the network of TSRs. These TSRs facilitated the movement of livestock over long distances from pastoral properties to markets, often formed an adjacent component to rural road networks and played a key role in the development of the Riverina towns. TSRs were formalised and gazetted in NSW from the early 1860s. Despite the widespread use of motor transport for the movement of livestock in the current era, TSRs continue to be utilised for their original purpose and possess social, cultural, economic, and ecological significance in the Riverina and rural NSW.

Towns and villages

Due to the changing climatic conditions, the population in many towns and villages places has swelled and shrunk over the years due to drought, changes in primary production, and accessibility of transport. The following localities are nearby to the project site.

Moulamein

Moulamein is considered the oldest town in the Riverina, located southwest of the project site at the confluence of the Edward River and Billabong Creek. Augustus Morris is the first account we have of a European calling it by this name who visited the area in 1842 seeking pastoral runs along the Edward River. Moulamein's township status was approved and gazetted in 1851.

Hay

Hay, located northeast of the project site, is situated at the junction of the Sturt, Cobb, and Mid-Western highways. This settlement originated in 1840 as a coach station on the Murrumbidgee River. The location was surveyed in 1858 and became a town the following year. Hay was proclaimed a municipality in 1872 and a shire in 1965 (Britannica, 2024a). Hay was used as a prisoner-of-war (POW) internment centre during World War Two, receiving their first arrivals in 1940 (Aussie Towns, 2024b). Repatriation of POWs was carried out in 1946 and the camp was dismantled in 1947 (Aussie Towns, 2024b).

Booroorban

Booroorban, located east of the project site in the Edward River Council Local Government Area (LGA), is situated on the Cobb Highway. The town developed after installation of a well along the Long Paddock Stock Route in 1859 (Wagga Wagga Express and Murrumbidgee District Advertiser, 1859). Crown lands were set aside in 1867 to build the town, that was renamed to the Village of Booroorban (New South Wales Government Gazette, 1867).

Deniliquin

Deniliquin is located southeast of the project site close to the border with NSW and Victoria and is the largest town in the Edward River Council LGA. It lies at the junction of the Riverina and Cobb Highways and is also the terminus of a rail line from Echuca. The town began in 1843 as a personal holding along Billabong Creek. By 1868 the town had been surveyed, gazetted as Deniliquin and declared a municipality. The town is now also the commercial and administrative centre for various irrigation districts in the Riverina (Britannica, 2024b).

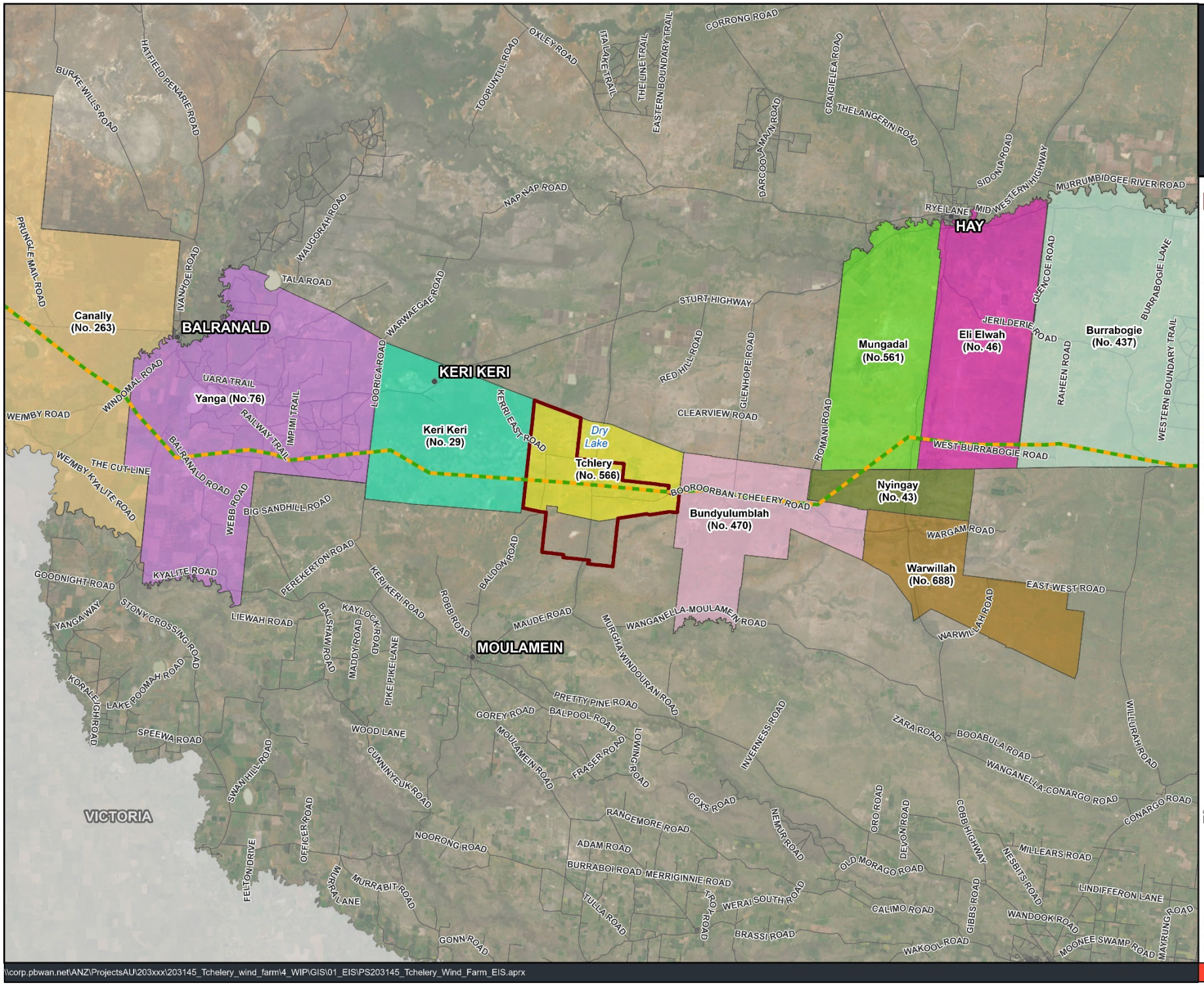
9.4.1.2 Aboriginal occupation

The Riverina Bioregion was the original homeland for many large Aboriginal communities living on the Hay Plain and around the rivers. These communities include the Wiradjuri, Nari-Nari, Mudi-Mudi, Gurendji and the Yida-Yida, while the Bangerang, Yorta-Yorta, Baraba-Baraba, Wamba-Wamba, Wadi-Wadi and Dadi-Dadi communities were found along the Murray River (National Parks and Wildlife Service, 2003). The rivers played a central role to the local Aboriginal lifestyles, especially as a food and water source. The presence of European settlers was clear by the 1830s, when diseases such as influenza, smallpox and syphilis ravaged the Wiradjuri and Bangerang communities.

Further information on Aboriginal heritage is provided in Chapter 8 (Aboriginal heritage) and Technical paper 2 (Aboriginal cultural heritage assessment).

9.4.1.3 Historical context of the Tchelery holding

The original Tchelery Pastoral Holding in 1885 comprised two runs, Windouran block A and Windouran block B, that were divided in accordance with the *Crown Lands Act 1884* (The Sydney Morning Herald NSW, 1885). In addition to leasehold area No. 566 (Figure 9.1) under the district of Hay and county of Wakool, the holding included a resumed area to the north (The Sydney Morning Herald NSW, 1885). In July 1899, the Supplement to the New South Wales Government Gazette gave notice for the surrender and exchange of lands within the Tchelery Pastoral Holding (New South Wales Government Gazette, 1899). In January 1903, the Department of Lands revoked their temporary reserves on various portions of land in the region (Government Gazette of the State of New South Wales, 1903). The properties affected had been reserved from sale since 1884 while the governor finalised the locations of key infrastructure that may be constructed on their land. Tchelery had four resumed portions of land, set aside for the following purposes: part of water reserve 965, village reserve 967, part of TSR 1,216, and part of TSR 1,216A (Government Gazette of the State of New South Wales, 1903).



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Tchelery Wind Farm

Figure 9.1
Map with historical pastoral holdings

Legend

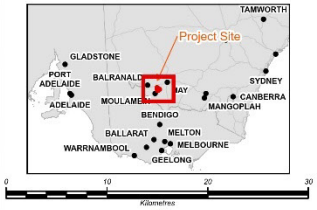
- Project site
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Historical Pastoral Holdings

- Bundyulumblah (No. 470)
- Burrabogie (No. 437)
- Canally (No. 263)
- Eli Elwah (No. 46)
- Keri Keri (No. 29)
- Mungadal (No.561)
- Nyingay (No. 43)
- Tchlery (No. 566)
- Warwillah (No. 688)
- Yanga (No.76)

Context

- Existing road
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:750,000 Date: 16/04/2025

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Tchelery Propriety Limited

Tchelery Proprietary Limited (Pty Ltd) incorporated on 28 November 1925 operated Tchelery Station for the Maclure family, who had acquired the station from Windouran Pastoral Co. Pty Ltd (Australian National University, 2012). In 1950 the company was purchased by New Zealand and Australian Land Company Limited (NZALC) and managed by Yanko Pty Ltd, a subsidiary of NZALC. The primary function of the company was sheep and cattle farming (Australian National University, 2012).

Tchelery Homestead Fire

In 1952, The Riverine Grazier reported that a fire had completely destroyed the Tchelery Station homestead (The Riverine Grazier, 1952). At the time the building was considered "one of the oldest [homesteads] in the Moulamein district". The damage was confined to the main building, and other structures such as outhouses, sheds and cottages were unharmed.

Tchelery Pastoral Co. Pty Ltd

The Tchelery Pastoral Co. Pty Ltd, an Australian proprietary company was registered on 15 July 1968. Currently the status of Tchelery Pastoral Co. Pty Ltd is registered in Australian Capital Territory.

9.4.1.4 Timeline

The project site is in the town of Tchelery, within the Parishes of Baldon, Gwynne, Raubelle, Tchelery and Thalaka and Caroonboon, in the County of Wakool. Table 9.1 outlines key dates and events in relation to the historical development and the project site and the surroundings.

Overlays of the project site with the Parishes of Baldon, Gwynne, Raubelle, Tchelery and Thalaka and Caroonboon, in the County of Wakool are shown in Figure 3.4 to Figure 3.13 in Section 3.4.1 of Technical paper 3 (Historic heritage assessment). These figures demonstrate changes in the area during the first half of the 20th century, including new roads and road updates, land grants and changes in ownership, property boundaries and land subdivision.

Table 9.1 Historical timeline highlighting key years in the development and use of the project site

Year	Event
1828 to 1830 and 1836	Charles Sturt and Major Thomas Mitchell explored the Murrumbidgee and lower Murray.
1830s	European pastoralists (squatters) begin to arrive in the Riverina regions.
1835 to 1839	Squatters established pastoral runs near Yanco and on the Murrumbidgee and Murray Rivers as far west as Hay.
1840s to 1860s	Cattle were the primary pastoral activity in the Riverina, but by the 1860s, sheep became the dominant pastoral activity.
1853 and 1858	Steamboat navigation of the Murray River commenced in 1853, and on the Murrumbidgee River in 1858.
1885	Tchelery Pastoral Holding established from Windorran block A and Windouran block B pastoral runs in the District of Hay, County of Wakool.
1912	Murrumbidgee Irrigation Area was established.
1915	River Murray Waters agreement allowed 26 weirs to be construction to provide permanent river access to Victoria.
1919 and 1931	Hume Dam built during on the Murray near Albury.
1925 to 1950s	Tchelery Proprietary Limited came into existence.

Year	Event
1952	Fire in the Tchelery Homestead.
1967	Tchelery Proprietary Limited renamed to Yanko Pty Ltd.
1968	Tchelery Pastoral Co. Pty Ltd registered on 15 July 1968.

9.4.2 Physical analysis

9.4.2.1 Field investigation

NOHC undertook a combined survey for Aboriginal and Historic heritage assessment during July 2023, February 2024 and July 2024. The team was divided into two smaller teams with each sub-team led by a NOHC senior archaeologist. The project site was divided into survey zones and each sub-team assigned a zone for surveying the proposed wind turbine locations and surrounds.

9.4.2.2 Physical description of the project site

The project site is a flat bushland with no physical evidence of the homesteads or pastoral holdings identified. There were few bricks found near wind turbine generator (WTG) 29, bottles and oil barrels around the project site; however, no specific relevance to the history of the project site was identified in the initial survey.

On 17 July 2024 NOHC staff Jasmine Fenyvesi and Ellaine Dickens identified a 1930s to 1950s shearers quarters complex located in the east of the project site. The project site consists of two water tanks and three buildings, with the main building containing 14 rooms. About 260 metres to the east of this complex is a stock run suspected to be of a similar age.

At the shearers complex, Building 2 is in good condition and still in use. Building 1 and Building 3 are not currently in use and were in derelict and poor condition respectively. The stock run was in poor condition and a metal barrel identified nearby was in very poor condition (refer to Figure 4.1 to 4.8 in Section 4.2 of Technical paper 3 (Historic heritage assessment)).

9.4.3 Discussion

The project site is associated with the pastoral history of the Riverina Region, and was used for pastoral purposes with no evidence of any other type of land use to have occurred. Historical evidence indicates that the western side of the project site covers a section of the former TSRs that partly aligns with an existing graded track. Across the different holdings, there is evidence of tanks and man-made dams for pastoral use of the land.

Historical evidence and field inspection identified a shearing complex; however, no evidence was identified indicating whether it is related to Tchelery Homestead or its holdings. There were no other places or items of historic archaeological significance identified. The absence of places and items of heritage significance within the project site confirms the background desktop assessment.

9.5 Assessment and mitigation of potential impacts – construction

Heritage significance of the historic heritage sites identified within the project site was assessed in accordance with Assessing Heritage Significance: Guidelines for assessing places and objects against the Heritage Council of NSW criteria (DPE, 2023g) (refer to Section 6 of Technical paper 3 (Historic heritage assessment)). This assessment determined that the project would not directly or indirectly impact on any known items or places of heritage significance. Mitigation measures are provided in Section 9.7 in the event that unexpected finds with heritage potential are uncovered during construction of the project.

No impacts to historic heritage are anticipated as a result of road upgrades required at pinch points along the haulage route between the Port of Newcastle and the project site.

9.6 Assessment and mitigation of potential impacts – operation

No impacts to historical heritage are anticipated during operation of the project.

9.7 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to historical heritage associated with the project are detailed in Table 9.2.

Table 9.2 Historical heritage mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
HH1	In the event that historical archaeological relics not assessed or anticipated are found during construction, all works in the immediate vicinity will cease immediately, and a qualified archaeologist will be contacted to assess the area and provide advice before works resume.	Construction	All locations
HH2	Protocols for the unexpected discovery of archaeological material and/or suspected human remains will be followed during construction activities involving ground surface disturbance and excavation (refer to Appendix 1 of Technical paper 3 (Historic heritage assessment)).	Construction	All locations

9.7.1 Interaction between measures

There are no mitigation measures in other chapters that are directly relevant to historical heritage.

9.7.2 Managing key uncertainties

There are no key uncertainties associated with historical heritage that would require further management beyond the implementation of mitigation measures.

9.7.3 Managing residual impacts

Residual impacts associated with historical heritage following the implementation of mitigation measures are negligible in during both construction and operation of the project. As such, further management would not be required.

10 Land

This chapter provides an assessment of potential impacts to land use and agriculture associated with the project and identifies mitigation measures to address these impacts. This chapter includes a summary of information in Technical paper 4 (Agricultural impact assessment) prepared by Tremain Ivey Advisory.

10.1 Summary of key findings

The key findings from the assessment of impacts to land use and agriculture are as follows:

- the project site is zoned RU1 – Primary Production that is a prescribed rural zone, and development for the purpose of electricity generating works is permitted with consent (refer to Chapter 4 (Statutory context))
- land use conflict risks would be effectively mitigated to reduce the impact of the project on livestock and biosecurity
- impact of the project on agricultural activities would be minor with the magnitude of impacts constrained by the:
  - relatively small amount of agricultural land permanently removed from production compared to the total project site and the total regional agricultural land
  - continued grazing on most of the project site during construction and operation
  - lack of any impact on irrigated cropping land
  - relatively low agricultural productivity of the project site
  - low cumulative impacts
  - relatively low biosecurity risk in the project site, further reduced after mitigation measures are implemented
  - effective mitigation measures that would be implemented to reduce impacts of the project on the agricultural industry
- impact of the project on agricultural productivity at a regional scale would be minimal due to the above factors, and this loss would also have a negligible impact on agricultural support services, processing and value adding industries.

10.2 Setting the context

10.2.1 Statutory requirements

Potential impacts to land use and agriculture associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Biosecurity Act 2015* (NSW)
- *Local Land Services Act 2013* (NSW)
- State Environmental Planning Policy (Primary Production) 2021
- NSW Invasive Species Plan 2018–2021 (Department of Primary Industries (DPI), 2018)
- Murray Regional Strategic Weed Management Plan 2017–2022 (Murray Local Land Services, 2017)
- Murray Regional Strategic Pest Animal Plan 2018–2023 (Murray Local Land Services, 2018)
- Land and Soil Capability Assessment Scheme (Office of Environment and Heritage (OEH), 2012)
- Riverina Murray Regional Plan 2041 (Department of Planning and Environment (DPE), 2023a)

- Edward River Local Strategic Planning Statement 2020 (Edward River Council, 2020)
- Cumulative Impact Assessment Guidelines for State Significant projects (DPIE, 2022a)
- Agricultural Land Use Mapping Resources in NSW (Squires, 2017)
- Infrastructure Proposals on Rural Land (DPI, 2013)
- Interim Protocol for Site Verification and Mapping of Biophysical Strategic Agricultural Land (OEH, 2013b).

10.3 Assessment method

The methodology for the assessment involved the following:

- review of publicly available data and relevant databases searches
- project site visit and landholder interviews were conducted 26 March 2024, to obtain information on the agricultural enterprises at the property, and the views of the landholders associated with the impacts of the project
- review of community consultation results from the Social Impact Assessment (SIA)
- identification of the main biosecurity risks associated with the project and recommended mitigation measures from consultation with various biosecurity officers from Edward River Council and Murray Local Land Services (LLS)
- impact assessment including:
  - project site features relevant to agricultural production
  - surrounding land uses
  - biosecurity
  - impacts on agricultural production
  - agricultural commodities and production levels
  - relative agricultural value to the region and State
- Land Use Conflict Risk Assessment (LUCRA)
- identification of mitigation measures.

10.3.1 Study area

The land use and agricultural study area comprises the Edward River Local Government Area (LGA), with the cumulative impact assessment considering relevant future projects identified in Chapter 22 (Cumulative impacts). Direct construction impacts on agricultural land would generally be within the project site, with potential for indirect impacts on immediately adjacent properties. Potential operational impacts would be contained within the project site.

10.3.2 Land Use Conflict Risk Assessment

A LUCRA was completed to evaluate the risk of each activity and to identify risk reduction management strategies (if required). This section presents the Risk Ranking Matrix that assesses the environmental, public health and amenity impacts according to the probability of the occurrence and the consequence of the impact.

The risk ranking matrix comprises a combination of five levels of 'probability' (refer to Table 10.1) and five levels of 'consequence' (refer to Table 10.2) to identify the risk ranking of each impact. The risk ranking matrix yields a risk ranking from a high of 25 to a low of 1 (refer to Table 10.3). A risk ranking greater than 10 is regarded as high and priority is given to those activities listed as high risk.

Table 10.1 Probability definitions

Level	Probability	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur of 'it has happened'
C	Possible	Could occur or 'I've heard of it happening'
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 10.2 Consequence definitions

Level	Consequence	Description
1	Severe	— severe and/or permanent damage to the environment — irreversible severe impact on the community — neighbours are in prolonged dispute and legal action involved.
2	Major	— serous and/or long-term impact to the environment — long terms management implications — serious impact on the community — neighbours are in serious dispute.
3	Moderate	— moderate and/or medium-term impact to the environment and community — some ongoing management implications — neighbour disputes occur.
4	Minor	— minor and/or short-term impact to the environment and community — can be effectively managed as a part of normal operations — infrequent disputes between neighbours.
5	Negligible	— very minor impact to the environment and community — can be effectively managed as part of normal operations — neighbour disputes unlikely.

Table 10.3 Risk ranking matrix

Consequence	Probability				
	A	B	C	D	E
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

10.4 Description of existing environment

10.4.1 Land zoning and land use

The project site is located in Edward River LGA and zoned RU1 Primary Production under the Wakool Local Environmental Plan (LEP) and Conargo LEP.

Land use within the project site is primarily dominated by agricultural activities, including livestock grazing and small areas of irrigated agriculture and residential and farm infrastructure (refer to Figure 10.1 and Table 10.4). The remainder of the project site is roads, farm dams and marsh and wetland along Abercrombie Creek, The Forest Creek and other areas in the southeast. These marsh and wetland areas are utilised by livestock for grazing.

Around 89 per cent of the construction and operational footprints are mapped as grazing of native pastures. These footprints cover a very small area mapped as residential and farm infrastructure. These footprints also cover a very small area mapped as residential and farm infrastructure and relatively little modified pastures, irrigated cropping and marsh and wetland. Surrounding land uses are consistent with land use at the project site and are dominated by agricultural activities.

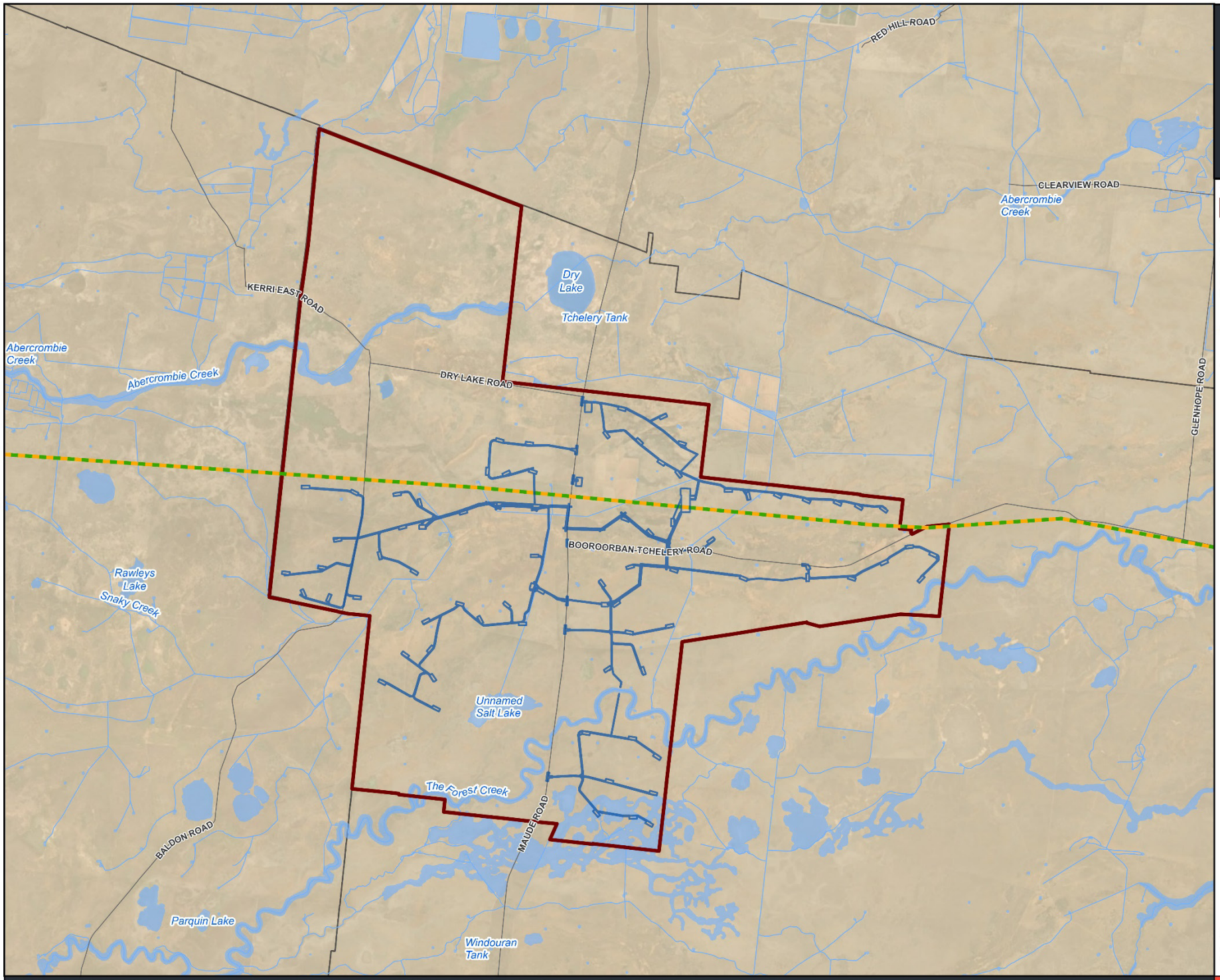
Table 10.4 Land uses within the project site

Land uses	Project site (ha)	Construction footprint (ha)	Operational footprint (ha)
Agricultural land uses			
Grazing native vegetation	26,312	576.4	451.5
Grazing modified pastures	707	36.3	24.9
Irrigated cropping	534	15.4	12.0
Residential and farm infrastructure	11	0.1	0.1
Sub-total Agriculture	**27,564**	**628.2**	**488.5**
Transport and communication	93	13.8	10.6
Reservoir and dam	0.3	Nil	Nil
Marsh and wetland	1,136	8.2	5.9
Total	**28,793**	**650.2**	**505**

Note: Individual amounts are approximate and may not sum to the amount of the totals due to rounding

Agricultural infrastructure within the project site includes:

- livestock yards
- shearing sheds
- fencing – internal and boundary fencing
- other farm sheds and storage
- water supply – catchment dams and water troughs
- irrigation infrastructure
- access – farm tracks, gates.



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Tchelery Wind Farm

Figure 10.1
Land use zoning within the project site and adjacent properties

Legend

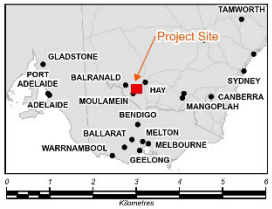
- Project site
- Construction footprint

Land Zoning

- RU1 - Primary Production

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - NSW Eastern Section
- Existing road



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:175,000 Date: 7/04/2025

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Other infrastructure within the project site includes:

- existing 220 kV transmission line
- future 500 kV Project EnergyConnect transmission line
- Maude Road
- Keri East Road
- Booroorban Tchelery Road.

No defence or Commonwealth lands are located within the project site.

There are no existing mining and mining lease areas identified within the project site.

10.4.2 Crown land and travelling stock reserves

The agricultural industry uses a network of Travelling Stock Reserves (TSRs) that are generally managed by Local Land Services under the *Local Land Services Act 2013*. Maude Road, located within the project site, is a TSR and is mapped as Crown reserve and Crown lease.

10.4.3 Biosecurity

10.4.3.1 Weeds

In contrast to much of NSW, the project site is less susceptible to biosecurity risks due to its separation from major populations and intensive agricultural industries as well as its semi-arid climate, which is challenging for exotic animals and plants to survive (DPE, 2017). However, the presence of irrigation areas on the project site would enable some weeds that may not thrive in dryland grazing situations to establish under irrigation.

The most common weeds recorded near the project site include:

- African boxthorn (*Lycium ferocissimum*), around 45 per cent of reported weeds
- Khaki weed (*Alternanthera pungens*), around 28 per cent of reported weeds
- Horehound (*Marrubium vulgare*), around 12 per cent of reported weeds.

Other weeds recorded near the project site include:

- Galvanised burr (*Sclerolaena birchii*)
- Common thornapple (*Datura stramonium*)
- Silverlead nightshade (*Solanum elaeagnifolium*)
- Spiny burrgrass (*Cenchrus spinifex*)
- Bathurst burr (*Xanthium spinosum*)
- Prickly pears (*Opuntia species*)
- Spiny burrgrass (*Cenchrus longispinus*).

State and regional priority weeds identified in the Murray Regional Strategic Weed Management Plan (Murray Local Land Services, 2017) include the blue heliotrope *(Heliotropium amplexicaule),* Scotch and Illyrian thistles *(Onopordum* spp.), spiny emex (*Emex australis)* and St Barnaby's thistle (*Centaurea solstitialis*).

Problematic weeds present in the district with the potential to become more widespread that were mentioned by the host landholder included Bathurst burr (*X. spinosum*), galvanised burr (*S. birchii*) and African boxthorn (*L. ferocissimum*).

10.4.3.2 Pest animals

Foxes, feral cats, wild rabbits, feral pigs and kangaroos have a widespread distribution in proximity of the project site (Murray Local Land Services, 2018). Feral goats have a limited distribution with a low presence to the west of the project site. Wild deer are present in the Balranald area and south of Moulamein (Murray Local Land Services, 2018; DPI, 2021). Some of these species (such as goats and pigs) pose important biosecurity, economic and social threats as they can harbour and transmit both endemic and exotic diseases. Plague locusts and mice can also cause problems in favourable seasons.

10.4.3.3 Animal and plant diseases

Footrot is a contagious bacterial disease of sheep and goats, caused by the organism *Dichelobacter nodosus* in association with several other bacteria. The occurrence of sheep footrot in the vicinity of the project site has been low in recent years. Due to its relative rarity and the low likelihood of it being introduced by the project, the host landholder did not view footrot as a major problem, despite the high economic cost if it was introduced.

Ovine Johne's disease (OJD) is an incurable infectious disease caused by the bacterium *Mycobacterium paratuberculosis*. Little recent data is available on the prevalence of OJD in NSW. However, the project site was in a low prevalence area in 2010. The host landholder confirmed that OJD is not a major concern as it is currently well managed and presents little risk to their commercial sheep flocks.

10.4.4 Agricultural productivity

The total gross value of agricultural production across the Edward River LGA in 2020–21 was $326 million (Australian Bureau of Statistics, 2022), the equivalent of $397 per hectare of agricultural land. The average gross income of the project site is $35.10 per hectare per year.

Livestock grazing is the predominant land use and around 6,500 to 7,000 merino ewes are stocked within the project site, with an average stocking rate estimated at 0.54 units per hectare. This is low compared to the Edwards River LGA and NSW averages of 1.43 units per hectare and 1.53 units per hectare respectively.

10.4.5 Land and soil capability

Land and Soil Capability is based on an assessment of the biophysical characteristics of the land, the extent to which this would limit a particular type of land use and the current technology that is available for the management of the land. The project site comprises mainly of moderate–low capability (class 5) land with small areas of low capability (class 6) land.

Biophysical Strategic Agricultural Land (BSAL) is land with high quality soil and water resources capable of sustaining high levels of productivity. NSW DPIE mapping indicates that there is no BSAL within or in close proximity to the project site.

A draft map of State Significant Agricultural Land (SSAL) indicates there is around 538 hectares of SSAL associated with historical irrigated areas within the project site. The mapped SSAL is separated into two areas: the western area (around 303 hectares) that is no longer used as irrigated land, and the eastern area (around 235 hectares) that is currently used as irrigated pasture.

10.5 Assessment of potential impacts – construction

Potential impacts on land use and agriculture during construction would include:

- loss of agricultural land
- reduced agricultural productivity
- disruption of agricultural operations
  - restriction of movement
  - livestock enterprises
  - biosecurity
  - on-ground operations
  - aerial spraying programs
- land and soil capability.

10.5.1 Loss of agricultural land

The area of agricultural land that would be removed from production during construction would include grazing land within the construction footprint (636.3 hectares), which is relatively small compared to the overall project site (28,793 hectares) and Edward River LGA agricultural land (821,710 hectares).

10.5.2 Reduced agricultural productivity

Potential loss of gross income during construction is around $67,002 over a 36 month period. This would equate to a small proportion (0.007 per cent) of the total gross value of agricultural production across the Edward River LGA. Loss of gross income would be short term and temporary.

The project would have little impact on processing and value adding industries as these are generally carried out on State-wide or international scale in the sheep and wool industries. As such, the impact of the project on the sheep and wool industries on a State-wide level and on sheep and wool processing is negligible.

10.5.3 Disruption of agricultural activities

10.5.3.1 Restriction of movement

It is unlikely that construction activities would substantially restrict movements of landholders, agricultural workers, their livestock or equipment within the project site. Potential movement restrictions would be temporary, generally short in duration, in a limited location, and therefore unlikely to markedly affect movements for agricultural purposes.

Despite the importance of Maude Road as a livestock route, the impact on travelling stock would be minimal due to the relatively short time that it would be affected by construction of the project site access tracks and the transmission lines, and the relatively low usage of roadsides for moving livestock.

10.5.3.2 Livestock enterprises

The main potential impact on livestock enterprises would be disturbance of sheep and cattle caused by noise and vehicle movements. Although livestock habituate to disturbances, the noise and movement of construction vehicles and other construction activities may have an impact on livestock in specific circumstances, especially during sensitive periods such as calving and lambing. Although there is potential for some disturbance, the effect on productivity is expected to be relatively minor.

10.5.3.3 Biosecurity

There is a risk that animal diseases, plant diseases, feral pests and weeds could be introduced or spread during construction of the project. However, the project site is less susceptible to biosecurity risks due to its separation from major populations and intensive agricultural industries, and the semi-arid climate that is challenging for exotic animals, diseases and plants to survive (DPE, 2017).

10.5.3.4 On-ground operations

Construction activities have the potential to disrupt on-ground husbandry operations such as spraying, cultivation, sowing, slashing and harvesting. However, the presence of low input native pastures and the limited irrigation area within the project site means that such operations would be rare. Therefore, the impact would be very low.

10.5.3.5 Aerial operations

The use of aerial agriculture in the project site in the dryland pastures is very limited and therefore impacts would be minimal. Drones are used within the project site to check irrigation operations and search for sheep. The risk on aerial operations would be mitigated by implementing a construction program in consultation with landholders that avoid impacts on aerial operations as far as reasonably practicable. For more information on aviation impacts refer to Technical paper 11 (Aviation impact assessment).

10.5.4 Land and soil capability

The construction footprint is outside of the eastern area of SSAL that is currently used as irrigated pastures, and previously irrigated cropping for barley. The western area of SSAL is no longer irrigated land. As such, the project is not expected to have an impact on irrigated lands associated with SSAL mapping within the project site.

10.6 Assessment of potential impacts – operation

Potential impacts on land use and agriculture during construction would include:

- loss of agricultural land
- reduced agricultural productivity
- disruption of agricultural activities
  - restriction of movement
  - livestock enterprises
  - biosecurity
  - on-ground operations
  - aerial operations
  - livestock enterprise
- land and soil capability.

10.6.1 Loss of agricultural land

The area of agricultural land that would be removed from production during construction would include grazing land within the operational footprint (494.3 hectares), which is relatively small compared to the overall project site (28,793 hectares) and Edward River LGA agricultural land (821,710 hectares).

10.6.2 Reduced agricultural productivity

Potential loss of gross income during construction is around $17,350 per year. This would equate to a small proportion (0.005 per cent) of the total gross value of agricultural production across the Edward River LGA. This loss would have a negligible impact on agricultural support services, processing and value adding industries.

10.6.3 Disruption of agricultural activities

10.6.3.1 Restriction of movement

It is unlikely that operation of the project would substantially restrict the movements of landholders, workers, livestock or equipment.

10.6.3.2 Livestock enterprises

The main potential impact on livestock enterprises would be noise and movement disturbance of sheep and cattle as discussed in Section 10.5.3. These impacts would be lower during operation due to a lower intensity of personnel and vehicle movements required for operation activities. The potential for damage to fences and other livestock infrastructure and gates being left open, are therefore lower.

10.6.3.3 Biosecurity

Any activity during operation (such as inspections, maintenance and repairs) that requires access of personnel, vehicles or machinery to the transmission line easement poses a potential biosecurity risk to agricultural operations in the vicinity of the project. Biosecurity risks and potential impacts identified in Section 10.5.3.3 would apply during operation, although to a lesser extent due to fewer operational vehicles and personnel moving reducing potential risk.

10.6.3.4 On-ground operations

The presence of structures on crop and pasture could disrupt, to some extent, normal on-ground husbandry operations around the structure. However, the prevalence of low input native pastures and the lack of any cropping area in the operational footprint means that impacts would be very low.

10.6.3.5 Aerial operations

Past and likely future aerial operations would be limited to the irrigated areas of the project site. Operation of the project is not expected to result in a substantial impact on aerial agricultural operations of irrigated areas.

Drone operations are subject to electric and magnetic interference from transmission lines, and it is recommended that they are not flown within 60 metres of power lines, electrical substations and other electrical equipment and are not permitted within Transgrid power line easements.

10.6.4 Land and soil capability

The project is not expected to have an impact on currently irrigated lands mapped as SSAL. The western SSAL area (no longer irrigated) would contain five Wind Turbine Generators (WTGs) and associated infrastructure.

10.6.5 Port to site

One dwelling at 15 Kyeamba Street, Mangoplah (Lot 5, Section 20, DP758642) would be demolished for the port to site haulage route. The dwelling is located at the corner of Kyeammba Street and Cox Street and would be demolished to allow for hard stand to be constructed to allow for right turn onto Cox Street. The impact would be negligible as demolition would occur in agreement with the landholder and no other dwellings or buildings would be impacted.

10.7 Land use conflict risk assessment

Five key activities that could result in conflict issues have been identified in relation to neighbouring agricultural properties (refer to Table 10.5) and include:

- noise disturbing livestock
- restriction of movement
- biosecurity breach
- dust generation
- soil disturbance.

Each of these issues prior to mitigation has been evaluated in relation to the construction and operational footprints and all except for noise disturbing livestock and a biosecurity breach have been determined to have pre-mitigated low impact. Agricultural conflicts or impacts on production for neighbouring properties are also considered to be very low or absent.

Noise generation from construction and operation would have the potential to disturb livestock, with the greatest impact occurring during lambing periods; however, impact would be minor if managed effectively such as moving lambing ewes to paddocks away from construction works and avoiding routine operation maintenance activities during lambing periods, where practicable.

Biosecurity breaches have potential to significantly impact agriculture on a local and regional scale but are unlikely to occur if a comprehensive biosecurity management plan is effectively implemented for the project.

Mitigation measures to mitigate onsite project risks are provided in Section 10.9.

Table 10.5 Risk evaluation of activities that have the potential to cause conflict (pre-mitigation)

Activity	Risks	Probability	Consequence	Risk rating
Noise disturbing livestock	Potential of noise generation from construction and operation (greatest impact during lambing periods)	Possible (B)	Moderate (3)	13
Restriction of movement	Potential restriction of movements of landholders, agricultural works their livestock or equipment	Likely (B)	Negligible (5)	7
Biosecurity breach	Potential of biosecurity protocols not being followed by construction and/or operation personnel leading to spread of weeds, pests or disease	Possible (C)	Major (2)	18
Dust generation	Potential of dust generation from vehicles and/or machinery impacting grazing vegetation and/or irrigated cropping	Possible (C)	Minor (4)	8
Soil disturbance	Potential of erosion and scour caused by soil disturbance during earthworks impacting downstream (stock and domestic) water quality	Unlikely (D)	Moderate (3)	9

10.8 Development rights

The Wind Energy Guideline (Department of Planning, Housing and Infrastructure (DPHI), 2024) states proposed wind farm developments need to consider impacts to the right of neighbouring landholders to develop their land for the purpose of residential accommodation, tourist and visitor accommodation or an eco-tourist facility. These impacts are only required to be considered on neighbouring land that is vacant and either:

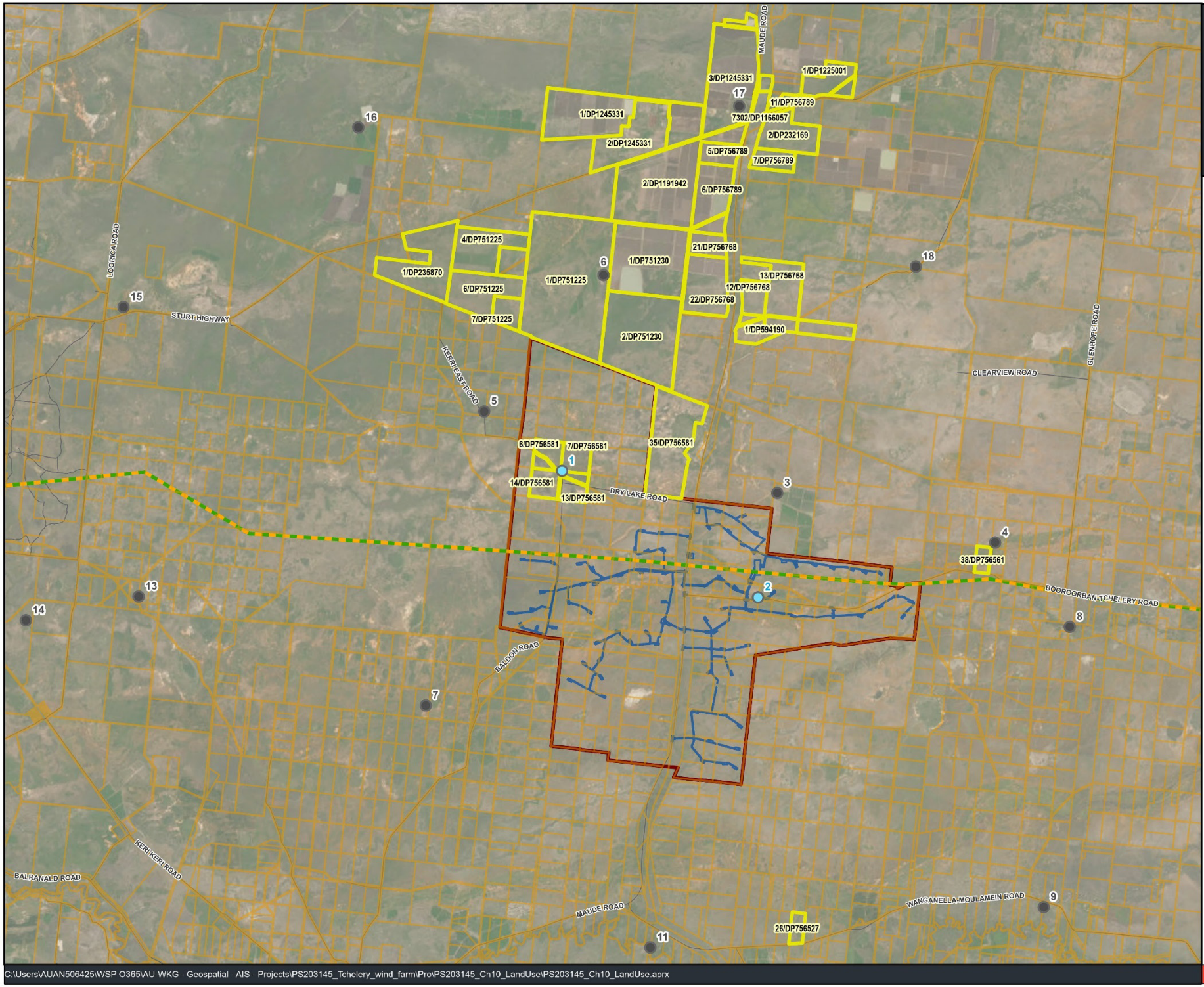
- partly or wholly within the visual impact setback in the Wind Energy Guideline – Technical Supplement for Landscape and Visual Impact Assessment (DPHI, 2024)
- experience exceedances of the relevant noise criteria, or
- be subject to significant risk from blade throw, ice throw or other risks.

Murray River Council, Hay Shire Council and Edward River Council were consulted regarding vacant properties with dwelling entitlements surrounding the project site. Murray River Council responded that there were no affected lots in the Murray River LGA, and Edward River Council provided a shape file of vacant properties with dwelling entitlements surrounding the project (refer to Figure 10.2). Hay Shire Council did not provide a response and was later determined to be located a sufficient distance from WTGs that assessment of impacts to development rights was not required.

Based on the height of the WTG and Figure 2 in the Wind Energy Guideline – Technical Supplement for Landscape and Visual Impact Assessment (DPHI, 2024e), the visual impact setback is conservatively 1,750 metres from WTGs. One vacant property within Edward River LGA (Lot 35, DP 756581) with a dwelling entitlement was identified as having potential to be impacted. Refer to Table 10.6 for assessment of potential impacts to development rights of Lot 35, DP 756581.

Table 10.6 Potential impacts to development rights of neighbouring landholders

Dwelling/Landholder	Impacts	Evaluation
Lot 35, DP756581	— the property is partially located within the visual impact setback of 1,750 metres from a WTG — the property is partially located within the 50–55 dBA noise contour for construction and the 35dBA noise contour for operation of the project — the property is partially located within the conservative 800 metre buffer from WTGs that is assessed as having risk to be impacted by a blade throw fragmentation event.	— there would be minor visual, noise and blade throw impacts. However, the property is of sufficient size so that future developments (if proposed) could be located to avoid these.



Tchelery Wind Farm

Figure 10.2
Dwelling entitlements

Legend

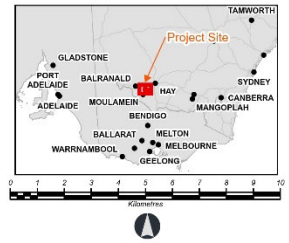
- Project site
- Cadastre lot with dwelling entitlement (lot and DP labelled)
- Other cadastre lot
- Construction footprint

Nearby Structures

- Dwelling or building associated with the project
- Non-associated dwelling

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - NSW Eastern Section
- Existing road



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10.9 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to land use and agriculture associated with the project are detailed in Table 10.7.

Table 10.7 Land mitigation measures

Ref	Mitigation measures	Timing	Applicable location(s)
L1	To minimise disruption to agricultural activities: — the host landholder will be consulted regarding any required adjustments to property infrastructure (fences, access tracks, etc) and the proposed timing and location of construction works, especially where some restriction on vehicular or stock movements will be necessary. These requirements will be included in the Construction Environmental Management Plan and will be provided to the construction contractor — property infrastructure (such as gates) will be managed in accordance with host landholder requirements (provided access is not limited or restricted) — any damage to property infrastructure caused by construction will be repaired in a timely manner in consultation with the host landholder — use of existing roads, tracks and other existing disturbed areas will be prioritised, where practicable — where access is required across open spaces, care will be exercised to ensure that minimum damage is caused to the surface by confining vehicular or plant movement, as far as practicable, to one route.	Detailed design and construction	All locations
L2	Disturbed areas will be stabilised and appropriately rehabilitated to achieve as close as practicable pre-impacted condition as soon as practicable following the completion of construction work at each location.	Construction	All locations
L3	Procedures will be implemented so that potential impacts or conflicts between livestock and construction activities are appropriately managed. Procedures will be developed in consultation with the host landholder and will include management of: — noise intensive activities during sensitive periods within the livestock production cycle (such as lambing and calving) — vehicle movements and other activities within the vicinity of livestock — movement of stock away from potential stressors created by construction activities.	Construction and operation	All locations

Ref	Mitigation measures	Timing	Applicable location(s)
L4	Construction and operation activities will conform to the biosecurity protocols pre-agreed with the host landholder including, as required: — recording of the name, location, date and time of visit for all persons entering the properties — project vehicles will be washed down prior to entering any agricultural areas, and vehicles will be washed down when moving between paddocks with known weed infestations — temporary or permanent fencing will be installed where required around facilities (such as the construction compound, concrete batching plants, materials storage and laydown areas and operation and maintenance facility) to conform to biosecurity protocols — new or existing infestations of any priority weed or unidentified weed will be reported to the appropriate weed management authority.	Construction and operation	All locations
L5	Where present, weeds will be managed in consultation with the host landholder.	Construction	All locations
L6	Fencing and access arrangements, such as locked gates and requirements for opening and closing of gates, will be determined in consultation with host landholder. Any damage caused by maintenance activities will be repaired promptly.	Operation	All locations
L7	Where present within the operational footprint, weeds will be managed in accordance with the *Biosecurity Act 2015* and the Murray Regional Strategic Weed Management Plan 2017-2022.	Operation	All locations
L8	The project site will be returned to pre-development condition at the end of the project's operational life in consultation with the host landholder. All above ground infrastructure will be removed. Hardstand surfaces, access tracks and other bare areas surplus to the host landholder's requirements will be rehabilitated to native pasture which may include addition of topsoil, restored drainage, and restoration of vegetation. Underground infrastructure (such as power lines and footings) will be removed to a depth of 500 millimetres below ground surface; however, may otherwise remain in consultation with the landholder. Any contamination or waste will be removed or managed in consultation with the host landholder and according to relevant legislation. Weed infestations will be controlled during the decommissioning process, if practicable.	Decommissioning	All locations
L9	Travelling stock reserves and Crown land will be managed in accordance with consultation with Crown Lands and Local Land Service.	Construction, operation and decommissioning	Maude Road

10.9.1 Interaction between measures

Mitigation measures in other chapters that are relevant to the management of land use include:

- Chapter 14 (Hydrology, flooding and water), specifically measures that address downstream surface water quality impacts
- Chapter 15 (Air quality and greenhouse gases), specifically measures that address dust impacts
- Chapter 17 (Traffic and access), specifically measures that address vehicle movements, property access and works within road reserves
- Chapter 18 (Hazards and risk), specifically measures that address aviation impacts and bushfire risks
- Chapter 19 (Soils and contamination), specifically measures that address soil contamination and erosion.

10.9.2 Managing key uncertainties

There are no key uncertainties associated with land use and agriculture that would require further management beyond the implementation of mitigation measures.

10.9.3 Managing residual impacts

Residual impacts associated with land use and agriculture following the implementation of mitigation measures are negligible in during both construction and operation of the project. As such, further management would not be required.

11 Landscape character and visual amenity

This chapter summarises potential impacts to landscape character and visual amenity, and from shadow flicker associated with the project and identifies measures to address these impacts. This chapter summarises information in Technical paper 5A (Landscape and visual impact assessment) and Technical paper 5B (Shadow flicker assessment) prepared by Iris and WSP, respectively.

11.1 Summary of key findings

The key findings from the assessment of impacts to landscape character and visual amenity are:

- visual impacts and landscape values were not a key theme identified from community engagement and no particular landscape feature or vantage points were identified by the local community for further consideration
- lighting installed on select Wind Turbine Generators (WTGs) would be on continuously at night for aviation safety and would result in a change to the dark sky at night
- road users on Maude Road and Booroorban-Tchelery Road would experience temporary visual impact during construction from the construction facilities and construction compound
- identified dwellings with potential to be impacted from the project were considered to have moderate to low visual influence zones
- one dwelling was identified to require mitigation to minimise landscape character and visual amenity impacts from the project
- no dwelling was identified as receiving shadow flicker impacts.

11.2 Setting the context

11.2.1 Statutory requirements

Potential impacts to landscape character and visual amenity and from shadow flicker associated with the project were assessed in line with the following legislation, policies and guidelines:

- Wind Energy: Visual Assessment Bulletin (the Bulletin) (Department of Planning and Environment (DPE), 2016)
- National Light Pollution Guidelines for Wildlife (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2023e)
- National Wind Farm Development Guidelines – Draft (Environment Protection and Heritage Council (EPHC), 2010) (the Guidelines)
- Update of UK Shadow Flicker Evidence Base (Department of Energy and Climate Change (DECC), 2010) (the UK Literature Review).

11.2.2 Community views

Wide-ranging engagement has occurred to consider the range of stakeholders that may potentially be impacted by or interested in the project. Engagement activities that have been carried out include a website, project e-mail and contact number, local media advertising, host landholder consultation, and community information sessions. Visual impact and landscape values were not a key theme identified from community engagement. No particular landscape features or vantage points were identified by the local community for further consideration.

Neighbours were visited and photographs of views from their dwellings was carried out in 2024. Some properties were visited and assessed due to interest by neighbours although the Bulletin would not require assessment from these locations. This includes Dwelling 6 (St Pauls) and Dwelling 5 (Keri East) (refer to Figure 11.1). Potential for visual impact was raised by landholders during these visits. However, most of the close neighbours are involved with other renewable energy projects, and the response to this project was generally favourable and collaborative.

11.3 Avoidance/minimisation of impact

To minimise the potential landscape character and visual amenity, and shadow flicker impacts, the following has been incorporated into the project:

- distance of WTGs from dwellings has been maximised
- Battery Energy Storage System (BESS) has been setback from Booroorban-Tchelery Road and Maude Road
- underground transmission lines would be utilised between WTGs and collector substations
- connection infrastructure near the existing 220 kilovolt (kV) lines would be away from dwellings.

11.4 Assessment method

Based on the Bulletin (DPE, 2016), the methodology for assessment of landscape character and visual amenity included the following key tasks:

- Stage One: Preliminary Environmental Assessment (PEA) visual baseline study (Section 11.6.1).
- Stage Two: Assessment and Determination requiring preparation of a visual assessment as part of an Environmental Impact Statement including:
  - preparation of visual baseline study inputs, including consulting the community on aspects of the baseline study
  - establishing visual influences zones from viewpoints using data collected in the baseline study
  - visual performance evaluation requiring application of visual performance objectives to the proposed WTG layout.

An area of eight kilometres from the outermost WTGs has been used as the study area for this assessment (Figure 11.1). The Bulletin states that this study area is considered to include locations where there would be the potential for the highest impacts on landscape character and visual amenity, because at this distance (eight kilometres) WTGs recede into the background in terms of visibility and are unlikely to dominate the landscape character (DPE, 2016).

The shadow flicker assessment involved assessment of a worst case scenario and a realistic scenario. The acceptable amount of shadow flicker was considered to be 30 hours per year and 10 hours per year for worst case and realistic models respectively, as per the Guidelines.

The worst case scenario determines the amount of shadow flicker produced by a WTG or received by a receptor under worst case weather and other conditions. A realistic scenario incorporates measured weather data and other inputs to estimate the amount of flicker produced by a WTG or received by a receptor. Both assessment types have their own associated benchmarks that relate to model inputs and assumptions and, maximum allowable shadow flicker. The factors unique to each model are listed and compared in Table 2.2 in Technical paper 5B (Shadow flicker assessment).

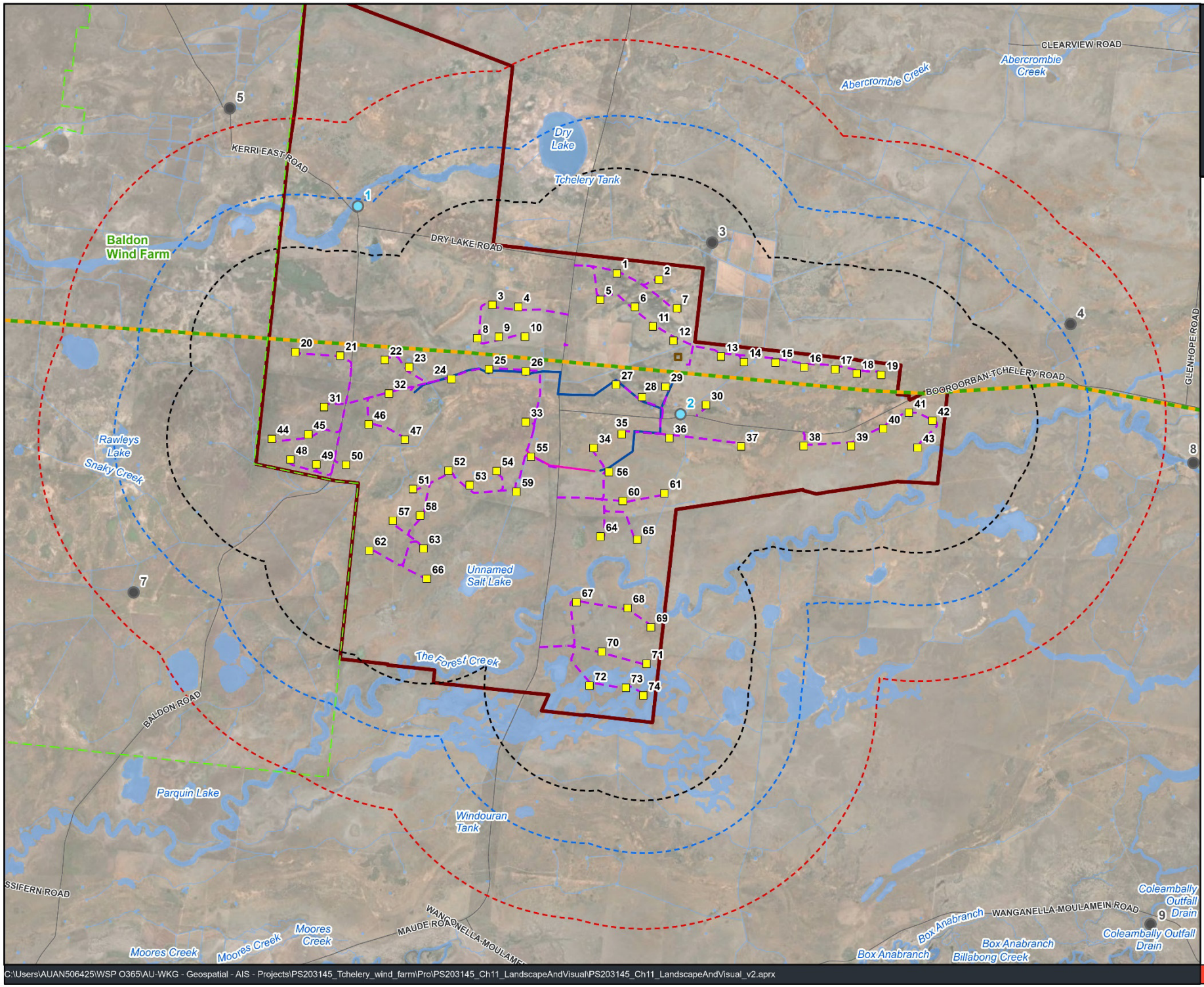
11.5 Description of existing environment

11.5.1 Visual baseline study

Design refinements have occurred since the scoping stage and the number of WTGs has been reduced from 120 to 74. This change has resulted in only four dwellings being within eight kilometres of WTGs; one of which is an associated receiver (Tchelery Homestead). Tchelery Woolshed is uninhabited and not a dwelling. Refer to Figure 11.1 for the project site location, context and topography.

11.5.1.1 Sensitive land use designations

Sensitive land use designations identify key national, and State sensitive land uses such as National Parks and land zoned for residential, environmental and recreational uses (DPE, 2016). The project site is located in a rural area south of Hay (refer to Figure 11.1). The project site and study area are zoned RU1 Primary Production, that is not considered to be a sensitive land use designation in the Bulletin (DPE, 2016).



Tchelery Wind Farm

Figure 11.1
Project site location,
Context and Topography

Legend

- Project site
- Wind turbine
- Dwelling or building associated with proposal
- Non-associated dwelling
- Internal access tracks
- Contour (2m)
- Contour (0.5m)
- Battery energy storage system
- Proposed Baldon Wind Farm project boundary

Transmission

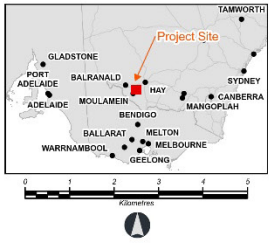
- Existing 220kV transmission line (project energy connect – eastern section)
- Overhead 330 kv lines
- Overhead 33 kv lines

Preliminary assessment tool 1 - Visual magnitude thresholds

- 3.6 km offset from the proposal
- 5.4 km offset from the proposal
- 8 km offset from the proposal

Context

- Roads
- Watercourse
- Waterbody



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11.5.1.2 Landscape character and scenic quality

The project site is located within the Riverina Bioregion as delineated in the Interim Biogeographic Regionalisation for Australia (IBRA) Version 7, and within the Murrumbidgee Subregion. Landscape character types identified in the study area include:

- Hay open rural plains
- Tchelery undulating pastoral landscape
- Forest Creek rural valley.

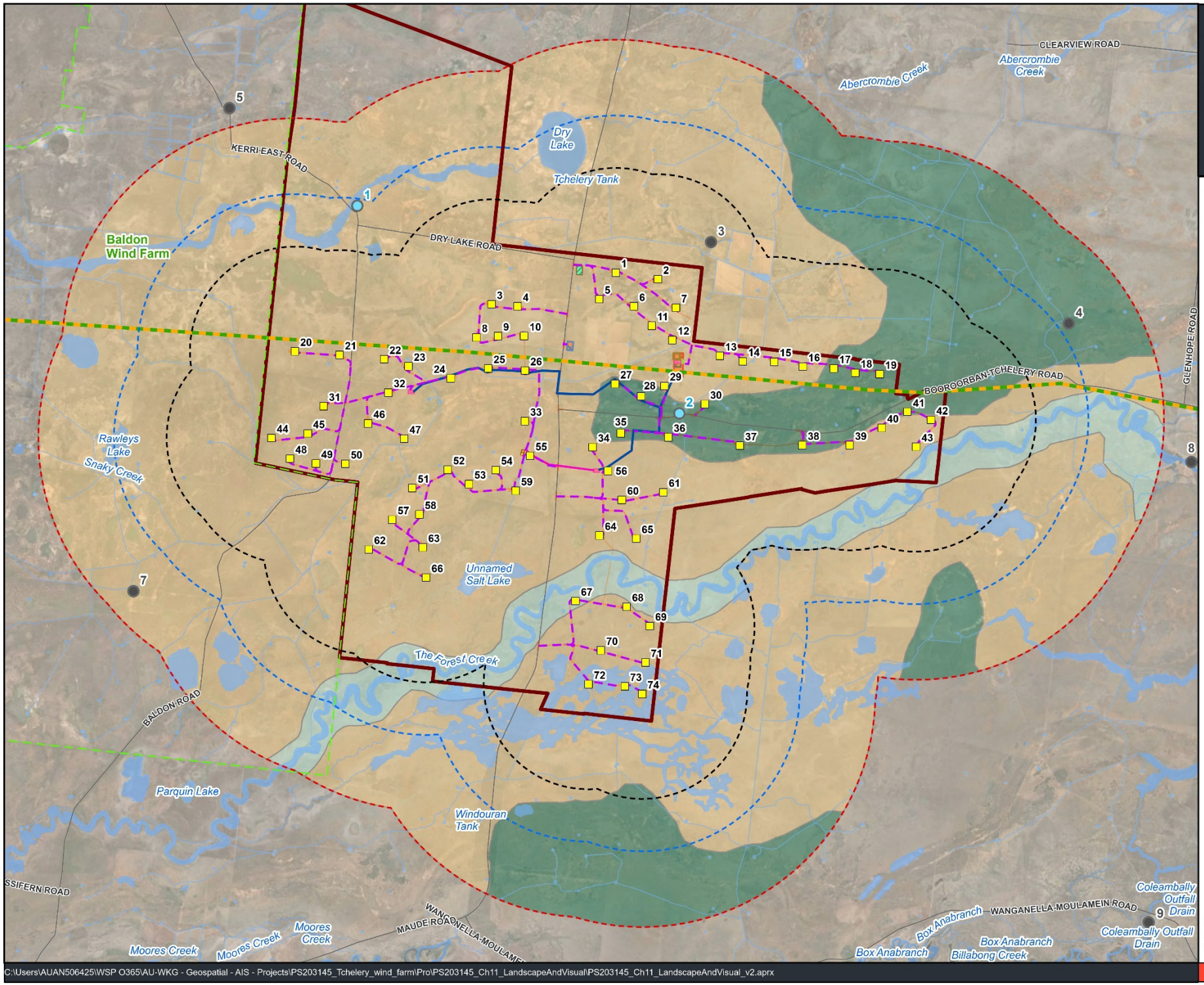
Refer to Table 11.1 and Figure 11.2 for the details and location of landscape character types within the study area. Refer to Figure 11.3, Figure 11.4 and Figure 11.5 for photographs of the landscape character types.

Scenic quality refers to the relative scenic or aesthetic value of the landscape based on the relative presence or absence of key landscape features known (landscape, vegetation and waterforms) to be associated with community perceptions of high, moderate or low scenic quality (DPE, 2016).

Table 11.1 Landscape character types within the study area

Landscape character type	Key features	Landscape character	Scenic quality class
Hay open rural plains	— characterised by large expanses of indistinctly dissected or unbroken landform — waterbodies include farm dams, irrigation channels, and some naturally occurring seasonal dry lakes within the floodplain — the landscape is sparsely vegetated landscape, consisting predominantly of large fields used for livestock grazing and farming — flat landform and sparse vegetation cover allows expansive views across the flat, rural landscape to the horizon — existing large-scale power infrastructure includes the 220 kV Darlington Point to Balranald transmission lines, as well as the approved Project EnergyConnect transmission lines (under construction) — zoned RU1 Primary Production with an objective to… “allow for the development of non-agricultural land uses that are compatible with the character of the zone” (Conargo Local Environmental Plan 2013 (Conargo LEP)).	— naturally appearing — agricultural — cultural (minor)	Low

Landscape character type	Key features	Landscape character	Scenic quality class
Tchelery undulating pastoral landscape	— large expanses of flat to gently undulating landform, slightly elevated above the surrounding rural plains — waterbodies include farm dams and constructed drainage lines — key landscape features are subtle, including areas of native saltbush and low native woodland — existing large-scale power infrastructure includes the 220 kV Darlington Point to Balranald transmission lines, as well as the Project EnergyConnect transmission lines (under construction) — zoned RU1 Primary Production (Conargo LEP).	— naturally appearing — agricultural — cultural (minor)	Low
Forest Creek rural valley	— narrow creek valley meanders through the Murrumbidgee River rural plains south of Hay — native vegetation along creek valley offer some visual relief from surrounding plains — vegetative stands exhibit a range of size, form, colour, texture and spacing, including low Eucalyptus and Acacia woodland.	— naturally appearing — riverine — cultural (minor)	Moderate



wsp

Tchelery Wind Farm

Figure 11.2
Landscape character types within the study area

Legend

- Project site
- Wind turbine
- Dwelling or building associated with proposal
- Non-associated dwelling
- Internal access tracks
- Contour (2m)
- Contour (0.5m)
- Battery energy storage system
- Construction compound
- Collector substation
- Switchyard
- Workforce accommodation camp
- Operations and maintenance facility
- Operational facilities area
- Workforce amenities
- Concrete batching plant
- Laydown areas
- Construction footprint
- Proposed Baldon Wind Farm project boundary

Transmission

- Existing 220kV transmission line (project energy connect – eastern section)
- Overhead 330 kv lines
- Overhead 33 kv lines

Preliminary assessment tool 1 - Visual magnitude thresholds

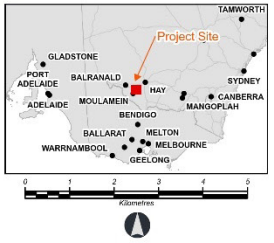
- 3.6 km offset from the proposal
- 5.4 km offset from the proposal
- 8 km offset from the proposal

Landscape Character Unit

- Forest Creek rural valley
- Hay open rural plains
- Tchelery open pastures

Context

- Roads
- Watercourse
- Waterbody



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Figure 11.3 Hay open rural plains



Figure 11.4 Tchelery undulating pastoral landscape



Figure 11.5 Forest Creek rural valley

11.6 Assessment of potential impacts – construction and operation

11.6.1 Preliminary assessment

A PEA (Iris, 2023) was carried out for the Scoping Report (WSP, 2023) for the project. However, due to several changes to the project, including a reduction in WTG numbers and height, the preliminary assessment has been revised. The preliminary assessment involves consideration of visual magnitude and the multiple wind turbine tool and is summarised in Section 11.6.1.1 and 11.6.1.2.

11.6.1.1 Visual magnitude

The visual magnitude threshold is based on the tip height of the WTGs (270 metres) and distance from dwellings or key public viewpoints. Using the tip height of 270 metres, the project has a visual magnitude line at 5.4 kilometres and a threshold distance (potentially highly impacted views) of 3.6 kilometres (refer to Figure 5.1 in Technical paper 5A (Landscape and visual impact assessment) for a graph of the visual magnitude).

Since the PEA (Iris, 2023) for the Scoping Report (WSP, 2023) the project has reduced in extent and scale. This change has therefore altered the findings of the PEA (Iris, 2023), as follows:

- there is now one non-associated individual dwelling (Dwelling 3 (Everslee) at 4026 Maude Road, Moulamein) within 5.4 kilometres of the project site that has potential to have a high visual impact (refer to Figure 11.1)
- Dwelling 5 (Keri East) and Dwelling 6 (St. Pauls) are now outside the eight kilometre study area and do not require assessment
- Dwelling 1 (Tchelery Homestead), within the eight kilometres study area, does not require detailed assessment as it is associated with the project
- Dwelling 7 (Baldon) does not require detailed assessment as it is beyond 5.7 kilometres from the nearest WTG and is a caravan.

As a result of community consultation, detailed assessment was carried out for Dwelling 5 (Keri East), Dwelling 6 (St Pauls), and Dwelling 7 (Baldon). Refer to Technical paper 5A (Landscape and visual impact assessment) for detailed assessment of these locations.

Therefore, the current scope of assessment is:

- two public viewing locations (Maude and Booroorban-Tchelery Road) within 5.4 kilometres of the project site that have potential to have a high visual impact
- one non-associated dwelling (Dwelling 3 (Everslee)) at 4026 Maude Road, Moulamein) within 5.4 kilometres of the project
- one non-associated dwelling (Dwelling 4 (Thalaka)) at 3222 Booroorban-Tchelery Road, Booroorban, that is between 5.4 and eight kilometres of the project.

11.6.1.2 Multiple wind turbine tool

Dwelling 3 (Everslee), that has potential to have a high visual impact, is located less than 3.6 kilometres from the nearest WTG and is predicted to have views towards WTGs within three or more 60 degree sectors, including 27 WTGs located less than eight kilometres away and potentially visible.

Both Maude Road and Booroorban-Tchelery Road extend through the project site, and would have views to multiple WTGs, at varying distances, including close-range views, with more than three 60 degree sectors. To the north, south and east of the project, the number of 60 degree sectors would reduce, as the project is viewed at greater distances from these roads.

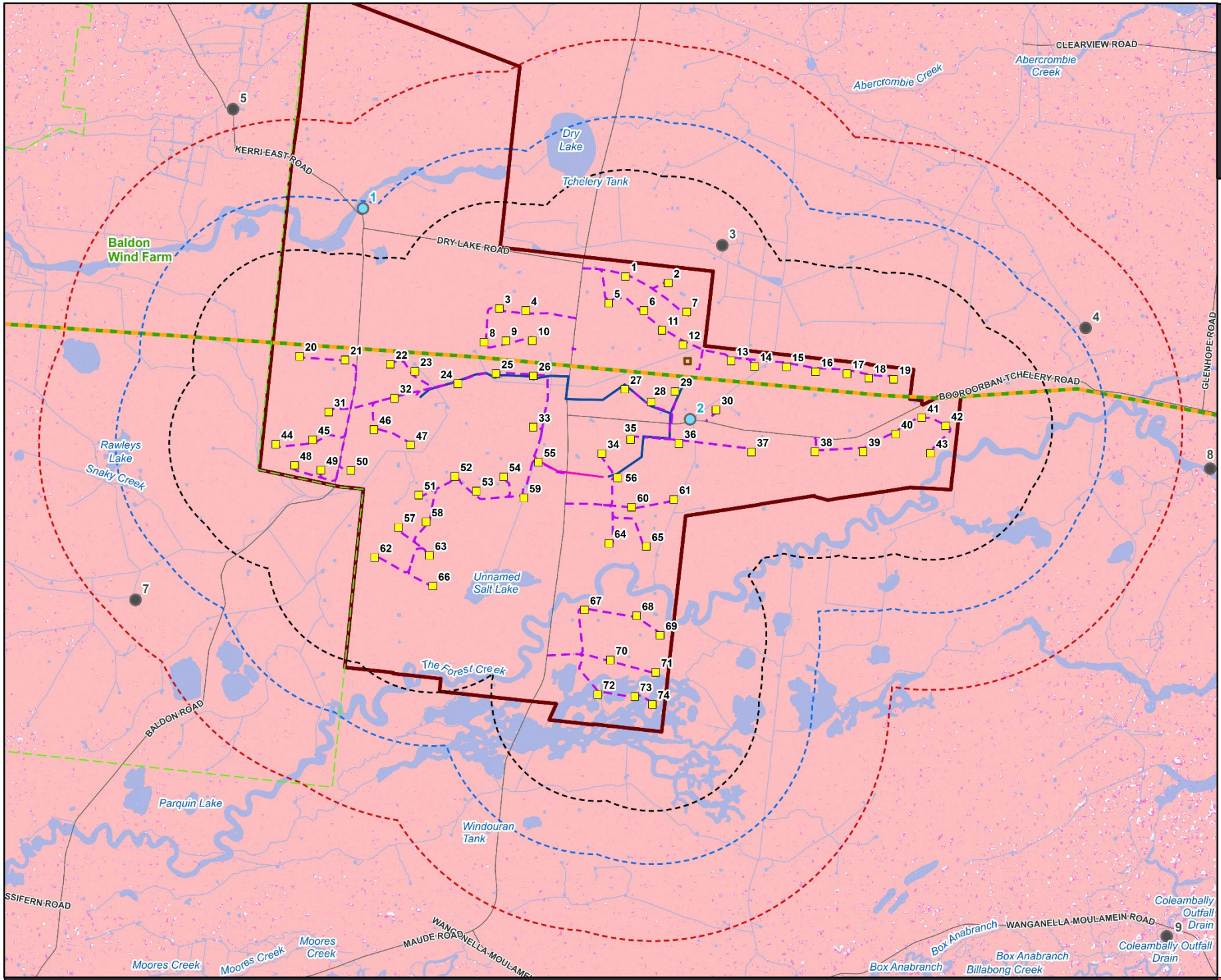
Refer to Appendix A in Technical paper 5A (Landscape and visual impact assessment) for the analysis of these views and other dwellings and structures within the eight kilometre study area and visited during neighbour consultation.

11.6.2 Assessment and determination

11.6.2.1 Zone of visual influence

A zone of visual influence has been prepared to identify the area from which the project is potentially visible. This visibility analysis used a three dimensional (3D) digital terrain model (a digital graphic representation of elevation data to represent existing landform) and points at the height of the wind farm, to identify the areas from which views to the project may be seen.

Figure 11.6 shows the potential visibility of the project. As the project is located in a largely flat landscape, with little intervening vegetation, landform and built form to impede views to the project, the visual catchment mapping has used the full turbine heights of the WTGs (to blade tip) as there was no variation in the visibility of the turbines at different height ranges, as shown in Figure 11.6.



Tchelery Wind Farm

Figure 11.6
Zone of visual influence plan

Legend

- Project site
- Wind turbine
- Dwelling or building associated with proposal
- Non-associated dwelling
- Internal access tracks
- Contour (2m)
- Contour (0.5m)
- Battery energy storage system
- Proposed Baldon Wind Farm project boundary

Transmission

- Existing 220kV transmission line (project energy connect – eastern section)
- Overhead 330 kv lines
- Overhead 33 kv lines

Preliminary assessment tool 1 - Visual magnitude thresholds

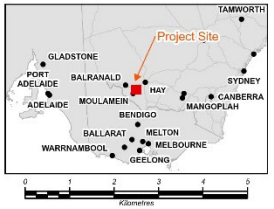
- 3.6 km offset from the proposal
- 5.4 km offset from the proposal
- 8 km offset from the proposal

Visibility threshold

- Proposed turbine blade tips visible (285 m)
- Proposed turbine hub visible (185 m)

Context

- Roads
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:170,000 Date: 9/04/2025

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11.6.2.2 Visual influence zones and visual performance evaluation

In line with the Bulletin, three Visual Influence Zones (VIZ) have been used for the project to assess the impacts on dwellings and key public viewpoints. Determining the VIZ for each viewpoint relies on the data gathered during the baseline study, including viewer sensitivity levels, visual distance zones, and scenic quality class. Refer to Table 5.1, Table 5.2 and Table 5.3 in Technical paper 5A (Landscape and visual impact assessment) for the criteria used to classify viewpoint sensitivity level, visual distance zones and scenic quality class. Refer to Table 5.4 in Technical paper 5A (Landscape and visual impact assessment) for the matrix of viewer sensitivity level, distance zone and scenic quality class combinations used to determine VIZ.

Visual Influence Zone 1 (VIZ1) is associated with those areas with the highest level of visual significance. VIZ2 would have combinations resulting in a moderate VIZ rating, and VIZ3 is associated with those landscapes with the lowest level of combined significance. Each VIZ has a corresponding set of visual performance objectives that guide the proponent and the consent authority by establishing different visual objectives and levels of landscape protection for assessment and determination of the project.

Photomontages have also been prepared to illustrate the expected changes to views as a result of the project and assist in confirming the visibility of the project. Photomontages are created using a combination of 3D modelling and photo editing techniques. Refer to Appendix A and Section 5.2.2.2 of Technical paper 5A (Landscape and visual impact assessment) for photomontages of the project and further details of how they were prepared.

The visual influence zone for each dwelling and public viewpoint is described in Table 11.2.

Table 11.2 Visual influence zone analysis

Representative view location (and other proximate dwellings)	Viewpoint sensitivity level	Distance to closest WTG and WTG ID	Scenic quality class	Visual influence zones
Dwelling 3 (Everslee) at 4026 Maude Road, Moulamein	Level 2, rural dwelling	2.2 kilometres from WTG 2 Near middleground	Low	VIZ2
Dwelling 4 (Thalaka) at 3222 Booroorban-Tchelery Road, Booroorban	Level 2, rural dwelling	5.8 kilometres from WTG 42 Far middleground	Low	VIZ3
View from Maude Road, Maude	Level 3, road	1.38 kilometres from WTG 33 Far foreground	Low	VIZ3
View from Booroorban-Tchelery Road, Maude	Level 3, road	0.75 kilometres from WTG 36 Mid foreground	Low	VIZ2

A summary of the viewpoint visual performance objectives analysis is provided in Table 11.3.

Table 11.3 Visual performance objectives results

Representative view location (and other proximate dwellings)	Visual performance objectives				
	Visual magnitude	Landscape scenic integrity	Key feature disruption	Ancillary infrastructure	Multiple wind turbine effects
Dwelling 3 (Everslee) at 4026 Maude Road, Moulamein	N	Y	Y	Y	Mitigation considered
Dwelling 4 (Thalaka) at 3222 Booroorban-Tchelery Road, Booroorban	Y	N/A	N/A	Y	Y
View from Maude Road, Maude	N	N/A	N/A	Y	Mitigation considered*
View from Booroorban-Tchelery Road, Maude	N	N/A	N/A	Y	Mitigation considered*

Y = complies, N = does not comply.

* Screening vegetation along Maude Road and Booroorban-Tchelery Road would not be consistent with the character of the landscape and is not proposed.

11.6.3 Impact on the night time environment

The project would introduce new lighting sources into the existing dark nighttime environment. Lighting associated with the substations and the operation and maintenance (O&M) facility would not be a source of permanent nighttime light. This lighting would only operate in an emergency to enable critical maintenance work to be carried out safely at night. When on, the lights would be of low intensity and directed downward.

Lighting installed on select WTGs (those at the highest elevations and around the project perimeter) would be on continuously at night for aviation safety. Although the light installed would be low intensity, these new light sources would result in a change to the dark sky at night.

The Bulletin objective for aviation hazard lighting states: Aviation hazard lighting (AHL) must meet the requirements of Australian Standard AS 4282 – 1997 (now 2023) and any prescribed or notified Civil Aviation Safety Authority (CASA) requirement, shield all AHL within two kilometres from any dwellings and avoid strobe lighting (DPE, 2016).

Australian Standard AS 4282 – 2023 (section 1.1, AS4282-2023) states it does not apply to lighting for aviation safety. Regardless, lighting principles from AS 4282 – 2023 would be applied where relevant, lighting would be installed at the lowest intensity to suit the purpose, and strobe lighting is not proposed. Any prescribed or notified CASA requirements would be applied.

11.6.4 Impacts of ancillary infrastructure

The project includes ancillary infrastructure associated with WTGs, including:

- BESS
- permanent electrical infrastructure including 330 kV transmission line, 33 kV transmission lines connecting the WTGs, switchyard and collector substations
- operational ancillary facilities, including O&M facility and meteorological masts.

Compared with the scale of the WTGs, these elements are far smaller, have a smaller potential visual effect. In particular, the BESS is set back from all surrounding roads and residential receivers and view to these components of the project would be limited.

Of note, the O&M facility and BESS would be set back from both Maude Road and Booroorban-Tchelery Road, further reducing their visual scale in views from these roads. The BESS and O&M facility are included in the photomontage and visual assessment from for the view from Booroorban-Tchelery Road.

The transmission lines would be seen together with the WTGs in views from Maude Road and Booroorban-Tchelery Road, where they would cross the landscape. These structures would contribute to the changes in character to views, shown in the photomontages for the view from Maude Road and the view from Booroorban-Tchelery Road.

11.6.5 Temporary visual impacts during construction

During construction there would be temporary construction facilities, including the:

- western construction facilities area, including construction workforce amenities, concrete batching plant, laydown areas
- eastern construction facilities area, including construction workforce amenities, concrete batching plant, laydown areas
- construction compound and workforce accommodation camp on Maude Road.

There would be views to the western construction facilities area and construction compound and workforce accommodation camp on Maude Road, from Maude Road. The western construction facilities area would be set back from Maude Road, reducing the scale of the facilities in views from the road. The construction compound and workforce accommodation camp; however, would be located adjacent to Maude Road. Both of these facilities would be largely unobstructed by landform and vegetation and would contrast with the character of the existing views along Maude Road.

The eastern construction facilities area would be less visible, and likely to be visible in the background of views from both Maude Road and Booroorban-Tchelery Road. This distance would reduce the visual scale of this facility. During construction, installation of the project elements would gradually transform views, to include the WTGs. With this construction, there would also be large equipment and heavy vehicles used for transport and construction of the project infrastructure. These visual impacts would temporary, and likely to be greater in scale than the operational works due to the construction activities, equipment, and construction support facilities.

11.6.6 Shadow flicker

The shadow flicker assessment determined Sensitive receiver 2 (Tchelery Woolshed) was the only building to receive shadow flicker impacts. Tchelery Woolshed is uninhabited and regularly used as a place of business. As such, mitigation measures are not required.

11.7 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to landscape character and visual amenity and from shadow flicker associated with the project are detailed in Table 11.4.

Table 11.4 Landscape character and visual amenity mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
LV1	Screening vegetation and a private agreement will be offered for Dwelling 3 (Everslee) at 4026 Maude Road, Moulamein, between the dwelling and the wind turbine generators to supplement the existing intervening vegetation if agreed. Alternatively, a private agreement will be established between Neoen and the landholder.	Construction and operation	4026 Maude Road, Moulamein
LV2	Lighting at temporary construction compounds and the temporary workforce accommodation camp will be designed and operated in accordance with Australian and New Zealand Standard AS/NZ 4282:2023 Control of the obtrusive effects of outdoor lighting.	Construction	Road construction compound, construction workforce amenities and construction compound
LV3	Any operational lighting at the battery energy storage system will be designed in accordance with the Australian and New Zealand Standard AS/NZ 4282:2023 Control of the obtrusive effects of outdoor lighting, be minimised and sensors will be used where practicable to minimise light spill and skyglow.	Operation	BESS
LV4	To reduce the visual impact on the existing dark sky from permanent lighting installed at select wind turbine generators, the following measures will be implemented: — apply lighting principles from the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023e), summarised as: — only add artificial light for specific and defined purposes, and only in the required location and for the specified duration — use smart control technology for better controlled and targeted artificial light management — light only the intended object or area – keep lights close to the ground, directed and shielded — use light intensity appropriate for the activity (only the minimum number and intensity of lights to meet the lighting objectives) — use non-reflective, dark-coloured surfaces — use lights with reduced or filtered-out blue, violet and ultraviolet wavelengths — install Australian Dark Sky Alliance approved light fittings where practicable.	Construction	Wind turbine generators

11.7.1 Interaction between measures

Mitigation measures in other chapters that are relevant to landscape character and visual amenity include:

- Chapter 10 (Land), specifically measures that address minimising impacts from the location of permanent and temporary infrastructure
- Chapter 12 (Social), specifically measures to address continued community engagement.

11.7.2 Managing key uncertainties

There are no key uncertainties associated with landscape character and visual amenity and shadow flicker that would require further management beyond the implementation of mitigation measures.

11.7.3 Managing residual impacts

Residual impacts associated with landscape character and visual amenity and shadow flicker following the implementation of mitigation measures are anticipated to be negligible during construction and operation of the project. As such, further management would not be required.

12 Social

This chapter provides an assessment of potential social impacts associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 6 (Social impact assessment) (SIA) prepared by WSP.

12.1 Summary of key findings

The key findings from the SIA are as follows:

- the local social locality comprises a population of 1,037 people, and the regional social locality comprises a population of 58,482 people (with Swan Hill comprising the highest population (21,403) followed by the Murray River Local Government Area (LGA) (12,850))
- major regional urban centres such as Swan Hill, Balranald, Deniliquin, Hay and Berrigan serve as hubs for education, health, and shopping for surrounding communities
- agriculture dominates the local economy, shaping the community's identity, with residents valuing their pastoral heritage, farming lifestyle, and natural surroundings, while also actively engaging in volunteering activities
- potential benefits expected to result during the project construction and operation include:
  - improvements in the local and regional economy from an increased employment and procurement
  - increase in income and improvements in socio-economic conditions due to the Community Benefit Sharing Scheme (CBBS)
- potential negative impacts include:
  - medium and low unmitigated impact to community cohesion due to unequal distribution of impacts and benefits, and decreased sense of safety due to inflow of workforce during construction and operation, respectively
  - low unmitigated impact to sense of road safety due to the presence of construction vehicles during construction and operation
  - high and low unmitigated impact to the capacity of health, food, short term accommodation and social services due to increased project workforce during construction and operation, respectively
  - low unmitigated impact on emergency services, cultural values for First Nations people, and health and wellbeing during construction and operation
  - medium and high unmitigated impact to sense of place due to changes in the landscape during construction and operation, respectively
  - medium and low unmitigated impact to the availability of local workforce due to increased competition between the project and local employers during construction and operation, respectively
  - host landholders and adjacent properties may experience a low unmitigated impact to their agricultural income due to interruption of agricultural activities during construction and operation
  - low unmitigated impact to stakeholders who may experience diminished capacity to influence project decisions.

A number of mitigation measures would be implemented such as a Community Engagement Plan (CEP), Accommodation and Employment Strategy, Industry Participation Plan and Community Benefit Fund and/or targeted local participation or council contributions. The mitigation measures proposed for social impact would maximise the project benefits and reduce all impacts to Low, with the exception of diminished sense of place and aesthetics values due to changes to landscape during operations that would result in a Medium residual impact.

12.2 Setting the context

12.2.1 Statutory requirements

Potential social impacts associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- Balranald Community Strategic Plan (CSP) 2032 (Balranald Shire Council, 2022)
- Benefit-Sharing Guideline (Department of Planning, Housing and Infrastructure (DPHI), 2024b)
- Cumulative Impact Assessment Guidelines (Department of Planning and Environment (DPE), 2022a)
- Edward River Shire CSP (Edward River Council, 2022)
- First Nations Guidelines: Increasing income and employment opportunities from electricity infrastructure projects (Office of Energy and Climate Change, 2022b) (First Nations Guidelines)
- Hay Shire Council CSP 2022–2032 (Hay Shire Council, 2022)
- Murray River CSP 2022–2032 (Murray River Council, 2022)
- NSW Electricity Infrastructure Roadmap (the Roadmap) (Department of Planning, Industry and Environment (DPIE), 2020a)
- Practice Note: Engaging with Aboriginal Communities (DPE, 2022b) (the Practice Note)
- Riverina Murray Regional Plan 2041 (DPE, 2023a)
- Social Impact Assessment Guideline (DPE, 2023d) (SIA Guideline)
- Technical Supplement – Social Impact Assessment Guideline for State Significant Projects (the SIA Technical Supplement) (DPE, 2023e)
- Undertaking Engagement Guidelines for State Significant Projects (DPHI, 2024c)
- Swan Hill Community Vision and Council Plan 2021–2025 (Swan Hill Council, 2024)
- Growing Gannawarra Council Plan 2021–2025 (Gannawarra Shire Council, 2021).

12.3 Assessment method

The methodology was prepared in accordance with the SIA Guideline (DPE, 2023d) and addresses Phase 2 assessment requirements by:

- predicting and analysing the extent and nature of social impacts against baseline conditions, consultation and findings
- evaluating and prioritising the social impacts that are important to people by analysing and categorising consultation findings
- developing appropriate and justified responses (for example avoidance, mitigation and enhancement measures) to social impacts, and identifying and discussing residual social impacts
- developing measures to monitor and manage residual social impacts, including unanticipated impacts, over the life of the project.

12.3.1 Social locality

Social locality represents communities that may experience direct and indirect socio-economic impacts associated with the project. Parameters used to define social locality include:

- scale and nature of the project
- stakeholders affected by the project
- vulnerable or marginalised individuals around the project
- natural features on or near the project
- relevant social, cultural and demographic trends.

The local social locality comprises the area closest to the project including the host landholders and properties adjacent to the project on Maude Road.

The regional social locality covers a broader area and represents those who may be affected indirectly by the project and comprises six LGAs within 100 kilometres of the project (refer to Section 12.4).

12.3.2 Existing conditions

The description of the existing social environment adhered to rigorous, impartial, and adaptable SIA principles by:

- using unbiased research methods and primary data sources, including targeted engagement
- employing accepted social science research methods and robust evidence from authoritative and trustworthy secondary data sources, primarily the 2021 Australian Bureau of Statistics (ABS) Census
- allowing for continuous validation and refinement of the discussion on the existing social environment informed by engagement findings.

12.3.3 Social impact assessment engagement

Targeted SIA engagement gathered insights from those potentially affected by the project. SIA engagement adhered to the principles of inclusivity and transparency. Participants were informed about the objectives of the interviews developed during the consultation process and informed about channels to provide feedback. Additionally, respondents were briefed on how their input would shape the SIA and, in turn, inform the Environmental Impact Statement (EIS).

12.3.4 Evaluation of significance

The methodology to assess the significance of each impact includes the following criteria:

- evaluating the five impact characteristics that demonstrate the material effect of an impact (extent, duration, severity, sensitivity, and level of concern)
- identifying the magnitude scale of each impact
- defining likelihood based on an understanding of social impact and interpretation in the project context
- determining the significance of the potential impact pre-mitigation.

Impact characteristics and consequences are assessed within the social impact significance framework (refer to Table 12.3) to determine risk level for construction and operation of the project. To determine the magnitude of any potential social impact, five dimensions were considered including the extent of people affected, duration, severity or scale of impacts, intensity or importance and level of concern/interest. The magnitude and likelihood definitions and social risk matrix framework is outlined in Table 12.1 and Table 12.2 respectively.

Table 12.1 Defining magnitude of social impacts

Magnitude criteria	Definition
Transformational	Substantial change experienced in community wellbeing, livelihood, amenity, infrastructure, services, health, and/or heritage values; permanent displacement or additional of at least 20 per cent of a community.
Major	Substantial deterioration/improvement to something that people value highly, either lasting for an indefinite time, or affecting many people in a widespread area.
Moderate	Noticeable deterioration/improvement to something that people value highly, either lasting for an extensive time, or affecting a group of people.
Minor	Mild deterioration/improvement, for a reasonably short time, for a small number of people who are generally adaptable and not vulnerable.
Minimal	Little noticeable change experienced by people in the locality.

(DPE, 2023e)

Table 12.2 Defining likelihood levels of social impacts

Likelihood level	Definition
Almost certain	Definite or almost definitely expected (for example has happened on similar projects)
Likely	High probability
Possible	Medium probability
Unlikely	Low probability
Very unlikely	Improbable or remote probability

(DPE, 2023e)

Table 12.3 Social impact significance matrix

Likelihood		Magnitude				
		1	2	3	4	5
		Minimal	Minor	Moderate	Major	Transformational
A	Almost certain	Low	Medium	High	Very high	Very high
B	Likely	Low	Medium	High	High	Very high
C	Possibly	Low	Medium	Medium	High	High
D	Unlikely	Low	Low	Medium	Medium	High
E	Very unlikely	Low	Low	Low	Medium	Medium

(DPE, 2023e)

12.4 Description of existing environment

The local social locality includes the area closest to the project and represents those communities who may experience direct social impacts. The local social locality includes the geographical area within a 20 kilometre buffer of the project site that intersects four ABS Statistical Areas Level 1 (SA1) and includes:

- Moulamein SA1: 10903118308
- Keri Keri SA1: 10903118310
- Booroorban SA1: 10903118311
- Hay SA1: 10902117711.

The regional social locality covers broader communities living in the areas who may be part of supply chain and transportation routes of the project and may be indirectly affected by other aspects of the project implementation. The regional social locality includes the six LGAs within a 100 kilometre buffer of the project and include:

- Edward River LGA in NSW
- Hay LGA in NSW
- Balranald LGA in NSW
- Murray River LGA in NSW
- Gannawarra LGA in Victoria
- Swan Hill LGA in Victoria.

12.4.1 Community

Community character of the local and regional localities is shaped by community pride in the pastoral history and agricultural lifestyle of the region. Members of the community value a sense of community and run a range of volunteering activities in sports, culture and health advocacy.

The population of the local social locality is 1,037 people while the population of the regional social locality is 58,482 people (with the Swan Hill LGA presenting the highest population of 21,403 people followed by the Murray River LGA with a population of 12,850 people). Median weekly household incomes for both the local and regional social localities are lower compared to NSW and Victoria averages.

12.4.2 Way of life

The local and regional social localities contain several major roads including the Sturt Highway, Maude Road and the Cobb Highway. In the south of the regional social locality, one of the road trip attractions is a scenic Long Paddock Touring Route going along the Cobb Highway from the NSW-Victoria border to Bourke and other NSW Outback towns (Visit NSW, 2023).

In the local social locality, the proportion of car users is 51.5 to 61.4 per cent of the population while in the regional social locality, this proportion is higher than 65 per cent across all LGAs. Most residents in the local and regional social localities commute to work by car, while the use of public transport is almost negligible (except for Moulamein where 10.4 per cent use public transport). The regional social locality does not have an extended bus services network.

12.4.3 Accessibility

Around 45.1 per cent of dwellings in the local social locality are owned outright, while 19.6 per cent of dwellings are owned with a mortgage. A similar trend can be observed in the regional social locality.

Short term accommodation is scarce in Moulamein (being the closest locality to the project site). Hay, Balranald and Swan Hill have a range of temporary accommodation options.

NSW State Emergency Services and NSW Rural Fire Service (RFS) are established in all the NSW LGAs within the regional social locality. Flooding is one of the key risks that is addressed by these services. Gannawarra and Swan Hill LGAs are located within Victoria's Mallee Country Fire Authority (CFA) district.

The local social locality has limited mobile reception and connectivity. The regional social locality partially stretches over the rural areas with a limited mobile network. In Edward River LGA, unreliable coverage outside the main city (Deniliquin) was reported as one of the top problems (Edward River Council, 2021).

12.4.4 Culture

First Nations people constitute around three per cent of local social locality population and around five per cent of the regional social locality population. First Nations people in the regional social locality come from diverse cultural groups including the Yorta Yorta and Baraba Baraba peoples, the Wiradjuri and Nari Nari peoples), the Wadi Wadi and Wemba Wemba peoples, and the Madi Madi and Dadi Dadi peoples (refer to Technical paper 2 (Aboriginal cultural heritage assessment)).

In the local social locality, particularly in Moulamein, key stakeholders have highlighted the significant colonial heritage present in the town represented by a few historical heritage sites (refer to Chapter 9 (Historic heritage) and recognise Moulamein's heritage as an asset for potential tourism development.

Cultural life within the regional social locality varies with noticeable events that include:

- Deni Ute Muster (Edward River LGA)
- Hay Rodeo (Hay LGA)
- Booligal Sheep Races (Hay LGA)
- Merino Sheep Show (Hay LGA)
- Moama Lights (Murray River LGA)
- Moulamein Fishing Competition (Murray River LGA)
- Easter Family Fun Day (Balranald LGA)
- Five Rivers Outback Festival (Balranald LGA)
- Swan Hill Region Food and Wind Festival Cruise (Balranald LGA).

12.4.5 Health and wellbeing

In NSW, Edward River, Murray River, and Hay LGAs are within the Murrumbidgee Local Health District, while Balranald LGA are within the Far West Local Health District. Most medical facilities, including hospitals, are in the regional centres that include Deniliquin, Hay and Balranald. In Victoria, Swan Hill District Health is the primary healthcare provider in the Swan Hill LGA, while health services in the Gannawarra LGA are concentrated in Kerang that is around 100 kilometres from the project site.

Large distances to health infrastructure, including aged care facilities and specialist services is a core concern of the communities in Edward River LGA, Murray River LGA, and Balranald LGA (Edward River Council, 2022; Murray River Council, 2022; Balranald Council, 2022).

Asthma is one of the most prevalent long term health conditions in the local and regional social locality. Mental health is another prevalent long term concern in the local and regional social localities.

12.4.6 Surroundings

The regional social locality stretches over vast flatlands that have been utilised for agricultural activities and touristic activities because of the unique nature of Riverina bioregion (National Parks and Wildlife Service, 2003). The agricultural landscape encompasses areas for cattle grazing and irrigated fields. All LGAs within the regional social locality have a mix of plant (maize, wheat, oats, and other) and animal agriculture (sheep for wool production, dairy and cattle).

The natural landscape of the regional social locality encompasses several National Parks and major rivers. There are five National Parks within the regional social locality:

- saltbush plains with rare species of birds in Edward River LGA
- Kalyarr National Park (one of the flattest places on earth) in Hay LGA (National Parks and Wildlife Service, 2023)
- Yanga National Park, Murrumbidgee Valley National Park, Murray Valley National Park, Werai State Forest and Koondrook and Campbells Island State Forests in the Murray River LGA (ABS, 2023)
- Mungo National Park (part of the World Heritage and famous for Mungo Man and Mungo Lady remains that have important influence on understanding of Australian pre-colonial history) in Balranald LGA (National Parks and Wildlife Service, 2023)
- Gunbower National Park and Gunbower State Forest in the Gannawarra LGA.

Rivers that shape the natural landscape include the Murrumbidgee River, Murray River, Wakool River, Edward River and the Lachlan River. The characteristics of each river contribute significantly to how communities perceive and appreciate their surrounding landscape.

12.4.7 Livelihoods

The population differs significantly between the LGAs within the regional social locality. Consequently, the labour force numbers differ as well, with the Murray River LGA presenting the largest labour force and Balranald the lowest.

Agriculture is the core industry for employment both in the local and regional social localities for NSW. Other top industries of employment within the NSW social locality are public administration and safety, healthcare and social assistance, and State Government and administration sector. Other top industries in the NSW regional social locality are healthcare and social assistance, retail, construction, and education. In the Victoria social locality, the top industries of employment are healthcare, construction and retail.

In the local social locality, the top occupations are managers and labourers. In the regional social locality, the top occupations include manager, professionals and technicians and trades workers.

12.5 Assessment of potential impacts – construction

Social impacts during construction have been assessed against way of life, accessibility, culture, health and wellbeing, surroundings and livelihoods. The potential positive and negative social impacts prior to mitigation are described in Table 12.4. Measures to mitigate negative impacts or to enhance positive impacts are discussed in Section 12.7.

Table 12.4 Construction impacts – social

Social category	Impact
Community	Changes to community cohesion could arise due to community understanding and experience of distribution of impacts and benefits during pre-construction and construction. A medium unmitigated impact of changes in community cohesion is expected. Changes in sense of safety may occur when a large number of workers enter a small and close-knit community. A medium unmitigated impact of changes to sense of safety is expected during construction.
Way of life	There is potential for a diminished sense of road safety during construction due to increased traffic and changes to the way people move and participate in community life. However, the project is not expected to significantly impact access to properties during construction. Where temporary partial road closures are required, traffic management plans would be prepared providing temporary alternative access and consultation would occur with affected property owners, road authority and emergency services. As such there is a low unmitigated impact expected during construction.
Accessibility	Local residents' access to services and temporary accommodation could be impacted in Moulamein, Hay and Deniliquin during construction. A high unmitigated impact would be expected. During construction the likelihood of potential impacts on the capacity of emergency services would be largely driven by risk of serious injuries and risk of non-safety behaviour of the construction workforce. A low unmitigated impact is expected as it is possible that during construction emergency services might experience minimal demand from the project. Water during construction would be required for on-site concrete batching, dust suppression, earthworks and pavement compaction and minor uses, including general workers facilities and workforce accommodation camps. However, negligible impacts to landholders are expected during construction as water would be sourced within existing water allocations.
Culture	A total of 13 sites of moderate and low Aboriginal heritage significance would be directly impacted and three sites would be partially impacted resulting in a loss of cultural values for First Nations people. This is expected to result in a low unmitigated impact during construction.
Health and wellbeing	During construction, landholders might experience changes to noise, vibration, lighting, and air quality. A low unmitigated impact is expected due to the distance to sensitive receivers from the project.
Surroundings	The installation of large-scale infrastructure can impact the communities' sense of place. Construction activities, such as earthworks, would have a negligible impact to the community, given that activities would take place in a private property with limited visual impacts to the public. Landholders hosting project infrastructure would likely experience a medium unmitigated impact to their sense of place.

Social category	Impact
Decision-making systems	Procedural fairness refers to stakeholders having an opportunity to present their views and receive fair treatment throughout decision-making processes (Tyler, 2006). In the context of the project, procedural fairness principles have been followed by the implementation of the CEP. Stakeholders consulted during the process of the SIA expressed both satisfaction and concern with regard to the engagement conducted. Consequently, it is possible that some community members and stakeholders would experience fatigue and see their capacity to influence this project diminished, resulting in a low unmitigated impact during construction.
Livelihoods	The project has the potential to positively impact the local and regional social localities by increasing employment opportunities. As such, the project has potential to generate a medium positive impact in the form of employment opportunities during construction. The project is expected to rely heavily on workers from specialised and other machinery and equipment manufacturing, and electrical equipment manufacturing industries, particularly for supplying WTGs or Battery Energy Storage System (BESS) components during construction. As such, the project would have the potential to generate a high positive impact on the local regional economy. Introducing large infrastructure projects in one area can create competition among local businesses as the availability of local workers does not meet the increased demand. Competitive salaries and packages offered by the project may further challenge local employers who face increased labour costs to attract available workers. This would result in a medium unmitigated impact during construction. The project has potential to decrease agricultural incomes for the host landholders and adjacent properties due to disruptions in agricultural land use during construction. However, a decrease in income for host landholders and adjacent properties is considered unlikely, resulting in a low unmitigated impact. Benefit sharing programs commonly target the issues relevant for a specific community leading to possibilities of additional employment or procurement to implement the funded projects. The program's beneficiaries would comprise the local community within 40 kilometre radius of the project site, including landholders and neighbours. The development of a CBSS during construction of the project would generate a high positive impact for the local community.
Decision-making systems	It is possible that some community members and stakeholders would experience fatigue and see their capacity to influence this project diminished, resulting in a low unmitigated impact during operation.

12.6 Assessment of potential impacts – operation

Social impacts during construction have bene assessed against way of life, accessibility, culture, health and wellbeing, surroundings and livelihoods. The potential positive and negative social impacts prior to mitigation are described in Table 12.5. Measures to mitigate negative impacts or to enhance positive impacts are discussed in Section 12.7.

Table 12.5 Operation impacts – social

Social category	Impact
Community	During operation, it is anticipated that changes to community cohesion from unequal distribution of impacts and benefits would result in a low unmitigated impact. Likewise, a low unmitigated impact on sense of safety is expected due to the small number of the permanent workforce.
Way of life	Maintenance activities during operation would be carried out infrequently at routine intervals and the traffic generated would have a negligible impact on the efficiency of the road network. As such, a low unmitigated impact on sense of road safety would be expected.
Accessibility	During operation, there may be a slight increase in the use of social services as the workforce transitions to permanent status (around 20 full-time equivalent (FTE) workers expected). This would not heavily impact accessibility to services and would result in a low unmitigated impact. Emergency services would not be heavily impacted and would result in a low unmitigated impact. During operation negligible impacts water access and groundwater are expected.
Culture	WTGs would be visible from Maude Road and there is the potential for a low unmitigated impact to the attachment to Country for local First Nations people.
Health and wellbeing	During operation, changes to landholder wellbeing might arise due to concerns about electric and magnetic fields, and changes to visual, noise and vibration from WTGs and BESS. Changes to landholder wellbeing would be expected to have a low unmitigated impact.
Surroundings	The project is expected to have a high unmitigated impact on the surroundings by the potential to dimmish sense of place and aesthetics due to changes to landscape and environmental values due to the introduction of WTGs in the landscape.
Livelihoods	During operation, the project would provide up to 20 FTE direct and indirect jobs within the local workforce economy. As such, the potential to generate a low positive impact in the form of employment opportunities during operation. Operation is expected to use people employed in the other repair and maintenance industry and the construction services industry. This is expected to have a high positive impact on the local and regional economy. A low unmitigated impact on the diminished availability of employees due to increased competition with the project among local employers is expected, as employment opportunities can be leveraged by those unemployed in the regional social locality in addition to those already active and engaged in work locally, decreasing the potential competition between local employers and the project. The project could result in a decrease in income for the host landholders and adjacent properties due to disruptions in agricultural land use during operation. However, a decrease in income for host landholders and adjacent properties is considered unlikely, resulting in a low unmitigated impact. The development of a CBSS during operation of the project would generate positive outcomes for the local community and provide a high positive impact.

12.7 Mitigation measures

Proposed mitigation measures to mitigate potential social impacts associated with the project are detailed in Table 12.6.

Table 12.6 Social mitigation measures

Ref	Mitigation measures	Timing	Applicable location(s)
SI1	Continue to implement a Community Engagement Plan. The plan will be reviewed on an annual basis with feedback from key stakeholders. The plan will include the following: — designation of a community engagement team or officer — establishment of effective communication channels to address community concerns while disseminating relevant information — implementation and management of the community benefit sharing scheme — monitor and publicly report progress and outcomes of social mitigation measures in an annual basis.	Pre-construction, construction	Local and regional social locality
SI2	Prepare and implement an Accommodation and Employment Strategy in consultation with relevant local councils to: — encourage local hiring through engagement with local employment agencies and via relevant local mediums of information — prioritise employment opportunities for local Aboriginal and/or Torres Strait Islander individuals to support their economic empowerment and inclusion — identify local skills gaps and possible initiatives for workforce training — propose measures to promote wellbeing of the workforce and a positive interaction with local community, that may include promoting workforce participation in community life (sports, events, volunteering), cultural awareness training, providing healthy food options and implementing health and safety assessments — provide details of how workforce will be accommodated during the construction of the project accommodation camp — provide opportunity for a nurse at workforce accommodation camp to avoid overburdening local health services — enable local housing for permanent staff to benefit the community and contribute to housing availability.	Pre-construction, construction and operation	Local and regional social locality

Ref	Mitigation measures	Timing	Applicable location(s)
SI3	Implement and coordinate an Emergency Response Strategy in collaboration with the Rural Fire Service. The strategy will involve: — implementation of a structured communication protocol between the Rural Fire Service, the construction contractor and Neoen. This measure aims to facilitate proactive dialogue and establish working relationships, enabling the exchange of insights, coordination of emergency response plans, and implementation of effective fire prevention strategies — implement preventive measures to avoid bushfires and other emergencies, such as clearing vegetation within a radius, to be determined during detailed, design around the wind turbine generators — maintain clear roads for emergency access, conducting regular maintenance on internal roads to mitigate damage from rain.	Pre-construction, construction and operation	Local and regional social locality
SI4	An Australian Industry Participation Plan (AIPP) will be prepared and implemented that will: — identify services and goods that could be sourced locally (quarry materials, catering, transport, cleaning, stationery) — identify the capacity of local and Indigenous businesses and suppliers to be ready for potential additional demand — provide local and Indigenous procurement targets — identify tailored 'meet-the-contractor' events for local and Aboriginal businesses to learn about potential opportunities associated with the delivery of the project — monitor the availability of key goods and services to the local community when procured locally.	Pre-construction, construction and operation	Local and regional social locality
SI5	A complaints management system will be maintained throughout the construction period and operation period. The complaints management system will include the following (at a minimum): — contact details for a phone line and email address for ongoing stakeholder contact throughout the project — details of all complaints received will be recorded — target timeframe for responding to complaints — verbal and written responses describing what action will be taken will be provided to the complainant (or as otherwise agreed by the complainant) — an avenue for escalating unresolved complaints.	Construction and operation	Local and regional social locality

Ref	Mitigation measures	Timing	Applicable location(s)
SI6	Neoen will participate and collaborate in the Renewable Energy Zone Industry Reference or Working Group (if established) to: — coordinate benefit sharing efforts among renewable energy developers within the Renewable Energy Zone — collaborate with renewable energy developers in the area to address cumulative impacts related to service provision, transportation, and road maintenance.	Construction and operation	Local and regional social locality
SI7	Neoen's financial contributions to a Community Benefit Sharing Scheme will be consistent with the Benefit Sharing Guideline (DPHI, 2024b). In the case of Tchelery Wind Farm, the total contribution will be $1,050 per megawatt per year based on actual installed capacity, paid over the life of the development, and indexed to the greater of Consumer Price Index, and 2.5 per cent. Neoen's contribution to the Community Benefit Sharing Scheme will be distributed into two streams: — a Community Benefit Fund, administered by the Council(s) under a Planning Agreement — Community Initiatives, including legacy initiatives, to be tailored to local feedback and administered by Community Enterprise Foundation (the philanthropic arm of Bendigo and Adelaide Bank). These decisions would be made by a Local Advisory Committee, which would consist of representatives from the Council(s), community and Neoen. Initiatives that may be included in the program can be focussed on following growth areas: — arts, culture and events — disaster relief and emergency services: — education and training — energy efficiency and environment — First Nations — health and well-being.	Construction and operation	Local and regional social locality

12.7.1 Interaction between measures

Mitigation measures in other chapters that are relevant to the management of social impacts include:

- Chapter 8 (Aboriginal heritage), specifically measures to address protection of Aboriginal cultural heritage
- Chapter 11 (Landscape character and visual amenity), specifically measures to address changes to landscape character
- Chapter 13 (Economic), specifically measures to address potential economic impacts and benefits of the project for local communities and residents
- Chapter 16 (Noise and vibration), specifically measures to address potential noise and vibration impacts during construction
- Chapter 17 (Traffic and access), specifically measures to address potential impacts to road users during construction
- Chapter 18 (Hazards and risk), specifically measures to address potential impacts to health and wellbeing of local communities and residents.

12.7.2 Managing key uncertainties

There are no key uncertainties associated with the SIA that would require further management beyond the implementation of mitigation measures.

12.7.3 Managing residual impacts

Residual impacts are impacts of the project that may remain after implementation of the mitigation measures detailed in Table 12.6 and elsewhere in this EIS. There would be a low or positive impact post mitigation for all potential impacts identified in Section 12.5 and Section 12.6 except for one. There would be a medium residual risk of diminished sense of place and aesthetics due to changes to landscape and environmental values (such as installation of WTGs and electricity transmission).

Residual social risks would be monitored and evaluated through the implementation of the CEP. The CEP would be reviewed annually and updated based on monitoring data and community and stakeholder feedback to adaptively manage social impacts and respond to unanticipated events, breaches, grievances and non-compliance.

13 Economic

This chapter summarises potential economic impacts associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 7 (Economic impact assessment) prepared by WSP.

13.1 Summary of key findings

The key findings from the economic impact assessment are as follows:

- the project would add:
  - $520,000 in gross value-added (GVA) to the economic study area and $11.01 million in GVA to New South Wales (NSW) over the six year development phase
  - $65.60 million in GVA to the economic study area and $521.14 million in GVA to NSW over the three year construction phase
  - $133.62 million in GVA to the economic study area, and $283.33 million in GVA to NSW over its 30 year operational life
  - $13.23 million in GVA to the economic study area and $77.71 million in GVA to NSW over the six year decommissioning phase
  - up to 0.63 full-time equivalent (FTE) employees per year from the economic study area and up to 11.75 FTE employees per year from NSW during the six year development phase
  - up to 134.30 FTE employees per year from the economic study area and up to 984.31 FTE employees per year from NSW during the three year construction phase
  - up to 29.98 FTE employees per year from the economic study area and up to 49.14 FTE employees per year from NSW over the 30 year operational phase
  - up to 34.13 FTE employees per year from the economic study area and up to 163.46 FTE jobs per year from NSW during the six year decommissioning phase.

13.2 Setting the context

13.2.1 Statutory requirements

Potential economic impacts associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environment and Biodiversity Conservation Act 1999* (EPBC Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- NSW Government Guidelines for Economic Appraisal (NSW Treasury, 2007).

13.3 Assessment method

13.3.1 Study area

The study area for the economic impact assessment (economic study area) comprises of four Local Government Areas (LGAs) in NSW and two LGAs in Victoria as shown in Figure 13.1. These LGA's have the potential to provide inputs to the project and derive benefits from construction of the project. The six LGAs that form the regional economy assessed for economic impacts include:

- Balranald LGA (NSW)
- Hay LGA (NSW)
- Murray River LGA (NSW)
- Edward River LGA (NSW)
- Gannawarra LGA (Victoria)
- Swan Hill LGA (Victoria).

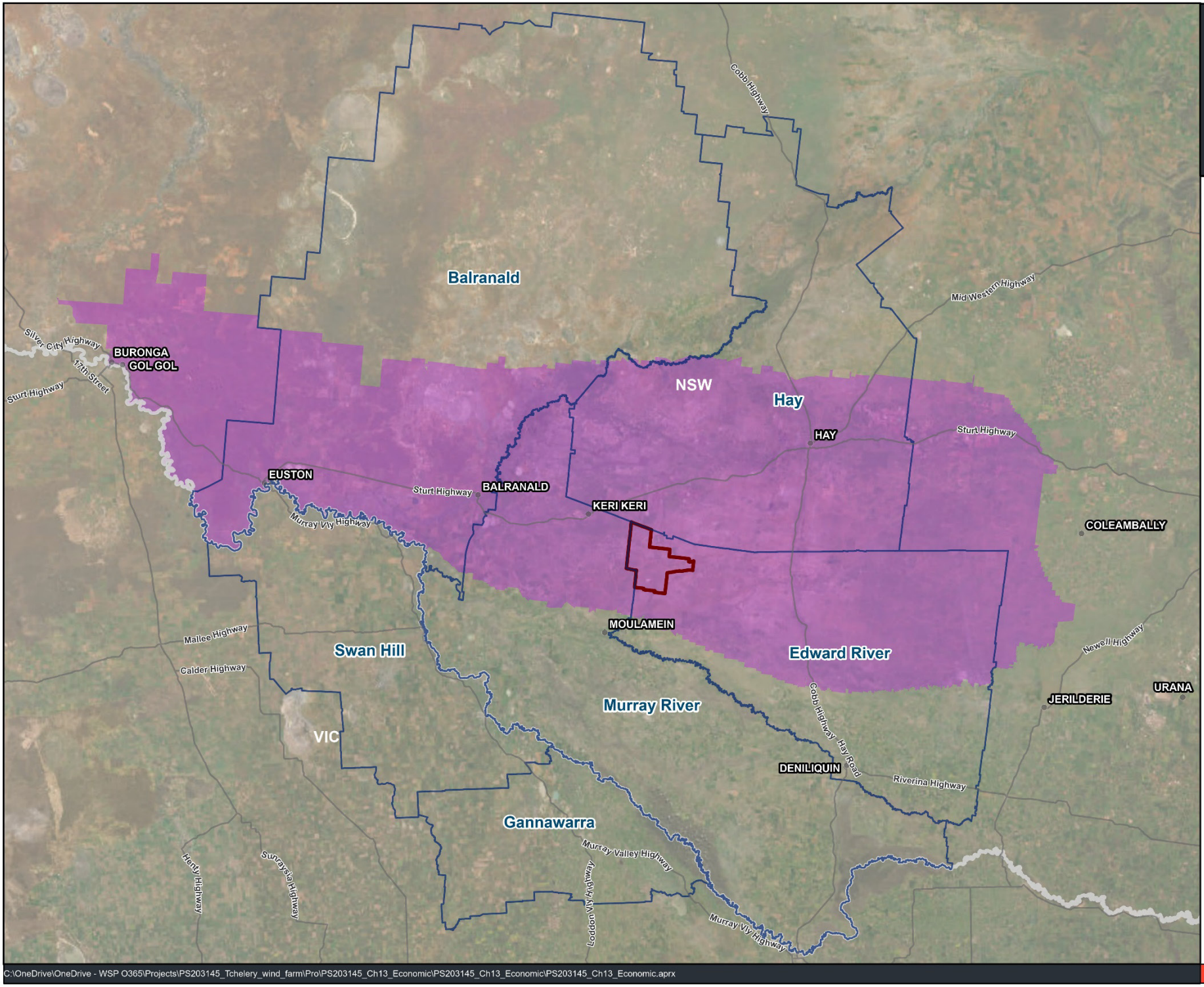
The study also analyses the economic impact of the project on the State of NSW, excluding the Victorian LGAs of Gannawarra and Swan Hill.

13.3.2 Assessment

The approach for this assessment included the following key steps:

- a desktop assessment of the existing regional economic environment based on Australian Bureau of Statistics (ABS) 2021 Census of Population and Housing (ABS, 2021a)
- an analysis of estimates for the contribution of the project to the economic study area and NSW economies are based on REMPLAN's input-output (IO) model. The project's economic contribution is measured through construction and operation expenditure. The estimated spend is entered into REMPLAN's IO model for NSW to identify the flow-on indirect and total contributions
- identifying measures to minimise and manage the potential impacts identified.

Further information regarding the assessment approach for the economic assessment, including the REMPLAN IO analysis and analysis assumptions, is provided in Chapter 3 of Technical paper 7 (Economic impact assessment).



Tchelery Wind Farm

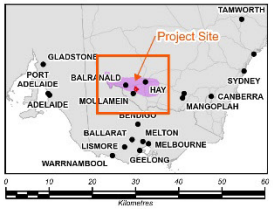
Figure 13.1
Economic study area for the assessment of the project's local economic impacts

Legend

- Project site
- Economic study area
- South West Renewable Energy Zone (REZ)

Context

- Locality
- Highway
- State border



Coordinate system: GDA 1994 MGA Zone 55
Scale ratio correct when printed at A4
1:1,750,000 Date: 21/03/2025

Data sources: ABS, Geoscience Australia, EnergyCo, WSP, World Imagery: Earthstar Geographics

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13.4 Description of existing environment

This section describes the existing economic characteristics of local communities within the economic study area as defined in Section 13.3.1.

13.4.1 Population and labour supply

The latest population data from ABS (2025) shows that:

- overall, the population of the economic study area has decreased by 3.2 per cent from 2001 to 2023
- Swan Hill LGA contributes the greatest population to the economic study area (36.3 per cent of the total population), followed by Murray River (22.8 per cent of the total population)
- the project is located within the Edward River LGA, that makes up 14.4 per cent of the population within the economic study area
- Murray River LGA has experienced an increase of 21.2 per cent in population since 2001, with Swan Hill LGA only experiencing a 0.9 per cent increase in population
- the remaining LGAs have experienced a decrease, notably, the Hay LGA, that borders the project has had a 21.8 per cent reduction in population since 2001
- the latest population projections (ABS, 2025) between 2023 and 2032 estimate Swan Hill's population to increase by 5.25 per cent, Murray River's to increase by 18.98 per cent, Edward River's to increase by 1.21 per cent and Gannawarra's to increase by 2.40 per cent by 2032 compared to the population of 2023
- the remaining LGAs are projected to experience a slight decline in population by 2032, with Balranald and Hay expected to decline by 1.14 per cent and 3.99 per cent, respectively compared to 2023 levels.

According to Jobs and Skills Australia, Small Area Labour Markets – September Quarter 2023 (Jobs and Skills Australia, 2023), the economic study area has an unemployment rate of three per cent that is slightly lower than the NSW unemployment rate of 3.8 per cent. The economic study area has seen unemployment rates fluctuate substantially in the last 10 years; however, it has exhibited an overall downward trend from 5.3 per cent in March 2011 to three per cent in September 2024. Of the LGAs in the economic study area, Edward River LGA consistently exhibited the highest unemployment rate, with a rate of four per cent in September 2024. Balranald and Murray River LGAs had the lowest unemployment rates at two and 1.9 per cent in September 2024 respectively. Over the last five years, the economic study area's labour force has risen from 27,536 in September 2019 to 32,058 in September 2024.

13.4.2 Economic profile

13.4.2.1 Industry of employment

The agriculture, forestry and fishing industry has a large presence in the economic study area, contributing to 22.7 per cent of the area's resident employment compared to NSW's 2.1 per cent (REMPLAN, 2024). Both the economic study area and NSW have a considerable proportion of resident employment in the health care and social assistance industry, with the economic study area at 12.8 per cent and NSW at 15.1 per cent.

Other employment industries of interest to the project include construction (eight per cent in the economic study area and nine per cent in NSW), manufacturing (6.3 per cent in the economic study area and 5.8 per cent in NSW), professional, scientific and technical services (2.6 per cent in the economic study area and 9.3 per cent in NSW), and electricity, gas, water and waste services (1.4 per cent in the economic study area and one per cent in NSW). Residents employed in these industries may provide important skills for the project.

13.4.2.2 Output by industry

Agriculture, forestry and fishing is the strongest industry in the economic study area, contributing 26.6 per cent to area's total output, substantially higher than the 2.4 per cent contribution in NSW (REMPLAN, 2024). This is followed by manufacturing at 14.9 per cent (14.8 per cent in NSW), construction at 12 per cent (12.9 per cent in NSW), professional, scientific and technical services at 2.2 per cent (7.5 per cent in NSW), electrical, gas, water and waste services at 4.3 per cent (three per cent in NSW) and administrative support services at one per cent (1.4 per cent in NSW) (REMPLAN, 2024).

13.5 Assessment of potential impacts

13.5.1 Development impact

For the estimated $10 million cost of the six year development phase, a very small amount is spent in the economic study area ($0.6 million or about six per cent), the largest amount is spent in NSW ($8.46 million or 85 per cent) with a further 10 per cent spent in Australia beyond NSW and the economic study area, as well as five per cent flowing to international economies. With supply chain and consumption effects, the $0.62 million spent in the economic study area could support an overall economic impact of $1.03 million, and the $8.46 million direct expenditure in NSW could support a total of $21.95 million to the State economy. This indicates that each dollar spent locally and within the State is linked to additional economic activity generated through upstream purchases from suppliers and increased household expenditure resulting from wages and other income generated by the initial expenditure.

The development stage can support up to 0.63 FTE employees per year from the economic study area and up to 11.75 FTE employees per year from NSW during the six year development phase. Over the six years of development, the project could support $0.33 million in wages and salaries to the economic study area and $6.48 million in wages and salaries to NSW. For the purposes of project planning, Neoen have predicted direct construction workforce would be about 300 FTE as an estimated daily average, with about 530 FTE at peak. The workforce accommodation camp would allow for up to 384 people. The peak construction FTEs would be confirmed during detailed design and workforce transport and accommodation would be resolved in consultation with local councils.

The project would contribute $0.52 million in GVA to the economic study area and $11.01 million in GVA to NSW over the six year development phase.

13.5.2 Construction impact

The overall construction expenditure for the project is projected to be $1.59 billion across a three year period between early 2027 and 2029. About seven per cent of expenditure is estimated to be spent within the economic study area, 35 per cent within the State, a further 15 per cent within Australia beyond NSW and the economic study area, and 49 per cent could be directed to overseas economies. The total annual output as a result of the investment within the economic study area, is estimated at $175.85 million. At the State level, the total output is forecasted to reach $1.31 billion.

The project would support up to 134.30 FTE employees per year within the economic study area and up to 984.31 FTE employees per year from NSW during the three year construction phase including direct, supply chain and consumption jobs. Over the three years of construction, the project would support around $35.17 million in wages and salaries to the economic study area and $274.75 million in wages and salaries to NSW.

The project could contribute $65.60 million in GVA to the economic study area and $521.14 million in GVA to NSW over the three year construction phase. The GVA likely to be added within the economic study area and NSW is substantially below the direct cost of construction as a large portion of capital expenditure is likely to be spent overseas due to the underdeveloped wind turbine generator industry in Australia.

13.5.3 Operation impact

The project is estimated to have a total operational cost of around $340 million over an assumed timeframe of 30 years. Sixty per cent of operational expenditure is expected to be incurred within the economic study area, with 81 per cent of the operational expense likely to be incurred within the State. This direct expenditure would support $358.43 million in total output for the economic study area, and $692.81 million in output for the State.

The operation phase is expected to primarily utilise persons employed in the other repair and maintenance industry from within the economic study area, followed by employment in the construction services industry. During the operation phase, the project could support up to 18.36 direct FTE jobs per year within the economic study area, and up to 11.63 additional indirect jobs per year. Within NSW, the project could support up to 21.18 direct jobs per year, and up to 27.96 additional indirect jobs per year. Operation of the project would result in $69.41 million in wages within the economic study area and would result in $141.58 million in wages within the State.

The project could add around $133.62 million in GVA to the economic study area over its operational life, equivalent to about $4.45 million per year. For NSW, the project could result in a total GVA of $283.33 million over 30 years, that equates to around $9.44 million per year.

13.5.4 Decommissioning impact

The total expenditure for the project's decommissioning is estimated to be $110 million over six years between 2055 and 2061. The BESS would be decommissioned in 2055 and 2056, while the wind farm would remain operational. The rest of the wind farm would be decommissioned in 2060 and 2061. About 60 per cent of this expenditure is expected to occur within NSW, with 18 per cent to be incurred in the economic study area. The total decommissioning expenditure would be 89 per cent within Australia and the remaining 11 per cent overseas. The total annual output within the economic study area, including direct impacts, supply-chain effects, and consumption effects, is estimated at $34.47 million. In NSW, the total output is forecasted to be $184.99 million.

During the decommissioning phase, the project is expected to rely heavily on workers from the waste collection treatment and disposal services industry and the heavy and civil engineering construction industry. Most of this expenditure would occur within the State as NSW is expected to develop the skills necessary for the decommissioning phase by the completion of the 30 year operating period. The decommissioning phase is expected to support up to 34.13 FTE employees from the economic study area and 163.46 FTE employees per year from NSW. This would result in $7.41 million in wages and salaries to the economic study area and $42.94 million in wages for the NSW economy.

The project is estimated to support around $13.23 million in GVA to the economic study area during the decommissioning period. On a broader scale, for the State, decommissioning the wind farm is projected to generate a total GVA of $77.71 million.

13.5.5 Overall project impact

Overall, the total economic impact of the project in the economic study area and the State is estimated to be $569.78 million and $2,205.55 million respectively.

A total direct amount of $61.85 million is forecasted for the economic study area, with indirect impacts accounting for an additional $50.48 million. Assuming that all flow on effects (supply-chain and consumption) from wages and salaries are directed towards the economic study area’s businesses, the economic study area is expected to experience additional growth and development (refer to Table 5.18 of Technical paper 7 (Economic impact assessment).

Neoen have proposed a Community Benefit Fund that would be equally directed to the local council and community through neighbour payments. A total of $10 million would be allocated to this fund over the life of project.

Apart from direct/indirect impact on economy, the project also provides benefit via reduction of greenhouse gas emissions. Assuming a carbon value of about $148 per tonne in 2030 (Infrastructure Australia, 2023), the value of carbon emission savings associated with the project is estimated to be $266.61 million in 2030. This value of carbon emission savings is expected to increase annually throughout the project's operational life due to the increased cost of abatement closer to the 2050 net zero target.

13.5.6 *Impact on the supply of commercial accommodation*

The prediction is that the project would require short term accommodation facilities for 279 FTE employees during the peak construction period of 2027–2030.

Neoen has proposed the construction of an on-site workforce accommodation camp to help meet the housing requirements of the construction workforce. During the construction phase, the engineering, procurement and construction contractor would assess the availability of local accommodation and determine whether to utilise existing options in the area or proceed with the construction of the proposed camp. While Neoen anticipates that accommodation would be available locally, either through council developments, legacy accommodation from other projects, or regional initiatives, the proposed on-site camp would provide additional flexibility in addressing the workforce housing needs. Given the limited availability of private rental stock in the surrounding LGAs, the construction of an on-site camp would help mitigate potential housing constraints to ensure adequate accommodation for the workforce in peak construction years.

13.6 Mitigation measures

Proposed mitigation measures to mitigate potential economic impacts associated with the project are detailed in Table 13.1.

Table 13.1 Economic mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
EC1	Prior to commencing construction and responding to actual regional demands at that time, Neoen will prepare an accommodation strategy for the project in consultation with relevant stakeholders. This strategy will include the following: — plans to ensure there is sufficient accommodation for the peak workforce associated with the construction phase of the project — measures to address any specific cumulative impacts arising associated with concurrent infrastructure projects under construction in the economic study area.	Pre-construction and construction	Economic study area

Ref	Identified mitigation measure	Timing	Applicable location(s)
EC2	A local workforce strategy (if required) will be developed for the project in collaboration with local councils and key stakeholders. This strategy will encompass, but not be limited to: — maximising employment prospects for residents in the economic study area, including plans to inform local communities about opportunities and obligations regarding project-related work both before and during construction — implementing and evaluating strategies for training and apprenticeships tailored for Aboriginal people, youth, and women. This involves consulting with local contractors and relevant stakeholders such as Aboriginal groups, youth organisations, and women's groups to identify and create suitable training and educational pathways — establishing communication channels with local councils in the economic study area concerning workforce numbers and scheduling for both construction and operational phases — devising strategies to mitigate the potential displacement of workers from existing industries.	Pre-construction, construction and operation	Economic study area
EC3	To mitigate potential impacts on business and industry, the project will: — prioritise local business opportunities in project procurement practices and encourage contractors to prioritise the sourcing of local goods and services whenever feasible — collaborate with economic study area councils and business associations to address local business needs and identify necessary skills for enhancing local business readiness — assess the needs in the economic study area and, based on this, explore the implementation of training programs to enhance local skills and boost the availability of local labour.	Pre-construction, construction and operation	Economic study area

13.6.1 Interaction between measures

Mitigation measures in other chapters that are relevant to economy include:

- Chapter 12 (Social), specifically measures that address the employee accommodation issues.

13.6.2 Managing key uncertainties

There are no key uncertainties associated with economic impacts that would require further management beyond the implementation of mitigation measures.

13.6.3 Managing residual impacts

Residual impacts associated with economic impacts following the implementation of mitigation measures are negligible in all project phases. Further management would not be required.

14 Hydrology, flooding and water

This chapter summarises potential impacts to hydrology, flooding and water associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 8 (Hydrology, flooding and water impact assessment) prepared by WSP.

14.1 Summary of key findings

The key findings from the assessment of potential impacts to hydrology, flooding and water are as follows:

- construction of Wind Turbine Generators (WTGs) within the floodplain may alter the shape of the flow channels due to temporary access tracks
- impacts to flooding, existing water quality and soil loss are anticipated to be minimal during construction
- prior to mitigation, pollutants, spills and litter may enter watercourses via runoff, impacting water quality and ecology
- based on flood modelling, there is a low flood risk to the project site for events up to the 0.2 per cent Annual Exceedance Probability event (AEP); minimal changes in flood behaviour are expected to occur during construction and operation
- localised changes in flow paths may occur during regular flood events, however no significant impact is expected during large flood events (one per cent AEP). WTGs located outside minor watercourses would not cause geomorphological impacts.

14.2 Setting the context

14.2.1 Statutory requirements

Potential impacts to hydrology, flooding and water associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Water Act 2007*
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Water Management Act 2000* (WM Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- Deniliquin Local Environmental Plan 2013
- National Water Quality Management Strategy (NWQMS) (Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), 2000)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)
- Murray-Darling Basin Plan (the Basin Plan 2012) (Murray-Darling Basin Authority (MDBA), 2012)
- Water Sharing Plan for the Murrumbidgee Regulated River Water Source 2016
- Water Sharing Plan for the Murrumbidgee Unregulated River Water Sources 2012

- Murrumbidgee Surface Water Resource Plan 2012
- NSW Water Quality and River Flow Objectives (Office of Environment and Heritage (OEH), 2006)
- Managing Urban Stormwater – Soils and Construction, 4th Edition (Landcom, 2004)
- Floodplain Risk Management Manual (Department of Planning and Environment (DPE), 2023h)
- Edward River Council Flood Planning Levels Policy (2019)
- Australian Rainfall and Runoff Guidelines Version 4.2 (ARR 4.2) (Commonwealth of Australia (Geoscience Australia), 2019).

14.3 Assessment method

The methodology for assessment of potential hydrology, flooding and water impacts considered all surface water resources within the study area, including permanent and intermittent resources; rivers, creeks, dams, irrigation channels, lakes, and any other features that either store, transport or use surface water.

Assessment of potential hydrology, flooding and water impacts from construction and operation of the project has been divided into the following aspects that can be considered separately however they inform the complete understanding of surface water resource relevant to the project:

- hydrology, water supply and water resources impact assessment
- geomorphic impact assessment
- water quality impact assessment
- flooding impact assessment.

The methodology adopted for the assessment of hydrology, flooding, and water involved the following:

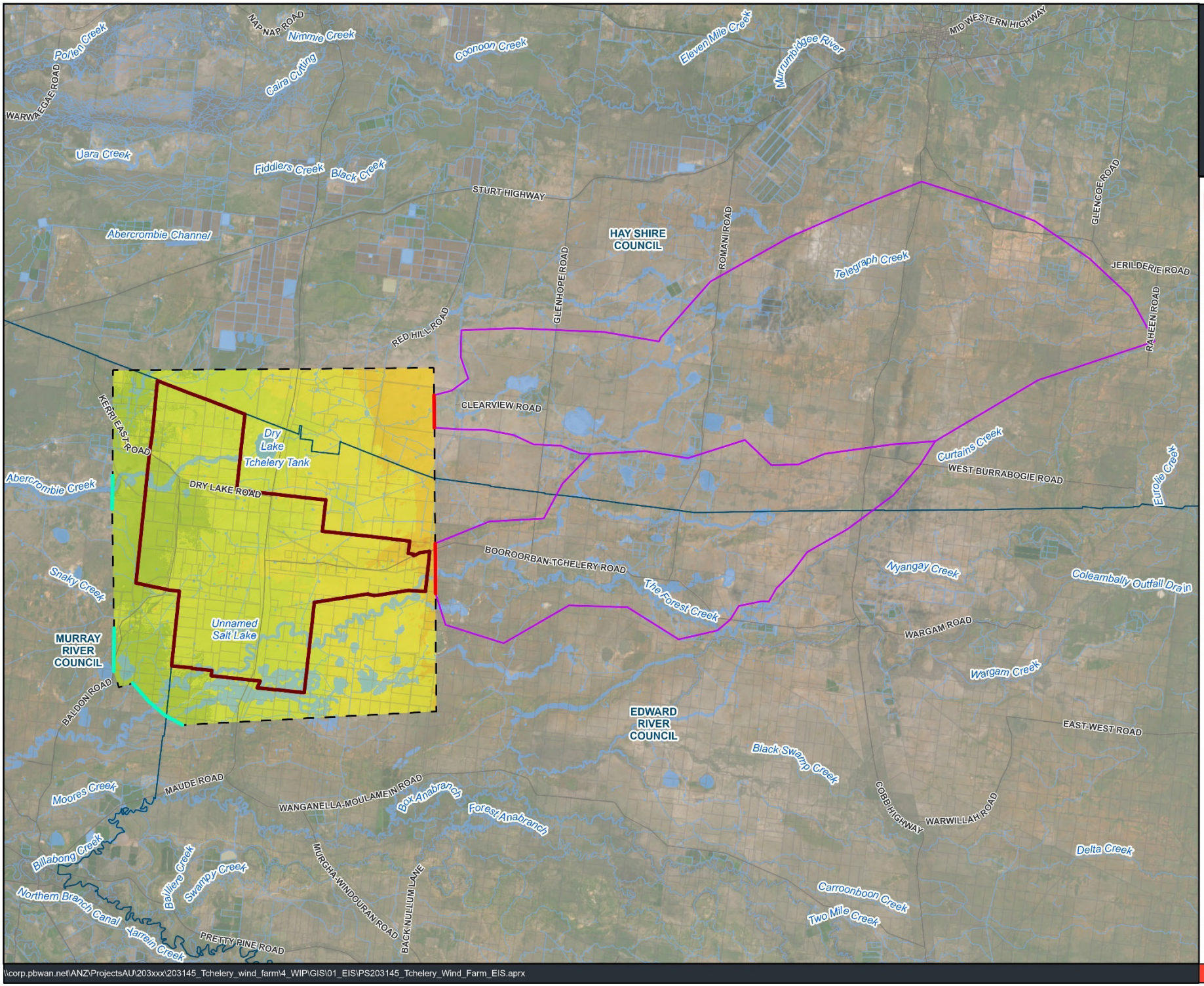
- defining the study areas relevant to hydrology, flooding and water
- describing the existing environment relevant to the study areas, through a review of existing publicly available information, and water quality data
- assessing the potential impacts of the project in relation to the surface water resources in the study areas
- determining whether potential impacts from construction and operation of the project are significant
- development of appropriate mitigation measures for residual impacts.

Further details of the assessment methodology for hydrology, flooding and water are provided in Section 3 of Technical paper 8 (Hydrology, flooding and water impact assessment). Assessment of potential impacts to groundwater is provided in Technical paper 16 (Groundwater impact assessment).

14.3.1 Study area

The study area for assessing geomorphology and surface water quantity is limited to the project site. The study area for flooding and surface water quality (flooding and water quality study area) has been expanded to encompass the catchment area associated with the project site. This includes Abercrombie and The Forest Creeks, along with all their major and minor tributaries forming the catchment area. The Abercrombie and The Forest Creek catchments do not have a well-defined catchment boundary, however they lie within the lower Murrumbidgee River valley and are generally not supplied by water from the Murrumbidgee River.

Figure 14.1 shows the location of the project site and the surrounding catchment boundaries of the Murray-Darling Basin.



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14.4 Description of existing environment

14.4.1 Sensitive receiving environments

The sensitive receiving environments relevant to hydrology, flooding and water include the watercourses that intersect the project site. Watercourses convey surface runoff from catchments and their shape, form and health is influenced by the quantity and quality of water that enters them. The surface water users who extract water from the water sources are also considered sensitive receivers and therefore the quantity of surface water available is a key aspect to assess.

Other sensitive receivers relevant to surface water quantity and quality include aquatic fauna and flora and Groundwater Dependent Ecosystems (GDE's) (refer to Technical paper 1 (Biodiversity development assessment report) and the Technical paper 16 (Groundwater impact assessment)).

14.4.2 Catchment overview

Refer to Table 14.1 for details of the catchment at the project site.

Table 14.1 Catchment overview

Aspect	Details
Watercourses	— the project is located in the Murray-Darling Basin that encompasses over one million square kilometres (km^2) of land in Queensland, New South Wales (NSW), Australian Capital Territory (ACT), Victoria, and South Australia — the project is located in the Murrumbidgee surface water catchment — two natural watercourses are located within the project site, namely Abercrombie Creek and The Forest Creek, that are both a Strahler stream order 9^{th} order — there are no major rivers intersecting the project site.
Geomorphology	— the NSW River Condition Index (RCI) tool, part of the NSW River Styles mapping (Department of Industry, 2019), documents geomorphic conditions for catchments located within project site — Abercrombie Creek and The Forest Creek are classified as having moderate geomorphic conditions indicating the presence of localised hydrologic stream changes, vegetation clearing, and evidence of erosion — both creeks have a moderate potential for recovery.
Climate and rainfall	— weather stations located nearby to the project site include Balranald (049002) to the west, Hay (075019) to the east and Deniliquin (074258) to the south — Balranald and Hay both record an annual (non-seasonal) maximum temperature of 24.3 degrees Celsius (°C) and annually (non-seasonal) mean minimum temperature of 10.0°C — Balranald and Hay record annual mean rainfall depths of 324.8 millimetres (mm) and 366.5 mm, respectively — Deniliquin records an annual (non-seasonal) maximum temperature is 23.6 °C, annual (non-seasonal) mean minimum temperature of 9.5°C and a mean annual rainfall of 372.9 mm — the closest rainfall weather station is Moulamein (Tchelery) (075062). Data collected at this station indicates the project site experiences relatively even rainfall throughout the year — based on mean annual rainfall across the region, the project site is anticipated to experience between 320 mm and 380 mm per year on average.

Aspect	Details
Topography	— the topography of the project site is generally quite flat from north to south — the catchment generally slopes east to west, with an eastern elevation of about 80 metres above sea level and a western elevation of about 70 metres above sea level.
Existing land uses	— the project site and surrounding area is used for agricultural purposes, including cropping and grazing — an existing 220 kilovolt (kV) transmission line traverses east-west through the project site.
Soil salinity and sodicity	— the project site is mapped as having a low salinity potential.
Acid sulfate soils (ASS)	— there is no known occurrence of ASS within project site according to the Commonwealth Scientific and Industrial Research Organisation (CSIRO) Acid Sulfate Soil Risk Mapping (CSIRO, 2023).
Water resources	— there are council owned public fill points from Standpipes based in Deniliquin, Wanganella and Booroorban located to the east of the project site. Beyond these towns, rural land holders rely on rainwater, surface flows and irrigation from Abercrombie and The Forest Creek via Water Access Licences (WALs) groundwater WALs for stock and domestic use — the project is located within the Murrumbidgee Regulated River Water Source 2016 and the Water Sharing Plan for Murrumbidgee River Water Sources 2012. According to the NSW Environment Water Register (Water NSW, 2022a), there are no environmental water licences across these water sources and as such all of these surface water sources are unregulated. Unregulated rivers have natural flows that depend entirely upon the weather and climate and therefore do not have dams that are able to capture, store and regulate the flows. Refer to Table 4.1, Table 4.2 and Table 4.3 in Technical paper 8 (Hydrology, flooding and water impact assessment) for details of allocation for the 2023-2024 water year. Additionally, the General security water licences held by the project landholder are provided in Table 4.4 in Technical paper 8 (Hydrology, flooding and water impact assessment).
Hydrogeology	— the project site is within the Lower Murrumbidgee Alluvium groundwater source — groundwater levels across the Lower Murrumbidgee Alluvium were contoured based on 2015–2016 from the DPE monitoring bore network and indicate groundwater levels in both the shallow and deep aquifers to be around 65 to 66 metres Australian Height Datum (mAHD) (refer to Figure 2.1 of Technical paper 8 (Hydrology, flooding and water impact assessment)). Water sources for the Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources 2016 are listed in Table 4.5 of Technical paper 8 (Hydrology, flooding and water impact assessment). Groundwater aquifer boundaries and existing boreholes in the project site are presented in Technical paper 16 (Groundwater impact assessment).

14.4.3 Groundwater dependent ecosystems

The Bureau of Meteorology (BoM) Groundwater Dependent Ecosystem Atlas for the project site identified several terrestrial GDEs that rely on the subsurface expression of groundwater and have a high likelihood of occurrence (BoM, 2023a). Terrestrial GDEs that are likely to occur within the project site are river base flows, floodplains, and riparian vegetation. Additionally, there is a high likelihood of aquatic GDEs being present within the project site where waterways are located.

14.4.4 Water quality

Existing water quality within the flooding and water quality study area is expected to be influenced by surrounding land uses, such as existing agricultural operations that may have resulted in increased pollutants (from pesticides, herbicides, fertilisers) and sedimentation within nearby waterways. The project site is located about 30 kilometres south of the Murrumbidgee River between Yanco Creek and the Lachlan River. Water sampling conducted for the NSW State of the Environment (SoE) report (Environment Protection Authority (EPA), 2018) shows the Murrumbidgee River between Yanco Creek and the Lachlan River has 'good' to 'fair' ratings for total nitrogen and total phosphorus. Water sampling conducted for the Murrumbidgee Surface Water Resource Plan downstream of Maude Weird and Hay Weir shows the Murrumbidgee River as having a water quality index (WaQI) of 'fair'.

14.4.5 Existing flooding conditions

The project site is flood prone and susceptible to both mainstream flooding from the nearby major river systems, and local flooding due to intense or prolonged rainfall in the immediate project vicinity. Significant flooding has been experienced in the past, with the most recent major event occurring in 2022. Information obtained from Hay Shire Council indicated that Maude Road was inundated and cutoff during this event. Photograph and video evidence indicated that paddocks and fields were inundated for long periods of time. Refer to Section 14.4.5.1 for the key findings of the existing flood behaviour in the vicinity of project features.

14.4.5.1 Key existing flooding results

The flooding results are shown on flood maps contained within Appendix A of Technical paper 8 (Hydrology, flooding and water impact assessment). The key findings of the existing flood behaviour have included information in the vicinity of the project features.

During a 10 per cent AEP event, flows from Abercrombie Creek and The Forest Creeks break out and spread across the floodplain, including the project site. These flows follow dry watercourses, oxbow lakes, or undefined areas. Floodplain flow remains poorly defined, with water spreading across few kilometres and few well-defined watercourses. Irrigation channels exceed their capacity, spilling water onto paddocks and the floodplain. Floodwaters overtop Maude Road at several locations, primarily at Abercrombie Creek and The Forest Creek, due to inadequate culverts or bridges. At Abercrombie Creek, flood depths reach two metres over a 200 metre stretch and extend up to 650 metres, while at The Forest Creek, inundation reaches 400 mm over 200 metres. Minor flow paths across Maude Road cause flooding depths below 200 mm.

Ponding occurs across large floodplain areas and the project site, with depths generally under 500 mm. Flow velocities stay below 0.2 metres per second (m/s), with some localised velocities reaching 0.5 m/s. However, the project site experiences low hazard (H1 or H2) (refer to Table 14.2), though some WTG footings would lie in or near H3 hazard areas, unsuitable for vehicles.

In a one per cent AEP event, inundation expands, however flood depth and velocity increase only slightly. Water depths at operational and construction facilities range from 300 to 400 mm, with low velocities and minimal flood hazards. During 0.5 per cent and 0.2 per cent AEP events, inundation further increases, however flood depths remain below 500 mm. Flood velocities rise slightly near the proposed laydown area, reaching 0.3 m/s. H3 hazards spread across the project site, affecting access roads and wind turbine footings, with some H3 hazard areas near construction and operational facilities.

The Probable Maximum Flood (PMF) event inundates significantly larger areas of the project site. Flood depths around the works remain between 300 and 400 mm, while velocities near construction and operational facilities stay under 0.3 m/s. H1 hazard areas from the one per cent AEP event transition to H2 hazards during the PMF event. However, hazard ratings near construction and operational facilities predominantly remain H1 and H2, similar to smaller events (refer to Table 14.2).

Table 14.2 Combined hazard curves – vulnerability threshold classification systems

Hazard vulnerability classification	Limiting still water depth (D)	Limiting velocity (V)
H1	0.3	2.0
H2	0.5	2.0
H3	1.2	2.0
H4	2.0	2.0
H5	4.0	4.0
H6	–	–

Source: Smith et al, 2014

14.5 Assessment of potential impacts – construction

14.5.1 Geomorphology

WTGs, the Battery Energy Storage System (BESS) and a substation would be constructed at least 50 metres from the edge of the major watercourses including The Forest and Abercrombie Creeks, however the project is unlikely to avoid all first and second order streams. There would be numerous crossings of minor watercourses by access tracks. Potential impacts to geomorphic conditions of these watercourses would include:

- changes in low flow channel shape due to temporary works changing local runoff behaviour (hydrologic regime)
- increased sediment load from runoff from construction areas. The final siting of WTGs would avoid watercourse banks where practicable, and so no direct geomorphological impacts would be anticipated from construction work.

Construction work associated with the installation of WTGs located within the floodplain may contribute to the above geomorphological impacts during flood events due to changes to overland flow paths. However, these impacts would be minor and would not result in changes to erosion and channel shape.

14.5.2 Water supply, water resources and wastewater

Water would be required for construction of the project for activities such as dust suppression, earthworks and pavement compaction and on-site concrete batching. The water anticipated to be required for construction of the project would be small compared to the full licence supply. It is expected that the impact of the construction phase on water supply would be relatively minor and managed adequately through consultation and agreement from the landholder.

14.5.3 Water quality

Construction of the project has the potential to degrade the water quality of watercourses within the flooding and water quality study area and downstream areas, if not properly managed. Construction activities assessed with regard to water quality impacts include but are not limited to:

- vegetation clearing
- soil stripping, transportation and stockpiling for all construction, laydown, staging areas and access tracks
- earthworks and establishment of construction pads for each WTG, substation and BESS
- establishment and operation of concrete batching plants during construction
- use of heavy and light machinery such as scrapers, excavators, dumpers, rollers, chainsaws and other equipment for all above activities (resulting potential spills or leaks of chemicals fuels or other waste materials)
- establishment and operation of construction compound and workforce accommodation camps.

Based on these activities, if not properly mitigated, construction of the project may lead to increases of the following pollutants into waterways and degrade the water quality:

- nutrients (nitrogen and phosphorus) – commonly present in agricultural areas that may become mobilised from disturbance of agricultural land for construction work
- sediment from vegetation and topsoil clearing, soil excavation, movement and storage and stormwater runoff through disturbed sites
- chemicals, fuels, and hydrocarbons from use, refuelling and maintenance of equipment and construction machinery
- concrete slurry and wastewater – from concrete batching plant
- potential contaminants of concern related to previous land uses – heavy metals, Total recoverable hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), Polycyclic aromatic hydrocarbon (PAH), organochlorine pesticides (OCP) and organophosphorus pesticides (OPP)
- heavy metals such as zinc, lead, copper, nickel, cadmium and chromium from disturbance of contamination and use and maintenance of vehicles and plants
- gross pollutants such as litter, paper, plastic packaging and materials from construction.

Poor management, such as uncontrolled failures of site-specific soil and erosion controls, of locally generated surface water may subsequentially have impacts to surrounding ecology, sensitive receiving environments and other water uses. The risk of surface water quality discharges not meeting trigger values, would vary depending on the stage of construction, the area of disturbance and presence of high rainfall or wind weather events.

The detailed water quality objectives for the project are defined in Section 2.4 of Technical paper 8 (Hydrology, flooding and water impact assessment) and the existing water quality conditions indicate turbidity and total phosphorus to be the indicators affecting the watercourses. It is anticipated that through correct implementation of the standard mitigation measures and minimising soil loss during construction would minimise impacts to water quality. As such construction of the project would not cause significant changes to the water quality environment against the identified water quality objectives and Basin Plan 2012.

Where there are sensitive receiving environments, water quality impacts from construction of the project are anticipated to be short term and limited in extent. Additionally, the progressive nature of construction would limit the work areas and duration within which impacts may occur.

Refer to Section 5.3.1 to 5.3.6 of Technical paper 8 (Hydrology, flooding and water impact assessment) for a detailed assessment of potential impacts to water quality from individual construction activities.

14.5.4 Flooding

The modelling of existing flooding patterns indicates that the project site has a low flood risk for events up to the 0.2 per cent AEP event. During construction, the risk of changes in flood behaviour remains minimal for events up to the 0.2 per cent AEP.

Construction works that were represented in the model to assess flood impacts included the workforce accommodation camp, permanent building footprints, substations, and laydown areas. It was estimated that the construction compound and workforce accommodation camp would be constructed on locally raised and levelled platforms to minimise flood risk. The key findings of the proposed construction works on flood behaviour included:

- afflux impacts in the one per cent AEP event were minor, specifically water level increases were a maximum of 80 mm at the main substation, 40 mm at the workforce camp, and 30 mm at the southern central substation. These impacts are localised and do not affect Maude Road

- afflux impacts in the 10 per cent AEP event were similar to the one percent AEP with a maximum of 50 mm at the main substation. For larger events like the 0.2 per cent AEP or PMF, the affected area increases, however the maximum afflux remains at 90 mm
- velocity impacts in the one per cent AEP event were very minor and localised, with a maximum increase of 0.07 m/s and a decrease of 0.12 m/s
- velocity impacts in larger flood events (such as 0.2 were minor and localised, with a maximum increase of 0.15 m/s in the PMF event at the main substation
- hazard changes in the one per cent AEP event were very localised and minor, with some areas increasing from H1 to H2 hazard or H2 to H3 hazard. There are no increases to H4 hazard
- similar localised hazard increases are observed in larger flood events, with small areas changing from H1 to H2.

These findings indicate that the proposed construction would have minimal impact on flood behaviour, with only minor and localised changes in water levels, velocities, and hazard levels.

14.6 Assessment of potential impacts – operation

14.6.1 Geomorphology

Potential impacts to geomorphology during operation of the project would include:

- changes in low flow channel shape due to placement of footings for the WTGs in low flow points that changes low flow runoff behaviour
- increased sediment load from runoff from permanent access tracks.

WTGs located within the flood prone area of the watercourses may have minor, localised geomorphological impacts to the existing watercourses during flood events. The placement of the WTGs may be within minor low flow paths (1st and 2nd order streams) that would then result in changes in the position of these flow paths and movement of sediment locally within the flow path. However, this would not affect the main watercourse channels and regular flow regimes within the channels. Additionally, no WTG would be located within the banks of watercourses with a stream order of three and above and therefore no geomorphological changes within the watercourses are expected that would affect the long term health of the watercourse (being the movement of sediment (including nutrients) and the presence of ponds or ripples that support aquatic fauna and flora).

Localised changes within flow paths may be experienced for the regular flood events, however no significant impact is expected in large flood events, such as the one per cent AEP. Where WTGs are located out of these minor watercourses, there would not be any geomorphological impacts.

14.6.2 Water supply and water resources

Water would be required during operation for maintenance activities and the operation The impacts to local water supply would be minor however potentially be affected during dry periods when surface water availability could be low, and competition for water resources at the project site from the same water resources could be increased.

14.6.3 Water quality

There is potential for water quality impacts as a result of accidental spills or litter generated from operation and maintenance activities near watercourses, however, these impacts would be minor and localised. Provided correct operation procedures and mitigation measures are implemented the residual likelihood of impacts would be very low. There would not be any significant impacts to water quality as a result of the presence of the project in the landscape.

14.6.4 Flooding

Modelling indicates a low flood risk to the project site for events up to the 0.2 per cent AEP event. Operational conditions show minimal risk of changes in flood behaviour for events up to 0.2 per cent AEP. The model assessed impacts from operational works, including the permanent operation and maintenance facility, BESS, and substations, as detailed in Section 3.4.5.4 and Appendix A of Technical paper 8 (Hydrology, flooding and water impact assessment).

The key findings of the proposed operational works on flood behaviour included:

- all operational works were flood affected in the 10 per cent AEP event and large events. No works are located on completely flood free land in a 10 per cent AEP event
- afflux impacts in the one per cent AEP event were minor, with maximum water level increases of 80 mm at the main substation facility and 30 mm at the southern central substation, confined to small areas of paddock or agricultural land. No afflux impacts to Maude Road was observed, and impacts at other work areas were less than 20 mm
- afflux impacts in the 10 per cent AEP event were similar to the one per cent AEP event, with a maximum afflux of 50 mm at the main substation facility. In larger events such as the 0.2 per cent AEP or PMF events, the extent of afflux impacts increased on the eastern upstream side of the proposed works, but the magnitude did not significantly increase, with a maximum afflux of 90 mm at the main substation facility
- velocity impacts in the one per cent AEP event were very minor around the proposed operational works, with a maximum increase of 0.07 m/s and a maximum decrease of 0.12 m/s, localised around the proposed works
- velocity impacts in larger flood events remain minor and localised around operational facilities, with a maximum increase in velocity of 0.15 m/s in the PMF event at the main substation
- hazard changes in the one per cent AEP event were very localised around the proposed works, mostly involving areas of H1 hazard increasing to H2 hazard, with a small number of H2 to H3 area increases. No locations showed existing H3 hazard increasing to H4 hazard
- hazard impacts in larger flood events are similar to the one per cent AEP event, with very small areas of hazard increase around the proposed works where areas of H1 hazard in existing conditions increased to H2.

14.7 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to hydrology, flooding and water associated with the project are detailed in Table 14.3.

Table 14.3 Hydrology, flooding and water mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
FL1	Infrastructure and landforms within the limit of works will be designed and implemented/formed with drainage works and away from existing watercourses where practicable to minimise potential scour and erosion risks associated and geomorphological changes to watercourses from surface water runoff.	Construction	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
FL2	Detailed construction planning will consider flood risk at construction areas. This will include: — identifying of measures that will be implemented to not worsen flood impacts of any temporary construction facilities downstream and on any habitable property and infrastructure during construction up to and including the five per cent annual exceedance probability design flood event — confirming project site layouts avoid or minimise, to the fullest extent practicable, obstruction of overland flow paths and to limit the extent of flow diversion required — ensure local drainage is included in earthworks design for the compound site — bund stockpiles to protect from inundation and minimise the storage of materials susceptible to damage by water — locate stockpiles on higher ground within the site compound, where practicable — prepare a Flood Emergency Management Plan that provides the project site with specific actions to take should a flood warning be issued for the Edward River. This will include moving equipment to higher ground or raising equipment.	Construction	All locations
FL3	Water supply options and management will be carried out in accordance with agreements between the construction contractor and the relevant landholder. These agreements will be in place prior to construction and will be evidenced with consultation between the relevant landholder and the contractor.	Construction	All locations containing construction camp
FL4	A Soil and Water Management sub-plan to the Construction Environmental Management Plan will be developed and implemented in consultation with a Certified Professional in Erosion and Sediment Control during construction. The plan will detail the processes, responsibilities and measures to manage potential soil and water quality impacts in accordance with the principles and requirements in: — Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004), and Volumes 2A and 2C (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the 'Blue Book' — Best Practice Erosion and Sediment Control (IECA – 2008) — Guidelines for Controlled Activities on Waterfront Land (NRA, 2018).	Construction	All locations

14.7.1 Interaction between measures

Mitigation measures in other chapters that are relevant to the impacts associated with Hydrology, flooding and water include:

- Chapter 19 (Soils and contamination) specifically measures to address impacts related to contamination of soil due to hydrocarbons during construction and operational activities
- Chapter 20 (Groundwater), specifically measures to address management of groundwater.

14.7.2 Managing key uncertainties

There are no key uncertainties associated with hydrology, flooding and water that would require further management beyond the implementation of mitigation measures.

14.7.3 Managing residual impacts

Residual impacts associated with hydrology and flooding following the implementation of mitigation measures are negligible in both construction and operational phases. Further management would not be required.

15 Air quality and greenhouse gases

This chapter summarises the potential impacts to air quality and greenhouse gases (GHG) associated with the project and identifies mitigation measures to address these impacts.

15.1 Summary of key findings

The key findings from the assessment of impacts to air quality and GHG are as follows:

- during construction, minor and short term impacts to air quality are expected in the form of particulate (dust) from earthworks, stockpile management, concrete batching, access track construction and exhaust emissions from use and maintenance of vehicles, plant and equipment
- during construction, GHG emissions would be generated by the combustion of fuels by heavy machinery, equipment and vehicles, and embodied through use of construction materials and clearance of vegetation. Electricity on-site would be sourced from connection to the power grid and a generator where it is not practicable to obtain power from the electricity network
- impacts would be managed through maintenance and correct operation of equipment, and minimising clearance of vegetation, where practicable
- during operation, impacts to air quality and GHG are expected to be minimal and managed through standard environmental mitigation measures. The project would generate renewable energy and contribute to the reduction of GHG emissions.

15.2 Setting the context

15.2.1 Statutory requirements

Potential impacts to air quality and GHG associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Protection of the Environment Operations Act 1997*
- *Climate Change (Net Zero Future) Act 2023*
- *Electricity Infrastructure Investment Act 2020*
- National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) (National Environment Protection Council, 2021)
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Environment Protection Authority (EPA), 2022a)
- Guidance on the Assessment of Dust from Demolition and Construction (Institute of Air Quality Management, 2014)
- Net Zero Plan Stage 1: 2020-2023 (Department of Planning, Industry and Environment, 2020b).

15.3 Assessment method

Potential impacts to air quality within and surrounding the project site during construction and operation were investigated through a desktop assessment. The assessment comprised a review of publicly available mapping and databases, including:

- New South Wales annual compliance report 2023 (NSW Department of Climate Change, Energy the Environment and Water (DCCEEW), 2025)
- NSW Planning Portal ePlanning Spatial Viewer (NSW Department of Planning, Housing and Infrastructure (DPHI), 2024)
- Climate statistics for Australian locations (Bureau of Meteorology (BoM), 2024).

The air quality assessment carried out for the construction and operational phase of the project adopted the following approach:

- reviewing the project scope, project site and activities to be carried out during construction
- reviewing the existing environment conditions including local topography, climate, and existing ambient air quality
- identifying the closest sensitive receivers to the project site
- conducting a qualitative assessment of potential dust impacts associated with the project
- identifying mitigation measures for construction and operation of the project.

A qualitative assessment was also carried out on the generation of GHG emissions during the construction phase. This included:

- understanding current trends in GHG emissions in Australia
- reviewing existing research and data
- identification of activities during construction and operation of the project that may generate GHG emissions.

15.4 Description of existing environment

15.4.1 Topography

The topography of the project site gently slopes from the east-northeast to the west-southwest, following the general flow directions of Abercrombie Creek and The Forest Creek. The topography ranges from about 70 metres Australian Height Datum (AHD) in the west to around 80 metres AHD in the east of the project site.

15.4.2 Climate and meteorological conditions

The BoM collects meteorological data from weather stations across Australia that can be used to determine climate statistics over time. The closest weather station to the project site with long term records of temperature are Hay (Airport) and Balranald (RSL), that are both located about 66 kilometres away from the project site, in a northeast and northwest direction respectively. Statistics from the Hay weather station between 2007 and 2024 identified an annual average maximum temperature of 25.1 degrees Celsius (°C) and minimum temperature of 10.2°C (BoM, 2024). Statistics summarised from the Balranald weather station identified an annual average maximum temperate of 24.3°C and minimum temperature of 10.0°C (BoM, 2024). The closest weather station with long term rainfall records is located at Moulamein (Tchelery). The average annual rainfall at Moulamein is 316.7 millimetres (mm) (BoM, 2024).

Wind conditions including speed, direction and strength are measured across Australia by the BoM and summarised in wind roses (BoM, 2024). The wind roses documented at the Hay (Miller Street) weather station about 62 kilometres northeast of the project site are based on data collected between 1957 and 2015 and constructed with the following considerations:

- percentage of calm conditions is represented by the size of the centre circle – the bigger the circle, the higher the frequency of calm conditions
- each branch of the rose represents wind coming from that direction, with north to the top of the diagram, eight directions are used
- branches are divided into segments of different thickness and colour, that represent wind speed ranges from that direction. Speed ranges of 10 kilometres per hour are used in these wind roses. The length of each segment within a branch is proportional to the frequency of winds blowing within the corresponding range of speeds from that direction.

Refer to Figure 15.1 for a guide to interpreting wind roses measured at Hay (Miller Street) weather station. Figure 15.2 indicates wind is typically blowing from a south and southwest direction, and wind conditions are typically calmer in the morning.

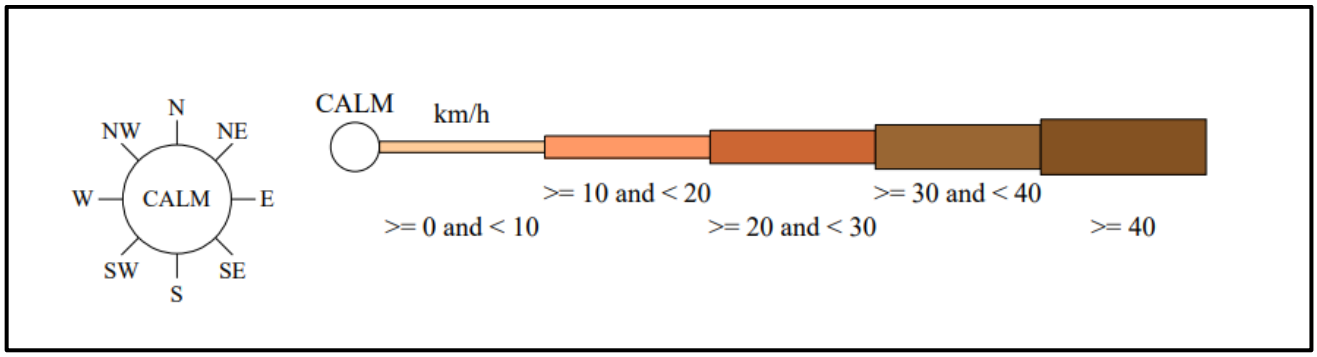
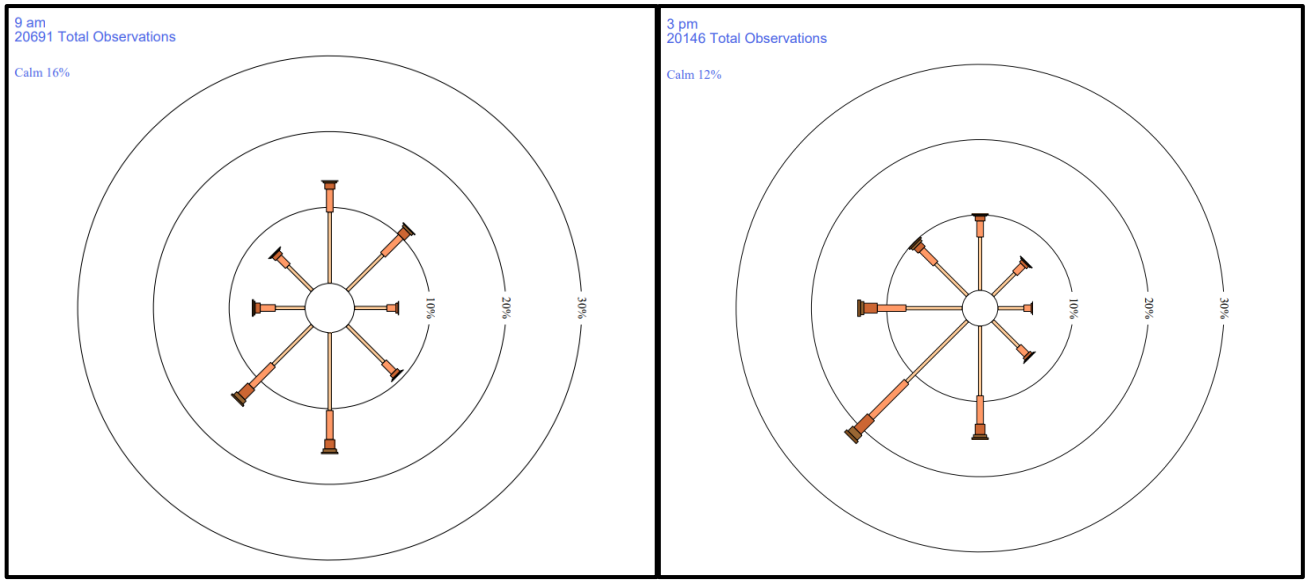


Figure 15.1 Guide to interpreting the wind rose



Source: BoM, 2024

Figure 15.2 Hay wind rose at 9 am and 3 pm

15.4.3 Ambient air quality

15.4.3.1 *National Pollutant Inventory*

The National Pollutant Inventory listed one source of air pollution, the 'JHW Patterson and Son' site on Sturt Highway (about 24 kilometres northwest of the project site), that includes a feedlot and general farming (NSW DCCEEW, 2023). Other existing air pollution sources surrounding the project site include vehicle and dust emissions from nearby roads and agricultural activities.

15.4.3.2 Existing air pollution

The NSW Ambient Air Quality Annual Compliance Report 2023 (NSW DCCEEW, 2025) summarises compliance with the National Environment Protection Ambient Air Quality Measures (AAQ NEPM) in 2023. Wagga Wagga North is the closest Air Quality Monitoring Station (AQMS) with all the relevant air quality data as presented in Table 15.1. The Wagga Wagga North AQMS is located about 285 kilometres east of the project site. Compliance with AAQ NEPM goals at the Wagga Wagga North AQMS is summarised in Table 15.1.

Table 15.1 Summary of compliance with AAQ NEPM goals for particles and gases (2023) at Wagga Wagga North

Region/Station	Carbon monoxide (CO) 8-hour	Nitrogen dioxide (NO_2) 1-hour	Nitrogen dioxide (NO_2) 1-year	Sulfur dioxide (SO_2) 1-hour	Sulfur dioxide (SO_2) 24-hour	Ozone (O_2) 8-hour	PM10 1-day	PM10 1-year	PM2.5 1-day	PM2.5 1-year
Wagga Wagga North	–	ND	ND	–	–	ND	N-C	C	C	C

C = compliant

N-C = non-compliant

ND = not demonstrated (Wagga Wagga North (Q3 and Q4) did not meet the 75 per cent quarterly data availability criterion. Compliance was therefore assessed as 'not demonstrated')

– = not monitored at this station

Data collected from Wagga Wagga North AQMS includes total suspended particles, PM_{10} and $PM_{2.5}$, on a daily and yearly timeframe. Particles classed as PM_{10} refer to those with a diameter of 10 micrometres or less. Non-compliance for daily goals for PM_{10} at Wagga Wagga North AQMS were attributed to non-exceptional event days where conditions such as local dust likely occurred (NSW DCCEEW, 2025).

Kyalite is the closest AQMS to the project site located about 57 kilometres southwest. Hay AQMS is about the same distance towards northeast; however, Kyalite AQMS would represent conditions of the project site due to the rural location. The Kyalite AQMS regularly monitors $PM_{2.5}$ and PM_{10} concentration. Recent air quality data from Kyalite AQMS shows generally good quality of $PM_{2.5}$ with few exceptions. PM_{10} data from the same station shows good air quality across the measurement period from 6 to 10 February 2025 (DPHI, 2025).

15.4.4 Sensitive receivers

The Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (EPA, 2022) describes a sensitive receiver (otherwise referred to as a sensitive receptor) as a location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area. An air quality impact assessment should also consider the location of any known or likely future sensitive receptor.

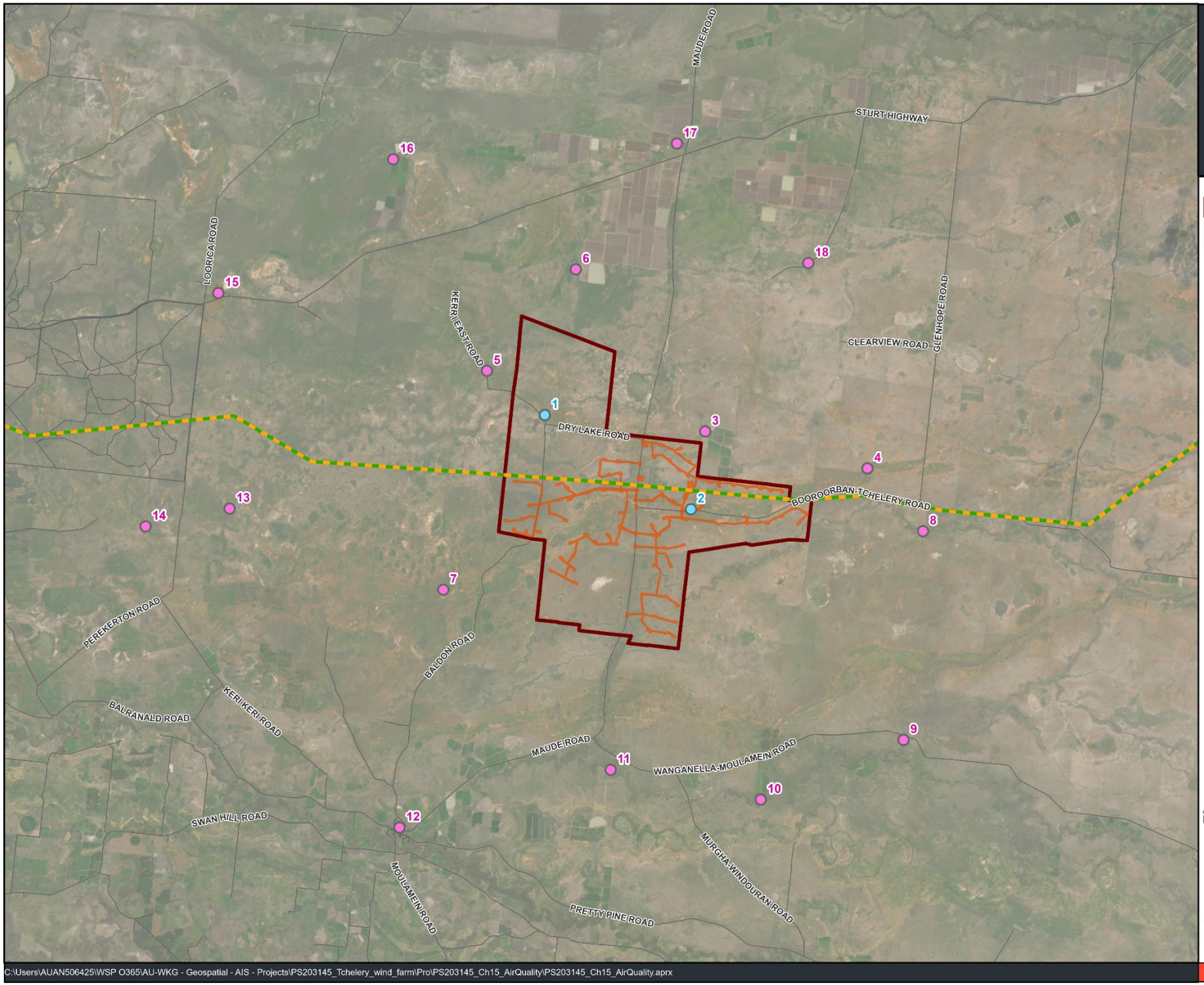
Five residential dwellings on agricultural land comprise the nearest sensitive receivers to the project site (two are associated with the project with one being the uninhabited woolshed that is regularly used as a place of business) (refer to Figure 15.3 and Table 15.2). To be conservative, a distance of eight kilometres from the nearest Wind Turbine Generator (WTG) was used to determine sensitive receivers. The project site is about 19 kilometres northeast of the closest town of Moulamein. For the purpose of this air quality impact assessment, both occupied and unoccupied dwellings are considered to be sensitive receivers.

Table 15.2 Sensitive receivers

Receiver ID	Approximate distance and direction from the project site	Nearest WTG number	Approximate distance and direction from the nearest WTG
1 (Tchelery Homestead)	Associated receiver within the northwestern extent of the project site	21	5,160 metres north
2 (Tchelery Woolshed) (uninhabited)	Associated receiver within the eastern extent of the project site	36	890 metres north
3	930 metres north	2	2,220 metres northeast
4	4,770 metres northeast	42	5,770 metres northeast
7	6,070 metres southwest	48	7,040 metres southwest

15.4.5 Greenhouse gas emissions

The Australian Government Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW) publishes data on Australia's GHG emissions. The most recent National Greenhouse Gas Inventory Quarterly Update (Cth DCCEEW, 2024b) found national emissions for the September quarter 2024 (between 1 July 2024 and 30 September 2024) decreased slightly (down in 0.1 per cent) in trend terms reflecting decreases in fugitive emissions, agriculture, industrial processes and stationary energy sectors being offset by increases in electricity and transport sectors. Australia's National Greenhouse Accounts (Cth DCCEEW, 2024a) show a general reduction in GHG emission across all States and sectors since 2006.



Tchelery Wind Farm

Figure 15.3
Air quality sensitive receivers

Legend

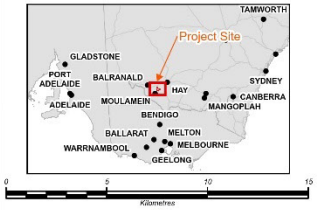
- Project site
- Construction footprint

Sensitive receivers

- Dwelling or building associated with the project
- Non-associated dwelling

Context

- Existing 220 kV transmission line and proposed Project EnergyConnect - NSW Eastern Section
- Existing road



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

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15.5 Assessment of potential impacts – construction

15.5.1 Air quality

During the three years construction period, local air quality may be temporarily affected by particulate (dust) and exhaust emissions from activities such as:

- earthworks
- stockpile management
- concrete batching plants
- access track construction
- vehicle movement
- vegetation clearing
- maintenance and use of vehicles, plant and equipment.

Air quality and dust impacts from these activities on sensitive receivers as identified in Table 15.2 depends on the nature of the dust, separation distance, wind speed and direction. As identified in Section 15.4.2, the predominant wind direction is from the southwest. Sensitive receiver 7 is located in the general direction of predominant wind and has the potential to be impacted by the construction activities; however, the receiver is located about seven kilometres from the nearest construction site, the potential for impact at this receiver would be limited. This dwelling was unoccupied at the time of this assessment.

Additionally, the concrete batching plant (a potential point source of air quality pollution) is outside the 8 kilometres potential impact area for all sensitive receivers except for sensitive receiver 3 that is located about four kilometres north. This receiver has potential to be impacted if favourable meteorological conditions are prevalent. However, due to the large separation distance and low probability for all meteorological conditions to be favourable at any given time, this impact would be negligible and temporary.

Overall, impacts to air quality from these activities at sensitive receivers are expected to be negligible following the implementation of mitigation measures described in Section 15.7. This is due to the relatively small scale of construction works required at each construction location, distance of construction works from sensitive receivers and progressive nature of construction works.

15.5.2 Greenhouse gas emissions

GHG emissions generated during project construction would be largely related to the combustion of fuels by heavy machinery, equipment and vehicles. Embodied emissions would be generated through materials used during construction, including transport of materials to the project site and cleared vegetation material. The impact of these emissions would be localised and minimal in scale and would be managed in accordance with mitigation measures in Section 15.7.

15.5.2.1 Energy and fuel use

Construction of the project would require use of energy and fuels to power plant, equipment and construction traffic. Fuels would likely include non-renewable sources such as diesel and unleaded petrol.

Electricity needs on-site would likely be provided by connection of the construction site offices to the electricity network. A generator would be used where it is not practicable to obtain power from the electricity network. Energy use would include fuel consumption associated with construction traffic (including deliveries and workforce movements). Local sourcing of materials where practicable would assist with minimisation of energy and fuel use.

15.6 Assessment of potential impacts – operation

15.6.1 Air quality

During operation, air quality impacts would be limited to the following sources:

- emissions generated from exposed surfaces
- use of operational equipment
- maintenance work on infrastructure including internal access tracks, hardstands, and laydown areas.

The blade tips of the rotating turbines have the potential to cause downstream wake effects for up to 10 rotor diameter distance (about two kilometres) beyond the turbine resulting in blowing of surface dust from exposed areas. However, given the clearance between the tip of the blade and the ground, it is unlikely for these wake effects to generate dust emissions during operation. Refer to Section 6.6 in Technical paper 11 (Aviation impact assessment) for further details of potential wake impacts of the project.

The ambient air quality is not anticipated to be impacted during operation as there would be limited maintenance requirements and the use of internal access tracks by service vehicles would also be limited. Sensitive receivers are not anticipated to be impacted during operation given their distance from project infrastructure.

15.6.2 Greenhouse gas emissions

The project would result in the displacement of GHG emissions that would otherwise be generated through burning of fossil fuels used to generate electricity from traditional coal fired power stations. Ongoing maintenance of project infrastructure has potential to result in minor localised emissions of GHG from vehicles and machinery.

15.7 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to air quality and GHG are detailed in Table 15.3.

Table 15.3 Air quality and GHG mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
AQ1	Access tracks will be clearly marked and maintained.	Construction	All locations
AQ2	Speed limits for construction vehicles and equipment will be implemented on unsealed access tracks and hardstand areas.	Pre-construction and construction	All locations
AQ3	Any material spilled will be promptly cleaned up.	Pre-construction and construction	All locations
AQ4	Clearing and ground disturbance will be kept to the minimum necessary and progressively rehabilitated as construction is completed in each location, where practicable.	Construction	All locations
AQ5	Stockpiles will be located, shaped and seeded for longer term topsoil stockpiles in a strategic manner to minimise dust erosion from exposed surfaces.	Construction	All locations
AQ6	Dust controls will be used (such as water sprays or dust capture systems) for construction phase concrete batching plant and crushing and screening plant.	Construction	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
AQ7	Regular inspections/audits will be conducted to monitor air quality controls during construction.	Construction	All locations
AQ8	All loads will be covered when transporting loose material off site.	Pre-construction and construction	All locations
GHG1	Equipment and vehicles will be regularly serviced and maintained to optimise efficiency.	Pre-construction, construction and operation	All locations
GHG2	Fuel and energy efficient equipment and vehicles will be selected, where practicable.	Pre-construction and construction	All locations
GHG3	Options will be reviewed to consider use of alternative materials in construction to concrete, such as fly ash as a supplementary cementitious material and reclaimed aggregate.	Detailed design	All locations
GHG4	Steel with high recycled content will be utilised where technically practicable and cost effective.	Detailed design, pre-construction, construction	All locations

15.7.1 Interaction between measures

Mitigation measures in other chapters that are relevant to air quality and GHG include:

- Chapter 19 (Soils and contamination), specifically measures that address the management of soil erosion and any potential contaminated soils during construction
- Chapter 21 (Waste management and resource use), specifically measures that address appropriate handling and management of construction materials, hazardous materials or asbestos.

15.7.2 Managing key uncertainties

There are no key uncertainties associated with air quality and GHG emissions that would require further management beyond the implementation of mitigation measures.

15.7.3 Managing residual impacts

Residual impacts associated with air quality and GHG emissions following the implementation of mitigation measures are negligible in both construction and operational phases. Further management would not be required.

16 Noise and vibration

This chapter summarises potential noise and vibration impacts associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 9A (Construction noise and vibration impact assessment) and Technical paper 9B (Operation noise impact assessment) prepared by WSP and Echo Acoustics, respectively.

16.1 Summary of key findings

The key findings from noise and vibration impact assessment are as follows:

- construction noise predictions are based on a conservative, worst case scenario where all construction activities are occurring simultaneously anywhere within the project site
- during construction, a minor exceedances of noise management levels (NMLs) is predicted at one sensitive receiver during out of hours work (OOHW)
- no vibration or road traffic noise impacts are predicted from construction of the project
- predicted operation noise levels of the Wind Turbine Generators (WTGs) are less than, or equal to the base equivalent noise level of 35 A-weighted decibels (dBA) at all hub height integer wind speeds at all non-associated sensitive receivers (Figure 16.3)
- predicted operation noise levels of the Battery Energy Storage System (BESS) and ancillary infrastructure indicate the noise criteria can be achieved at all sensitive receivers based on candidate equipment and anticipated discharge and temperature control requirements
- there is potential for cumulative impacts from overlap of construction period of the project and Baldon Wind Farm.

16.2 Setting the context

16.2.1 Statutory requirements

Potential noise and vibration impacts associated with the project were assessed in line with the following legislation policies and guidelines:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- Interim Construction Noise Guideline (ICNG) (Department of Environment and Climate Change (DECC), 2009)
- Construction Noise and Vibration Guideline (Roads) (CNVG-R) (Transport for NSW, 2024b)
- NSW Road Noise Policy (Department of Environment, Climate Change and Water (DECCW), 2011b)
- Noise Policy for Industry (Environment Protection Authority (EPA), 2017b)
- Assessing Vibration: A Technical Guideline (Department of Environment and Conservation (DEC), 2006b)
- Cumulative Impact Assessment Guidelines for State Significant Projects (Department of Planning, Industry and Environment (DPIE), 2022a)
- Approved methods for the measurement and analysis of environmental noise in NSW (EPA, 2022b)
- Wind Energy: Noise Assessment Bulletin (Department of Planning and Environment (DPE) and EPA, 2016)
- Australian Standard (AS) 1055: Description and measurement of environmental noise

- International Organisation for Standardisation (ISO) 8297 – Determination of Sound Power Levels of Multisource Industrial Plants for Evaluation of Sound Pressure Levels in the Environment (Engineering Method)
- German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures (German Building and Civil Standards Committee, 1999)
- British Standard (BS) 7385 Part 2-1993 Evaluation and measurement for vibration in buildings Part 2 (BS7385) (British Standard Institution (BSI), 1993)
- Australian Standard (AS) 2187.2-2006 Explosives – Storage, Transport and Use provides guidance for the assessment of cosmetic damage to buildings caused by vibration
- International Organisation for Standardisation (ISO) 9613-2 Acoustics – Attenuation of sounds during propagation outdoors
- A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (Institute of Acoustics, 2013).

16.3 Assessment method

16.3.1 Study area

Construction

The noise and vibration study area was determined based on preliminary calculations of the likely maximum extent of construction noise impacts. These calculations considered the likely maximum noise levels of construction plant and equipment, and the distance between the construction areas to sensitive receivers. The noise and vibration study area comprises three noise catchment areas (refer to Figure 16.1).

Noise Catchment Areas (NCAs) have been defined to classify groups of sensitive receivers that are likely to have a similar existing noise environment and experience similar impacts from the project. NCAs were determined through reference to aerial imagery and land use maps and verified during the noise monitoring program.

All NCAs defined for the noise and vibration study area were found to be highly rural in nature and are described in Table 16.1 and shown in Figure 16.1. Sensitive receivers with the potential to be impacted by noise and vibration during construction of the project were identified by reviewing recent aerial imagery and observations made during environmental noise surveys.

Table 16.1 Noise catchment areas

Noise catchment area	Representative monitoring location	Region/description of noise environment	Approximate number of sensitive receivers
NCA 1	NM01	Tchelery Homestead, rural area primarily dominated by agricultural rural activities including livestock grazing.	7
NCA 2	NM02	St Pauls, rural area primarily dominated by agricultural activities including livestock grazing.	4
NCA 3	NM03	Everslee, rural area primarily dominated by agricultural activities including livestock grazing.	6
	NM04	Thalaka, rural area primarily dominated by agricultural activities including livestock grazing.	

Note: Receiver 2 (Tchelery Woolshed) is located in NM03; however, it is not inhabited and regularly used for business purposes.

16.3.1.1 Sensitive receivers

Construction

Seventeen residential noise sensitive receivers have been identified within the noise and vibration study area, refer to Figure 16.1. One of these sensitive receivers is associated with the project and located within the project site. No other non-residential, noise sensitive receivers have been identified.

Vibration sensitive receivers include all regularly occupied buildings and sensitive structures within the noise and vibration study area. All identified noise sensitive receivers are also considered potentially vibration sensitive and have been assessed for possible vibration impacts during construction of the project.

Vibration impacts could also affect potential sensitive heritage structures up to a distance of 54 metres from the construction work area. Technical paper 2 (Aboriginal cultural heritage assessment) identifies a range of Aboriginal heritage items, that generally consist of non-vibration sensitive items such as scatters and potential archaeological deposits (PAD). However, some isolated artefacts and hearths may be considered potentially vibration sensitive.

Operation

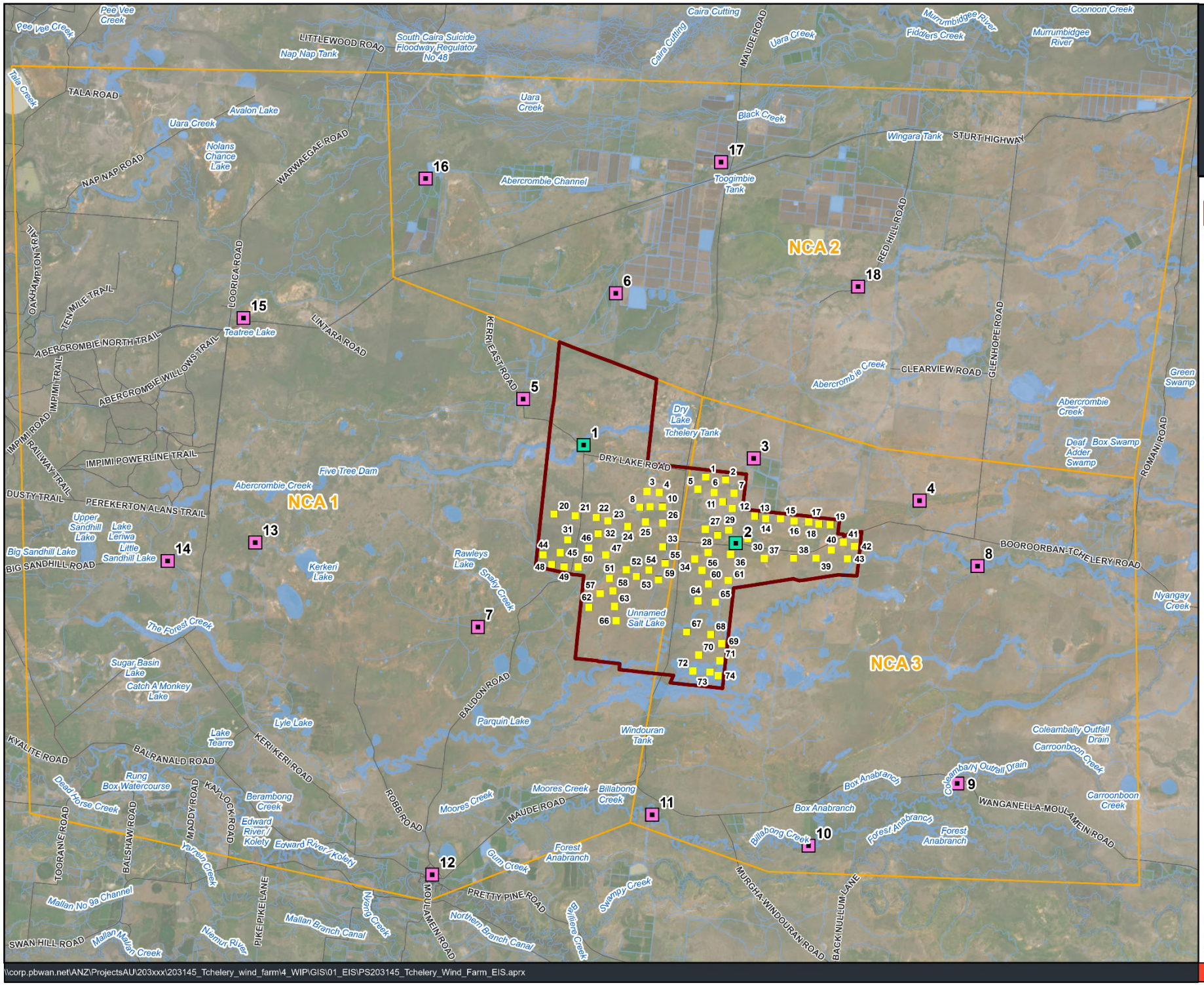
Seven sensitive receivers and receiver 2 (Tchelery Woolshed) that are within nine kilometres of the project site were assessed for potential operation noise impacts (refer to Figure 16.3). Discussions with the impacted landholders (of sensitive receiver 1 and 2 (refer to Figure 16.3)) is underway and Neoen is working towards finalising private agreements in the near future. These locations are be referred to as ‘associated’ sensitive receivers, with the remaining, sensitive receivers 3-8, that do not have an agreement with the project, referred to as ‘non-associated’ sensitive receivers.

16.3.2 Approach to assessment

The methodology adopted for the assessment of construction and operation noise and vibration involved the following:

- defining the study area for noise and vibration based on the proposed construction and operation activities, sensitive receivers within the surrounding environment, and the anticipated level of impact
- baseline noise monitoring survey to determine the existing environment of the noise and vibration study area for assessment of construction noise impacts
- reference to regulatory guidelines and standards to establish construction and operation noise and vibration criteria and limits to define where impacts maybe experienced and to quantify the performance of recommended noise and vibration mitigation measures
- predictive modelling of noise levels at sensitive receivers to inform the assessment of the potential impacts to amenity from construction and operation of the project
- calculation of safe working distances for plant and equipment for the management of ground borne vibration during construction activities
- an assessment of the potential cumulative impacts of noise and vibration during construction and operation in combination with other known developments within the vicinity of the project
- summarising recommended mitigation measures to avoid, minimise and manage any potential impacts of noise and vibration from construction and operation of the project.

A detailed description of the assessment methodology is provided in Section 3 of Technical paper 9A (Construction noise and vibration impact assessment). Further details of the operation noise impact assessment methodology are provided in Technical paper 9B (Operation noise impact assessment).



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Tchelery Wind Farm

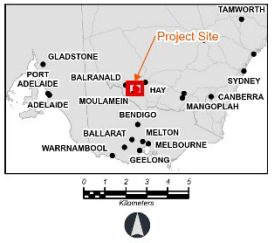
Figure 16.1
Noise sensitive receiver map

Legend

- Project site
- Noise catchment area (NCA)
- Associated dwelling
- Non associated dwelling
- Wind turbine generator

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:360,000 Date: 22/04/2025

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16.4 Description of existing environment

The following details of the existing environment at the project site are summarised from Technical paper 9A (Construction noise and vibration impact assessment).

The existing noise environment varies over the noise and vibration study area; however land uses within the noise and vibration study area are generally characterised as rural, primarily dominated by agricultural and rural residential land uses. The primary activities that dominate the existing noise levels include a combination of natural noises (for example birds) and local traffic influences. Main arterial roads in the construction area include the Sturt Highway.

16.4.1 Noise monitoring

The baseline environmental noise surveys involved a combination of unattended and attended noise monitoring to quantify the pre-construction noise environment at locations representative of the sensitive receivers.

16.4.1.1 Unattended monitoring

Unattended noise monitoring was carried out between 22 February and 5 April 2023 using Rion NL-42 noise logging devices. Unattended monitoring results are summarised in Table 16.2 and Figure 16.2, with daily logger charts presented in Appendix A of Technical paper 9A (Construction noise and vibration impact assessment).

Table 16.2 Unattended noise measurement results

ID	Rating background level dBA			Ambient noise level dBA $L_{eq(period)}$		
	Day[1]	Evening[1]	Night[1]	Day[1]	Evening[1]	Night[1]
NM01	23	18	18	44	46	39
NM02	25	24	24	51	54	49
NM03	25	23	23	49	52	45
NM04	26	19	19	46	46	41

(3) Time periods defined as – Day: 7 am to 6 pm Monday to Saturday, 8 am to 6 pm Sunday; Evening: 6 pm to 10 pm; Night: 10 pm to 7 am Monday to Saturday, 10 pm to 8 am Sunday

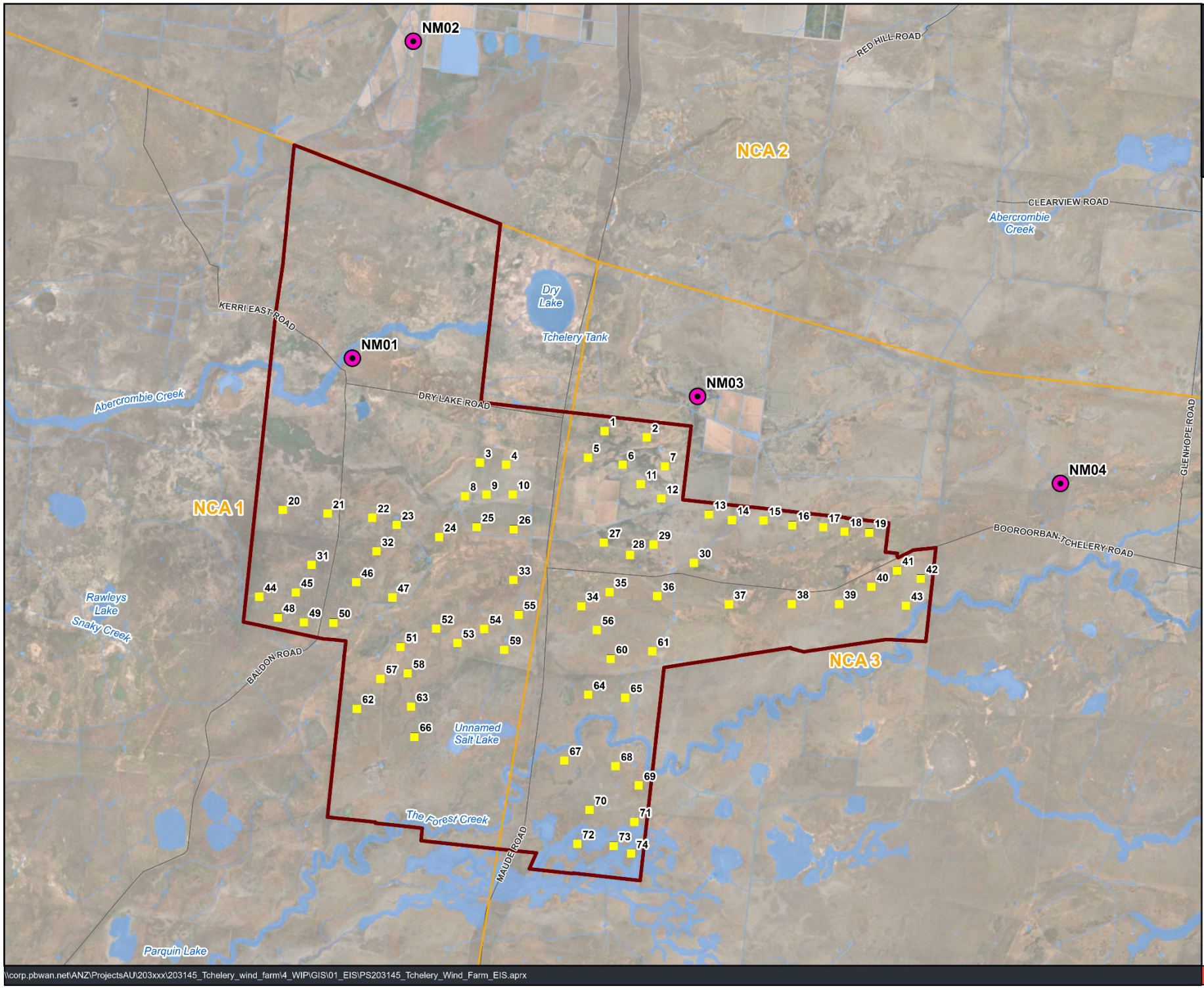
16.4.1.2 Attended monitoring

To characterise the existing noise environment, short term (attended) noise measurements were carried out at representative locations summarised in Table 16.3. Weather conditions during monitoring were observed to be suitable for monitoring, with northerly winds of 2.5 to 3 metres per second (m/s) and light cloud cover observed.

Background noise levels were generally observed to be low during the daytime period and dominated by rural and natural sounds, typical of a rural land use area. Low background noise levels of about 30 to 40 dBA were generally observed, that is consistent with the findings of the unattended noise monitoring program.

Table 16.3 Attended noise measurement results

ID	Date and time	Measured noise level dB			Comments
		$L_{A90(10\ min)}$	$L_{Aeq(0\ min)}$	$L_{Amax(0\ min)}$	
NM01	22 February 2023 11:48–11:58 am	36.6	42.0	63.5	Rural noises: Wind and birds
NM02	22 February 2023 9:55–10.05 am	51	63.0	78.9	Rural noises: Wind, birds and metal clanging
NM03	22 February 2023 1:13–1.23 pm	28.8	41.1	53.8	Rural noises: Wind, birds, and flies
NM04	22 February 2023 3.14–3.24 pm	36.3	41.6	53.7	Rural noises: Wind and birds



Tchelery Wind Farm

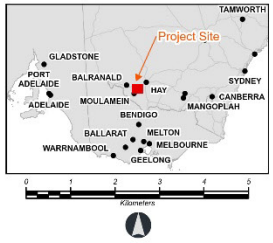
Figure 16.2
Project site and noise monitoring locations

Legend

- Wind turbine generator
- Noise monitoring location
- Project site
- Noise catchment area

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:170,000 Date: 20/03/2025

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16.5 Assessment of potential impacts – construction

Potential impacts from construction noise and vibration from the project include:

- construction noise levels are predicted to be the highest during the construction of footings, foundations and hardstands for each WTG
- a minor exceedance of NMLs is predicted at one sensitive receiver during standard work hours
- exceedances of NMLs are predicted at two sensitive receivers where foundations works are carried out during OOHW
- sleep disturbance impacts during the worst case night time foundations work stage are predicted at one sensitive receiver, with potential sleep awakening impacts not predicted to occur
- actual noise levels are generally be expected to be below these predicted noise levels at any identified noise sensitive receiver
- no vibration impact or road traffic noise impacts are predicted from construction of the project.

16.5.1 Construction noise

Noise levels have been calculated assuming all construction activities within each work stage occur simultaneously, anywhere within the construction area. Actual construction noise levels are expected to vary based on the final project design and the actual setback distances to sensitive receivers. Therefore, potential construction noise impact predictions are presented as a conservative, worst case scenario assuming all identified plant (refer to Appendix B1 in Technical paper 9A (Construction noise and vibration impact assessment)) are operational at any one time at the nearest boundary to each sensitive receiver during adverse meteorological conditions.

The assessment shows that construction noise levels are predicted to be the highest during the construction of footings, foundations and hardstands for each WTG. Noise levels during this stage have been predicted to exceed NMLs at sensitive receiver 3 (NCA3) during OOHW. This exceedance is considered minor (less than 10 decibels (dB) above NMLs). No sensitive receivers have been predicted to be highly noise affected (greater than 75 dBA) during multiple work stages.

Calculations carried out to quantify potential noise impacts, where construction activities are carried out simultaneously, identified no additional noise impacts would be likely to occur. Construction work stages for the western construction area, construction compound, workforce accommodation camp and substations are predicted to have no impact on all noise sensitive receivers during standard work hours.

Detailed results of the construction noise assessment associated with construction works are presented in Table 5.1 and Appendix B2 in Technical paper 9A (Construction noise and vibration impact assessment).

16.5.2 Construction vibration

The minimum working distances from the construction footprint were identified based on the potential vibration generating plant identified for construction (refer to Section 2.1.3 in Technical paper 9A (Construction noise and vibration impact assessment)). The closest identified and occupied vibration sensitive receiver to the construction footprint is about one kilometre away. As such, no vibration sensitive buildings are anticipated to be within the minimum working distances and no vibration impacts are predicted.

Seven sites are listed in Technical paper 2 (Aboriginal cultural heritage assessment) as areas that could be at risk of indirect harm if not properly managed during construction as they are within 20 metres of the construction footprint. Potential impacts to these items are listed as vegetation clearance, disturbance from surface water drainage and workers driving over sites without authorisation. Vibration impacts have been assessed for heritage sites up to a distance of 54 metres from the construction work area, which included the seven sites at risk of indirect harm as well as a further three heritage sites. Following assessment, it was determined that the risks to these sites from vibration is negligible.

16.5.3 Construction road traffic noise

Additional road traffic generated on existing roads due to construction of the project has the potential to cause adverse road noise impacts at nearby sensitive receivers. The daytime and night time predicted construction traffic noise level of the worst impacted sensitive receivers along each major construction route, as well as a qualitative assessment of the impacts to sensitive receivers exceeding base noise criteria, are presented in Table 16.4.

Table 16.4 Predicted impacts of construction traffic noise along key construction routes

Construction route section	Road type	Worst impacted sensitive receiver noise level (increase on existing) (dBA)		Qualitative discussion
		Day	Night	
Sturt Highway (east of Maude Road), Maude	Arterial	41 *(+0)*	31 *(+0)*	No exceedances were predicted along the Sturt Highway east of Maude Road.
Sturt Highway (west of Maude Road), Maude	Arterial	42 *(+1)*	31 *(+1)*	No exceedances were predicted along the Sturt Highway west of Maude Road.
Maude Road (south of Sturt Highway), Maude	Sub-arterial	37 *(+5)*	26 *(+5)*	No exceedances were predicted along Maude Road south of Sturt Highway.
Booroorban-Tchelery Road (east of Maude Road), Maude	Local	45 *(+5)*	n/a	No exceedances were predicted along Booroorban-Tchelery Road east of Maude Road.

Overall, no exceedances are predicted either public roads or internal access tracks. One sensitive receiver directly adjacent to Booroorban-Tchelery Road may experience a noticeable increase in traffic noise of more than two dB during daytime hours. However, road traffic noise levels are expected to remain well below the base road noise criteria.

16.6 Assessment of potential impacts – operation

Potential impacts of operational noise from the project include:

- predicted noise levels of the WTGs are less than, or equal to the base equivalent noise level of 35 dBA at all hub height integer wind speeds at all non-associated sensitive receivers (Figure 16.3)
- predicted noise levels of the BESS and ancillary infrastructure indicate the noise criteria can be achieved at all sensitive receivers based on candidate equipment and anticipated discharge and temperature control requirements
- no impacts from special noise characteristics (tonality and low frequency) are expected.

16.6.1 Wind turbine generator noise

The operational noise impact assessment was prepared based on the highest sound power level in each octave band of the reviewed candidate WTGs. The candidate WTG is not a specific make or model, but rather a conservative (highest) indication of the noise from a number of WTGs.

The operational noise impact assessment was informed by the original equipment manufacturer noise level data that are based on the highest available sound power levels produced by the WTGs for integer wind speeds (at hub height) from wind turbine cut-in wind speed to the wind speed of the rated power. The indicative sound power levels used as the basis of the operation noise impact assessment for each relevant octave band and as a total are provided in Table 4 in Technical paper 9B (Operation noise impact assessment).

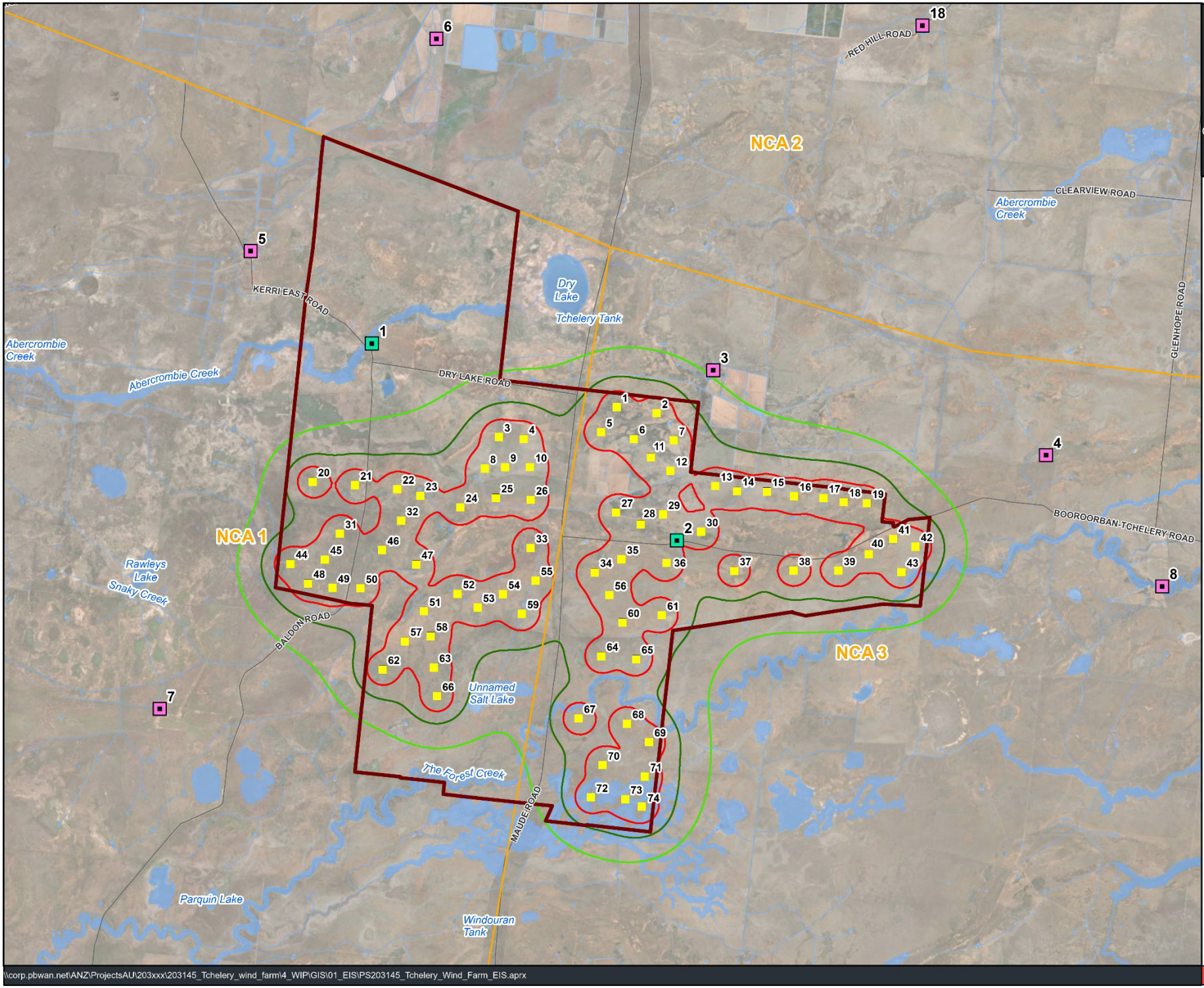
The predicted noise levels are provided in Table 16.5 for each sensitive receiver from the cut-in wind speed to the wind speed at rated power in integer hub height wind speed steps. The distance to the closest WTG from each sensitive receiver is also provided in Table 16.5. The noise levels provided in Table 16.5 represent the noise predictions using both the 1996 and 2024 versions of the International Standard, noting that the predicted noise levels using both versions are the same.

Table 16.5 Predicted WTG noise levels

Sensitive receiver	Distance to nearest WTG (metres)	Bulletin base equivalent noise level (dBA)	Predicted WTG A-Weighted Noise Level (dBA) for each Hub Height Integer Wind Speed								Highest predicted WTG C-Weighted noise level at any integer wind speed (dBC)
			3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s to rated power	
1	5,162	Subject to agreement	18	21	24	29	29	29	29	29	50
2	919	Subject to agreement	34	37	41	45	45	45	45	45	59
3	2,231	35	24	27	31	35	35	35	35	35	53
4	5,774	35	14	17	20	24	24	25	25	25	46
5	8,650	35	11	14	18	22	22	22	23	23	46
6	14,594	35	8	11	14	18	18	19	19	20	43
7	7,039	35	13	16	20	24	24	24	25	25	47
8	9,055	35	9	12	16	20	20	20	21	21	44

Special noise characteristics, tonality and low frequency, were assessed for operation of the candidate WTG. Tonality was assessed using the available one-third octave band sound power level data used for the candidate WTG. The available data indicates that the WTGs do not have tonal characteristics in close proximity (or an intermediate location) and the candidate WTG would not be tonal at the sensitive receivers. Low frequency noise was assessed by comparing the predicted C-weighted noise level provided in Table 16.5 against the criterion of 60 C-weighted decibels (dBC). The predicted noise levels indicate the low frequency criterion of 60 dBC would be achieved at all non-associated sensitive receivers (Figure 16.3), and further comparison of the one-third octave band noise levels against Table C2 of Noise Policy for Industry (EPA, 2017b) is not required. As such, no adjustment has been made to the A-Weighted noise levels provided in Table 16.5 for special noise characteristics.

Overall, the predicted noise levels are less than, or equal to the base equivalent noise level of 35 dBA at all hub height integer wind speeds at all non-associated sensitive receivers. The noise prediction contours (refer to Figure 16.3) illustrate that all non-associated sensitive receivers are outside (or subject to lower noise levels than) the base equivalent noise level contour of 35 dBA.



Tchelery Wind Farm

Figure 16.3
Operation sensitive receivers and WTG noise prediction contours

Legend

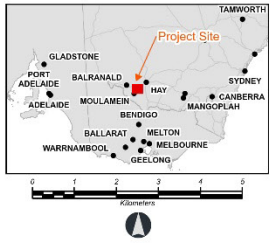
- Wind turbine generator
- Associated dwelling
- Non associated dwelling
- Project site
- Noise catchment area

Nosie Prediction Contours

- 45 dB (A)
- 40 dB (A)
- 35 dB (A)

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

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16.6.2 Battery energy storage system and ancillary infrastructure

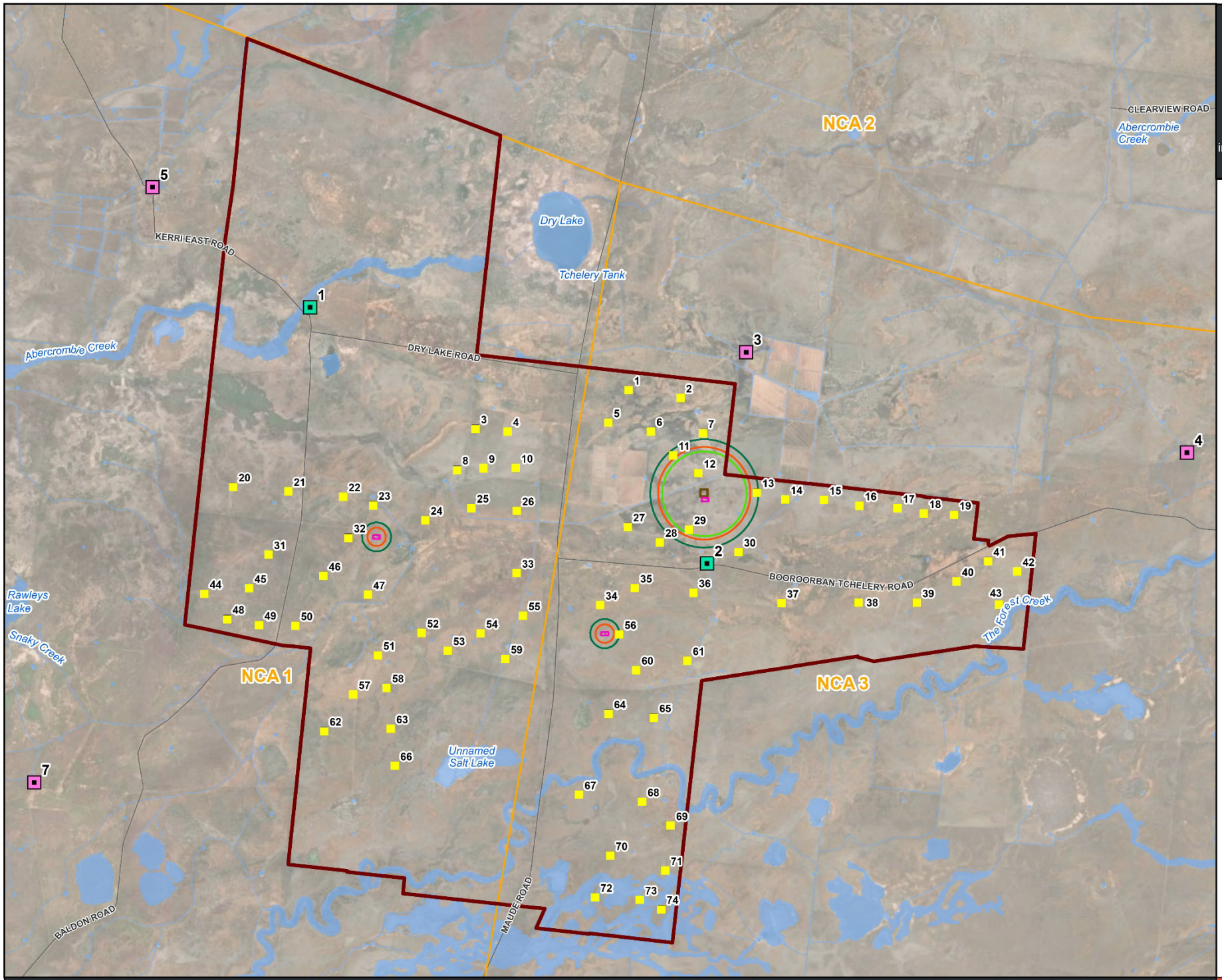
A three-dimensional noise model for the BESS and ancillary infrastructure has been developed based on the algorithm provided by the Conservation of Clean Air and Water in Europe (CONCAWE). The algorithm conservatively assumes favourable propagation conditions occur simultaneously between all sources and the sensitive receivers. Refer to Table 16.6 for details of the BESS and transformers relevant to noise impact assessment and Technical paper 9B (Operation noise impact assessment) for the model inputs.

Table 16.6 Details of BESS and ancillary infrastructure (transformers)

Project component	Details
BESS	Assessment of noise generated by the BESS was on a battery capacity of up to 350 megawatts (MW) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh) at the location shown in Figure 16.4. The noise from a BESS is predominantly associated with the inverters, and the fans and compressors used to control the temperature of the electronics and batteries. The final BESS equipment for the project would be confirmed during the original equipment manufacturer selection and procurement stages. The operation noise impact assessment was informed by original equipment manufacturer noise level data and represents a conservative assessment. The following cumulative sound power levels have been utilised for the BESS: — day operation: 119 dBA — evening operation: 116 dBA — night operation: 112 dBA.
Transformers	Assessment of noise generated by the transformers was based on: — two high voltage transformers with a rating of 250 megavolt amperes (MVA) at each of the three collector substation locations as shown in Figure 16.4 — 60 medium voltage transformers with a rating of 4.5 MVA located at the BESS. The noise predictions have been based on a sound power level of 100 dBA for each of the 250 MVA transformers, and 75 dBA for each of the 4.5 MVA transformers, as derived from Australian Standard AS 60076.10:2009 Power transformers – Part 10: Determination of sound levels.

Noise level predictions have been compared with the noise trigger levels, being 40 dBA during the day and 35 dBA during the evening and night. The predicted noise levels, provided in Table 8 in Technical paper 9B (Operation noise impact assessment), indicate the noise criteria can be achieved at all sensitive receivers based on candidate equipment and anticipated discharge and temperature control requirements. Noise level contours of the predictions indicate the localised nature of any noise impacts from the BESS and ancillary infrastructure (refer to Figure 16.4).

The noise from transformers, inverters, and the fans or compressors used to control the temperature of the electronics and batteries can exhibit tonal noise characteristics when in close proximity. However, given the BESS would have a large number of individual cooling fans that would operate at different speeds, tonality is unlikely to be a dominant and repeatable characteristic when considered at the separation distances equivalent to the sensitive receivers from the BESS and transformers.



Tchelery Wind Farm

Figure 16.4
Operation BESS and ancillary infrastructure noise prediction contours

Legend

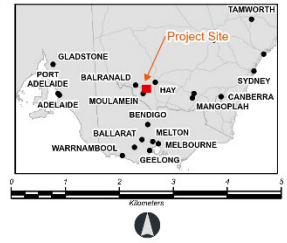
- Wind turbine generator
- Associated dwelling
- Non associated dwelling
- Project site
- Collector substation
- Battery energy storage system
- Noise catchment area

Nosie Prediction Contours

- BESS and ancillary infrastructure - 40 dB(A) Day
- BESS and ancillary infrastructure - 35 dB(A) Evening
- BESS and ancillary infrastructure - 35 dB(A) Night

Context

- Existing road
- Watercourse
- Waterbody



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16.7 Construction environmental management framework

A Construction Noise and Vibration Management Plan (CNVMP) would be prepared as a sub-plan within the Construction Environmental Management Plan (CEMP), to identify measures to reduce potential for noise impacts. The CNVMP would be developed to address the relevant technical papers, consolidated mitigation measures and conditions of consent with reference to any design refinements. However, the CNVMP would address the following as a minimum:

- confirm nearby residences and other sensitive land uses
- assess the potential impacts from the proposed construction methods and staging, including road traffic noise
- where management levels would be exceeded, examine feasible and reasonable mitigation and develop associated noise and vibration monitoring programs, as required
- develop reactive and proactive strategies for dealing with noise and vibration complaints
- develop an OOHW protocol
- assign roles and responsibilities for the management of noise and vibration complaints.

Construction traffic noise measures would be included as part of the CNVMP and Traffic Management Plan (TMP) to mitigate predicted road noise impacts at locations where exceedances are predicted. These would address the following, at a minimum:

- designation of dedicated traffic routes
- limiting traffic movements to daytime periods as far as reasonably practicable
- minimising traffic movements by ensuring full loads
- restriction of heavy vehicle movements to standard (daytime) work hours where feasible.

16.8 Mitigation measures

Proposed mitigation measures to mitigate potential noise and vibration impacts associated with the project are detailed in Table 16.7.

Table 16.7 Noise and vibration mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
NV1	As part of development of the design refinement and construction methodology, all reasonable and feasible mitigation measures will be considered, confirmed and implemented to minimise construction noise impacts and to avoid exceedances of the applicable noise goals at adjacent sensitive receivers where practicable. Measures that may achieve this outcome may include, but not limited to the following: — portable temporary noise screens will be erected adjacent to stationary or long term static noise sources, or noise generating items, where reasonable and feasible — spotters, 'smart' reversing alarms, or broadband reversing alarms will be used in place of traditional tonal beeper reversing alarms, particularly on equipment where reversing alarms are frequently in use such as rollers, loaders or compactors, where required and reasonable, and there is no risk to safety — noise source controls, such as the use of the adequate class mufflers, will be used reduce noise from all plant including cranes, excavators and trucks, where required and reasonable — the offset distance between noisy plant items and sensitive receivers will be maximised, where reasonable and feasible — machinery will be operated in a manner which reduces maximum noise level events such as shaking excavator buckets, dropping materials into trucks from a height or steel on steel contact, where required — construction plant and equipment will be turned off when not in use.	Detailed design/ pre-construction/ construction	All locations where exceedances of the applicable construction noise criteria are predicted at nearby sensitive receivers
NV2	Opportunities to reduce exceedances of the applicable construction noise goals through the implementation of administrative controls will be examined, confirmed and implemented where reasonable and feasible. Controls to be considered will include, but not limited to the following: — environmental awareness training and inductions for site personnel will include noise mitigation techniques/measures to be implemented when on site and accessing the project site — noise-intensive works will be limited to less sensitive construction hours (ie away from early morning and late afternoon periods) as far as practicable, when working in the vicinity of sensitive receivers — plant and equipment will be well maintained to ensure that excessive noise is not generated — for any works outside standard work hours an out of hours works protocol will be developed to mitigate any identified impacts.	Detailed design/ pre-construction/ construction	All locations where exceedances of the applicable construction noise are predicted at nearby sensitive receivers

Ref	Identified mitigation measure	Timing	Applicable location(s)
NV3	Opportunities to reduce the impacts associated with construction noise levels through the implementation of proactive community consultation will be examined, confirmed and implemented where reasonable and feasible. Controls to be considered will include, but not limited to the following: — sensitive receivers potentially affected by the works will be notified of the commencement of construction activities at least five days prior to works starting. The notification will describe the nature of and duration of works, expected noise levels and details of where sensitive receivers can contact project representatives — the community will be kept regularly informed of noise intensive activities in the immediate area — if genuine noise complaints are received, the complainant will be offered the opportunity for noise monitoring to be carried out to confirm the noise level at the receiver. Where the noise monitoring confirms that the applicable noise predictions are being exceeded, the construction methodology will be reviewed and changes implemented to reduce construction noise levels to be compliant with noise predictions where reasonable and feasible.	Pre-construction	All locations where exceedances of the applicable construction noise criteria are predicted at nearby sensitive receivers.
NV4	In consultation with Baldon Wind Farm, where reasonable and feasible: — plan noisy construction activities and avoid simultaneous noisy construction works where impacts are predicted — plan periods of high traffic generation and/or the delivery of oversized plant or structures.	Pre-construction/ construction	All locations
NV5	Vibration sensitive Aboriginal heritage items that have potential to be impacted by the project works will be confirmed prior to the commencement of vibration generating works in proximity to relevant structures. Suitable, item specific criteria will be developed for heritage items and vibration impacts at these locations will be managed before commencement of construction. This may include the use of alternative construction methods that generate lower levels of ground vibration and the installation of vibration monitors while vibration intensive activities are conducted.	Detailed design	All heritage items where exceedance of the applicable vibration criteria are predicted
NV6	Pre-construction noise modelling of the wind turbine generators will be conducted to ensure compliance with the project criteria established by the Secretary's Environmental Assessment Requirements.	Pre-construction	Wind turbine generators
NV7	Pre-construction noise modelling of the Battery Energy Storage System and ancillary infrastructure will be conducted to ensure ongoing compliance with project criteria established by the Secretary's Environmental Assessment Requirements.	Pre-construction	Battery energy storage system and ancillary infrastructure

16.8.1 Interaction between measures

Mitigation measures in other chapters that are relevant to noise and vibration include:

- Chapter 8 (Aboriginal heritage), specifically measures to address protection of Aboriginal items
- Chapter 9 (Historic heritage), specifically measures to address protection of historic heritage items
- Chapter 17 (Traffic and access), specifically measures to address management of traffic generated by the project.

16.8.2 Managing key uncertainties

There are no key uncertainties associated with noise and vibration that would require further management beyond the implementation of mitigation measures.

16.8.3 Managing residual impacts

Residual impacts associated with noise and vibrations following the implementation of mitigation measures are negligible in both construction and operational phases. Further management would not be required.

17 Traffic and access

This chapter summarises potential impacts to traffic and access associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 10 (Transport impact assessment) prepared by WSP.

17.1 Summary of key findings

The key findings from the assessment of impacts to traffic and access are as follows:

- key roads within the traffic and access study area include the Sturt Highway, the Cobb Highway, Maude Road, Swan Hill Road, Booroorban-Tchelery Road, Dry Lake Road, Kerri East Road and Baldon Road
- key intersections for the site include the Sturt Highway/Maude Road intersection and Maude Road/ Booroorban-Tchelery Road intersection
- the impact of the project on traffic during construction would include:
  - the project would not adversely affect the level of service for road capacity and intersection performance
  - construction vehicle movements to access the project site would largely be associated with heavy vehicle deliveries travelling via Sturt Highway and workforce traffic commuting from Balranald and Hay as well as movements to and from the access gates along Maude Road and Booroorban-Tchelery Road
  - modifications would be required at some locations along the oversize overmass (OSOM) vehicle construction routes
  - a moderate impact on road safety from risk of driver fatigue
- maintenance activities during operation would be carried out at routine intervals but infrequently and generate an insignificant level of traffic that would have a negligible impact on the efficiency of the road network, road condition and road safety.

17.2 Setting the context

17.2.1 Statutory requirements

Potential impacts to traffic and access associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environmental Planning and Assessment Act 1979*
- *Roads Act 1993*
- NSW Road Rules 2014
- Austroads Guide to Traffic Management and Road Design (Austroads, 2020)
- Guide to Traffic Generating Developments (Transport for NSW, 2002)
- Guide to Transport Impact Assessment (Transport for NSW, 2024a)
- Traffic Control at Work Sites – Technical Manual 2022 (Transport for NSW, 2022)
- 2026 Road Safety Action Plan (Transport for NSW, 2022b)
- NSW Heavy Vehicle Access Policy Framework (Transport for NSW, 2018).

17.3 Assessment method

The methodology adopted for the assessment of traffic and access impacts included:

- a desktop assessment to identify, describe and qualitatively assess the existing conditions of the traffic and access study area, including road regulations, speed zones, approved restricted access vehicle and OSOM vehicle routes, OSOM vehicle access, crash history, traffic volumes, active transport and public transport
- review of construction and operation vehicle access to construction areas
- a qualitative impact assessment of the traffic and access impacts during construction that included:
  - a road network capacity assessment to assess the impact of construction traffic movements on the surrounding road network
  - a review of the proposed haulage access requirements
- examination of the operational traffic and access impacts, such as impact on the road network due to maintenance vehicle movements, emergency vehicle access, and requirements of access by large vehicles
- identifying mitigation measures to minimise as far as practicable the traffic and access impacts of the project.

17.3.1 Study area

The traffic and access study area for this assessment has been identified the transport networks that may be impacted by construction movements to and from the project site, in addition to movements from the Port of Newcastle and Port of Adelaide to the project site, or by the operation of the project (staff and maintenance movements). The traffic and access study area spans the Edward River Council, Murray River Council, Hay Shire, Balranald Shire, and Rural City of Swan Hill Local Government Areas (LGAs).

17.3.2 Existing conditions

The existing conditions assessment involves undertaking desktop and mapping analysis to identify, describe and qualitatively assess the existing conditions of construction traffic routes, including road classification, lane configuration, speed limit, pavement type, pedestrian/cyclist facilities, the existing approved restricted access vehicles and OSOM vehicle routes, crash history, traffic operating performance and public transport provisions.

Data collection consisted of a combination of intersection traffic counts and midblock surveys at:

- Sturt Highway/Maude Road intersection (Hay LGA)
- Maude Road/Booroorban-Tchelery Road intersection (Edward River LGA)
- Sturt Highway (east of Maude Road) (Hay LGA)
- Maude Road (south of Sturt Highway) (Hay LGA)
- Booroorban-Tchelery Road (east of Maude Road) (Edward River LGA).

Crash data was sourced from New South Wales (NSW) Crash Data accessible from Transport for NSW's Open Data platform. The five year crash data available during this assessment extended from 2019 to 2023.

17.3.3 Construction traffic

To assess the potential traffic and access impacts of the project during construction, a quantitative assessment was carried out of roads and intersections at key locations along construction routes, along with a qualitative assessment of impacts to the broader transport network.

The quantitative assessment involved forecasting a threshold of construction traffic movements that would represent the highest traffic demand likely to be experienced along the construction routes within the traffic and access study area. These volumes were added to the surveyed traffic demand (existing conditions) to enable a capacity assessment of the road network to be completed, assessed against the Level of Service criteria (Austroads, 2020).

Daily construction vehicle movements have been estimated based on the indicative construction workforce, project construction activities, staging, size of the construction compound and the number of workforce staying at the accommodation camp.

Assessment of project site access considered:

- safe intersection sight distance
- minimum gap sight distance
- stopping sight distance
- Austroads guidelines intersection requirement.

The project site could be formally decommissioned and rehabilitated or repowered. It has been assumed that the resultant impacts of these activities on traffic and transport infrastructure would be comparable to impacts during the construction phase of the life cycle.

17.3.4 Operational traffic

The operation of the project generally involves maintenance works (such as maintenance of turbines, access tracks, and fire detection systems) that would be done several times in a year. During its operation, project-generated movements would be associated with maintenance and are likely to be low in volume.

Therefore, the operational traffic assessment aims to qualitatively assess the impacts associated with road capacity, road condition, road safety, efficiency, active transport, public transport, and property access.

17.4 Description of existing environment

The key State roads within the traffic and access study area are the Sturt Highway and the Cobb Highway. The speed limits on the highways are generally 110 kilometres per hour, dropping down to 90 or 80 kilometres per hour when approaching towns and further reduces to 50 or 60 kilometres per hour within town environments. When passing through towns, the highways typically have wider road width to accommodate kerbside parking and paths for walking or cycling to support the towns' activities.

Regional roads are classified roads that support the highways by connecting smaller towns to the State highway network and with each other in rural areas. There are two regional roads in the traffic and access study area that would be used for construction traffic: Maude Road and Swan Hill Road.

There are four local roads in the traffic and access study area that would form part of the construction vehicle routes for the project and include: Booroorban-Tchelery Road, Dry Lake Road, Kerri East Road and Baldon Road. However, there are no local roads as part of the key construction haulage routes in the traffic and access study area.

Refer to Table 17.1 for key intersections in the traffic and access study area.

Table 17.1 Key intersections in the traffic and access study area for access to the project site

Intersection	Description
Sturt Highway/Maude Road	A T-intersection with priority given to Sturt Highway in the east-west direction. Sturt Highway is sealed, and line marked. Maude Road is currently a sealed road with unsealed shoulders that acts as a secondary link between towns. The speed limit is 110 kilometres per hour on Sturt Highway and 100 kilometres per hour on Maude Road.
Maude Road/ Booroorban-Tchelery Road	A T-intersection with priority given to Maude Road in the north-south direction. Maude Road is currently a sealed road with unsealed shoulders that acts as a secondary link between towns. Booroorban-Tchelery Road is currently a sealed road with unsealed shoulders. The speed limit on both roads is 100 kilometres per hour.

Highways in the traffic and access study area (the Sturt Highway and the Cobb Highway) and the sealed portion of one regional road (Maude Road) that would be utilised for construction routes for the project are part of the existing gazetted OSOM network. A portion of Maude Road, south of Dry Lake, towards the project site is currently not gazetted as an approved OSOM route. While approval for OSOM vehicles to travel on the road network is still required, this provides assurance that these roads are the designated route for oversize vehicles travelling through the region.

Depending on the equipment being transported during various phases (particularly the construction phase), oversize and/or overmass permits would need to be obtained through the National Heavy Vehicle Regulator (NHVR).

The Balranald Line (railway) traverses the southwestern portion of the traffic and access study area, running from Barnes to Balranald. Only the portion from Barnes to Moulamein is active. The Balranald Line has a level crossing at Moulamein that falls within the traffic and access study area; the crossing is a single track with passive protection on Tallow Street.

The project would encounter two level crossings on haulage routes from port to the project site:

- Selwyn Street, Mayfield North: active control with boom gates and flashing lights
- Cobb Highway, Ivanhoe: active control with flashing lights.

Crashes on State roads, including Sturt Highway and Cobb Highway, within the traffic and access study area are most commonly off-path crashes with 48 recorded crashes of which five (10 per cent) were classified as Fatal and Serious Injury (FSI) crashes. Three crashes, with two classified as FSI, are recorded on regional roads along construction routes in the traffic and access study area including Maude Road and Pretty Pine Road. There are no local roads as part of key construction haulage routes within the traffic and access study area.

The crash history along proposed haulage routes from port to sites within NSW and South Australia (SA) is detailed in Appendix C of Technical paper 10 (Transport impact assessment).

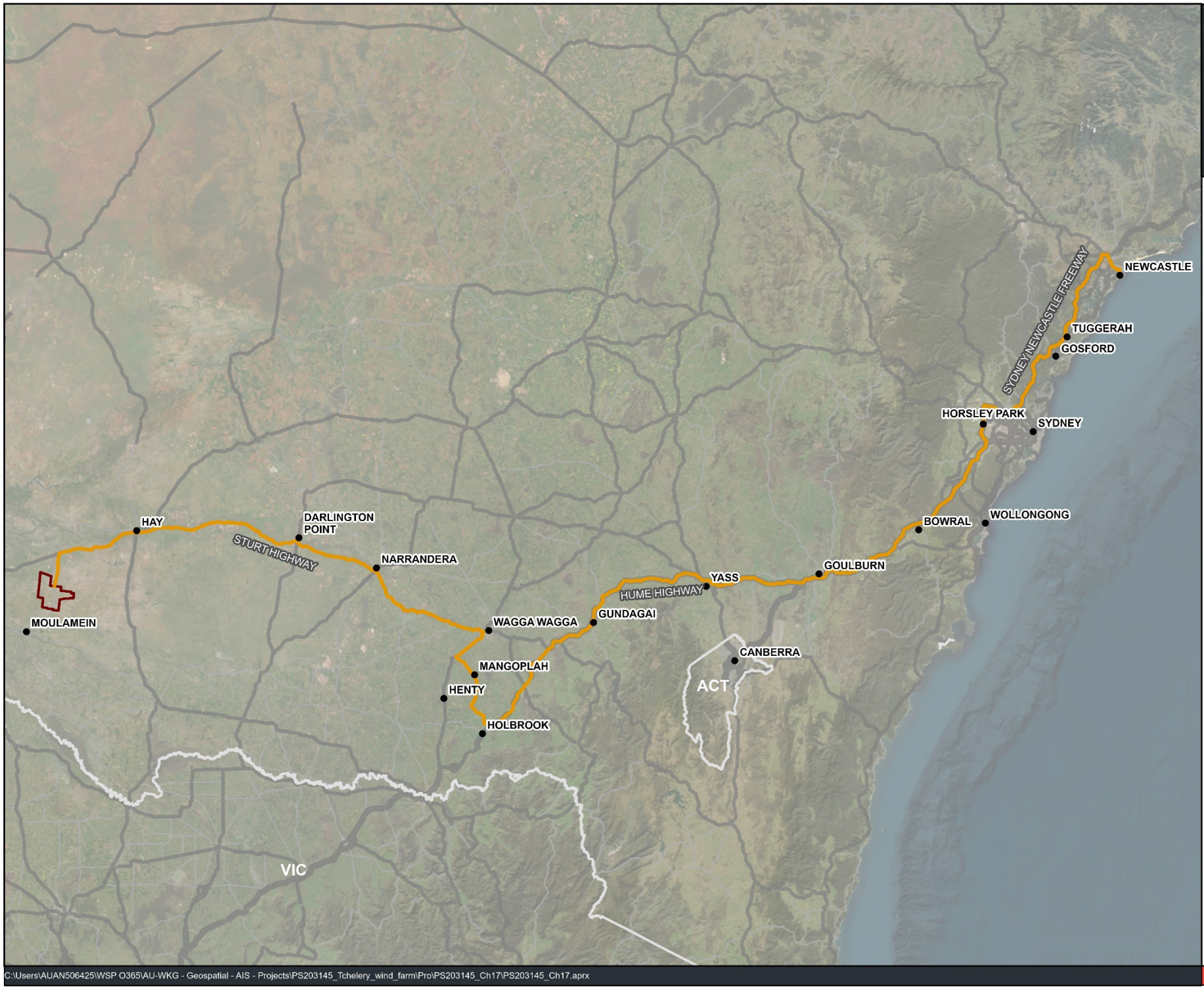
17.5 Assessment of potential impacts – construction

The construction routes for the project are shown in Figure 17.1. General construction vehicles primarily comprise of semi-trailer and B-double vehicles. These vehicles play a crucial role in transporting equipment, waste, materials, and spoil between the project site and nearby towns. Construction traffic movements for the project are summarised in Table 17.2.

Table 17.2 Traffic generation during construction

Vehicle type	Total vehicle movements during construction (one-way)	Daily trips during construction peak (two-way)	Estimated peak hour trips (two-way)
Wind turbine generator components			
Light vehicles	2,146	12	2
Heavy vehicles	589	4	1
OSOM vehicles	1,110	6	1
Other construction components			
Light vehicles	28	2	1
Heavy vehicles	9,407	50	5
OSOM vehicles	14	2	1
Project site establishment/demobilisation			
Light vehicles	52	N/A	N/A
Heavy vehicles	198	N/A	N/A
OSOM vehicles	26	N/A	N/A
Construction staff commuting and service			
Light vehicles	77,801	232	116
Total peak traffic (two-way)*			
Light vehicles	N/A	246	118
Heavy vehicles	N/A	54	6
OSOM vehicles	N/A	8	2

*rounded to the nearest even number



Tchelery Wind Farm

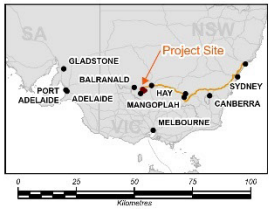
Figure 17.1A
Port of Newcastle to site haulage route

Legend

- Project site
- Port of Newcastle to project site haulage route

Roads

- Dual carriageway
- Principal road
- Secondary road

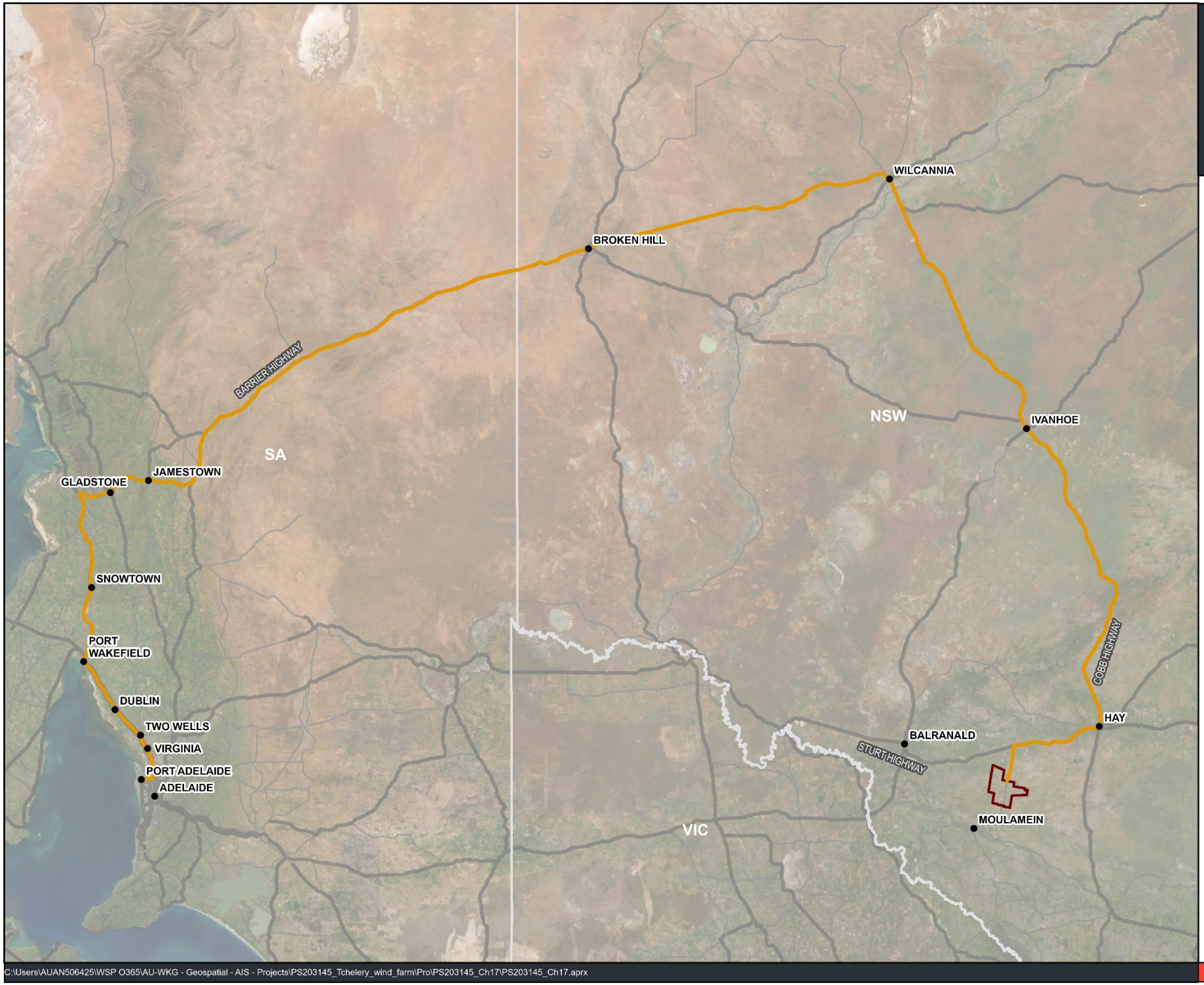


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Tchelery Wind Farm

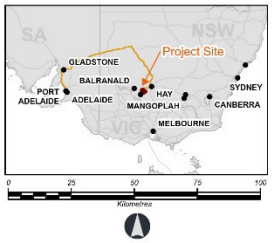
Figure 17.1B
Port Adelaide to site haulage route

Legend

- Project site
- Port Adelaide to project site haulage route

Roads

- Dual carriageway
- Principal road
- Secondary road



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17.5.1 Impacts on road capacity

Construction traffic would have a minimal impact to the road network's capacity and efficiency as the road network would continue to operate at the same level of service as existing conditions. This result can be attributed to the already low traffic volumes on construction routes and the low level of construction traffic expected compared to spare network capacity. It is expected that the broader road network within the traffic and access study area would unlikely experience any noticeable changes in its level of service.

Overall, the project would not adversely affect the road capacity performance (level of service) of any construction route.

17.5.2 Impacts on intersection performance

Intersection upgrades within the traffic and access study area are required to allow for the safe manoeuvring of construction vehicles, including the existing intersection of Maude Road and Booroorban-Tchelery Road and the intersection of Sturt Highway and Maude Road. These upgrades would allow OSOM access to the project site.

Construction traffic would have a minimal impact on intersection capacity and efficiency, with both intersections (Sturt Highway/Maude Road intersection and Maude Road/Booroorban-Tchelery Road intersection) continuing to operate at the same level of service as existing conditions. This result can be attributed to the already low traffic volumes and the low construction traffic with respect to the spare intersection capacity.

Overall, the project would not adversely affect the performance of the assessed intersections.

17.5.3 Impacts on access

Both primary access intersections at Sturt Highway and Maude Road, and Maude Road and Booroorban-Tchelery Road meet all requirements and no intersection upgrades are required due to this assessment.

Construction vehicle movements to access the project site would largely be associated with heavy vehicle deliveries travelling via Sturt Highway and workforce traffic commuting from Balranald and Hay as well as movements to and from the access gates along Maude Road and Booroorban-Tchelery Road. The increase of traffic movements during to construction would result in the intersection requiring basic right turn (BAR) and basic left turn (BAL) treatments, that currently exist at the intersection. As such, the existing intersection treatments would not be impacted due to the project.

Beyond the primary and secondary access points, the construction area sprawls across the project site, necessitating vehicle access at multiple locations. These access points extend from Maude Road and potentially include Booroorban-Tchelery Road, Dry Lake Road, and Baldon Road. The access points and associated tracks would be designed in accordance with Austroads.

The project is not expected to significantly impact access to properties during construction. Where temporary partial road closures are needed, the construction contractors would consult and/or notify the affected property owners, relevant road authority and emergency services of any changes to the road network.

Road and intersection upgrades would be required at pinch points along the port to site haulage route due to heavy and OSOM vehicle swept path and manoeuvring requirements (refer to Section 5.18 of Technical paper 10 (Transport impact assessment)).

17.5.4 Impacts during stringing of transmission lines across roads

The stringing of transmission lines across Maude Road and across Booroorban-Tchelery Road would require temporary road closures. This would likely be done with localised, short term closures outside of the peak periods. During stringing works, traffic controls would be implemented to safely manage traffic passing the work area. This may entail short term full road closure, localised traffic controls (stop/go) being implemented, and/or reduction in speed limit. Road Occupancy Licence(s) (ROLs) would be sought for all temporary lane or road closures (as required).

Any road closures that would result in a substantial impact would be assessed on a case-by-case basis, and approval sought from the relevant road authority and consulted with emergency services, landholders and other relevant stakeholders. Where feasible, temporary lane closures would be planned outside of the traffic peak periods to minimise impact to the road network.

17.5.5 Impacts on clearance

The project is proposing 33 kilovolt (kV) and 330 kV above ground transmission lines be strung across Madue Road and Booroorban-Tchelery Road. The minimum height that 33 kV transmission lines must be strung at is between 10 to 20 metres, with 330 kV lines sitting higher above that. It is unlikely that lines at this height would limit or impact standard heavy vehicle clearances in the area.

17.5.6 Impacts on road condition

Repeated heavy vehicle traffic movements can result in pavement fatigue. Construction of the project would generate a minor increase in heavy vehicle movements and impacts on pavement would be minor and depend on the existing conditions and remaining life of the pavement.

A road pre-condition survey would be carried out prior to construction commencing to record and confirm pavement condition. Routine inspections and maintenance would be completed along all nominated routes to ensure that construction routes, access tracks, construction compound and workforce accommodation camp accesses are maintained to safe standard during construction, in consultation with the relevant road authority.

Light vehicles during construction would have a negligible impact on road pavement condition.

17.5.7 Impacts on rail crossings

Traffic movements associated with the construction phase would have minimal impact on rail crossings due to the small volume of traffic using the crossing and the infrequent use of the rail line.

OSOM haulage routes would interact with level crossings identified in Section 17.5.1. Due to the oversized nature of these loads, there is a possibility of loads becoming stuck mid-crossing, leading to impacts to the rail corridor. Each level crossing would need to be assessed on a case-by-case basis for each load and prior approval sought from the appropriate rail operators.

17.5.8 Impacts from OSOM vehicles

OSOM vehicles would transport OSOM components for construction of the project from Newcastle and Adelaide. The Port of Newcastle to site route analysis has been conducted for blades only assuming a 100 metre blade length, and the Port Adelaide to site route analysis has been conducted for all other components assuming 170 metre hub height. Modifications would be required at some locations along the Port of Newcastle to site OSOM construction routes under investigation. The main pinch points that would require road upgrades on the Port of Newcastle to site route include:

- Quayside Close and Selwyn Street (right turn)
- Selwyn Street and Industrial Drive (right turn)
- John Renshaw Drive and M1 Motorway (left turn)
- Hume Highway and Rankins Lane (right turn)
- Rankins Lane and Holbrook Wagga Road (right turn)
- Kyeamba Street and Cox Street (right turn)
- Holbrook Road and Tywong Street (left turn)
- Tywong Street and Henty Street (right turn)

- Cox Street and The Rock-Mangoplah Road (left turn)
- The Rock-Mangoplah Road and Olympic Highway (right turn)
- Olympic Highway and Sturt Highway (left turn)
- Sturt Highway, Narrandera (left turn)
- Sturt Highway, Hay South (roundabout)
- Maude Road and Booroorban-Tchelery Road (left turn).

17.5.9 Impacts on active and public transport

The project site is distant from any existing active and public transport facilities or services. The additional traffic movement generated during construction is anticipated to have a negligible impact on the broader active and public transport network of the region.

17.5.10 Impacts on road safety

While the project would increase vehicle movements on the road network within the traffic and access study area, the assessment found that the road network would continue to operate efficiently with the same level of service as existing conditions.

Factors that can contribute to crashes, including vehicle design, speed of operation, road design, weather, road environment, driving skills, and driver behaviours. Key factors that may impact road safety during construction include:

- road network capacity – traffic increase associated with the construction activities is low and the road network capacity on the proposed construction routes would not be adversely impacted. The project is unlikely to result in increased vehicle overtaking, sudden speed reductions, or lane changing and is unlikely to increase crashes. The impact to road network efficiency during construction is considered to be low
- access points – as there would be multiple points of access to the project, there is an increased interaction with the road network and the risks associated with traffic movements into/out of access track; however, with appropriate traffic management, intersection treatments, signs and line marking the potential impact on road safety is expected to be low
- driver fatigue – the impact of driver fatigue is expected to have a moderate impact on road safety as travel fatigue may be present for drivers conducting extended driving tasks and effective fatigue management must be implemented for drivers to minimise road safety issues
- road condition – road conditions during construction are expected to have a low impact on road safety as construction vehicles are not expected to have an adverse impact on road condition due to low number of vehicle movements and proposed mitigation measures (refer to Section 17.8)
- local climate condition –in wet weather conditions, there is potential for unsealed shoulders to fray, be easily damaged or become muddy and this could lead to loss of heavy vehicle control, shoulder damage or vehicle becoming bogged. In dry weather conditions, there is potential for unsealed sections and shoulders of road to emit dust. The implementation of water trucks to spray and hose down dry unsealed sections would manage this impact. The tracking of mud, spoil, dust or gravel from the project site onto the road network would be monitored and truck tyre brushes (that are driven over upon exiting) or water hoses (for drivers to spray down tyres and clean) placed on site prior to exit at project site access intersections. Regular road maintenance and monitoring would assist in removing these impacts or ameliorating them where they cannot be fully removed
- OSOM haulage – the impact on road safety from OSOM haulage is expected to be low with appropriate mitigation measures and approvals and procedures guided by the NHVR and Transport for NSW (refer to Section 17.8).

17.6 Assessment of potential impacts – operation

During operation of the project, likely maintenance activities involving the movement of maintenance vehicles during operation include:

- regular inspection (ground and aerial) and maintenance of access tracks every six months
- wind turbine blade inspection (and replacement if applicable) every five years
- fire detection system inspection and maintenance
- stormwater and drainage infrastructure maintenance.

Potential impacts during operation of the project are outlined in the following sections.

17.6.1 Impacts on road capacity and efficiency

Maintenance activities during operation would be carried out infrequently. As such, traffic generation during operation would be insignificant and would have a negligible impact on the efficiency of the road network.

17.6.2 Impacts on access

Access to properties for residents (including for emergency vehicle access and egress) is expected to be maintained throughout operation of the project. Should there be a requirement for a short term restriction for a particular property, prior consultation with the affected party would be carried out.

17.6.3 Impacts on intersection operation

The low number of traffic movements during operation of the project would result in a negligible impact on intersection capacity.

17.6.4 Impacts on road condition

The low number of traffic movements and minimal heavy vehicles involved in operation of the project are not anticipated to have a noticeable impact on the road pavement condition.

17.6.5 Impacts on road safety

The project is expected to have a negligible impact on road safety due to the low number of traffic movements.

17.6.6 Impacts on rail crossings

The project is expected to have a negligible impact on the rail crossings due to the low number of traffic movements during operation of the project.

17.6.7 Impacts on active and public transport

Operation of the project would have limited interactions with the wider road network including existing active transport routes and public transport services, resulting in negligible impacts to both active and public transport.

17.7 Decommissioning

The operational life of the wind farm is about 30 years. At this point the project could be formally decommissioned and rehabilitated or repowered. If the project were to be decommissioned at the end of life, the process would be carried out in accordance with relevant legislation, regulations and requirements including any conditions of approval. Ancillary infrastructure, such as access tracks, could be retained in consultation with the landholder.

In either case, construction works would occur with the usage of OSOM vehicles to dismantle and move the wind turbines and equipment off-site. The impacts of these activities on traffic and transport infrastructure would be comparable to impacts during construction of the project.

17.8 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to traffic and access associated with the project are detailed in Table 17.3.

Table 17.3 Traffic and access mitigation measures

Ref	Mitigation measures	Timing	Applicable location(s)
T1	All accesses will be designed to accommodate the design vehicle(s) requiring access, and in accordance with relevant Austroads guidelines (where applicable). Intersection and access point upgrades will include the following (with localised widening, sealing and modifications required to both Maude Road and Booroorban-Tchelery Road): — Maude Road/Sturt Highway — Maude Road/Booroorban-Tchelery Road — Maude Road/Entrance 1 — Maude Road/Entrance 2 — Maude Road/Site Compound — Maude Road/Entrance 3 — Maude Road/Entrance 4 — Maude Road/Entrance 5 — Booroorban-Tchelery Road/Entrance 6 — Booroorban-Tchelery Road/Entrance 7 — Booroorban-Tchelery Road/Entrance 8 — Booroorban-Tchelery Road/Entrance 9.	Detailed design	Project site access Along oversize overmass vehicle construction routes (where/if required)
T2	Traffic control plans will be prepared in consultation with the relevant road authorities. The plans will be implemented by licenced traffic management contractors. Necessary road occupancy licences and road related work approvals will be obtained prior to the commencement of relevant works.	Construction	Construction routes, access tracks, construction compound and workforce accommodation camp accesses

Ref	Mitigation measures	Timing	Applicable location(s)
T3	All accesses will be designed to accommodate the required construction vehicle(s) requiring access, and in accordance with relevant Austroads guidelines (where applicable). Road safety audits and routine inspections will be completed on a regular basis.	Construction	Construction routes, access tracks, construction compound and workforce accommodation camp accesses
T4	The following road safety measures will be implemented with regard to driver management during construction: — a Driver Code of Conduct will be developed and implemented. The code will define acceptable driver behaviour for proposal personnel to promote road safety and ensure that the impacts of construction-related vehicle movements on local roads and the local community are minimised — in-vehicle monitoring systems (IVMS) will be installed in relevant vehicles to monitor load limits and fatigue management — a Driver Fatigue Management Plan will be developed and implemented as part of the Construction Environmental Management Plan, and will incorporate appropriate measures to manage driver fatigue risks, including, but not limited to: — planning of regular breaks — mapping locations of driver rest areas along the proposed construction routes.	Construction	Construction routes, access tracks, construction compound and workforce accommodation camp accesses
T5	Access tracks used for construction sites, construction compounds and the workforce accommodation camp will be maintained to safe standard.	Construction	Access tracks
T6	Pre- and post-construction road dilapidation surveys and regular monitoring during construction will be completed along all nominated construction routes on local roads. Where rectification works are required due to project impacts, consultation with the appropriate road authority will be carried out to confirm the scope of the work required.	Pre-construction Construction	Local roads
T7	Road Occupancy Licence(s) will be sought for all temporary lane closures (as required). Where road closures are likely to result in a significant traffic impact (for example short term full road closure and long term temporary lane/road closures), prior consultation will be carried out with potentially affected stakeholders (for example landowners, emergency services, transport services) and relevant approval(s) obtained from the relevant roads authority. Where feasible, temporary road closures will be planned to occur outside of the traffic peak periods to minimise impacts to the road network.	Construction	Construction routes Stringing sites

Ref	Mitigation measures	Timing	Applicable location(s)
T8	Access to host and neighbouring properties will be maintained throughout construction where feasible. Where that is not feasible, temporary alternative access arrangements will be provided following consultation with affected landholders and in accordance with the requirements of the pre-construction and construction Community Engagement Plan. Disruptions to property access and traffic will be notified to affected landholders at least five days prior and in accordance with the relevant community consultation processes outlined in the Construction Environmental Management Plan.	Construction	All areas affected by construction
T9	Safe pedestrian and cyclist access will be maintained where the project interacts with existing pedestrian or bicycle facilities. Where this is not feasible, temporary alternative access arrangements will be provided following consultation with affected stakeholders and the relevant roads authority.	Construction	Areas affected by construction that may apply to the project site internally
T10	A Vehicle Movement Plan will be prepared that identifies the construction vehicle route(s) (including oversize overmass vehicle routes) to be used during construction. The Vehicle Movement Plan will also include details of activities of adjoining land uses and awareness of public safety measures (for example entering urban areas from the highways) to provide guidance to drivers of construction vehicles travelling to and from project locations. Ongoing consultation will be carried out with Transport for NSW regarding the use of State roads for oversize overmass vehicle routes.	Construction	Construction routes
T11	The following maintenance and safety measures will be implemented at relevant locations along each of the access tracks, construction compounds and workforce accommodation camp access: — appropriate line marking and signage at access points — wheel cleaning facility as required at access points/intersections — signage to indicate trucks turning — monitoring of vehicle queuing at project site access intersections along the public road network — potential use of road plates, propping (or similar) over culverts where required — improvements to existing roads at new access points which may include importing or stabilising material if required.	Construction	Access tracks
T12	Further analysis of sign gantries along Port River Expressway and Port Wakefield Road will occur to ensure safe clearance for oversize overmass vehicles from travel from Port Adelaide.	Detailed planning	Construction routes

17.8.1 Interaction between measures

Mitigation measures in other chapters that are relevant to the management of traffic and access impacts include:

- Chapter 12 (Social), specifically measures related to maintaining access for emergency services
- Chapter 15 (Air quality and greenhouse gases), specifically measures to address generation of dust and emission of greenhouses gases
- Chapter 16 (Noise and vibration), specifically measures to address road noise impacts.

17.8.2 Managing key uncertainties

As many of the roads are likely to be trafficked for a relatively short period (relative to a roads' design life), an approach of maintaining and locally mitigating impacts would form the best strategy, as opposed to improving and upgrading roads ahead of time (refer to Figure 17.2). The exception to this is where proposed access points are to be installed. Each access point would be designed based on road type, condition, existing speed, existing traffic and predicted construction movements and where appropriate, would meet the relevant road design standards. Refer to Technical paper 18 (Intersection concept design) that includes concept site entrances.

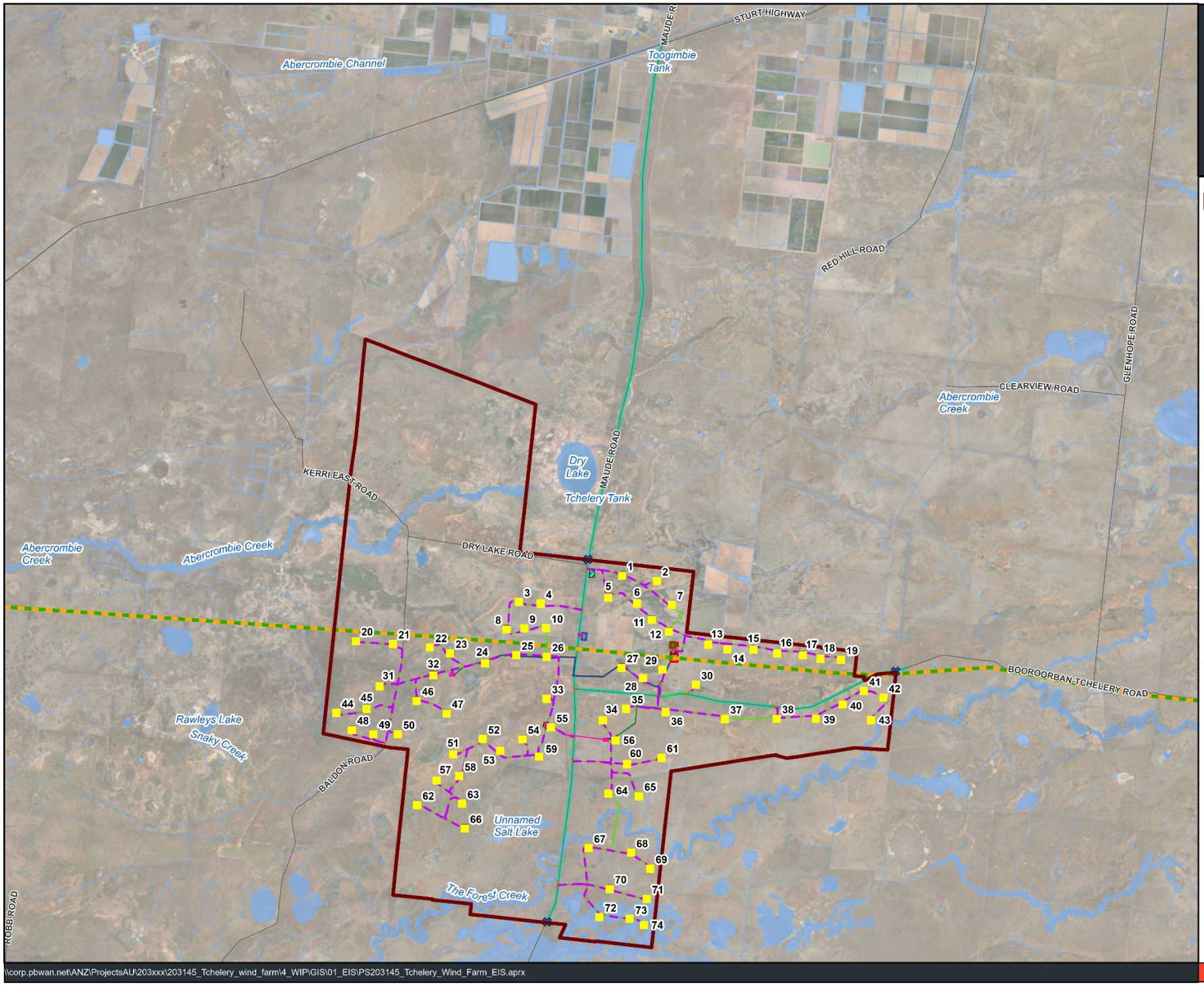
In addition, road upgrades along OSOM vehicle construction routes are required to enable transport from the Port of Newcastle to the project site. Typically, these upgrades involve localised intersection widening at limited locations and are contingent upon the preferred OSOM vehicle construction routes.

Roads would be used in the accordance with permitted use or otherwise agreed or granted by the relevant road authority.

17.8.3 Managing residual impacts

Mitigation measures for construction and operation of the project have been considered to minimise the potential impacts that arise from the development and maintenance of the project. Recommended mitigation measures have been provided so that the safety and efficiency of the transport network in the project study area is maximised throughout all phases.

Proposed design of roads and access points would be considered against the proposed mitigation measures for consistency.



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Tchelery Wind Farm

Figure 17.2
Road netwrok

Legend

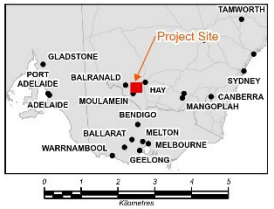
- Project site
- Site access points
- Wind turbine generator
- Internal access track
- Construction footprint
- Battery energy storage system
- Construction compound
- Collector substation
- Switchyard
- Workforce accommodation camp
- Workforce amenities
- Concrete batching plant
- Operations and maintenance facility
- Laydown areas
- Road maintenance and mitigation

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

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18 Hazards and risk

This chapter summarises potential impacts from hazards and risk associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in the following technical papers:

- Technical paper 11 (Aviation impact assessment) prepared by Aviation Projects
- Technical paper 12 (Bushfire risk assessment) prepared by Blackash Bushfire Consulting
- Technical paper 13A (Telecommunication impact assessment) prepared by Middleton Group Engineering
- Technical paper 13B (Electric and magnetic fields assessment) prepared by Middleton Group Engineering
- Technical paper 14 (Preliminary hazard analysis) prepared by Umwelt (Australia) Pty Ltd.

18.1 Summary of key findings

The key findings from the assessment of hazard and risk are as follows:

- Wind Turbine Generators (WTGs) would impact the Grid lowest safe altitude (LSALT), that would need to be raised by 500 feet to 2,200 feet
- WTGs would impact on two Air Route LSALTs:
  - air route W792 LSALT would need to be raised by 100 feet to 2,200 feet
  - air route H247 LSALT would need to be raised by 200 feet to 2,200 feet
- WTGs would not impact on the aviation navigation facilities of nearby certified airports
- WTGs' geolocations and heights would be reported to Civil Aviation Safety Authority (CASA) and construction details provided to Airservices Australia
- while there is possibility of bushfire behaviour occurring at site over the predicted 30-year asset life, the risk to life and project infrastructure is expected to be appropriately mitigated through implementation of mitigation measures and a Bushfire Emergency Management and Evacuation Plan
- project is unlikely to have a material impact on telecommunication services
- electric and magnetic field (EMF) levels from the proposed electrical infrastructure are well within the allowable limits for all scenarios if the recommended ground clearances in Technical paper 13B (Electric and magnetic fields assessment) are maintained
- a Final Hazard Analysis (FHA) will be prepared once design refinements and equipment selection are finalised to address potential risk associated with WTG blade fragmentation impacting transmission lines on the project site and adequate spacing is available to ensure non-propagation between Battery Energy Storage System (BESS) units
- a Fire Safety Study (FSS) and Emergency Plan will be prepared to confirm the final design adheres to appropriate risk management measures.

18.2 Setting the context

18.2.1 Statutory requirements

Potential impacts from hazards and risks associated with project were assessed in line with the following legislation, policies and guidelines:

- *Dangerous Goods (Road and Rail Transport) Act 2008* (Dangerous Goods Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Rural Fires Act 1997* (RF Act)
- *Work, Health and Safety Act 2011*
- State Environmental Planning Policy (Resilience and Hazards) (Department of Planning and Environment (DPE), 2021) (Resilience and Hazards SEPP)
- Civil Aviation Safety Regulation 1998 (CASR) Part 139 – Aerodromes, Manual of Standards (MOS)
- Rural Fires Regulation 2022 (RF Regulation)
- Dangerous Goods (Road and Rail Transport) Regulation 2014
- *Work Health and Safety Act 2011*
- Advisory Circular (AC) 91-10 V1.3 Operations in the vicinity of non-controlled aerodromes (CASA, 2025)
- AC 91-02 V1.2 Guidelines for aeroplanes with MTOW not exceeding 5700 kg – suitable places to take off and land (CASA, 2022)
- Wind Farms and Bushfire Operations (Australasian Fire and Emergency Services Council (AFAC), 2018)
- Bland Temora Zone Bushfire Risk Management Plan (BRMP) (Bland Temora Bush Fire Management Committee, 2020)
- Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields (1 Hz – 100 kHz) (International Commission on Non-Ionizing Radiation Protection (ICNIRP), 2010)
- Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 (Department of Planning (DoP), 2011a)
- Hazardous Industry Planning Advisory Paper No. 4 – Risk Criteria for Land Use Safety Planning (DoP, 2011c) (HIPAP)
- HIPAP No. 6 – Guidelines for Hazard Analysis (DoP, 2011d)
- Standard C95.1-2019 – Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz (Institute of Electrical and Electronics Engineers (IEEE), 2019)
- ISO 31000:2018 Risk Management – Guidelines
- Multi-Level Risk Assessment (MLRA) (DoP, 2011b)
- National Airspace Safeguarding Framework Guideline D (NASF): Managing the Risk to Aviation Safety of Wind Turbine Installation (Wind Farms)/Wind Monitoring Towers (Department of Infrastructure, Transport, Regional Development, Communications and the Arts (DITRDCA, 2012)
- Network Standard NS187 Passive Fire Mitigation Design of Major Substations
- Planning for Bushfire Protection 2019 (Rural Fire Service (RFS), 2019) (PBP)

- Design Guidelines and Model Requirements (Version 3) (Victorian Country Fire Authority, 2022)
- Wind Energy Guideline (Department of Planning, Housing and Infrastructure (DPHI), 2024a)
- Wind Energy Guideline for State Significant wind energy development (DPE, 2016a)
- Guide For Bush Fire Prone Land Mapping (RFS, 2015)
- Best Practice Guidelines For Implementation of Wind Energy Projects in Australia (Clean Energy Council, 2018)
- National Wind Farm Development Guidelines – Draft (Environment Protection and Heritage Council (EPHC), 2010)
- ICNIRP Guidelines For Limiting Exposure To Electromagnetic Fields (100 kHz to 300 gHz) (ICNIRP, 2020).

18.3 Assessment method

18.3.1 Aviation safety

Technical paper 11 (Aviation impact assessment) assesses potential aviation impacts, provides aviation safety advice in respect of relevant requirements of the air safety regulations and procedures, and informs and documents consultation with relevant aviation agencies. The Aviation impact assessment report includes an Aviation impact statement (AIS) and a qualitative risk assessment to determine the need for obstacle lighting.

The methodology for the assessment of impacts to aviation included the following key tasks:

- reviewing relevant regulatory requirements and information sources
- conducting a site visit to properly investigate aviation safety aspects of the project site (completed on 26 April 2024)
- identifying aviation assets and activities within vicinity of the project, and identifying any aviation constraints to obstacle limitation surfaces and flight paths
- proposing risk mitigation strategies that provide an acceptable alternative to night lighting in accordance with guidelines in ISO 31000:2018 Risk Management –Guidelines
- consulting with aviation stakeholders
- providing mitigation measures for construction and operation of the project.

The AIS within the Aviation impact assessment considers the aeronautical impact of the WTGs on the following:

- operation of nearby certified aerodromes
- operation of nearby aircraft landing areas (uncertified aerodromes)
- grid and air route LSALTs
- airspace protection
- aviation navigation facilities
- Air Traffic Controller (ATC) radar installations
- local aircraft operations.

Assessment of operation of nearby certified aerodromes considered a study area of 30 nautical mile (nm) radius.

18.3.2 Bushfire risk

The methodology for assessment of bushfire risk included the following key tasks:

- background searches to establish site context
- an assessment of the risks to public safety, paying particular attention to bushfire risks, emergency egress and evacuation, and demonstrate compliance with PBP
- determining the bushfire hazards and risk to the project from surrounding areas (ie bushfire impacting the project)
- assessing the potential for construction and operational activities to be an ignition source and causing a bushfire risk to people and the environment
- assessing the bushfire risk to project infrastructure, including an assessment of the applicable bushfire attack levels (BAL) and the required asset protection zones (APZs)
- providing mitigation measures for construction and operation of the project.

The bushfire risk study area includes the areas within five kilometres from the WTGs (refer to Figure 18.3).

18.3.3 Electric and magnetic fields

The New South Wales (NSW) Governments Wind Energy Guideline (DPE, 2016a) state that an issue that is specifically relevant for wind energy development and must be considered in an environmental assessment, is health of the community. The Wind Energy Guideline (DPE, 2016a) requires consideration of any health issues having regard to the latest advice of the National Health and Medical Research Council and potential hazards and risks associated with EMFs to demonstrate the application of the principles of prudent avoidance.

The Safe Engineering Services software package Current Distribution, Electromagnetic Fields, Grounding and Soil Structure Analysis version 19.0.19009.0 was used to model the underground and aboveground transmission lines. The High Frequency module was utilised to capture the EMF strengths.

The current, voltage, line/cable geometry and phasing have been used to model the EMF levels. The approach has also considered cumulative impact of existing infrastructure on the site.

Refer to Chapter 5 in Technical paper 13B (Electric and magnetic fields assessment) for further details of the method for assessing potential EMF impacts associated with the project.

18.3.4 Telecommunications

Electromagnetic interference (EMI) assessment examined the radiocommunications systems and radio links in the vicinity of the project and determined potential impact if any that the WTGs may have on operation of these radiocommunications systems. Potential impacts on television and radio broadcasting were also examined.

The EMI assessment relied on desktop assessments to assess the impacts with respect to the following services:

- point-to-point microwave links
- meteorological radar
- mobile voice-based communications
- wireless and satellite internet services
- broadcast and digital radio
- broadcast, digital and satellite television
- trigonometry stations
- geographical positioning system (GPS).

18.3.5 Resilience and Hazards SEPP

Under the Resilience and Hazards SEPP, a preliminary risk screening of a proposed development is required to determine the need for a preliminary hazard analysis (PHA). A PHA is required if a proposed development is assessed as 'potentially hazardous'. Hazardous and Offensive Development Application Guidelines – Applying SEPP 33 (Applying SEPP 33) (DoP, 2011a) contains a number of assessment criteria for the storage of hazardous materials that have the potential to create off-site impacts. The PHA has followed the HIPAP No. 6 – Guidelines for Hazard Analysis (DoP, 2011d) and MLRA to identify and assess all hazards that have the potential for off-site impact.

A preliminary risk screening was conducted for identified hazards under the SEPP 33 (refer to Technical paper 14 (Preliminary hazard analysis). The assessment included:

- storage quantity screening:
  - lithium-ion batteries (LIBs)
  - electrical transformers insulating oil – high voltage transformers
  - liquified petroleum gas (LPG), petrol and diesel
- transport screening that includes assessment of risk posed by hazardous materials during transportation to and from the site.

Level 1 Qualitative Risk Analysis has been carried out to identify and assess these hazards and risks.

18.3.6 Blade throw

A Blade Throw Risk Assessment was prepared as a part of the PHA to assess blade throw risks in the vicinity of the project. The Blade Throw Risk Assessment incorporated the following scope of works:

- blade drop/fragmentation impact on the BESS
- blade drop/fragmentation impact on transmission lines
- blade drop/fragmentation impact on adjoining land user.

18.4 Description of existing environment

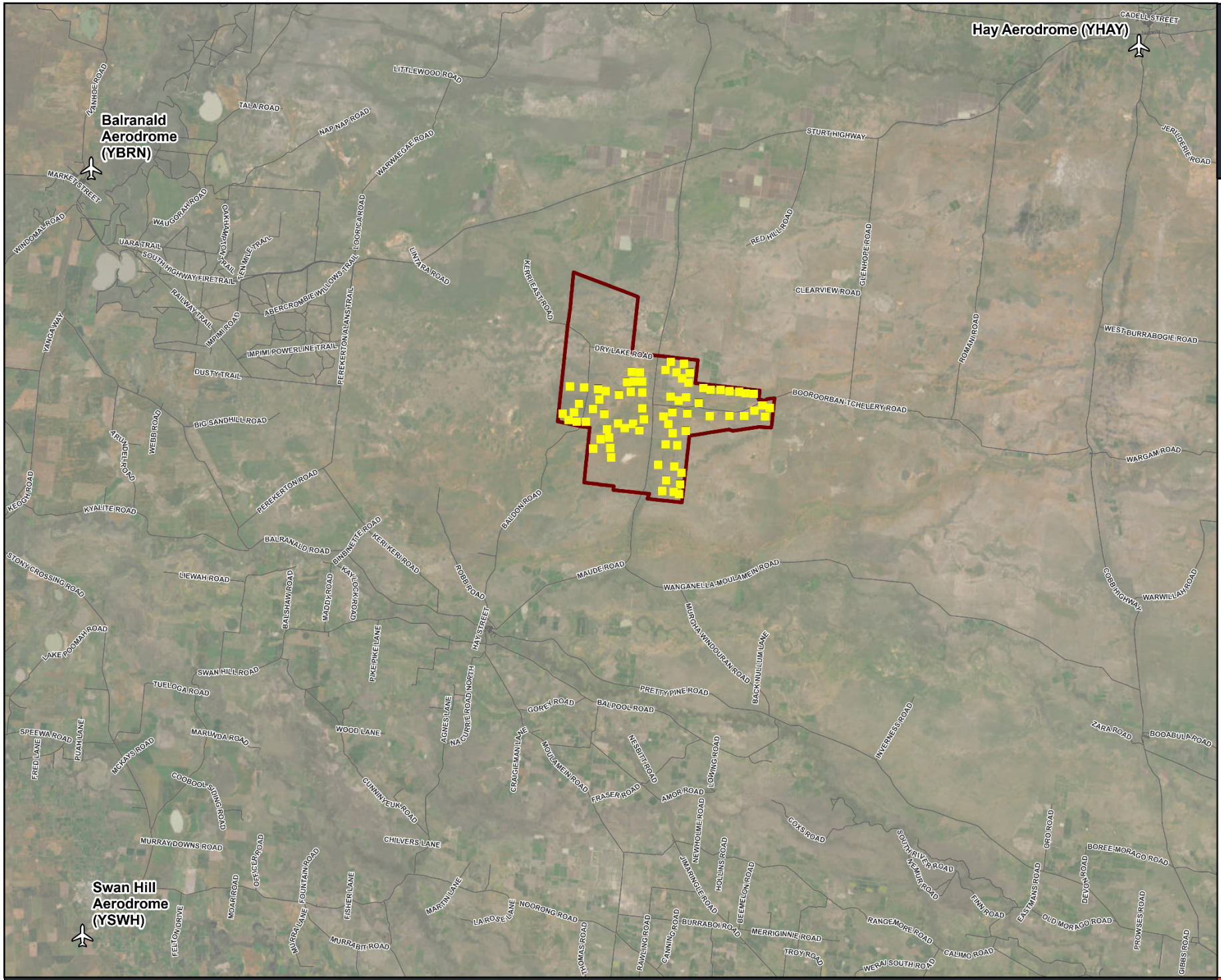
18.4.1 Aviation safety

Details of the existing environment at the site relevant to aviation safety are provided in Table 18.1.

Table 18.1 Existing environment of the site relevant to aviation safety

Aspect	Details
Aerodromes near the site	Two certified aerodromes (Balranald Aerodrome and Hay Aerodrome) were identified within 30 nm (about 56 kilometres) to the project site. The location of the project site relative to these identified aerodromes is shown in Figure 18.1. Balranald Aerodrome is operated by Balranald Shire Council and does not have any instrument approach or departures designed for it. Consequently, there are no associated Procedures for Air Navigation Services – Aircraft Operations surfaces, including the instrument approach and departure surfaces and minimum sector altitude (MSA) protection surface. Balranald Aerodrome is a non-instrument aerodrome. The closest proposed WTG site to Balranald Aerodrome is located about 57.5 kilometres southeast of the aerodrome reference point and beyond the horizontal extent of the obstacle limitation surfaces of Balranald Aerodrome.

Aspect	Details
	Hay Aerodrome is operated by the Hay Shire Council and is served by non-precision instrument flight procedures. The project site is partly within the 25 nm MSA of the airport and completely outside of the 10 nm MSA protection area. All project components including WTGs are outside of the MSA. The closest proposed WTG to Hay Aerodrome is about 56 kilometres southwest of the aerodrome reference point and beyond the horizontal extent of the obstacle limitation surfaces of Hay Aerodrome. A search of various aviation datasets on 10 December 2024 identified a number of uncertified aerodromes/aircraft landing areas in proximity to the project site. Refer to Section 6.5 and Figure 10 in Technical paper 11 (Aviation impact assessment) for the location of uncertified aerodromes near the site.
Potential wake turbulence	A 200 metre rotor diameter has been used for the wake turbulence analysis. Based on this scenario, NASF Guideline D suggests the effects of wake turbulence could be noticeable from the WTGs within 3,200 metres of the runway and the nominal circuit area, depending on wind direction. Based on the results of published scientific studies (European Academy of Wind Energy, 2018; University of Liverpool, 2015) which indicate that any medium level of turbulence would in most circumstances be confined to within seven rotor diameters of a WTG, Aviation Projects considers that a conservative area of 10 rotor diameters is likely to be the maximum area where wake turbulence from WTGs would be noticed by pilots of light aircraft operating downstream of a WTG. Studies identified in Section 6.6 of Technical paper 11 (Aviation impact assessment) indicate that where any such turbulence is experienced, the pilot would be able to control the aircraft using normal control inputs. The minimum distance between turbines at typical wind farms is about 800 metres, a significantly shorter distance than rotor diameters.
Grid and air routes LSALT	The project site is located within an area with a Grid LSALT of 518.2 metres Australian Height Datum (AHD) (1,700 feet above mean sea level (AMSL)) with a protection clearance above obstacles with heights up to 213.4 metres AHD (700 feet AMSL). Figure 18.2 shows the grid LSALT in proximity to the site.
Air route LSALTs	There are two air routes within seven nm of the project site.
Airspace protection	The project site is located outside of controlled airspace (wholly within Class G airspace) and is not located in any Prohibited, Restricted and Danger areas.
Aviation facilities	The closest aviation navigation facility is located at Swan Hill. This non-directional beacon navigation aid has a protection area of 300 metres surrounding it. The closest WTG to the Swan Hill non-directional (radio) beacon is about 77 kilometres away.
Aviation communication systems	NASF Guideline G specifies the area of interest surrounding aviation communication locations. The nearest aviation communication site is the Mildura Airport communication site that is located 198 kilometres from the project site. This distance is outside the area of interest for very high frequency communication sites.
ATC Radar installation	The closest radar to the project is the Mt Macedon Radar and the Mt Macedon Route Surveillance Radar, that is located about 269 kilometres to the southwest.



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Tchelery Wind Farm

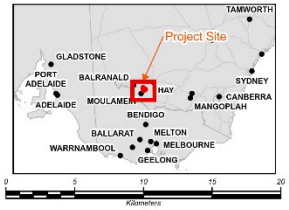
Figure 18.1
Location of certified aerodromes in relation to the site

Legend

- Project site
- Wind turbine generator
- Certified aerodromes

Context

- Existing road

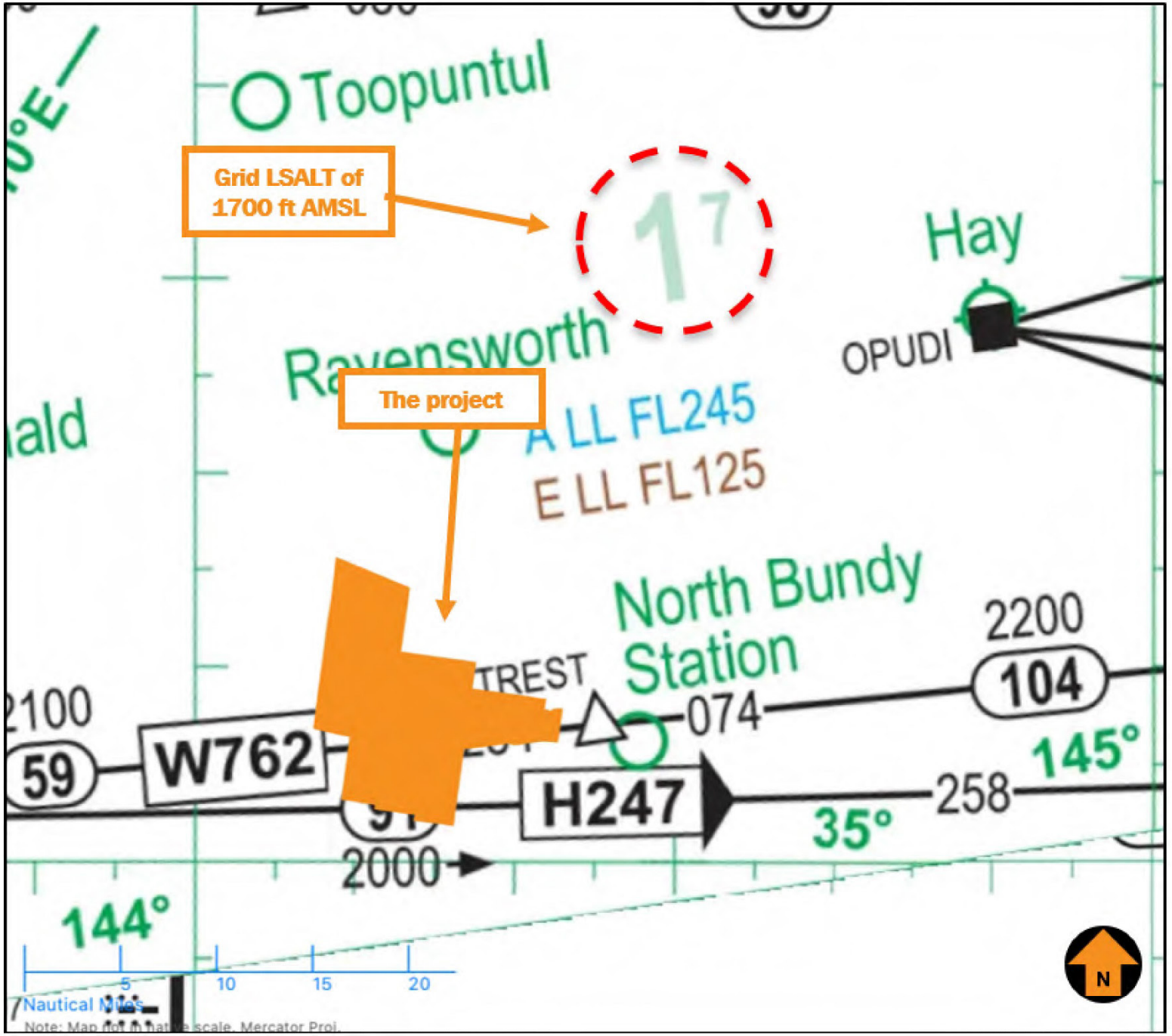


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1:550,000 Date: 3/04/2025

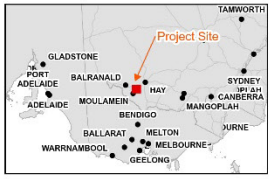
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Tchelery Wind Farm

Figure 18.2
Grid LSALT and nearby air route in relation to the project



Note: Figure is not as to scale and just for the representation purposes only.

Date: 22/04/2025

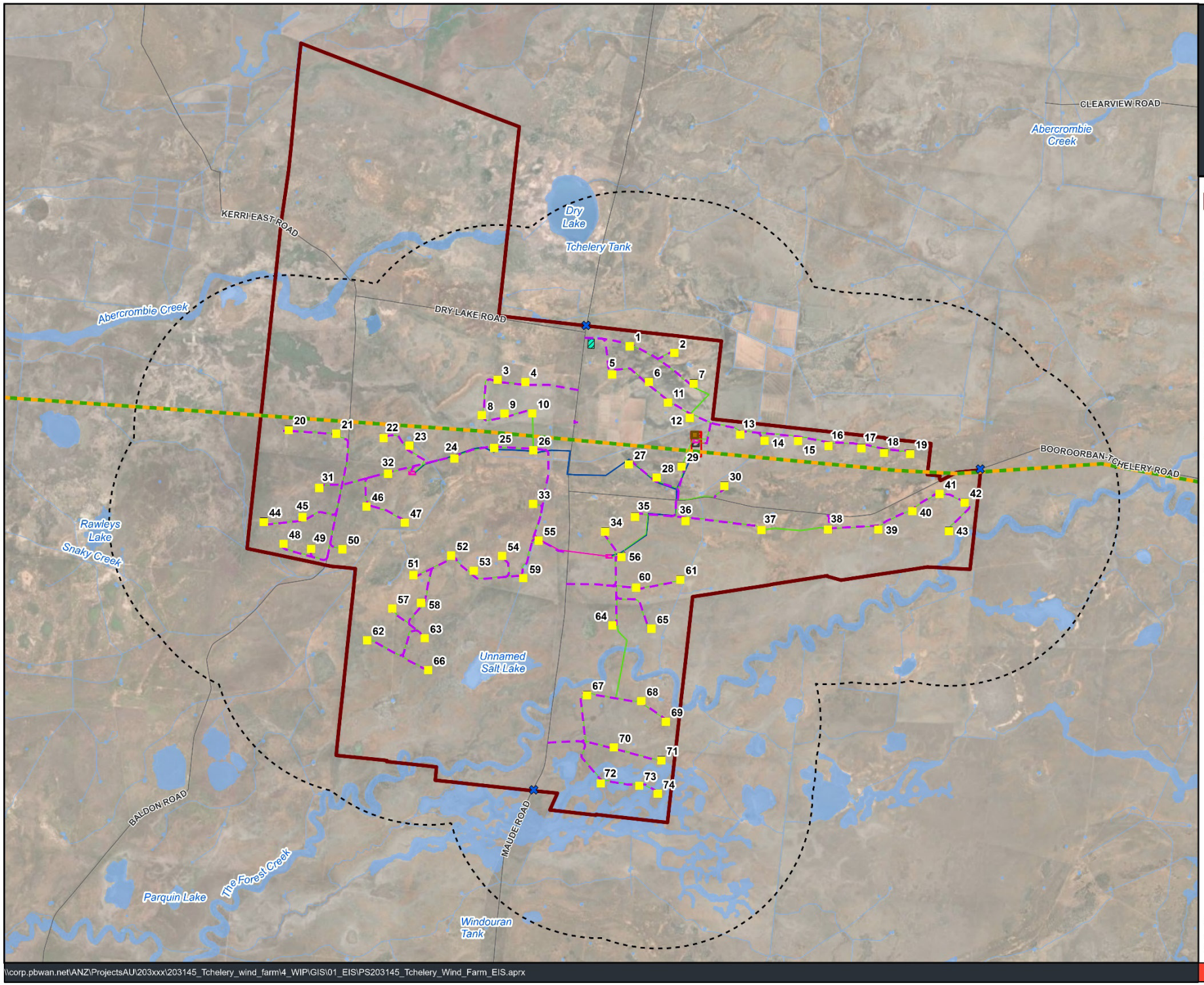
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18.4.2 Bushfire risk

Details of the existing environment at the project site relevant to bushfire risk are provided in Table 18.2.

Table 18.2 Existing environment of the site relevant to bushfire risk

Aspect	Details
Climate and fire history	The project is covered by the Bland Temora Zone BRMP. The typical climatic conditions in the Bland Temora Zone are as follows: — temperatures between 26 and 34 degrees Celsius (°C) with some periods exceeding 35°C — humidity of less than 15 per cent, with an average rainfall of 584 millimetres (mm) — dry westerly winds generally from October to March. The project site does not have record of bushfire or hazard reduction burning. Fire history of the Bland Temora Zone is as follows: — typical bushfire danger period is between 1 October and 31 March — on average 150 bushfires occur each year, of which three on average can be considered to be major fires — the main sources of ignition in the area are, lightning, farming equipment and breach of permit for hazard reduction burning. The applicable Fire Danger Index for the project as per the PBP is 100, to ensure a conservative approach to bushfire risk assessment.
Bushfire prone land	The bushfire prone land map shows the project site is affected by Category 3 vegetation and associated buffer (Figure 18.4). The RFS Guide for Bushfire Prone Land Mapping (RFS, 2015) note that vegetation Category 3 is considered to be medium bushfire risk vegetation. This category consists of grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands. The vegetation is predominantly farmland, grassland and Chenopod Shrublands, that are susceptible to carrying bushfires due to their abundance of fine, continuous, and often dry vegetation, that acts as fuel. It is highly probable that bushfire could occur within the project site.
Vegetation formations	The predominant vegetation formations relevant to the project site as identified in accordance with the PBP are outlined in Figure 18.5 and listed below: — inland floodplain shrublands — inland floodplain swamps — riverine sandhill woodlands — semi-arid sand plain woodlands — inland floodplain woodlands — grassland — riverine plain grasslands — aeolian chenopod shrublands — riverine chenopod shrublands — inland saline lakes.
Topography and slope influencing bushfire behaviour	The site and surrounding area are characterised by relatively flat channel country with gentle topography, characterised by minimal changes in elevation across the landscape. The terrain consists of expansive plains intersected by meandering water channels or perennial creeks. The relatively flat landscape results in minimal influence of slope on fire behaviour and spread. Refer to Figure 9 in Technical paper 12 (Bushfire risk assessment) for effective slope at the project site.



Tchelery Wind Farm

Figure 18.3
Bushfire risk study area

Legend

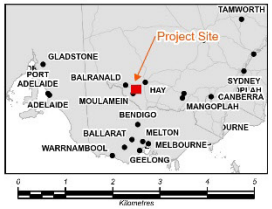
- Project site
- Site access points
- Wind turbine generator
- Internal access track
- Workforce accommodation camp
- Operational facilities area
- Battery energy storage system
- Collector substation
- Operations and maintenance facility
- Switchyard
- Stidy area 5km from nearest wind turbine

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Context

- Existing road
- Watercourse
- Waterbody

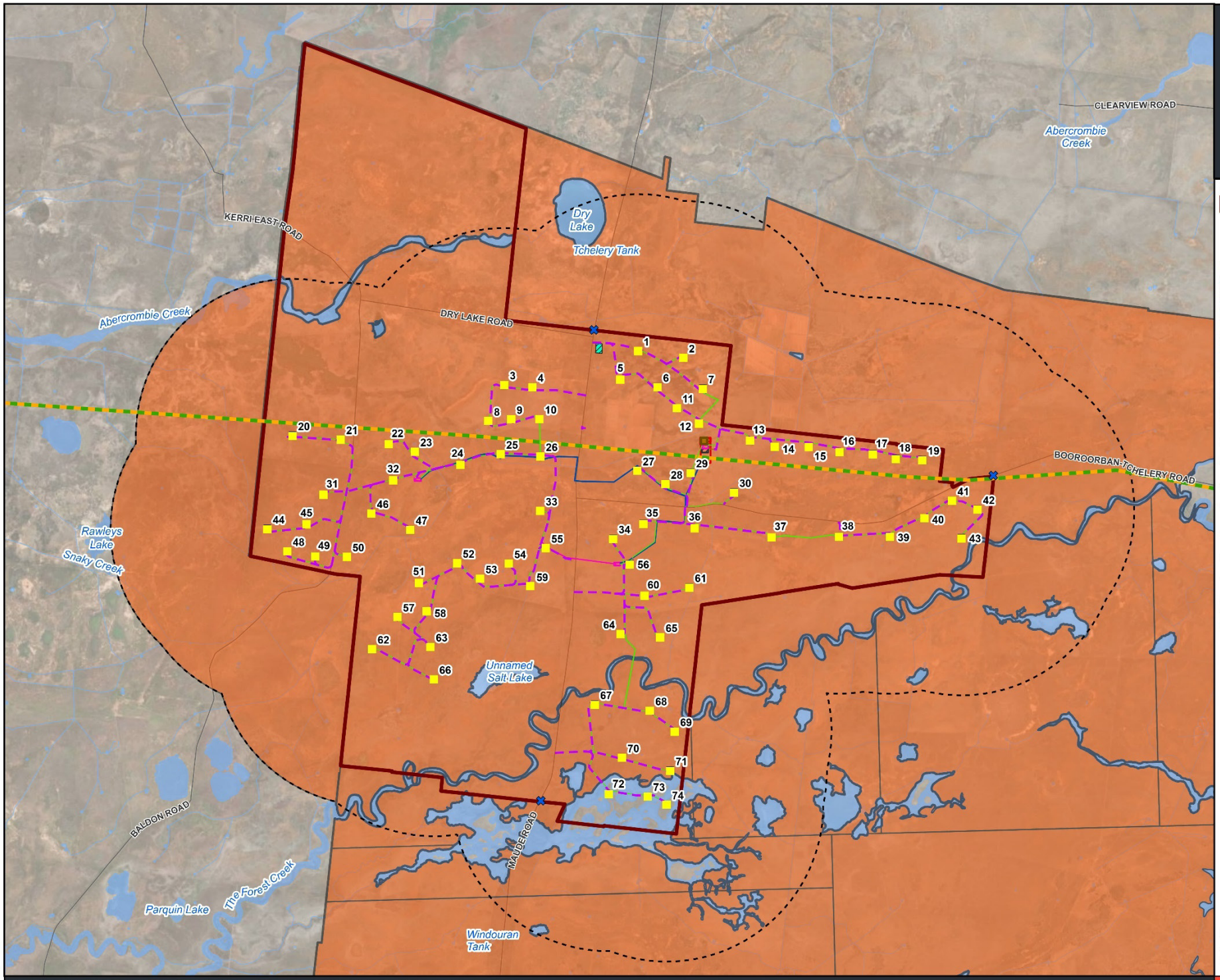


Coordinate system: GDA 1994 MGA Zone 55

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Tchelery Wind Farm

Figure 18.4
Bushfire prone land

Legend

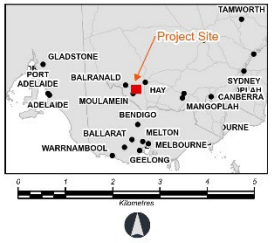
- Project site
- Site access points
- Wind turbine generator
- Internal access track
- Workforce accommodation camp
- Operational facilities area
- Battery energy storage system
- Collector substation
- Operations and maintenance facility
- Switchyard
- Bushfire prone land
- Stidy area 5km from nearest wind turbine

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Context

- Existing road
- Watercourse
- Waterbody

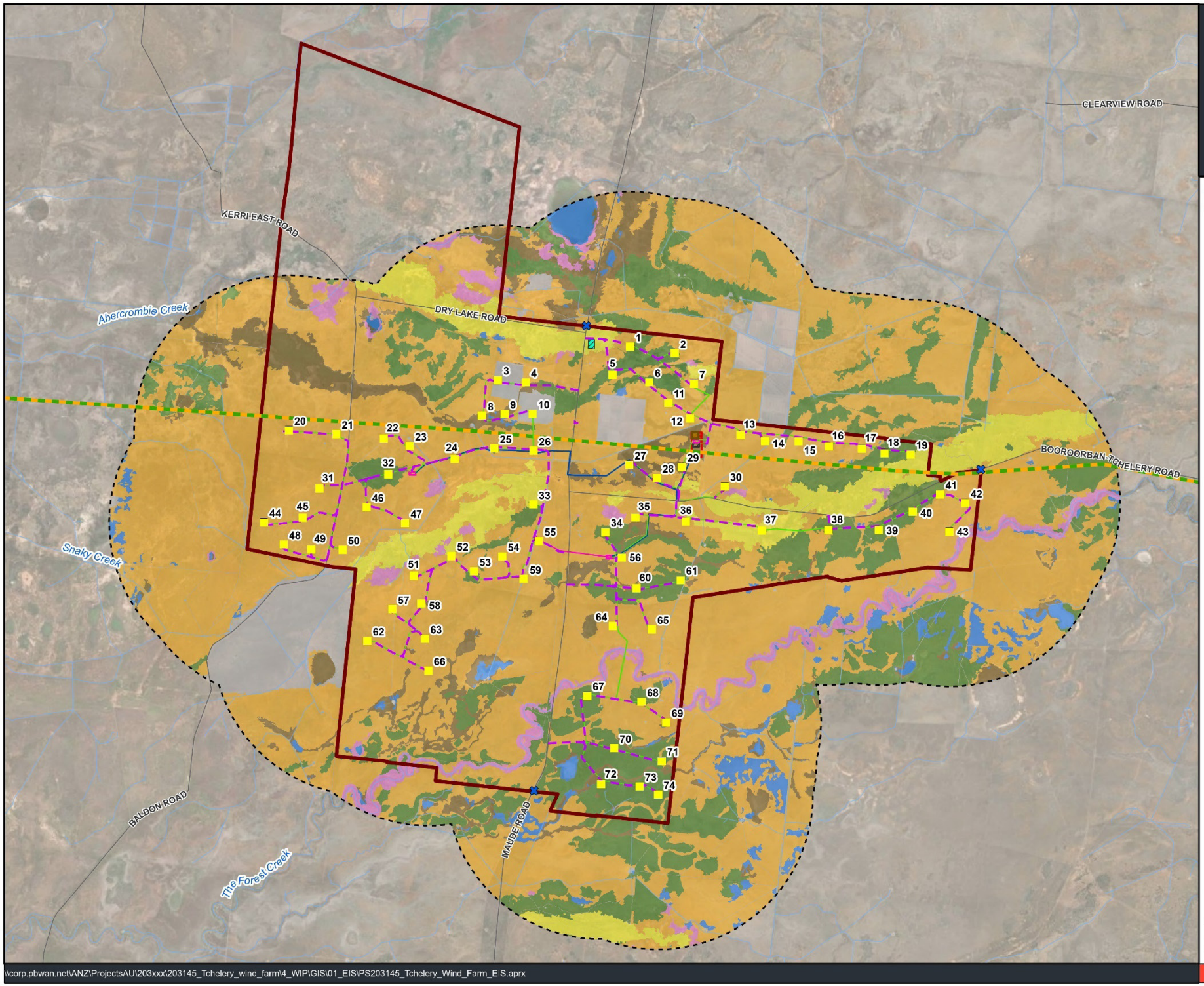


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Tchelery Wind Farm

Figure 18.5
Vegetation formations

Legend

- Project site
- Site access points
- Wind turbine generator
- Internal access track
- Workforce accommodation camp
- Operational facilities area
- Battery energy storage system
- Collector substation
- Operations and maintenance facility
- Switchyard
- Stidy area 5km from nearest wind turbine

Transmission

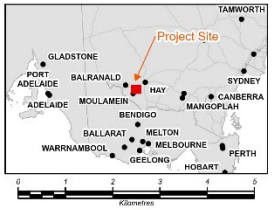
- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Vegetation formation

- Arid Shrublands (Chenopod sub-formation)
- Freshwater Wetlands
- Grasslands
- Saline Wetlands
- Semi-arid Woodlands (Grassy sub-formation)
- Semi-arid Woodlands (Shrubby sub-formation)
- Not classified

Context

- Existing road
- Watercourse



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18.4.3 Electric and magnetic fields

EMFs are part of the natural environment with electric fields present in the atmosphere in ionospheric currents, thunderstorms and lightning while static magnetic fields are created by the earth's core. EMF is also produced wherever electricity or electrical equipment is in use. Parts of the project site contain existing transmission lines (one 220 kilovolt (kV) transmission line running on north south direction and 330 kV Project EnergyConnect transmission line running west to east that is under construction).

18.4.4 Telecommunications

18.4.4.1 Point-to-point links

Telecommunications systems used for radio, radar, broadcast, television, mobile networks as well as mobile and fixed radio transmission sites transmit electromagnetic signals (radio waves). These work best when there is a clear, unobstructed sight along the path from the transmitter to the receiver.

WTG have the potential to impact on point-to-point Australian Communications and Media Authority (ACMA) communication links through three mechanisms (Bacon, 2002) namely:

- near field effects
- reflection or scattering effects
- diffraction.

There are no communication links found transversing the project site. Additionally, no communication site registered with ACMA is detected within the project site. Therefore, no further analysis is considered necessary.

18.4.4.2 Meteorological radar

Meteorological radars detect rain and thunderstorm events, as well as other phenomena such as flocks of birds, smoke, or ash, that cause echoes to be visible. The Bureau of Meteorology's (BoM's) radars typically detect rain between 2.5 kilometres to 3.5 kilometres above the ground within a radius of 250 kilometres, and in some instances, beyond. Some wind farms are visible to meteorological radars, registering as static echoes.

The World Meteorological Organisation recommends that WTG are sited, at a minimum, beyond five kilometres from meteorological radars, and preferably beyond 20 kilometres (Commission for Instruments and Methods of Observation, 2010). Furthermore, the Operational Programme for the Exchange of Weather Radar Information, and the radar programme of European Meteorological Services Network, state that no WTG should be deployed within five-kilometre radius of C-band radars and ten- kilometre radius of S-band radars.

The closest four weather radars (within 250 kilometres of the project site) are detailed in Table 18.3.

Table 18.3 Meteorological radar within 250 kilometres of the project site

Weather radar name	Coordinate	Radar type	Distance to the project site
Yarrawonga	36.03° S, 146.03° E	WSR 81C C-Band	199 kilometres
Rainbow	35.99° S, 142.01° E	Meteor 735C (C-Band, Doppler and Dual Pol enabled)	228 kilometres
Hillston	-33.55° N, 145.52° E	Meteor 735CDP (C-Band, Doppler and Dual Pol enabled)	182 kilometres
Mildura	-34.28° S, 141.59° E	Meteor 735CDP, C-band, Dual Pol	241 kilometres

The project complies with World Meteorological Organisation standards based on distance setbacks from the various meteorological radars in the region. Further, there appears to be excellent coverage from the four radars within 250 kilometres of the project site.

18.4.4.3 Mobile voice-based communications

The closest mobile tower, used by Telstra, is 2.3 kilometres away from the nearest WTG (WTG 2) (refer to Figure 18.6). The next closest mobile tower, used by Optus, Telstra and Vodafone, is 22 kilometres away from the nearest WTG, (WTG 1). Typically, the signal would not be critically impacted where the towers are located more than one kilometre from WTGs. It is considered unlikely that the project would cause any critical impact on the operation of mobile phone base stations.

Satellite services would only be impacted where receivers are sited in close proximity to WTGs, impeding their view of the sky. These satellites typically provide pay-television, wireless internet, and satellite phone coverage, as well as television coverage where there is no terrestrial service available.

18.4.4.4 Trigonometrical stations and GPS

Trigonometrical stations and survey marks are observation marks used for surveying or distance measuring purposes. GPS antennas and electronic distance measuring (EDM) devices may be installed at some trigonometrical stations.

The performance of the EDM devices depends on the type of wavelength bands used. The current EDM devices operate by using three different wavelength bands: microwave systems, infrared systems, and light wave systems. Microwave systems have a measurement range of up to 150 kilometres and are not limited to line of sight or visibility. The infrared systems and light wave systems can measure a range three to five kilometres; however, accuracy may be limited by the line of sight or visibility (Satheesh et al, 2006). If a line-of-sight blockage occurs, moving laterally one to two metres would typically alleviate the line-of-sight blockage. In addition, the presence of WTGs would typically assist with sight navigation, providing fixed reference points.

A review on the location of all active survey marks has been completed, and the findings are summarised as the below:

- there is no proposed WTG location that shares the same location as a survey mark
- there are seven survey marks within a two-kilometre buffer of proposed WTGs location
- the closest distance between survey marks to the nearest WTG is 706 metres.

18.4.4.5 Global navigation satellite system station

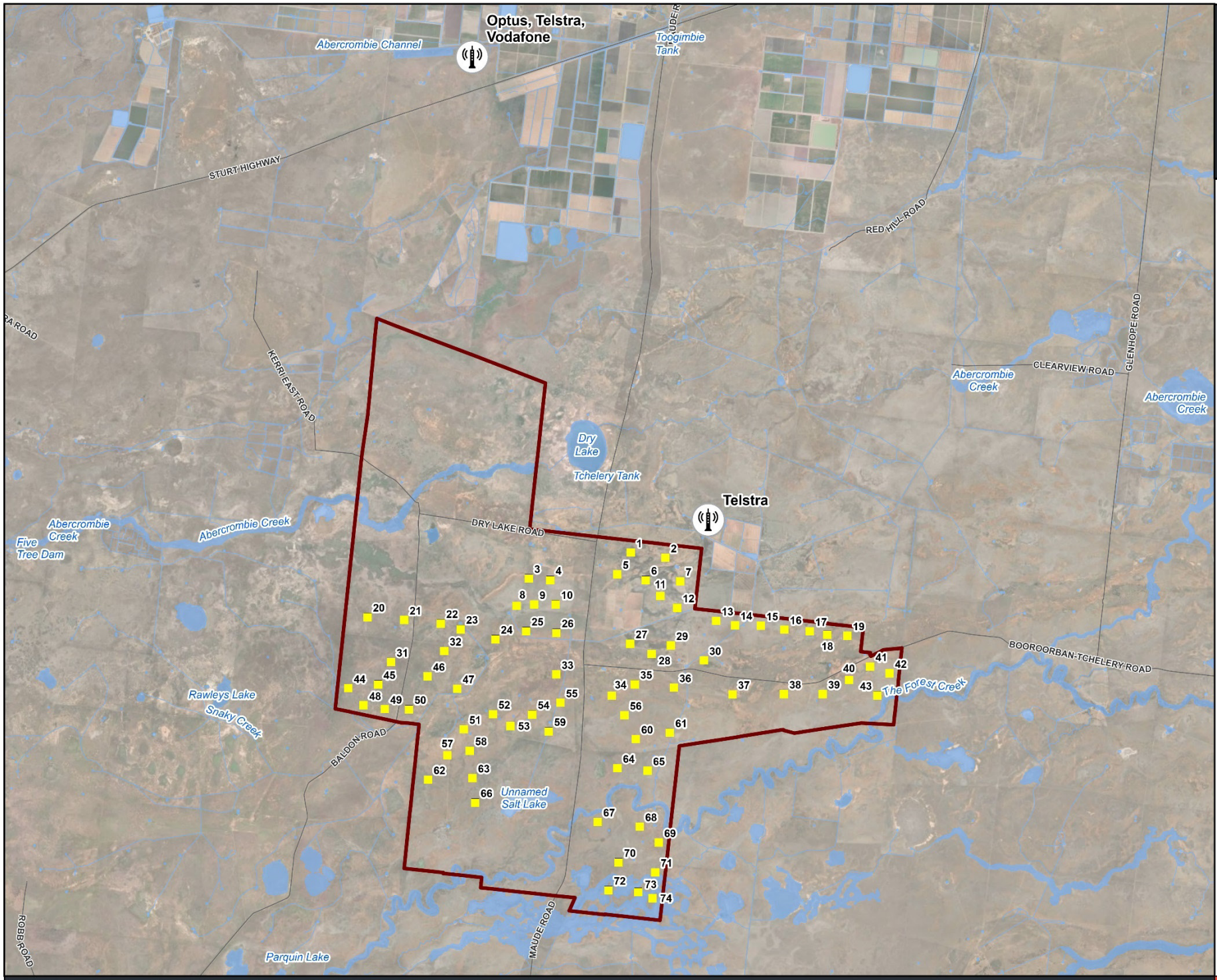
Global Navigation Satellite System (GNSS) networks are operated and maintained across the Australian region and the South Pacific. This includes the Australian Regional GNSS Network, the South Pacific Regional GNSS Network and the AuScope Network. GNSS networks provide the geodetic framework for the spatial data infrastructure in Australia and its territories. Data from the GNSS Network also contributes to the International GNSS Service.

Based on the GNSS network map provided by Geoscience Australia (Geoscience Australia, n.d.), the telecommunications impact of the project to the GNSS stations has been analysed. There are no GNSS stations within the project's five-kilometre boundary. The closest GNSS station, MOUL, is 23 kilometres away from the nearest WTG.

18.4.4.6 Broadcast, digital radio and television

There are no broadcast, radio, and television services transmitters are located within 20 kilometres of a WTG. The closest frequency modulation (FM) station and digital television is BALRANALD that is 58 kilometres away from the nearest WTG.

If issues are encountered with television reception, this is most readily mitigated by readjusting the receptor, to capture signal from an alternative transmitter.



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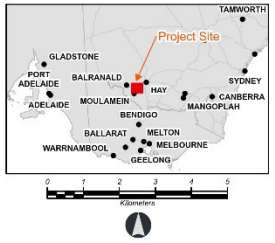
Figure 18.6
Proximity of the project site to mobile phone base stations

Legend

- Project site
- Wind turbine generator
- Mobile tower

Context

- Existing road
- Watercourse
- Waterbody



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18.4.5 Resilience and Hazards SEPP

Dangerous goods and hazardous material may currently be stored and used within vicinity of the project for agricultural activities. Businesses are required to store, handle and use these dangerous goods and hazardous substances in accordance with the *NSW Work Health and Safety Act 2011* and relevant Australian Standards. Road users are required to transport dangerous goods and hazardous materials within the surrounding road network in accordance with the Dangerous Goods Act and the Dangerous Goods (Road and Rail Transport) Regulation 2014.

18.4.6 Blade throw

A blade throw incident can occur when a wind turbine becomes separated from its hub at the metal to metal root joint. There are currently no WTGs at the project site.

18.5 Assessment of potential impacts

18.5.1 Aviation safety

During construction and operation of the project, there could be impacts on existing operations of aircraft in the region. Installation of WTGs with hub heights up to 170 metres and tip heights of up to 270 metres would present potential impacts on aviation safety and existing aerial applications such as aerial firefighting and agricultural practices. Assessment of potential impacts to aviation safety are provided in Table 18.4 and Section 18.5.1.1 and 18.5.1.2. A risk assessment of identified aviation safety risks associated with the height and location of WTGs is provided in Section 18.5.1.3.

Table 18.4 Assessment of potential impacts to aviation safety

Aspect	Impact assessment
Aerodromes near the site	The closest WTG to Balranald Aerodrome is located about 57.5 kilometres southeast of the aerodrome reference point and beyond the horizontal extent of the obstacle limitation surfaces of Balranald Aerodrome. With regard to Hay Aerodrome: — there are currently no proposed WTGs in the overlap area between the Hay Aerodrome 25 nm MSA and the project site — there would be no impact to the MSA at Hay Aerodrome as a result of the project — the project site is beyond the circling area for all runway ends at Hay Aerodrome — the project would not impact circling areas established for instrument flight procedures at Hay Aerodrome — the project would not affect instrument flight procedures at Hay Aerodrome — the closest WTG to Hay Aerodrome would be beyond the horizontal extent of the obstacle limitation surfaces of Hay Aerodrome. There are no uncertified aerodromes located within three nm of the site.
Potential wake turbulence	There may be slight wake turbulence within three nm of an unnamed uncertified aerodrome to the southwest of the project. Operation of the project is likely to cause minor impact to operations at this aerodrome.
Grid and air routes LSALT	The highest WTG is 347.2 metres AHD (1,139.2 feet AMSL). The Grid LSALT would need to be raised to 2,200 feet. This is likely to lead to a minor impact to operations surrounding the project.

Aspect	Impact assessment
Air route LSALTs	The project would impact two Air Route LSALTs that would need to be raised to 2,200 feet.
Airspace protection	The project would not impact controlled or designated airspace.
Aviation facilities	The project site is located a sufficient distance away from nearby aviation facilities and would not have an impact.
Aviation communication systems	The project would not interfere with nearby aviation communication facilities.
ATC Radar installation	The project is outside the line-of-sight range of identified radars and would not impact those facilities.

18.5.1.1 Aerial application operations

Aerial application operations including such activities as fertiliser, pest and crop spraying are generally conducted under day visual flight rules below 500 feet above ground level (AGL): usually between 6.5 feet and 100 feet AGL. The Aerial Application Association of Australia (AAAA) has a formal risk management program (that is recommended for use by its members) to assess the risks associated with their operations and implement applicable treatments to ensure an acceptable level of safety can be maintained. Based on previous studies and the results of consultation with AAAA and local aerial application operators, it is reasonable to conclude that safe aerial application operations would be possible on properties within the project site and on neighbouring properties, subject to final WTG locations and by implementing mitigation measures in Section 18.6.1.

To facilitate the flight planning of aerial application, details of the project, including location and height information of WTGs, wind monitoring towers (WMTs) and overhead transmission lines would be provided to landholders so that, when asked for hazard information on their property, the landholder may provide the aerial application pilot with all relevant information. The use of helicopters enables aerial application operations to be conducted in closer proximity to obstacles than would be possible with fixed wing aircraft due to their greater manoeuvrability.

18.5.1.2 Emergency services

The AFAC has developed a national position on wind farms, their development and operations in relation to bushfire prevention, preparedness, response and recovery, set out in the document titled Wind Farms and Bushfire Operations, version 3.0, dated 25 October 2018.

The project would adhere to the recommendation by the AFAC. These measures have been integrated to the mitigation measures presented in Section 18.6.1 and 18.6.2.

18.5.1.3 Aviation risk assessment

The primary risk being assessed is that of aviation safety associated with the height and location of WTGs and WMTs proposed by the project. The risk assessed against the project is primarily associated with smaller aircraft likely to be flying under the visual flight rules, and so the maximum number of passengers exposed to the nominated consequences is likely to be limited.

A summary of the level of risk associated with the project, is provided in Table 18.5.

Table 18.5 Summary of aviation risk

Identified risk	Consequence	Likelihood after implementation of proposed mitigation measures	Residual risk	Actions required
Aircraft collision with WTG	Catastrophic	Unlikely	7 – Tolerable	Communicate details of the project WTGs to local and regional operators and make arrangements to publish details in En Route Supplement Australia (ERSA) for surrounding aerodromes before, during and following construction.
Aircraft collision with WMTs	Catastrophic	Unlikely	7 – Tolerable	Although there is no obligation to do so, consideration has been made for marking the WMTs according to the requirements set out in MOS 139 Chapter 8 Division 10 Obstacle Markings, specifically 8.110 (5), (7) and (8). Communicate details of WMTs to local and regional operators and make arrangements to publish details in ERSA for surrounding aerodromes following construction.
Avoidance manoeuvring leads to ground collision	Catastrophic	Unlikely	7 – Tolerable	Communicate details of the project WTGs and WMTs to local and regional operators and make arrangements to publish details in ERSA for surrounding aerodromes before, during and following construction.
Effect of the project on crew	Minor	Possible	5 – Tolerable	Communicate details of the project WTGs and WMTs to local and regional operators and make arrangements to publish details in ERSA for surrounding aerodromes before, during and following construction.
Visual impact from obstacle lights	Moderate	Likely	7 – Tolerable	As lights are installed, design to minimise impact to neighbours.

18.5.2 Bushfire risk

Assessment of impacts to bushfire risk considered both the risk posed by bushfires to the project as well as the risk posed by bushfires ignited by construction and operation of the project.

18.5.2.1 Construction

Risk posed by bushfires to the project

There is potential for a landscape scale fire to affect the site as potential fire runs of more than 20 kilometres extending in all direction from the project site. When the individual factors are scored, after consideration of the landscape context, the site design complying with PBP, the overall Landscape Scale Threat for the site is assessed as High Risk prior to implementation of proposed mitigation measures. The summary and weighted scores are presented in Table 5 in Technical paper 12 (Bushfire risk assessment).

The reduction of bushfire risk in the project site due to effective mitigation measures involves systematically identifying, addressing, and minimising potential fire hazards to protect life, property, and the environment. When well-executed, proposed mitigation measures significantly decrease the impact and consequence of fire on project infrastructure, reduce the likelihood of ignition and limit potential fire spread, and enhance the project's resilience to bushfire impacts.

Fireline intensity modelling based on maximum vegetation fuel loads, slope/terrain, aspect and Fire Danger Index indicates the greatest fire intensity is fires driven into the project site from the northwest or west. Scenario 3 fire intensity (Figure 5 in Technical paper 12 (Bushfire risk assessment)) has been used to determine the potential fireline intensity for a fire being driven into key assets from the north to southwest. Key project infrastructure is within areas with the lower likely fireline intensity that makes for easier fire suppression, likely reduced bushfire attack, improved safety conditions and reduced environmental footprint in the form of APZs.

Bushfire risk created by construction of the project

There is a risk that construction activities could be impacted by fires as well as a risk that construction activities could initiate fires. The potential sources of ignition of bushfires resulting from the construction of the project and decommissioning include:

- construction equipment including bulldozers, excavators and vegetation removal machinery using slashers and mulching machines. These activities can produce sparks when steel blades encounter rock, with potential to ignite surrounding vegetation
- motor vehicle exhaust systems and diesel-powered trucks with pollution control devices have potential to emit burning diesel particles and ignite grassland and woodland ground fuels
- hot works such as welding and grinding can produce sparks resulting in an extreme level of risk of ignition for cured vegetation
- electrical equipment faults create a high level of risk of ignition of vegetation
- inappropriate storage of chemicals has the potential to cause a chemical fire or explosion. Failure to clean up a spill can also lead to fire
- arson.

In general, the risk of bushfire impact during construction is dependent on factors such as fuel loads, weather and the scale (size) of fires that may occur. There is a threat to construction personnel or firefighters from fast moving bushfire events that may impact the project site.

Other considerations

Other considerations related to bushfire risk are discussed in Table 18.6.

Table 18.6 Other considerations related to bushfire risk

Consideration	Details
Access and egress	Road and internal access track upgrades required for the initial construction phase would need to meet all RFS standards to accommodate equipment and plant. Road and internal access track upgrades would provide a significant upgrade to response capability by cutting response times, allowing for more efficient patrolling on elevated fire weather days, and allowing delivery of heavy plant more quickly and to more areas.
Water supplies	The nature of the project involves substantial water supply requirements. At all stages there would be an opportunity to discuss the best locations for water supplies to be sited and installed to provide a lasting benefit to fire management at the project site. To satisfy the aim and objectives of PBP there would be a need for substantial firefighting water to be made available at multiple locations.
Landscaping	It is assumed that landscape-managed areas would be provided within compounds and in close proximity to windfarm assets and infrastructure. These would either be in the form of fuel free areas (ie concrete, dirt or crushed rock) or APZs with significantly modified and managed fuels to RFS standards.

18.5.2.2 Operation

Risk posed by bushfires to the project

Bushfire attack assessment – APZ and Bushfire attack level

An APZ is a fuel-reduced area surrounding a built asset or structure that provides a buffer zone between a bushfire hazard (fuel) and an asset. Infrastructure associated with the project would be designed in such a way as to minimise the impact of bushfire on the infrastructure and minimise potential for infrastructure to cause a bushfire, or that capabilities of the infrastructure are not compromised during bushfire emergencies.

Site-specific APZs have been determined for WTGs, with APZ widths varying between five metres and 13 metres, refer to Figure 10 in Technical paper 12 (Bushfire risk assessment). In addition to these designated APZs, broader managed areas extending approximately 50 metres in diameter would be established around each WTG. These managed areas contribute to the overall risk mitigation strategy by reducing fuel loads, thereby enhancing the effectiveness of the APZs and improving the resilience of the wind farm against potential bushfire threats. The project design complies with APZ requirements in Table 6.8a of the PBP.

Emergency egress and evacuation

There are no identified difficulties in accessing and suppressing fires that could occur within the project site during operation. The evacuation options that would be outlined in the Bushfire Emergency Management and Evacuation Plan provide flexibility and alternate routes to take if for some reason the primary route to a safer location is blocked.

Bushfire risk created by the project

Wind farms are not expected to adversely affect fire behaviour or create major ignitions risks (AFAC, 2018). The materials used for the turbines are non-combustible and are required to meet accepted quality and safety standards. However, risk of fire always exists when electronics and combustible oils and hydraulic fluids exist in the same enclosure.

Potential sources of ignition of bushfires resulting from the operation of the project include:

- nacelle (including turbine oil) fires
- electrical faults
- impacts from downwind air turbulence on fire behaviour
- impacts of lightning
- landscape hazards, such as bushfire and grass fire ignition from fire within the facility, or external ignition of site infrastructure from embers, radiant heat and flame contact
- chemical hazards, such as the leakage of oils and lubricants within the turbine and ancillary equipment
- electrical hazards, such as wind turbine electrical faults, power surges, hot surfaces, lightning strike or falling blades.

In addition to the above, firefighting limitations within and adjoining the project site, should also be considered such as limitations on aerial support. Wind turbines and power transmission infrastructure can cause a potential obstruction for aerial firefighting.

However, with implementation and maintenance of the mitigation measures outlined in Section 18.6.2 the bushfire risk from the project to the surrounding environment would be reduced significantly.

18.5.3 Electric and magnetic fields

EMF is not expected to be an issue during construction as the WTGs and ancillary structure would not be energised.

During commissioning and operation, the low expected values of electric field strength from 33 kV transmission lines would not have any notable impact. For the aboveground 330 kV transmission lines, the electric field strength is modelled to be 0.62 kV per metre (kV/m), that is within the permissible limits. At the minimum recommended sag height of 10.5 metres, the electric field strength is modelled to be 4.9 kV/m, that is within the permissible limits.

Modelling of magnetic field shows that:

- 33 kV underground transmission lines directly above the transmission line would result in the magnetic field strength of 18 milliGauss (mG), that is within the permissible limit
- 33 kV aboveground transmission lines directly under the transmission line would result in the magnetic field strength of 61 mG, that is within the permissible limit
- 330 kV underground transmission lines directly above the transmission line would result in the magnetic field strength of 162 mG, that is within the permissible limit
- 330 kV aboveground transmission lines directly under the transmission line would result in the magnetic field strength of 114 mG. At the edge of the easement, the magnetic field strength would be 13 mG, that is within the permissible limit.

18.5.4 Telecommunications

The project has been designed, located and sited to avoid, or minimise and mitigate telecommunications impact to the pre-existing television, radar and radio transmission. Stakeholder correspondences are being collated regarding impact on their services and any final assessment should be performed with consideration of stakeholder feedback.

18.5.4.1 Point to point links

As there are no ACMA links or sites within two kilometres of a WTG, no analysis of the Fresnel zones (envelope of influence along the length of the ray line) or site buffers is considered necessary as the impact would not be significant. No near field effects would occur as the proposed WTGs are not within close proximity to the ACMA towers. Since there are no transmitters or receivers, the project would not result in any reflection or scattering effects and as there are no communication links traversing the project, no impact is anticipated.

18.5.4.2 Meteorological radars

The project complies with World Meteorological Organisation standards based on distance setbacks from the various meteorological radars in the region. Further, there appears to be excellent coverage from the four radars within 250 kilometres of the project site.

Following stakeholder engagement, the BoM have indicated manageable impact on their assets and requests the applicant to:

- inform the BoM of any changes in the wind farm, including varying the layout of the farm, changing the location of a turbine more than 100 metres, or altering turbine height
- inform the BoM at least two weeks, if practical, before any planned shut-down of the wind farm (for maintenance or any other reason) so that the BoM may calibrate its weather radar system
- collaborate with the BoM in the event of severe weather conditions to assist in matters of community safety.

18.5.4.3 Mobile voice-based communications

As mentioned in Section 18.4.4.3 the closest mobile tower is 2.3 kilometres away in the northeast direction of WTG 2. Typically, the signal would not be critically impacted where the towers are located more than one kilometre from a WTG. Therefore, it is unlikely that the project would cause any critical impact on the operation of mobile phone base stations.

In the immediate vicinity of the WTGs, the predominant networks available are 3G and 4G, that would experience minimal impact, with only a slight reduction in signal strength expected. However, this can be resolved by moving the mobile phone or the person using it by a distance of several tens of metres. Beyond the project area, there would not be any critical impact on the signal.

18.5.4.4 Wireless and satellite services

There is one associated building (Tchelery Woolshed) within two kilometres of the WTGs layout, the Tchelery Woolshed located 893 metres north of WTG 36 (refer to in Figure 3.1 in Chapter 3 (Project description)). The project may cause degradation to signal quality from satellite services to this associated building; however, it is not occupied and currently used for agricultural activities. No non-associated dwelling would be impacted by the project.

The proponent and impacted homeowners would reach private agreement should satellite services be impacted by the project.

18.5.4.5 Trigonometrical stations and GPS

The infrared systems and light wave systems can measure a range three to five kilometres, but accuracy may be limited by the line of sight or visibility (Satheesh et al,. 2006). If a line-of-sight blockage occurs, moving laterally one to two metres would typically alleviate the line-of-sight blockage. In addition, the presence of WTGs would typically assist with sight navigation, providing fixed reference points.

Site works would need to be designed to avoid the survey mark, or, alternatively, seek assistance from a registered surveyor to move or remove the survey marks. There is no WTG location that shares the same location as a survey mark. As such the project would have no critical effect on their operation. Any line-of-sight blockages are to be considered by the surveyor when the sites are in use.

The project is also highly unlikely to affect GNSS infrastructure due to their separation distance from nearest WTGs.

18.5.4.6 Broadcast, digital radio and television

Based on the current arrangements. it is highly unlikely that the project would impact the any broadcast, radio, and television services transmitters.

18.5.5 Resilience and Hazards SEPP

The hazardous materials that would be stored and used for the project are described in Table 18.7.

Table 18.7 Storage quantity of hazardous materials

Hazardous material	Quantity	Classification	Screening threshold[1]
Installed system			
LIBs	6,500 to 8,500 tonnes [2]	Class 9 miscellaneous dangerous good	N/A
Electrical transformer insulating oil – high voltage transformers	240 kilolitres	Not classified as a dangerous good	N/A
WTG transformers	74 kilolitres	Not classified as a dangerous good	N/A
Maintenance requirements			
LPG	Less than 1 tonne	Class 2.1	N/A for less than 10 tonnes in above ground storage
Petrol	Less than 1,000 litres	Class 3 PG II	N/A for less than 5 tonnes
Diesel	40 kilolitres	Combustible liquid Class C1	N/A

(1) N/A refers to the screening threshold not being applicable, or the hazardous material does not have a relevant screening threshold.

(2) Mass estimated based on 0.25 Wh/kg for a LIB cell from Bravo Diaz et al. (2020). Contemporary units range from 0.17 to 0.24 Wh/kg for the LIB cell.

Storage, handling and use of dangerous goods and hazardous substances may adversely impact human safety, either directly through contact, or indirectly through damage to the local environment. This may impact construction workers and residents surrounding the project study area and haulage routes. A Level 1 Qualitative Risk Analysis has been conducted to determine the risk of the hazardous materials and equipment. The risk register is presented in Table 18.8.

The storage, handling and use of dangerous goods and hazardous substances would be carried out in accordance with the *NSW Work Health and Safety Act 2011*, relevant Australian Standards and mitigation measures developed for the project. As such, potential for impacts to construction workers and the environment is considered to be low.

LIB BESS would generate toxic air emissions during a thermal runaway incident. This toxic plume would not impact off-site receivers; however, it would impact the first responders. The risk of potential toxic impacts to first responders can be limited by limiting the quantity of LIB cells involved in a thermal incident (ie ensuring non-propagation between adjacent modules, racks and units/containers) and selecting an appropriate location for the LIB BESS with first responder access and egress to the LIB BESS from alternate directions (ie to allow access and egress via upwind direction).

If the fire safety strategy relies on the application of water for suppression of the thermal incident, the project would incorporate fire water containment with sufficient capacity to capture all contaminated fire water runoff for the expected duration of the incident. Consideration would also be given to the LIB BESS location with respect to drainage pathways to receiving waterways in the event the capacity of the fire water containment system is exceeded.

Table 18.8 Risk register

Risk level	Risk area	Hazardous event	Consequences	Existing controls
Medium	Lithium Cells Battery Racks heating, ventilation and air conditioning (HVAC) systems Invertors Transformer High voltage switchgear Overhead transmission lines	General exposure to high voltage	Electrocution/injury/fatality from short circuit/or equipment failure	Equipment and systems would be designed and tested to comply with international and/or Australian Standards and guidelines, mainly AS3000:2018 Electrical installations for wiring. BESS battery management system fault detection and safety shut-off systems provided. Emergency Response Plan to cover all site hazards. External assistance for firefighting (Fire and Rescue NSW (FRNSW) and RFS). Use of appropriate personal protective equipment.
	BESS	Arcing/short circuit	Electrocution/injury/fatality from cable or equipment fault	
	Transformers	Transformer arcing leading to fire event/pool fire	Pool fire event from winding arc fault, or overheating, poor oil maintenance	Transformer subject to routine maintenance including oil sampling. Power control unit and transformer located in designated area. Adequate separation distance to not involve adjacent plant and equipment. Installation, operations and maintenance by trained personnel (for example reputable third party) in accordance with relevant procedures. Preventative maintenance (for example insulation replacement of faulty equipment). Activation of emergency shutdown button (emergency shut down button). Prepare Fire Management Plan and Emergency Response Plan. External assistance for firefighting (FRNSW and RFS).

Risk level	Risk area	Hazardous event	Consequences	Existing controls
	Fuel storage (LPG, unleaded petrol (ULP), Diesel)	Leakage/fire	Pool fire or flash fire from equipment failure, flex hose failure	Storage location to be fenced with onsite security protocol and warning signs. Fuel storage and handling to AS 1940 - Storage and Handling of Flammable liquids. Implement Emergency Response Plan and Bushfire Management Plan.
Low	Site and surrounding bush/scrublands	Bushfire or scrub fire	Personnel injury or burns, asset or equipment damage	Storage location to be fenced with gravel hardstands and APZ/fire breaks. Supervisory control and data acquisition (SCADA) controls and monitoring systems, including closed circuit television (surveillance). Bushfire Management Plan to be implemented in consultation with local NSW RFS.

18.5.6 Blade throw

Bases on the results of the Level 1 Qualitative Risk Analysis, credible hazardous events and scenarios with the potential for off-site consequences is associated with the throw of a fragment of a WTG blade. Three hazardous events associated with the WTG are identified as follows

- blade drop/fragmentation impact on the BESS
- blade drop/fragmentation impact on Transgrid transmission lines
- blade drop/fragmentation impact on adjoining land user.

Based on the separation distances from the WTG to the BESS, the transmission lines and the project site boundary, the consequence of blade drop and or tower collapse do not require further evaluation in terms of land use risk impacts.

The analysis of blade fragmentation as per current design has considered the probability of the blade fragment landing in the past the line of the asset. For this analysis of blade fragment impacts the potential for of exceeding HIPAP No. 4 – Risk Criteria for Land Use Safety land use risk criteria for an asset of 50 x 10^{-6} could occur for WTGs 20, 21, 22 and 26 for the 220 kV transmission line, WTG 20 for the Project EnergyConnect (NSW – Eastern Section), transmission line and WTGs 19 and 28 for the agricultural grazing land. This would be confirmed subject to the final design and equipment selection.

18.6 Mitigation of potential impacts

18.6.1 Aviation impact

Proposed mitigation measures to mitigate potential impacts to aviation safety associated with the project are detailed in Table 18.9.

Table 18.9 Aviation safety mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
AV1	Details of wind turbine generators exceeding 100 metres above ground level will be reported to Civil Aviation Safety Authority as soon as practicable after forming the intention to construct or erect the proposed object or structure, in accordance with Civil Aviation Safety Regulation 1998 Part 139.165(1)(2).	Pre-construction	All wind turbine generators and wind monitoring towers
AV2	'As constructed' details of wind turbine generator coordinates and elevation will be provided to Airservices Australia, by submitting the form at this webpage: https://www.airservicesaustralia.com/wp-content/uploads/ATS-FORM-0085_Vertical_Obstruction_Data_Form.pdf to the following email address: vod@airservicesaustralia.com	Construction and post construction	All wind turbine generators and wind monitoring towers

Ref	Identified mitigation measure	Timing	Applicable location(s)
AV3	Any obstacles above 100 metres above ground level (including temporary construction equipment) will be reported to Airservices Australia Notice to Airmen office until they are incorporated in published operational documents. With respect to crane operations during construction of the project, a notification to the Notice to Airmen office will include, for example, the following details: — the planned operational timeframe and maximum height of the crane; and — either the general area within which the crane will operate and/or the planned route with timelines that crane operations will follow.	Construction	All locations
AV4	Details of the wind farm will 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.	Pre-construction	All locations
AV5	To facilitate the flight planning of aerial application operators, details of the project, including the 'as constructed' location and height information of wind turbine generators and overhead transmission lines will be provided to landholders so that, when asked for hazard information on their property, the landholder may provide the aerial application pilot with all relevant information.	Construction and operation	All locations
AV6	The rotor blades, nacelle and the supporting tower of the wind turbine generators will be painted non-reflective off-white, typical of most wind turbine generators operational in Australia. No additional marking measures are required for wind turbine generators.	Pre-construction	All wind turbine generators
AV7	The following markings will be implemented in consideration of potential day visual flight rules aerial work operations in accordance with National Airspace Safeguarding Framework Guideline D: — obstacle marking for at least the top third of the tower and be painted in alternating contrasting bands of colour — marker balls or high visibility flags or high visibility sleeves placed on the outside guy wires — guy wire ground attachment points in contrasting colours to the surrounding ground/vegetation.	Pre-construction, construction	Wind monitoring towers

Ref	Identified mitigation measure	Timing	Applicable location(s)
AV8	Lighting of wind turbine generators and ancillary infrastructure will be designed to minimise potential amenity impacts by using the lowest intensity lighting suitable for the site: — lighting is required for the most critical wind turbine generators (for example turbines at highest elevations and/or around the project perimeter) — lighting of turbines and ancillary infrastructure will be designed to minimise potential amenity impacts by using the lowest intensity lighting suitable for the site. Consultation with Civil Aviation Safety Authority and Airservices Australia would inform the lighting plan.	Pre-construction	All wind turbine generators and wind monitoring towers
AV9	Transmission lines and/or supporting poles that are located where they could adversely affect aerial application operations will be identified in consultation with local aerial application operators and marked in accordance with Civil Aviation Safety Regulation 1998 Part 139 Manual of Standards 2019 Chapter 8 Division 10 Section 8.110 (7) and Section 8.110 (8).	Pre-construction	Overhead transmission line locations
AV10	The applicant or operator will consider the guidance contained in the National Council for Fire and Emergency Services 'Wind Farms and Bushfire Operations' (AFAC, 2018) to ensure: — liaison with the relevant fire and land management agencies is ongoing and effective — access is available to the site by emergency services for on-ground firefighting operations. — wind turbines are shut down immediately during emergency operations — where practicable, blades will be stopped in the 'Y' or 'rabbit ear' position, as this positioning allows for the maximum airspace for aircraft to manoeuvre underneath the blades and removes one of the blades as a potential obstacle.	Construction and operation	All wind turbine generators and wind monitoring towers
AV11	The following triggers for review of the risk assessment will be considered: — prior to construction to ensure the regulatory framework has not changed — following any significant changes to the context in which the assessment was prepared — following any near miss, incident or accident associated with operations considered in this risk assessment.	Construction and operation	All wind turbine generators and wind monitoring towers

18.6.2 Bushfire impact

Proposed mitigation measures to mitigate potential impacts to bushfire risk associated with the project are detailed in Table 18.10.

Table 18.10 Bushfire risk mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
BF1	A comprehensive Bushfire Emergency Management and Evacuation Plan will be prepared in consultation with local Rural Fire Service District Office and Fire Rescue NSW, in accordance with NSW Rural Fire Service's Guide to Developing a Bushfire Emergency Management and Evacuation Plan (2014) and meet the requirements of Australian Standard AS3745-2010 Planning for Emergencies in facilities. The Bushfire Emergency Management and Evacuation Plan will inform operational and emergency management practices at the facility, effectively describe all fire hazards and provide clear actions and accountabilities for their management, including: — protocols for the relocation of workers to nominated safe refuge zones during a bushfire emergency, either within or remote to the work zone (Bushfire Emergency Management and Evacuation Plan) — emergency procedures for fires within, and in the vicinity of, wind turbines — protocols for the management of bushfire risk and fuel management during construction and operation. This will include the restriction and/or prevention of certain activities that present bushfire risks on days with a fire danger rating of equal to or greater than 'high', and as directed by relevant State authorities, and maximum (safe) operational wind speed and temperature conditions and operating procedures to limit fire risk — training to inform workers of bushfire risks and preventative actions, including risks associated with the operation (and maintenance) of vehicles, plant and equipment — site infrastructure plan, including water supply — site access and internal access track plan — location of asset protection zones and their continued maintenance protocols — location of hazards (physical, chemical) that may impact firefighting operations.	Pre-construction, construction and operation	All locations
BF2	The Construction Environmental Management Plan will also include strategies and measures for: — management of hazardous materials and dangerous goods — management of other hazards and risks to the general public and the environment.	Pre-construction and Construction	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
BF3	To effectively manage and mitigate ignition and fire risk from activities such as hot works, high risk fire tasks, vegetation clearing and management and onsite operation of vehicles, contractors will need to implement the following bushfire mitigation measures: — two mobile water supplies with a minimum capacity of 500 litres each (for example tanks on utes or standalone tankers) will be made available on-site — during the Bushfire Danger Period (usually October to April), the use of construction equipment, slashers and mulching machines in areas where rock is known to occur or excessive grass has built up, will be accompanied by the mobile water supply, equipped with a pump and hose — requirements from Rural Fire Service and Total Fire Ban will be strictly followed — precaution will be used during all external hot works with shielding and a water supply (ie mobile water supply or fire extinguisher) provided — motor vehicles will not be driven across long cured (dry) vegetation (grass and crops) and will be equipped with a nine kilogram water fire extinguisher — operators of diesel-powered trucks will be made aware of the risk of ignition of vegetation posed by the exhaust emission system. These trucks will be equipped with a nine kilogram water fire extinguisher — electrical equipment used during construction will be checked for potential faults — chemicals will be managed and stored in accordance with safety data sheet requirements — management protocols will be introduced to reduce the risk of ignition from discarded cigarettes — first-aid equipment will be provided, such as fire extinguishers (and where possible, portable fire hose reels at all construction portables/buildings on site), in the vicinity of all construction activities and in site-based vehicles.	Construction	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
BF4	Asset protection zones for critical asset areas are to be established in accordance with Figure 10 and Table 8 of Technical paper 12 (Bushfire risk assessment) as follows: — wind turbine generators: Ranging from five to 13 metres, with a 50 metre broader managed area around each wind turbine generator — battery energy storage system: 22 metres — batching plant: 15 metres — collector substation: 15 metres — construction compound: 15 metres — workforce accommodation camp: 15 metres — laydown area: 15 metres — operations and maintenance facility: 15 metres — switchyard: 22 metres — southwestern collector substation: 22 metres — western batching plant: 15 metres — western collector substation: 22 metres.	Construction and Operation	Wind turbine generators
BF5	The asset protection zones will must be maintained to the standards of an Inner Protection Area for the life of the project.	Construction and operation	All locations
BF6	Essential equipment will be designed and housed in such a way as to minimise the impact of bushfires on the capabilities of the infrastructure during bushfire emergencies. It will also be designed and maintained so that it will not serve as a bushfire risk to surrounding vegetation.	Pre-construction, construction and operation	All locations
BF7	Static water supply will be provided as two mobile water supplies with a minimum capacity of 500 litres each (for example tanks on utes or standalone tankers) will be made available on-site during operation.	Operation	All locations
BF8	Air Services Australia will be notified of the locations of meteorological masts to be recorded in the Tall Structures Database. Warning lights or visible markers (such as orange balls) will be installed on all masts to minimise risks during aerial firefighting operations.	Construction and operation	Meteorological masts
BF9	Protocols will be established for the rapid shut down of wind turbine generators in emergency situations identifying who has the authority to direct turbine shut-down procedures.	Operation	Wind turbine generators
BF10	Essential equipment will be designed and housed in such a way as to minimise the impact of bushfires on the capabilities of the infrastructure during bushfire emergencies. It will also be designed and maintained so that it will not serve as a bushfire risk to surrounding vegetation.	Pre-construction	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
BF11	The actual location of the workforce accommodation camp (and other structures such as site offices, operation and maintenance building and material storage) will be confirmed as the design is refined, the asset protection zones will be large enough in most circumstances to allow placement of these buildings at less than 19 kilowatts of radiant heat. Any refuge buildings will be beyond 10 kilowatts of radiant heat. It is recommended buildings used for accommodation within 100 metres of bushfire prone vegetation are constructed to comply with AS3959 – Construction of buildings in bushfire-prone areas.	Pre-construction	All locations

18.6.3 Electric and magnetic fields

The expected EMF levels from the project at the recommended heights comply with the relevant Australian and International standards and guidelines. As such, there are no mitigation measures to be considered at this stage until detailed design.

18.6.4 Telecommunication

Proposed mitigation measures to mitigate potential impacts to telecommunications associated with the project are detailed in Table 18.11.

Table 18.11 Telecommunications mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
TC1	The Bureau of Meteorology will be consulted as follows: — inform the Bureau of any changes in the wind farm, including varying the layout of the farm, changing the location of a turbine more than 100 metres, or altering turbine height — inform the Bureau at least two weeks, if practical, before any planned shut-down of the wind farm (for maintenance or any other reason) so that the Bureau may calibrate its weather radar system — collaborate with the Bureau in the event of severe weather conditions to assist in matters of community safety.	Construction and operation	All locations
TC2	If the construction activities are to impact any of the existing survey marks, the proponent will seek assistance from registered surveyor to move or remove the survey marks in consultation with the NSW Government via the following website: https://www.spatial.nsw.gov.au/surveying.	Construction	All locations
TC3	If a change is required to the project layout, the recommended buffers of the telecommunication services must be maintained to avoid any impact.	Construction and operation	All locations
TC4	Neoen will offer a private agreement with homeowners should satellite services be impacted by the project.	Construction and operation	All locations

18.6.5 Resilience and hazards SEPP

Proposed mitigation measures to mitigate potential impacts from hazardous materials and blade throw associated with the project are detailed in Table 18.12.

Table 18.12 Hazardous materials and blade throw mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
HM1	The selection process will consider that the battery energy storage system will be: — designed and constructed to meet the requirements of Underwriters Laboratory 9540 Standard for Safety of Energy Storage Systems and Equipment (UL 9540) (Underwriters Laboratory, 2022) — design so that configuration of the lithium-ion batteries modules for the 'as constructed' project will be consistent with a configuration determined by the Underwriters Laboratory 9540A testing to achieve no propagation — has been subject to rigorous factory acceptance testing prior to dispatch from the supplier — has incorporated adequate instrumentation, interlocks and alarms to minimise the risk of the lithium-ion batteries incubation period (the time at a particular temperature at which thermal runaway is likely to initiate) being approached by shutting down modules/racks and alarming unsafe temperatures or other unsafe conditions such as: — loss of cooling — charge/discharge voltage or current outside design parameters — internal electrical resistance outside design parameters during charging or discharge — rack fail-to-trip detected — inverter/charge fail-to-trip detected — designed to maintain separation distances between containers to reduce the risk of accident propagation in accordance with manufacturer's instructions, appropriate standards/guidelines that may include National Fire Protection Association 855 Standard for the Installation of Stationary Energy Storage Systems (NFPA 855) (National Fire Protection Association, 2022) and Property Loss Prevention Data Sheet 5-33 Lithium-Ion Battery Energy Storage Systems (FM Global, 2023) and in line with testing conditions set during type testing for Underwriters Laboratory 9540A.	Pre-construction	Battery energy storage system
HM2	The project will require an effective fire suppression plan that can be implemented over the full duration of the fire event should the fire safety strategy involve suppression (for example as per Property Loss Prevention Data Sheet 5-33 Lithium-Ion Battery Energy Storage Systems (FM Global, 2023) requirements).	Construction and operation	Battery energy storage system
HM3	The project will incorporate lightning protection at the site to reduce the risk of lightning initiating a lithium-ion batteries hazard event.	Pre-construction	Battery energy storage system

Ref	Identified mitigation measure	Timing	Applicable location(s)
HM4	The battery energy storage system will have external visual and audible alarms that will be initiated should the battery management system detect a thermal runaway event.	Construction and operation	Battery energy storage system
HM5	The site will be equipped with adequate fire safety systems (for example provision of fire water tanks, hydrant booster sets and fire water containment) that will be determined following completion of detailed design, and the bushfire assessment and the Fire Safety Study.	Construction and operation	All locations, specially battery energy storage system
HM6	Battery energy storage system area will be designed to ensure emergency services will have clear access and egress to all areas of the site (including alternate access and egress routes) that may require an emergency response.	Pre-construction	Battery energy storage system
HM7	The substation and transformers will be designed, installed, operated and maintained in accordance with: — Australian/New Zealand Standard AS/NZS 60076.1:2014 Power transformers General — Australian/New Zealand Standard AS/NZS 60076.2:2013 Power transformers Temperature rise for liquid immersed transformers — Australian/New Zealand Standard AS/NZS 60076.5:2012 Insulated bushings for alternating voltages above 1000 V — Australian/New Zealand Standard AS/NZS 60076.6:2013 Power transformers Loading guide for oil-immersed power transformers — Australian Standard AS 60296:2017 Fluids for electrotechnical applications – Unused mineral insulating oils for transformers and switchgear — Australian Standard AS 2067-2016 Substation and High Voltage Installations exceeding 1 kV AC. — Australian Standard AS 2374.8-2000 Power Transformers – Application Guide.	Pre-construction, construction and operation	Substation location
HM8	Final Hazard Analysis (FHA) will be completed for the project after final design is complete to reflect changes in the project layout and equipment selection.	Pre-construction	All locations
HM9	Lithium-ion batteries will be transported to site by a suitably accredited freight company using dangerous goods licensed vehicles and drivers.	Pre-construction	Port to site haulage route

Ref	Identified mitigation measure	Timing	Applicable location(s)
HM10	A Fire Safety Study will be prepared in accordance with the guidelines of Hazardous Industry Planning Advisory Paper 2 (DoP, 2011e) and will: — address the requirements of Fire and Rescue NSW's Large-scale external lithium-ion battery energy storage systems - Fire safety study considerations — consider the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence — consider the requirements of the Fire Management Plan that will be prepared in consultation with NSW Rural Fire Service. The Fire Management Plan describes the methods and resources needed to manage and extinguish lithium battery fires and the management of a defendable asset protection zone as described in Planning for Bush Fire Protection 2019.	Pre-construction	All locations
HM11	The Fire Safety Study will inform the requirements of an Emergency Plan that will be prepared in accordance with Hazardous Industry Planning Advisory Paper 1 (DoP, 2011f) in consultation with relevant emergency services organisations (ie Fire and Rescue NSW, NSW Rural Fire Service, NSW Ambulance and relevant local emergency management services). The Emergency Plan will inform the requirements of an Emergency Services Information Package (ESIP) that will be prepared in accordance with Fire and Rescue NSW Fire Safety Guidelines – Emergency services information package and tactical fire plans (FRNSW, 2019). Both the Emergency Plan and EP and the Emergency Services Information Package will: — inform first responders of site-specific features and safety measures required to ensure they are able to undertake their duties effectively — include agency-specific standard operational guidelines.	Construction and operation	All locations
HM12	First responders will be made aware of hazards (including those specific to lithium-ion batteries and electrical hazards that pose a threat during emergency response) and appropriate responses to hazardous events in post construction inductions for first responders.	Construction and operation	All locations
HM13	Site security will include perimeter fencing and closed-circuit television monitoring of the battery energy storage system facility entrance and electrical substation.	Construction and operation	Battery energy storage system and substation areas
HM14	An exclusion zone for combustible materials (including vegetation) will be maintained within of 20 metres around all substation equipment to reduce the risk of fire propagation from or to the transformers.	Operation	Substation
HM15	On-site vehicle speed and traffic flow directions within the site will be managed based on the assessment of on-site hazards and the location of the battery energy storage system, switchroom and control room.	Construction and operation	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
HM16	Training will be provided for all personnel responsible for operations, maintenance and emergency response.	Construction and operation	All locations
HM17	Hot work/safe work procedures will be prepared for any maintenance works on battery energy storage system or electrical transformers.	Operation	Battery energy storage system and Substation
HM18	Routine preventative maintenance, interlock testing and condition monitoring (for example thermography, insulating oil analysis) of battery energy storage system lithium-ion batteries modules and electrical transformers will be carried out.	Operation	Battery energy storage system and substation
HM19	All waste batteries will be disposed of in a safe and responsible manner by suitably licensed waste contractors	Operation and decommissioning	Battery energy storage system
HM20	Consultation with adjacent landholders and associated dwellings will occur to ensure they are aware of the hazards associated with the battery energy storage system and understand the emergency systems and protocols (visual and audible alarms, communications from site, evacuation plans) that will be implemented in the event of a thermal runaway event. The outcome of this consultation will be reflected in the Emergency Management Plan that will be completed provided approval for the project is granted.	Operation	Relevant adjacent properties
BT1	The final design and equipment selection for the windfarm will be subject to a Final Hazard Analysis (FHA).	Pre-construction	All locations

18.6.6 Interaction between measures

There are no mitigation measures in other chapters that are directly relevant to hazards and risk.

18.6.7 Managing key uncertainties

All the assessments presented in this chapter are based on current design and current understanding of the risk. Due to the nature of the risk, management plans have been proposed that will be regularly updated as the project operates.

18.6.8 Managing residual impacts

Mitigation measures for construction and operation of the project have been considered to minimise the potential impacts that arise from the development and maintenance of the project. Where there is possibility of having residual impacts from the project, management plans have been proposed to manage those impacts.

19 Soils and contamination

This chapter summarises potential impacts to and from soils and contamination associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 15 (Soils and contamination impact assessment) prepared by WSP.

19.1 Summary of key findings

The key findings from the assessment of impacts to and from soils and contamination are as follows:

- the project site did not appear to be affected by broad-scale contamination, resulting in a low risk of soil contamination exposure
- potential for significant groundwater contamination beneath the project site is considered to be low
- probability of encountering Acid Sulfate Soils (ASS) is low with the exception of low-lying areas surrounding former lakes and river beds, that are mapped as having a high probability of ASS occurrence
- sections of the planned 33 kilovolt (kV) underground transmission line would be excavated in areas identified to be of medium contamination concern and in low-lying areas of lakes and riverbeds associated with risks of ASS
- potential naturally occurring asbestos (NOA) hazards and risks associated with saline environments were not identified
- minimal potential contamination sources were identified, and where identified are limited to the existing transmission infrastructure, residential properties, cleared agricultural land, farm dams, Tchelery Woolshed and a potential quarry located about 500 metres east of the intersection of Booroorban-Tchelery Road and Maude Road
- no current or planned projects in/or surrounding the project site are expected to cause cumulative impact risk with regards to contamination
- mitigation measures would ameliorate or minimise any expected impacts to generally acceptable levels.

19.2 Setting the context

19.2.1 Statutory requirements

Potential impacts to and from soils and contamination associated with the project were assessed in line with the following legislation, policies, and guidelines:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
- *Protection of the Environment Operations Act 1997* (POEO Act)
- *Contaminated Land Management Act 1997* (CLM Act)
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *National Environment Protection Council Act 1994*
- National Water Quality Management Strategy (NWQMS) (Australian Government, 2018)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)
- National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013 (NEPM 2013) (National Environment Protection Council (NEPC), 2013)

- State Environmental Planning Policy (Resilience and Hazards) 2021
- Murray-Darling Basin Plan 2012 (the Basin Plan 2012) (Murray-Darling Basin Authority (MDBA), 2012)
- Acid Sulfate Soil Manual (Acid Sulfate Soil Management Advisory Committee (ASSMAC), 1998)
- Managing Asbestos in or on Soil guide (SafeWork NSW, 2014)
- Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA Department of Health, 2009)
- Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (New South Wales (NSW) Environment Protection Authority (EPA)), 2015)
- Guidelines for the NSW Site Auditor Scheme (3rd edition) (NSW EPA, 2017a)
- Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004).

19.3 Assessment method

The assessment methodology generally followed the framework for the assessment of site contamination outlined in the NEPM 2013. The soils and contamination study area is the project site with a 500 metre buffer zone around the project site (Figure 19.1). The assessment methodology for soil and contamination involved:

- identification of potential areas of ASS, soil salinity and NOA that may be disturbed by the project
- review of available information to identify potentially current or historical contaminating land uses and subsequent identification of potential areas of contamination concern
- identification and assessment of pollution linkages associated with construction and operation of the project to inform the impact assessment of the project
- construction phase impact assessment that identifies potential contamination impacts based on the current understanding of the likely construction methodology. A qualitative risk ranking is used to identify potential severity of the impact. Mitigation measures are proposed to minimise, mitigate and manage potential impacts, as relevant
- an operational phase impact assessment that identifies whether any long term operational or maintenance activities have the potential to impact on land suitability.

Further detail on the assessment method and sources of information used for the desktop review are provided in Section 3.3 of Technical paper 15 (Soils and contamination impact assessment).

19.3.1 Risk and impact assessment

Identified potential environmental risks associated with construction and operation were rated according to likelihood, consequence and overall level of risk, in general accordance with Australian and New Zealand Standard (AS/NZS) ISO 31000:2009 Risk management – Principles and guidelines.

The assessment includes a preliminary contamination risk evaluation (considering potential for risks without the implementation of appropriate controls or remediation) to understand the potential risk of identified areas of contamination concern. The risk ranking has been based on likelihood of encountering contamination on the assessment of current regulated activities, and historical land uses/activities at the project site as described in Table 19.1.

Table 19.1 Qualitative risk ranking

Risk and impact rating	Likelihood that the site may be affected by contamination	Basis for risk impact rating
High	Likely contamination source identified	The available information indicates that the location within the project site is currently identified as being contaminated on a public register of contaminated sites maintained by a regulator or has been the subject of an activity which is frequently associated with contamination.
Medium	Contamination potentially present at concentrations above the relevant guideline criteria and limited in extent.	The available information indicates that the location within the project site: — is or has been the subject of an activity which in some circumstances is known to be associated with contamination — has been historically filled with imported material, the origin of which is unknown — has groundwater records indicating the potential for contamination. The available information indicates that land within 500 metres of the construction footprint: — is currently identified as being contaminated on a public register of contaminated sites maintained by a regulator — is or has been the subject of an activity which is in some circumstances known to be associated with contamination — has groundwater records indicating the potential for contamination — is identified as land that may be affected by NOA or serpentine minerals.
Low	Contamination unlikely to be present above relevant guideline criteria and limited in extent.	The location within the project site has been partially cleared for agricultural and/or infrastructure (including roads) purposes, however no distinct contamination sources have been identified. The available information does not indicate that land within 500 metres of the project site: — is currently identified as being contaminated on a public register of contaminated sites maintained by a regulator — is or has been the subject of an activity which is frequently associated with contamination — has groundwater records indicating the potential for contamination — is identified as land that may be affected by NOA or serpentine minerals.
Insignificant	No contamination sources identified	The available information indicates that the location within the project site, or land within 500 metres of the project site is generally undisturbed bushland or grazing land.

19.4 Description of the existing environment

19.4.1 Topography

The topography of the soils and contamination study area is largely flat rising to the east. The topography ranges from about 70 metres Australian Height Datum (AHD) in the west to around 80 metres AHD in the east of the soils and contamination study area. Water features include The Forest Creek, Abercrombie Creek, and a number of dams that are inferred to be used for livestock and irrigation.

19.4.2 Geology

Published geological mapping data from NSW Seamless Geology Project accessed 11 March 2024 indicates that soils transported during the Cenozoic and Quaternary ages cover the soils and contamination study area with the majority of the study area being covered by alluvial floodplain deposits from the Cenozoic era. The soils have been deposited in alluvial floodplains, dune sands and lake deposits. The geological unit, origin and corresponding soil type are listed in Table 4.1 in Technical paper 15 (Soils and contamination impact assessment).

19.4.3 Soils

A search of the Australian Soil Classification (ASC) Soil Type Map of NSW on 6 March 2024 identified three soil types within the soils and contamination study area, namely vertosols, chromosols and rudosols. The soils and contamination study area is predominantly covered by vertosols that characteristically shrink and swell through wetting and drying phases. Rudosols, were found in the centre of the soils and contamination study area, and chromosols were found along The Forest Creek in the southern section of the project site.

A search conducted on the NSW Government eSpade online tool on 6 March 2024, indicates a low likelihood of salinity within the project site. The published digital graphical information systems (GIS) and the Commonwealth Scientific and Industrial Research Organisation Australian Soil Resource Information System indicates that there is an extremely low probability of ASS within most of the soils and contamination study area, except for low-lying areas surrounding former lakes and riverbeds, that are mapped as having a high probability of ASS occurrence. A search on the NSW Trade & Investment, Resources and Energy NOA mapping tool on 6 March 2024 shows no NOA in or near the soils and contamination study area.

19.4.4 Hydrogeology

The soils and contamination study area is situated within the Murrumbidgee surface water catchment. The Water Sharing Plan for the Murrumbidgee Unregulated and Alluvial Water Sources 2016 is in place for the catchment.

The Forest Creek and Abercrombie Creek, and ephemeral waterways are present on the project site. There are no major riverways, lakes or swamps situated within the soils and contamination study area, however Dry Lake is located north of the study area.

Groundwater levels beneath the project site have been measured to between seven to nine metres below ground level (mBGL) (Department of Planning, Industry and Environment (DPIE), 2019a). A search on the Water NSW Realtime tool for registered bores identified 18 bores within the project site listed for use as water supply for stock and domestic purposes or a WaterNSW asset. The identified registered bores are provided in Table 4.2 in Technical paper 15 (Soils and contamination impact assessment).

Refer to Chapter 14 (Hydrology, flooding and water) and Chapter 20 (Groundwater) for further information on surface and groundwater.

19.4.5 Land use and land zoning

The tenure in the soils and contamination study area is predominantly freehold, with some areas of Crown Land, including road reserves and Travelling Stock Reserves (TSRs). Maude Road is a livestock highway and Category 2 TSR with medium conservation value (Local Land Services (LLS), 2019). Category 2 TSRs are commonly used for travelling stock, emergency management and biosecurity; play an important role in biodiversity conservation and provide access for Aboriginal cultural heritage practices. Table 19.2 outlines the key land uses within and surrounding the soils and contamination study area.

Table 19.2 Key land uses within and surrounding the soils and contamination study area

Key land uses	Area (Ha)	Proportion (per cent) of total project site coverage
Grazing native vegetation	26,312	91.38
Grazing modified pastures	707.3	2.46
Irrigated cropping	533.6	1.85
Residential and farm infrastructure and transport and communication	103.4	0.36
Reservoir/dam	0.3	0.00
Marsh/wetland	1136	3.95
Grand total	28,792.6	100.00

The project site and surrounds are zoned RU1 Primary Production. RU1 land zoning is primarily intended to promote agricultural production and environmental protection. Livestock grazing is the predominant land use within the soils and contamination study area with small areas of cropping (DPIE, 2020c).

19.4.6 Database search results

A review of a database searches of potential current and former contaminant sources in the soils and contamination study area was carried out in January 2025 and is presented in Table 19.3.

Table 19.3 Search of potential and former contaminant sources

Item	Details within soils and contamination study area
List of NSW contaminated sites reported to NSW EPA	A search of the NSW EPA contaminated land database revealed that there has been no record of written notices issued under the CLM Act.
Current NSW EPA licensed activities	There are no sites that currently hold an Environment Protection Licence to undertake scheduled activities and/or scheduled development work under the POEO Act.
Clean Up and Penalty Infringement Notices	There are no sites that have a record of notice issued by the NSW EPA under Section 55 of the POEO Act.
Former licensed activities, now revoked or surrendered	There are no former licensed activities under the POEO Act, now revoked or surrendered.
Delicensed activities still regulated by the NSW EPA	There are no delicensed activities regulated by the NSW EPA.
Former gasworks	There are no former gas works.
National waste management site data base	There are no sites that are currently registered and operational under the National Waste Management Site Database.

Item	Details within soils and contamination study area
NSW EPA per- and polyfluoroalkyl substances (PFAS) investigation program	There are no sites listed on the NSW EPA PFAS investigation program.
Unexploded ordnance (UXO) database review	There are no mapped UXO areas.
Cattle dips	The presence/absence of cattle dips is unknown as no data could be found on the study area.

19.4.7 Historical aerial photography review

Available historical aerial photographs from NSW Government Spatial Services online tool were reviewed. Land uses do not appear to have significantly changed since the first available imagery from year 1974. The review did not identify any areas of potential historical filling or stockpiling as would be indicated by large embankments or scaring. There do not appear to be any areas within the majority of the project site, that included any major earthworks.

19.4.8 Previous investigations

No previous contamination investigations have been conducted within the soils and contamination study area.

19.4.9 Areas of contamination concern

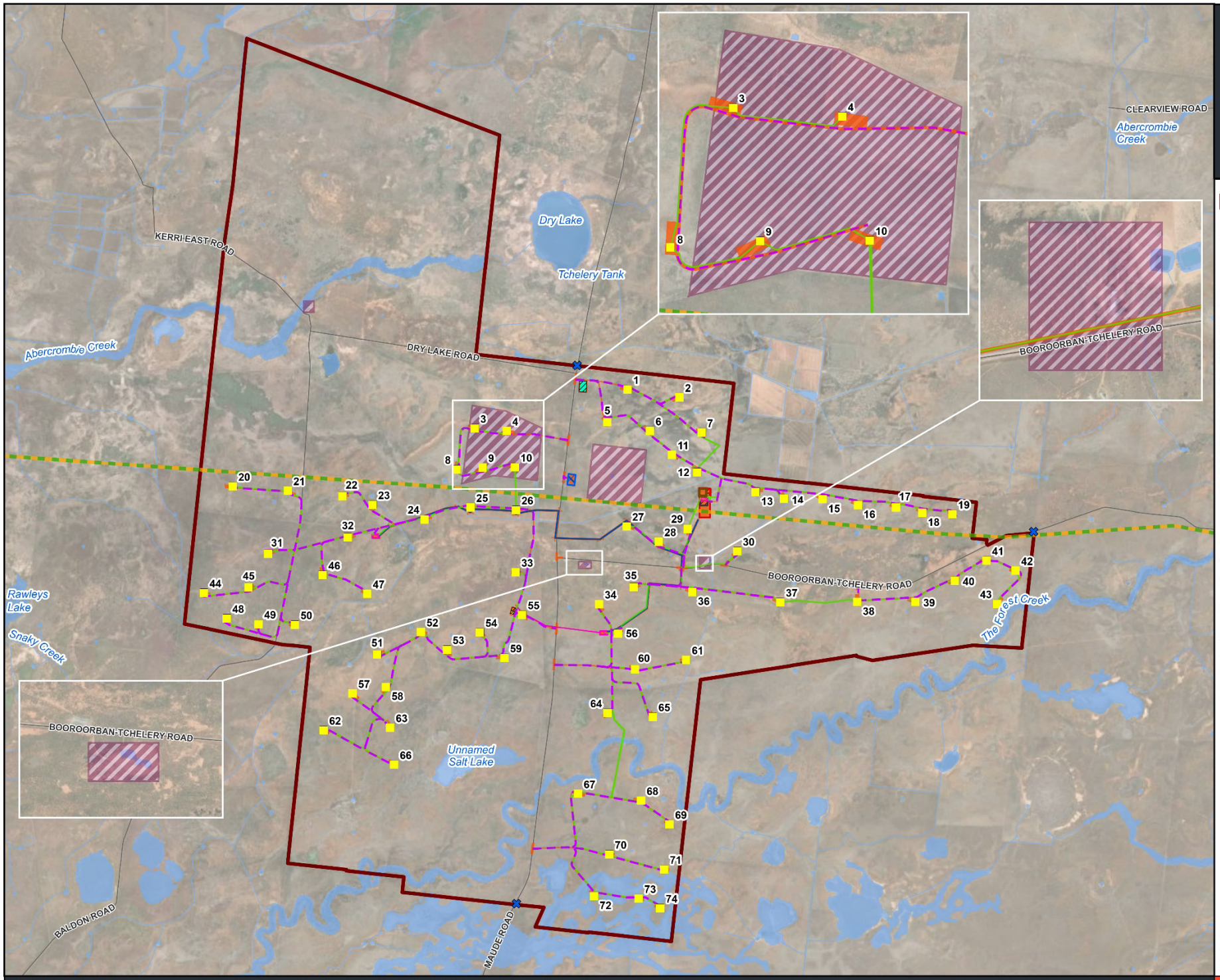
Table 19.4 provides an overview of the areas of contamination concern, and the associated contaminants of concern at within the soils and contamination study area. The identification of areas of contamination concern is based on existing land uses and the potential for contamination to occur. Figure 19.1 shows the locations of these areas of interest. These locations are identified from areal imagery, WSP has not conducted any site visit to investigate these locations or other potential locations not identified from this desktop assessment.

Table 19.4 Identified areas of potential contamination concern within the soils and contamination study area

Areas of contamination concern and rationale for reason		Confirmed location	Sensitive receiver	Potential contaminants of concern
Existing 220 kV transmission line infrastructure (the currently constructed transmission line is considered in Chapter 22 (Cumulative impacts).	Spills from maintenance activities on site, asbestos paints on tower infrastructure.	Portions of the soils and contamination study area.	— terrestrial flora/fauna — surface water features.	— benzene, toluene, ethylbenzene, xylenes, and naphthalene (BTEXN) — total recoverable hydrocarbons (TRH) — asbestos — polychlorinated biphenyls (PCBs).
Cleared improved agricultural land (including cropping and irrigated land).	Historical use of pesticides, and defoliants, large scale land use and the use of heavy machinery.	Near -34.855863 °S, 144.261196 °E	— current agricultural site users — terrestrial flora/fauna.	— heavy metals, — organochlorine pesticides (OCP) — organophosphorus pesticides (OPP).

Areas of contamination concern and rationale for reason		Confirmed location	Sensitive receiver	Potential contaminants of concern
Farm dams	Areas of potential contaminant sediment build-up.	Multiple locations.	— terrestrial flora/fauna.	— heavy metals — OCP — OPP — Nutrients.
Tchelery Woolshed	Potential for use of chemicals associated with wool production (machinery and treatment of wool).	Near 34.875716 °S, 144.284605 °E	— terrestrial flora/fauna — terrestrial flora/fauna — current residential and site users — terrestrial flora/fauna — current residential site users.	— TRH — BTEXN.
	Potential use of sheep dips for control of parasites in sheep.			**Historical** — arsenic. **Current** — organophosphates — synthetic pyrethroids.
	Pile of material indicative of rubbish located northeast of the property.			— heavy metals — BTEX — asbestos — polycyclic aromatic hydrocarbons (PAHs) — pesticides — TRH.
Tchelery Homestead	Indications of heavy machinery and storage silos on site indicative of the potential for bulk storage of fuel to fill the machinery. An item indicative of an above ground storage tank was identified through aerial imagery.	-34.808717 °S, 144.166049 °E	— terrestrial flora/fauna — current residential site users.	**Historical** — lead — TRH — BTEXN. **Current** — TRH — BTEXN.
Built-up areas and residences	Historical uncontrolled earthworks and building structures previously demolished/degraded.	-34.807048 °S, 144.168492 °E, -34.877582 °S, 144.284420 °E	— current residential site users — terrestrial flora/fauna — surface waters.	— heavy metals — BTEX — asbestos — PAHs — pesticides — TRH.

Areas of contamination concern and rationale for reason		Confirmed location	Sensitive receiver	Potential contaminants of concern
Potential quarry and sand deposit	Potential presence of fill material.	-34.87520284122694 °S, 144.24736597982204 °E	— terrestrial flora/fauna — current residential site users — surface water.	— heavy metals — BTEX — TRH — PAHs.



Tchelery Wind Farm

Figure 19.1
Areas of contamination concern

Legend

- Project site
- Potential contamination area

Project Design

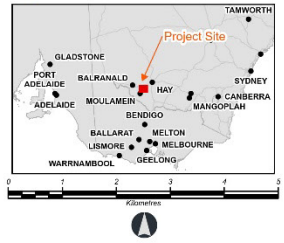
- Site access points
- Wind turbine generator
- Internal access track
- Construction footprint
- Construction compound
- Workforce accommodation camp
- Workforce amenities
- Operational facilities area
- Battery energy storage system
- Collector substation
- Concrete batching plant
- Operations and maintenance facility
- Laydown areas
- Switchyard

Transmission

- Overhead 330 kV lines
- Overhead 33 kV lines
- Underground 33 kV lines
- Existing 220 kV transmission line and proposed project EnergyConnect - eastern section

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 4/04/2025

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19.5 Assessment of potential impacts – construction

19.5.1 Potential to encounter contamination

Information reviewed during the desktop assessment has identified that greater than 94.0 per cent of the project site is grazing land with minimal areas of contamination concern identified. A number of potentially contaminating activities that have been identified are presented in Table 19.4 with the associated area of contamination concern as shown in Figure 19.1.

If inadequately managed, disturbance of contaminated areas has the potential to:

- mobilise contaminants, affecting nearby soils, surface water and groundwater
- increase the migration of contaminants into surrounding areas via leaching, overland flow and/or subsurface flow (water and/or vapour) or dust, with the potential to impact on receiving environments, such as The Forest Creek and Abercrombie Creek
- increase the risk of exposure to contaminants (direct contact and/or inhalation) by site workers, visitors and the local community.

Soil contamination could also be encountered during construction work at locations not previously identified as areas of potential concern. An unexpected contamination finds procedure would need to be developed as part of the Construction Environmental Management Plan (CEMP).

The risk of disturbing or encountering contaminated material during construction varies depending on the extent and type of contamination and the work conducted. Based on available information, a risk rating has been assigned to each land use and activity based on the potential for that use or activity to cause contamination, this information is presented in Table 19.5.

Table 19.5 Preliminary risk ranking for areas of potential contamination concern

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Farm dams	Excavation activities	As dams are replenished by rainfall, or irrigation practices there is potential for runoff carrying soil fertilisers, animal dung, pesticides and other pollutants to impact on water quality and sediment quality within the dam. If not managed appropriately, disturbance of sediments within the farm dam could result in the following exposure scenarios which have the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — off-site transport of contaminants via vehicle/plant movements — surface water runoff and discharge into receiving environment.	Medium potential for contaminant build-up within the dam sediments; however, it is unlikely that the dam sediments would need to be disturbed during construction.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low
	Pile construction and de-watering	As dams are replenished by rainfall, there is a potential for runoff carrying soil fertilisers, animal dung, pesticides and other pollutants to impact on water quality and sediment quality within the dam. If not managed appropriately, construction de-watering activities have the potential to draw-down surface water from within the farm dam, that has the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — incidental discharge into receiving environment.	Unlikely that dam water would be disturbed during construction.	Potential exposure pathway (unknown if dam water is in continuity with groundwater).	Low

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Cleared improved agricultural land (including cropping and irrigated land)	Excavation activities, vegetation clearing, vehicle movement, temporary stockpiling and utilities works	Common contaminants of concern associated with agricultural activity include pesticides, herbicides, nutrients and heavy metals. If not managed appropriately, disturbance of contaminated soil could result in the following exposure scenarios which have the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — off-site transport of contaminants via vehicle/plant movements — risk of dust exposure to construction workers — surface water runoff and discharge into receiving environment.	Medium potential for agricultural contaminants to be present.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Medium
	Pile construction and de-watering	Common contaminants of concern associated with agricultural activity include pesticides, herbicides, nutrients and heavy metals. If not managed appropriately, construction de-watering activities have the potential to encounter contaminated groundwater that has the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — incidental discharge into receiving environment.	Groundwater depth anticipated to be seven to nine mBGL. Low likelihood for groundwater contamination.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Existing transmission line infrastructure	Excavation activities, vegetation clearing, vehicle movement, temporary stockpiling and utilities works	Common contaminants of concern associated with maintenance activity surrounding transmission lines include pesticides, herbicides, and hydrocarbons. If not managed appropriately, disturbance of contaminated soil could result in the following exposure scenarios which have the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — off-site transport of contaminants via vehicle/plant movements — risk of dust exposure to construction workers — surface water runoff and discharge into receiving environment.	Low potential for contaminants to be present.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low
	Pile construction and de-watering	Common contaminants of concern associated with maintenance activity surrounding transmission lines include pesticides, herbicides, and hydrocarbons. If not managed appropriately, construction de-watering activities have the potential to encounter contaminated groundwater that has the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — incidental discharge into receiving environment.	Groundwater depth anticipated to be seven to nine mBGL. Low likelihood for groundwater contamination.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Potential quarry	Excavation activities, vegetation clearing, vehicle movement, temporary stockpiling and utilities works	Potential contaminants of concern associated with quarry activities include hydrocarbons and heavy metals. If not managed appropriately, disturbance of contaminated soil could result in the following exposure scenarios which have the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — direct contact, ingestion and inhalation by residential users — off-site transport of contaminants via vehicle/plant movements — risk of dust exposure to construction workers/residential users of the site surface water runoff and discharge into receiving environment.	Low potential for widespread contaminants to be present.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Medium
	Pile construction and de-watering	Potential contaminants of concern associated with quarry activities include hydrocarbons, heavy metals, pesticides which may leach into the groundwater table. If not managed appropriately, construction de-watering activities have the potential to encounter contaminated groundwater that has the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers and residential users — incidental discharge into receiving environment.	Groundwater depth anticipated to be seven to nine mBGL. Low likelihood for groundwater contamination.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low/Medium

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Tchelery Homestead (built-up areas and residences)	Excavation activities, vegetation clearing, vehicle movement, temporary stockpiling and utilities works	Potential contaminants of concern associated with residential areas and areas surrounding dwellings/homesteads include hydrocarbons, heavy metals, pesticides and asbestos impacted fill material. No significant filling is evident from aerial photographs. If not managed appropriately, disturbance of contaminated soil could result in the following exposure scenarios which have the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — direct contact, ingestion and inhalation by residential users — off-site transport of contaminants via vehicle/plant movements — risk of dust exposure to construction workers/residential users of the site — surface water runoff and discharge into receiving environment.	Low potential for widespread contaminants to be present.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
	Pile construction and de-watering	Common contaminants of concern associated with residential areas and areas surrounding dwellings/homesteads include hydrocarbons, heavy metals and asbestos impacted fill material. If not managed appropriately, construction de-watering activities have the potential to encounter contaminated groundwater that has the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers and residential users — incidental discharge into receiving environment.	Groundwater depth anticipated to be seven to nine mBGL. Low likelihood for groundwater contamination.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
Tchelery Woolshed (built-up areas and residences)	Excavation activities, vegetation clearing, vehicle movement, temporary stockpiling utilities works, pile construction and de-watering	Potential contaminants of concern associated with woolsheds and associated dwellings/homesteads include hydrocarbons, heavy metals, pesticides and asbestos impacted fill material. No significant filling is evident from aerial photographs. If not managed appropriately, disturbance of contaminated soil and groundwater could result in the following exposure scenarios which have the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers — direct contact, ingestion and inhalation by residential users — off-site transport of contaminants via vehicle/plant movements — risk of dust exposure to construction workers/residential users of the site — surface water runoff and discharge into receiving environment — incidental discharge of groundwater into receiving environment.	Low potential for widespread contaminants to be present.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Medium

Areas of interest	Construction activity	Construction impact	Likelihood	Consequence	Preliminary risk evaluation
	Pile construction and de-watering	Common contaminants of concern associated with woolsheds and associated dwellings/homesteads include hydrocarbons, heavy metals, pesticides and asbestos impacted fill material. If not managed appropriately, construction de-watering activities have the potential to encounter contaminated groundwater that has the potential to impact on human health and/or the environment: — direct contact, ingestion and inhalation by construction workers and residential users — incidental discharge into receiving environment.	Groundwater depth anticipated to be seven to nine mBGL. Low likelihood for groundwater contamination.	Exposure pathway complete during construction (without the implementation of appropriate controls).	Low/Medium

19.5.2 Potential risks and impacts to the project from existing sources of contamination

19.5.2.1 Naturally occurring asbestos

Based on the information reviewed in Section 19.4.3, there is no known or expected NOA minerals or serpentine and amphibole occurrence within the soils and contamination study area. Therefore, no NOA impacts are expected in relation to construction of the project.

19.5.2.2 Soil contamination

Construction activities, including excavation activities, vegetation clearing, vehicle movement and utility works, would disturb the soil. This could result in the exposure of sensitive receivers to contaminated soils, that could lead to ecological or human health impacts, if not properly managed. To assess the potential for contamination impacts during construction of the project, a contamination assessment has been performed in accordance with guidelines made or approved under the CLM Act. The outcomes of the qualitative risk ranking completed are presented in Table 19.5. The majority of areas of contamination concern were evaluated to pose a low risk during construction, with areas of cleared agricultural land (for cropping), Tchelery Woolshed and the potential quarry assigned a medium and a low/medium risk. It is noted that the risk rankings in Table 19.5 are prior to the implementation of the recommended mitigation measures identified in Section 19.7.

The potential risk associated with unexpected contamination finds (including potential uncontrolled filling) have not been assessed as this would be managed in accordance with an unexpected contamination finds procedure (refer to Appendix A of Technical paper 15 (Soils and contamination impact assessment)).

Following the implementation of recommended mitigation measures, it is anticipated that the identified medium risk rankings would ultimately present a low risk of exposure and would be effectively managed through controls in place in the CEMP and unexpected finds protocol.

19.5.2.3 Groundwater contamination

Based on the findings of the contamination and groundwater investigations, groundwater from identified areas of contamination concern poses a low risk to the environment, with regard to construction of the project. This is because the volumes of groundwater expected to interact with project infrastructure features during construction would be negligible or are not expected to require management.

If during construction, volumes of groundwater are encountered that may require management and potential disposal associated with de-watering activities, further investigations would need to be carried out to confirm the contaminant levels within the groundwater, potential volumes that may need to be managed and measures for appropriate management.

Releases of groundwater off-site into the surrounding environments would be managed through the CEMP to protect the surrounding surface and groundwater environments.

19.5.2.4 Construction compound and accommodation camp

Storage and laydown areas would be used to store construction materials, plant and equipment and recovered waste and recycling materials. Hazardous and dangerous goods storage would include petroleum, diesel, liquefied natural gas, herbicide, pesticide and mineral oils that would be secured in purpose-built bunded and secure areas. The potential impact resulting from construction storage and waste management is exposure of the surrounding soil and water environments to contamination from spills and leaks from plant and equipment during standard operations or incidents.

With appropriate and relatively standard construction controls in place as part of the CEMP, the risks from these activities would be minimised.

A wastewater treatment plant would be established at the workforce accommodation camp to manage the generation of wastewater. The water treatment plant would be appropriately sized according to the number of personnel to be housed at the workforce accommodation camps, including applicable redundancy for maintenance requirements. Wastewater would be treated in accordance with the National Guidelines for Water Recycling (Environment Protection and Heritage Council, 2006) to enable reuse for construction activities, such as dust suppression with any waste by-product to be disposed off-site at a licenced premise that can lawfully accept the waste.

19.5.2.5 Underground transmission line (33 kilovolt)

In two areas, a section of the 33 kV underground transmission line is planned be excavated in areas identified to be of contamination concern (Figure 19.1). The two areas are made up of agricultural land (including cropping and irrigated land), and a potential quarry. These areas have been identified as medium risk of contamination (Table 19.5). The installation of the transmission line includes excavation of the ground, resulting in the possibility of release and exposure of contamination associated with agricultural and quarry activities. Mitigation measures are proposed in Section 19.7 to minimise potential risks.

Other sections of the transmission line are planned to run beneath Forest Creek and other low-lying areas of lakes and riverbeds (Figure 19.1). These areas have been mapped to have high probability of ASS occurrence. Refer to Section 19.5.2.6 for management of ASS and Potential Acid Sulfate Soil (PASS).

19.5.2.6 Acid sulfate soils and acid rocks

Based on the information reviewed in Section 19.4.3, there is a low probability of encountering ASS with the exception of low-lying areas surrounding former lakes and riverbeds, that are mapped as having a high probability of ASS occurrence. Areas of PASS or actual ASS should be managed in accordance with the Acid Sulfate Soil Manual (ASSMAC, 1998). If avoidance of low-lying and waterlogged areas is unavoidable, a preliminary assessment would be carried out to determine whether ASS are present and if the proposed works are likely to disturb these soils.

19.5.2.7 Salinity

Development of bushland for alternative land use can change the movement of surface, and groundwater, resulting in a change in the way salts and other minerals interact. When the water table rises close to the surface, it carries dissolved salts that are typically locked in the soil and rock profile to the surface.

The current hydrogeological model is not anticipated to alter significantly during the project, given the limited scale of the proposed construction activity. As such, no significant impact on soil salinity is anticipated from the project. The localised impact would be managed by preventing re-use of excavated saline soils in low salinity areas.

Salinity has the potential to damage foundations of infrastructure, make soils unsuitable for re-use as fill, preclude vegetation growth and may affect landscaping. Saline soil and water have the potential to damage concrete and metal structures, including piers and transmission line structure foundations. Given the low risk of saline soils, there is low risk to the structures associated with the project.

19.5.2.8 Soil erosion and sediment transportation

Soil disturbance could occur during the construction phase that could result in soil erosion and associated sediment transportation. The highest potential for soil erosion would be associated with disturbance of soils on existing slopes during construction. The terrain of the construction footprint is predominantly flat; however, it includes rolling hills to alluvial floodplains. The Douglas Partners (2020) geotechnical report indicates that surface soils have a moderate to high potential for dispersion.

19.5.2.9 Stockpiling and spoil handling

Construction of the project would generate spoil including vegetation, general construction, and demolition waste that would be stored in stockpiles. Excavated material would be stockpiled to be used for backfill around the tower foundations and embankment filling at the tower site from which it was excavated. Topsoil would be kept separate from the excavated material to allow for placement at ground level during backfilling. Any excess excavated material would be spread evenly around the project site after completion of the foundation backfilling (if suitable) or removed from the project site and disposed of in accordance with the appropriate waste classification.

Stockpiling and screening of earthwork materials would pose a risk to the existing water quality in receiving environments through the increased likelihood of movement of sediment, with the risk increasing if stockpiles are in proximity to a watercourse. Stockpiling of mulched vegetation from clearing of trees and shrubs would also pose a risk of tannins leaching into watercourses, and increased loads of organics in watercourses.

Excess spoil stockpiled in locations that are open to rainfall or runoff would include appropriate mitigation measures such as sediment fences and diversion drains to mitigate the impact of sediment movement off-site. Correct implementation of stockpile management protocols would mitigate and manage impacts to the receiving environments water quality.

19.5.2.10 Surface water quality

The construction phase of the project has the risk of impacting watercourses within the soils and contamination study area and downstream areas, if not properly managed. Risk of surface water quality discharges not meeting trigger values, would vary depending on the stage of construction, the area of disturbance and presence of high rainfall or wind weather events.

The construction activities assessed with regard to water quality impacts include but are not limited to:

- vegetation clearing
- soil stripping, transportation and stockpiling for all construction, laydown, staging areas and access tracks
- earthworks and establishment of construction pads for each transmission line structure
- construction of footings and foundation works for the new transmission line structures including boring and/or excavation, steel fabrication works and concrete pours
- establishment and operation of concrete batching plant(s) during construction
- use of heavy and light machinery such as scrapers, excavators, dumpers, rollers, chainsaws and other equipment for all above activities (resulting potential spills or leaks of chemicals fuels or other waste materials)
- establishment and operation of construction compound and workforce accommodation camp.

Based on these activities, construction of the project may lead to increases of the following pollutants into waterways:

- nutrients (nitrogen and phosphorus) – commonly present in agricultural areas that may become mobilised from disturbance of agricultural land for construction work
- sediment from vegetation and topsoil clearing, soil excavation, movement and storage and stormwater runoff through disturbed sites
- chemicals, fuels, and hydrocarbons from use, refuelling and maintenance of equipment and construction machinery
- concrete slurry and wastewater – from concrete batching plant
- potential contaminants of concern related to previous land uses – TRH, BTEX, PAHs, OCPs and OPPs

- metals such as zinc, lead, copper, nickel, cadmium and chromium from disturbance of contamination and use and maintenance of vehicles and plant
- gross pollutants such as paper and plastic packaging and materials from material use on construction sites and general construction.

Construction of the project may degrade water quality if not properly managed. Poor management, such as uncontrolled failures of site-specific soil and erosion controls, may subsequently have impacts to surrounding ecology, sensitive receiving environments and other water uses. The risk of surface water quality discharges not meeting trigger values, would vary depending on the stage of construction, the area of disturbance and presence of high rainfall or wind weather events.

19.6 Assessment of potential impacts – operation

19.6.1 Potential impacts from existing potential sources of contamination to the environment and exposure to users

Soil disturbance activities are not expected to be part of the general maintenance activities. Operation of the project could possibly result in exposure to potentially contaminated soil or groundwater during maintenance of the underground infrastructure including the 33 kV transmission line.

During operation of the project, groundwater levels could be impacted through changing the natural pervious land surface into impermeable layers such as concrete pavement, that can reduce infiltration of rainfall and surface water recharge to the underlying aquifer. The proposed impervious areas are small relative to the local catchment area and the net impact on regional recharge and groundwater levels would be low.

Future decommissioning of underground infrastructure could result in mobilisation and exposure to contaminants associated with historical activities and/or contaminants associated with future use of the construction footprint.

19.6.2 Potential impacts to the environment from project activities

The operational impact related to the project would be potential hydrocarbon (fuels, diesel, oils) contamination of soil, surface water and groundwater arising from incidents involving vehicle accidents, leaks and spills associated with operation and maintenance of the Wind Turbine Generators (WTGs) or at the substation site. The substation will include a 33/330 kV substation and switchyard including ancillary infrastructure to connect to a 330 kV transmission line. The substation will incorporate two 33/330 kV oil-filled electrical transformers. The substation transformer will contain mineral oil. Leakage of substation transformer oil can result in environmental impacts due to toxicity and fire and/or explosion accidents should leaking oil directly contact high-voltage elements or other ignition sources.

Spill volumes related to the WTGs and substation incidents would be expected to be minor; however, the potential for hydrocarbon fuel to migrate off-site cannot be discounted. Spill containment facilities (such as bunded containers, designated fill points, and spill kits) would be used on maintenance work sites and at the substation. Furthermore, it is expected that the operator would implement and develop incident response procedures to manage the risk from these occurrences.

19.7 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to and from soils and contamination associated with the project are detailed in Table 19.6.

Table 19.6 Soils and contamination mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
SC1	Wind turbine generator structure foundations, and ancillary construction sites will be positioned to avoid disturbance to any known farm dams, where practicable.	Detailed design and pre-construction	All wind turbine generator locations
SC2	Disturbance to areas of medium risk of contamination will be avoided or minimised where practicable during construction. This includes the position of wind turbine generator foundations and other structural features. Areas of medium risk of contamination that will be disturbed by construction activities will be further investigated including completion of a site inspection. Where considered to be required, a Phase 2 investigation will be completed in accordance with National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013. Mitigation measures identified through phase 2 investigations will be implemented for the project.	Detailed design and pre-construction	Locations mapped as medium risk for contamination
SC3	Prior to ground disturbance in areas of potential acid sulfate soils occurrence (for example in low-lying areas surrounding former or current lakes and riverbeds), testing will be carried out to determine the presence of actual and/or potential acid sulfate soil. If acid sulfate soils are encountered, they will be managed in accordance with the Acid Sulfate Soil Manual (ASSMAC, 1998) and Neoen HSE Guideline.	Pre-construction and construction	Locations containing potential acid sulfate soils or acid sulfate soils
SC4	Prior to ground disturbance, a visual inspection will be carried out in accordance with the Department of Land and Water Conservation (2002) Site investigations for urban salinity for the presence of saline soils. Areas where evidence of salting is observed will be subject to further testing as required. If salinity is confirmed, excavated soils will be managed in accordance with Book 4 Dryland Salinity: Productive use of Saline Land and Water (DECC, 2008a) to prevent impacts from salinity. Erosion controls will be implemented in accordance with Blue Book (Landcom, 2004). The re-use of excavated saline soils in low salinity areas will be prevented.	Pre-construction and construction	All locations
SC5	During ground disturbance, excavated material will be segregated as per the different encountered soil layers (ie topsoil, natural) and stockpiled for subsequent backfilling purposes. Topsoil will be separated to ensure placement at ground level during backfilling.	Construction	All locations
SC6	The discovery of previously unidentified contaminated material will be managed in accordance with a contamination unexpected finds protocol (refer to Appendix A of Technical paper 15 (Soils and contamination impact assessment)).	Construction	All locations

Ref	Identified mitigation measure	Timing	Applicable location(s)
SC7	Construction materials, spoil and waste will be suitably stored to minimise the potential for soil, groundwater or water quality impacts. More specifically with reference to the guidelines specified in managing Urban Stormwater: Soils and construction (Landcom, 2004). Erosion and sediment controls will be developed and implemented to mitigate any runoff or infiltration impacts.	Construction	All locations
SC8	All chemicals, fuels or other hazardous substances will be stored in accordance with the supplier's instructions and relevant legislation, Australian Standards and applicable guidelines. The location of the bunded enclosures will be shown on site plans.	Construction and operation	All locations
SC9	Emergency spill procedures will be implemented to avoid and manage accidental spillages of fuels, chemicals or fluids during operation and maintenance activities in accordance with the Neoen Health, Safety and Environment Guideline. Environmental spill kits will be provided at strategic, accessible locations, and staff will be trained in spill response procedures.	Construction and operation	All locations

19.7.1 Interaction between measures

Mitigation measures in other chapters that are relevant to the management of contamination include:

- Chapter 14 (Hydrology, flooding and water), specifically measures to address project water requirements, water supply arrangements and wastewater disposal arrangements for construction and operation
- Chapter 15 (Air quality and greenhouse gases), specifically measures to address generation of dust and management of stockpiles
- Chapter 20 (Groundwater), specifically measures to address management of groundwater
- Chapter 21 (Waste management and resource use), specifically measures to address management of waste.

19.7.2 Managing key uncertainties

There are no key uncertainties associated with soil and contamination that would require further management beyond the implementation of mitigation measures.

19.7.3 Managing residual impacts

Residual impacts associated with soil contamination following the implementation of mitigation measures are negligible in both construction and operational phases. Further management would not be required.

20 Groundwater

This chapter summarises potential impacts to groundwater associated with the project and identifies mitigation measures to address these impacts. This chapter summarises information in Technical paper 16 (Groundwater impact assessment) prepared by WSP.

20.1 Summary of key findings

The key findings from the assessment of impacts to groundwater are as follows:

- potential impacts are expected to be short term and localised during construction and limited to areas with a shallow water table or perched system where interception might occur or during installation of deeper foundations
- an assessment in accordance with the NSW Aquifer Interference Policy 2012 (AIP) (Department of Primary Industries (DPI), 2012b) for Lower Murrumbidgee Alluvial Shallow and Deep groundwater sources complies with Level 1 minimal impact considerations indicating the project is anticipated to have minimal impact to the underlying groundwater environment
- overall, the project is anticipated to generally have a limited impact to groundwater, that would be further reduced with implementation of mitigation measures.

20.2 Setting the context

20.2.1 Statutory requirements

Potential impacts to groundwater associated with the project were assessed in line with the following legislation, policies and guidelines:

- *Environment Protection and Biodiversity Act 1999* (EPBC Act)
- *Water Act 2007* (Cth)
- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *Water Management Act 2000* (WM Act)
- Water Management (General) Regulation 2018
- *Protection of the Environment Operations Act 1997* (POEO Act)
- Murray-Darling Basin Plan 2012 (the Basin Plan, 2012) (Murray-Darling Basin Authority (MDBA), 2012)
- Murrumbidgee Alluvium water resource plan (Department of Industry, 2018)
- NSW Murray-Darling Basin Fractured Rock water resource plan (MDBA, 2022)
- NSW Aquifer Interference Policy 2012 (AIP) (DPI, 2012b)
- Guidelines for Groundwater Quality Protection in Australia (Australian Government, 2013)
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZG, 2018)
- Groundwater assessment toolbox for major projects in NSW (Department of Planning and Environment (DPE), 2022a).

20.3 Assessment method

A desktop groundwater assessment was carried out using publicly available data, reports and existing studies. The groundwater study area involved a two-kilometre buffer around the project site. From the available information the following assessments were carried out:

- desktop review of publicly available data, reports and existing studies was completed to develop an understanding of the existing hydrogeological environment within the groundwater study area
- a qualitative risk assessment that examined the various aspects of the groundwater system in context of potential impacts to the groundwater environment during construction and operation of the project
- development of a site conceptual model
- assessment of potential construction and operation impacts to physical and/or quality aspects of groundwater due to aquifer interference activities, or changes to the physical characteristics of aquifers affected by project related construction and operation activities
- an assessment of potential groundwater interception and water take construction activities against the minimal impact considerations outlined in the AIP (DPI, 2012b)

Where potential adverse effects to the groundwater systems were identified due to the project, recommended mitigation measures were provided to minimise these potential impacts.

20.4 Description of existing environment

20.4.1 Groundwater systems

The groundwater study area is within the Murray-Darling Basin. There are three distinct Murray-Darling Basin sediment formations underlying the groundwater study area:

- Shepparton Formation – unconsolidated to poorly consolidated mottled variegated clay interbedded with silty clay and lenses of coarse to fine sand and gravel from flat alluvial flood plains from the surface to about 70 metres below ground level (mBGL).
- Calivil Formation – interbedded clay, silty clay, silt and subangular to subrounded fine to coarse-grained quartz sand, reef quartz and metasediment gravel associated with the river valley from 40 metres to 140 mBGL.
- Renmark Group – comprised of sediments overlying rock associated with the Lachlan Fold Belt from 120 metres to 350 mBGL.

Four groundwater systems underlie the project site:

- Lower Murrumbidgee Alluvium (shallow perched groundwater) – this system is likely ephemeral with limited groundwater and localised around major recharge zones and is situated above the regional water table.
- Lower Murrumbidgee Alluvium (shallow) – this system represents the regional water table and extends to 40 mBGL, or the bottom of the geological Shepparton Formation, whichever is deeper, and groundwater quality is predominantly suited for stock and environmental purposes.
- Lower Murrumbidgee Alluvium (deep) – this system starts from the base of the Shepparton Formation to a maximum of 400 mBGL; however, the project is not expected to intercept this aquifer.
- Murray-Darling Basin Lachlan Fold Belt – this system is anticipated to be more than 200 mBGL and would not be impacted by the project. As such, this system has been discounted from further assessment in this Environmental Impact Statement (EIS).

20.4.2 Groundwater levels

Groundwater level information throughout the groundwater study area is sparse, with a search of the WaterNSW real-time water data website (WaterNSW, 2024) identifying nine water bores with groundwater level measurements recorded, with water depths ranging from 1.9 metres to 21.3 mBGL.

Groundwater levels and contours based on 2015–2016 data across the Lower Murrumbidgee Alluvium indicate groundwater levels in both the shallow and deep aquifers to be around 65 to 66 metres Australian Height Datum (mAHD) (about seven to nine mBGL, based on a surface elevation of 74 mAHD within the project site). Some variation to the estimated groundwater level can be expected across the project site and there is insufficient data to comment on seasonal variation of groundwater levels within the groundwater study area and their response to major recharge events, such as flooding. There is a clear decrease in groundwater levels in response to pumping from irrigation bores within the groundwater study area.

20.4.3 Groundwater quality

Groundwater quality within the Murrumbidgee Alluvial Groundwater Sources has been monitored from the 1970s with differences in water quality (salinity) noted between the shallow and deeper groundwater sources and laterally within a source (Department of Planning, Industry and Environment (DPIE), 2019a). Anticipated regional water quality for the Lower Murrumbidgee Alluvial groundwater source identified in (DPE,2022e) is provided in Table 20.1.

Table 20.1 Regional groundwater quality

Groundwater source	Expected water quality range within the groundwater study area
Lower Murrumbidgee Alluvial (Shallow)	Brackish: 3,000 to 7,000 mg/L
Lower Murrumbidgee Alluvial (Deep)	Fresh to brackish: 500 to 7,000 mg/L[1]

Note: mg/L – milligrams per litre.

(1) Salinity decreases with depth and is correlated to encountered geological formation (for example the Calivil Formation or Renmark Group).

(DPE, 2022e)

Available groundwater quality information for the groundwater study area was obtained from driller's records for registered bores listed in WaterNSW real-time water data website (WaterNSW, 2024). The interpreted groundwater quality and associated beneficial use categories (DPE, 2023c; Department of Industry, 2018) across the groundwater study area include:

- predominately brackish with a C1 beneficial use category, that is listed as suitable for stock drinking water, aquatic ecosystem protection, recreation and aesthetics, industrial water, and cultural and spiritual uses
- contained one record of potable, that is interpreted to have a beneficial use category of A1 to A3, suitable for drinking quality, irrigation and stock, aquatic ecosystem protection, recreation and aesthetics, industrial water and cultural and spiritual uses
- contained three records listed as slightly brackish, that is interpreted to have a beneficial use category of B to C1, possibly suitable for irrigation and suitable for stock, aquatic ecosystem protection, recreation and aesthetics, industrial water, and cultural and spiritual uses
- contained one record listed as very brackish, that is interpreted to have a beneficial use category of C1 to C2, suitable for stock drinking water, aquatic ecosystem protection, recreation and aesthetics, industrial water, and cultural and spiritual uses.

20.4.4 Sensitive receivers

A groundwater sensitive receiver is any identified receiver that utilises groundwater. Registered bores with a registered use as water supply and groundwater dependent ecosystems (GDEs) are considered sensitive receivers.

There are 23 registered groundwater users within the groundwater study area, 18 of which are within the project site. The 18 registered bores within the project site are listed for use as water supply for stock and domestic purposes or a WaterNSW asset. One monitoring bore, WaterNSW asset (GW036720), was identified as a sensitive receiver within the groundwater study area. However, no registered bores are located within the construction footprint.

There are no high priority GDEs listed within the Murrumbidgee Alluvium water sharing plan or GDEs identified as containing medium, high, or very high ecological value aquatic ecosystems (HEVAE) within the groundwater study area.

20.5 Assessment of potential impacts – construction

During the construction phase of the project, potential impacts are expected to be short term, localised, and limited to areas with a shallow water table or perched system where installation of deeper foundations may intersect groundwater.

20.5.1 Reduced quantity and level of groundwater

Key construction activities that have the potential to impact groundwater recharge and/or levels include the construction/installation of Wind Turbine Generators (WTGs), construction of temporary and permanent auxiliary infrastructure, and construction water supply.

Excavation works would be required at each WTG and auxiliary infrastructure locations to enable the installation of foundations. WTGs typically require shallow foundations, with a depth of up to six metres expected. Groundwater is anticipated to be at a depth greater than seven mBGL and therefore is unlikely to be intercepted by WTG foundations. However, concrete piles installed to greater depths may be adopted to reduce required excavation and concrete volumes, that would potentially intercept local groundwater. A maximum depth of construction activities has been assumed to be 15 mBGL. Depth of piling foundations would be dependent on the underlying materials geotechnical properties.

Whether shallow or deeper foundations are adopted for the construction of WTGs, there is no permanent take of water. Therefore, there is no permanent change to groundwater levels and associated sensitive receivers during construction.

In the event surface water availability does not meet the project's water requirements during construction, groundwater supply could be investigated. Groundwater for water supply, if required, would be temporary and within licensing controls, therefore any temporary changes to groundwater levels and quality would be within approved impact limits.

20.5.2 Changed recharge or groundwater flow paths

Recharge from infiltration may be impacted through changes in land use and vegetation clearing, or changes to the permeability of the underlying soils through compaction in the area beneath the work pads used for construction activities.

Groundwater flow paths are not anticipated to be intersected by shallow earthworks or ground preparation tasks such as the removal of vegetation and topsoil. Concrete pilings that intercept groundwater would result in small scale localised changes in flow paths. Concrete pilings would not obstruct groundwater flow or reduce the available water as piling foundations are limited in width (typically in the order of metres). As such, the project would not result in a permanent alteration to groundwater flow during construction.

20.5.3 Groundwater quality

Changes to groundwater quality can occur due to a variety of reasons, including disturbance of contaminated groundwater or soils, accidental release of chemicals (such as fuels and oils) used during construction, migration of contaminants into surrounding aquifers via infiltration of poor-quality water, or mobilisation of salts or saline water. All instances could have the potential to reduce quality and lower the beneficial use of local groundwater sources. With the implementation of mitigation measures, potential adverse impacts on groundwater quality are unlikely to occur during construction.

The volumes of groundwater expected to interact with project infrastructure during construction would be limited and can be managed; therefore, the areas of groundwater contamination concern pose a low risk to the environment during construction.

20.6 Assessment of potential impacts – operation

Potential impacts during operation, including on identified receivers such as registered groundwater users and GDEs, are expected to be lower than during construction. Potential impacts on groundwater during operation of the project include:

- changed recharge or groundwater flow paths:
  - permanent associated subsurface foundations and footings for infrastructure, such as pile foundations for permanent ancillary infrastructure or WTGs, if adopted
- changes to groundwater quality (salinity and contamination) available for use and change the beneficial use of the resource:
  - permanent associated subsurface foundations and footings for infrastructure, that may degrade and impact groundwater quality
  - storage, spillage and leaks of hazardous substances used during operation
  - permanent subsurface foundations for infrastructure that alter groundwater flow paths, distributing existing contaminants
  - leaching of contaminants from contaminated fill.

The potential changes to infiltration would result in a negligible change to surface infiltration as the areas affected are small in scale compared to the underlying groundwater source and its recharge contributions. Where deeper concrete pilings for WTGs or permanent ancillary infrastructure are adopted, it would likely intercept the local water table. This would result in small scale localised changes to flow paths. However, the concrete pilings beneath the water table would not significantly obstruct groundwater flow or reduce the available water at sensitive receivers as pile diameters are small, typically in the order of metres. Therefore, the risk to the environment from permanent structures adopting piling foundations is low.

Potential impacts to the underlying groundwater sources from infiltration of chemicals and hazardous materials is low and would be managed through standard mitigation measures in the Operation Environmental Management Plan (OEMP).

20.7 Minimum impact considerations

The AIP provides a framework for assessing the impacts of aquifer interference activities on groundwater resources and defines minimal impact considerations to ensure no more than minimal harm occurs to key water-dependent assets. The maximum depth of construction activities is anticipated to be 15 mBGL for concrete piling, indicating that only the Lower Murrumbidgee Alluvial Shallow groundwater source may be intercepted.

The AIP provides minimal considerations for highly productive water sources including Lower Murrumbidgee Alluvial Shallow and Deep groundwater sources (see Table 8.1 of Technical paper 16 (Groundwater impact assessment)). The assessment of the project during construction and operation complies with Level 1 minimal impact considerations. This indicates the project is anticipated to have minimal impact to the underlying groundwater environment.

Groundwater is currently not anticipated to be required to support water supply for the construction of the project. If groundwater is required for construction water supply, it would be sourced from existing bores installed to extract from either the Lower Murrumbidgee Alluvial Shallow or Deep groundwater source and would be regulated per licensing requirements.

20.8 Mitigation measures

Proposed mitigation measures to mitigate potential impacts to groundwater associated with the project are detailed in Table 20.2.

Table 20.2 Groundwater mitigation measures

Ref	Mitigation measures	Timing	Applicable location(s)
GW1	A Soil and Water Management sub-plan will be prepared as part of the Construction Environmental Management Plan and contain details of appropriate measures if groundwater is encountered during construction. The sub-plan will include but is not limited to: — appropriate design of fuel and oil storage areas — use nominated and bunded fuel and chemical storage areas — provision of spill kits for cleaning up chemical, oil and fuel spillages — training for personnel — procedure for managing any intercepted shallow groundwater — procedures for soil storage (including any potential contaminated soil) and erosion control.	Pre-construction	All locations
GW2	In the event that groundwater is encountered during excavations, any dewatering volumes will be recorded and managed in accordance with the *Water Management Act 2000*.	Construction	Areas of intercepted groundwater
GW3	If groundwater is to be used as a water supply during construction, it will be from existing groundwater bores. Extraction volumes from water supply bores will be licensed, monitored, and recorded. Regular analysis of extracted volumes will be completed against existing applicable water access licence and approval requirements.	Construction	Existing water supply bores

Ref	Mitigation measures	Timing	Applicable location(s)
GW4	Direct impacts to registered bores, including WaterNSW monitoring bore GW0036720, will be avoided, where practicable. If the bores are not required to be removed during construction, then they will be clearly demarcated to protect the infrastructure. Where impact is unavoidable and a bore will require decommissioning, it will be replaced in a similar nearby location in consultation with the bore owner and landowner.	Construction	All locations
GW5	Emergency spill procedures will be implemented to avoid and manage accidental spillages of fuels, chemicals or fluids during operation and maintenance activities in accordance with the Neoen Health, Safety and Environment Guideline. Environmental spill kits will be provided at strategic, accessible locations, and staff will be trained in spill response procedures.	Operation	All locations
GW6	All chemicals or other hazardous substances at the substation will be stored in bunded and weatherproof facilities away from drainage lines, and in accordance with supplier's instructions and relevant legislation, Australian Standards and applicable guidelines. The capacity of the bunded area will be at least 130 per cent of the largest chemical volume contained within the bunded area. The location of the bunded enclosure/s will be shown on site plans in the Construction Environmental Management Plan.	Operation	Planned substation

20.8.1 Interaction between measures

Mitigation measures in other chapters that are relevant to the management of groundwater include:

- Chapter 14 (Hydrology, flooding and water), specifically measures to address impacts to surface water
- Chapter 19 (Soils and contamination), specifically measures to address contamination associated with groundwater.

20.8.2 Managing key uncertainties

There are no key uncertainties associated with groundwater that would require further management beyond the implementation of mitigation measures.

20.8.3 Managing residual impacts

There are no key uncertainties associated with groundwater that would require further management beyond the implementation of mitigation measures.

21 Waste management and resource use

This chapter summarises the potential impacts from waste management and resource use associated with the project and identifies mitigation measures to address these impacts.

21.1 Summary of key findings

The key findings from the assessment of impacts from waste management and resource use are as follows:

- disposal of waste during construction and operation is not expected to cause significant adverse environmental impacts through application of mitigation measures
- waste streams during construction are expected to be green waste, excess spoil, liquid and oil wastes, and general construction waste
- due to the scale of the project, the demand for materials is not considered to be high. Where practicable, opportunities to source construction materials locally as well as use of recycled materials has been incorporated into the project design
- electricity on-site would be sourced from connection to the power grid and a generator where it is not practicable to obtain power from the electricity network
- water would be sourced from existing surface Water Access Licences (WALs) during construction for dust suppression, concrete batching and Wind Turbine Generator (WTG) foundations, and worker facilities. Where practicable, measures such as using recycled water would occur to reduce demand on local water supplies
- during operation, resources that would be used include water, wastewater, electricity and fuel. Waste is expected to be limited to equipment maintenance, general domestic waste from site personnel, and wastewater from the operation and maintenance facility.

21.2 Setting the context

21.2.1 Statutory requirements

Potential impacts from waste management and resource use were assessed in line with the following legislation, policies and guidelines:

- *Protection of the Environment Operations Act 1997* (POEO Act)
- Protection of the Environment Operations (Waste) Regulation 2014
- *Waste Avoidance and Resource Recovery Act 2001* (WARR Act)
- NSW Waste and Sustainable Materials Strategy 2041: Stage 1 – 2021–2027 (Department of Planning, Industry and Environment, 2021c)
- Waste Avoidance and Resource Recovery Strategy 2014-2021 (Environment Protection Authority (EPA), 2014a)
- Waste Classification Guidelines (EPA, 2014b).

21.3 Assessment method

21.3.1 Waste management

The assessment method for waste management involved:

- review the regulatory framework for waste management
- identification of potential waste generating activities
- identification of the likely classification of waste generated by the project in accordance with relevant legislation and guidelines
- estimation of quantities of waste, where practicable
- identification of available waste management options
- review of any community views raised during consultation in relation to waste generated by the project
- identification of waste mitigation measures for construction and operation.

The waste types detailed in this Environmental Impact Statement (EIS) are indicative and have been identified for the purpose of determining potential waste impacts and waste management options. Quantities of waste generated by the project would be confirmed as the design is refined; however, the identified waste management options are variable and would be appropriate to the final waste quantities.

Typical management and mitigation measures, in line with the regulatory framework outlined in Section 21.2 have also been proposed to appropriately manage potential waste impacts (refer to Section 21.7).

21.3.2 Resource use

The assessment method for resource use involved the following:

- review of likely resources required for construction of the project, including construction materials, energy and water
- development of management strategies to adequately address waste during construction including targets for beneficial reuse of solid wastes, wastewater and other construction wastes
- review of any community views raised during consultation in relation to resource use by the project
- identification of resource reuse or use mitigation measures for the project.

21.4 Description of existing environment

There are several licensed waste management facilities in the area near the project.

21.4.1 Edward River local government area

Edward River Council operates the following waste depots within the Local Government Area (LGA) (Riverina and Murray Joint Organisation Murray Waste Group, 2022):

- Deniliquin Landfill Depot (Tip Road, Deniliquin NSW 2710)
- Blighty Waste Disposal Depot (Riverina Highway, Blighty NSW 2713)
- Conargo Landfill (McKenzie Street, Conargo NSW 2710)
- Pretty Pine Landfill (Gibbs Road, Pretty Pine NSW 2710)

- Wanganella Landfill (Cobbs Highway, Wanganella NSW 2710)
- Booroorban Landfill (Cobbs Highway, Booroorban NSW 2710).

Metal recycling facilities are available at Deniliquin Landfill Depot, Blighty Waste Disposal Depot and Pretty Pine Landfill Depot. The Deniliquin Landfill Depot also supports the national drumMuster program, that accepts triple rinsed plastic and steel drums (oil drums are not accepted); however, The Deniliquin Landfill Depot is reaching critical capacity while serving as the main licenced waste disposal site for the LGA with no operation for expansion to the southwest and northwest (MRA Consulting Group, 2019).

The landfill sites that accept used motor oil are located at Blighty, Conargo, Pretty Pine, Wanganella, and Booroorban landfills.

Sewage treatment plants are located at the Deniliquin Sewage Treatment Plant at Calimo Street, Deniliquin (Environment Protection Licence Number 1694).

Consultation has been carried out with Edward River Council regarding the use of Deniliquin Landfill Depot for general waste generated by the project. Further consultation would be carried out with local Edward River Council regarding wastewater and waste disposal options for the project prior to construction.

21.4.2 Murray River LGA

Murray River Council operates the following waste depots:

- Moulamein Land Depot (126 Tchelery Road, Moulamein)
- Barham Waste Transfer Station (732 East Barham Road, Barham)
- Koraleigh Landfill (505 Koraleigh Road, Koraleigh)
- Mathoura Waste Transfer Station (27 Clifton Street West, Mathoura)
- Moama Waste Management Facility (91 Centre Road, Moama).

Construction waste, demolition waste, and steel are accepted at both Barham Waste Transfer Station and Mathoura Waste Transfer Station. Steel is also accepted at Koraleigh Landfill.

Sewerage treatment plants are located at the Moama Sewer Treatment Plant, Mathoura Sewer Treatment Plant, Picnic Point Sewer Treatment Plant, Barham Sewer Treatment Plant, Moulamein Sewer Treatment Plant, Murray Downs Sewer Treatment Plant, Tooleybuc Pondage and Wakool Pondage.

Consultation would be carried out with Murray River Council regarding wastewater and waste disposal options for the project.

21.4.3 Hay LGA

Hay Shire Council operates the Hay Waste Disposal Depot and Hay Community Recycling Centre (Tip Road (Thelangerin Road), Hay).

The Hay Waste Disposal Depot supports the national drumMuster program while the Hay Community Recycling Centre accepts used motor oils.

The Hay Sewerage Treatment Plant is located off Old Thelangerin Road, Hay, that provides a wastewater and sewerage scheme within Hay.

Consultation would be carried out with Hay Shire Council regarding wastewater and waste disposal options for the project.

21.5 Assessment of potential impacts – construction

21.5.1 Waste

The anticipated waste streams generated during construction would include the following:

- vegetation waste generated by vegetation removal during enabling works
- excess spoil from excavation works associated with the WTGs and access tracks
- contaminated soil or spoil
- general construction waste such as cut-offs, packaging and excess construction material (such as concrete, timber, plastic and metal)
- waste oils, grease and lubricants from maintenance of construction plant and equipment
- wastewater from the workforce accommodation camp, construction compounds and operation and maintenance facility
- domestic waste from site personnel including food scraps, glass and plastic bottles, paper and plastic containers.

Proposed waste handling and mitigation measures for construction waste streams are provided in Table 21.1.

Table 21.1 Management of construction waste

Waste type	Management
Vegetation and green waste	As far as practicable, green waste would be chipped, mulched and reused for vegetation management or dust suppression on-site, reused in other projects in accordance with the requirements of any applicable resource recovery order and exemption, or collected by an authorised contractor and recycled off-site. Noxious weeds would be disposed of in accordance with relevant guidelines.
Spoil from excavation works	Net surplus of spoil would be removed from the site for reuse where practicable or disposed of to an appropriately licenced waste facility.
Contaminated spoil or soils	If potentially contaminated soils are encountered during earthworks, on-site testing of these soils would be carried out to determine the appropriate waste classification prior to disposal at a suitably licenced waste facility. Further detail regarding management of any contaminated soils is provided in Chapter 19 (Soils and contamination).
General construction waste	General construction waste would be managed in accordance with the *Waste Classification Guidelines* (NSW EPA, 2014b) and directed to a waste management facility that is lawfully permitted to accept that type of waste or reused in other projects in accordance with the requirements of any applicable resource recovery order and exemption. Waste would be segregated and stockpiled on-site. Materials such as timber and metals would be separated for reuse or recycling. Electrical waste would be stored for collection by an authorised contractor for recycling off-site, where practicable, or disposal at an appropriately licenced facility. Any additional metals such as steel or aluminium (either from redundant infrastructure or waste from new structures) would also be recycled, where practicable.

Waste type	Management
Waste oils, grease and lubricants	Waste from construction vehicle and plant maintenance activities would be collected and stored in designated waste storage areas. for collection by an authorised contractor for off-site disposal. Where practicable, containers holding oil, grease and lubricants would be stored separately for disposal. Waste oil filters would be stored in recycling bins and collected by an authorised contractor and recycled or disposed of off-site, where practicable.
Liquid waste	Wastewater treatment plants would be established at the workforce accommodation camps to manage the generation of wastewater. The water treatment plants would be appropriately sized according to the number of personnel to be housed at the respective workforce accommodation camps, including applicable redundancy for maintenance requirements.
Domestic waste from site personnel	Waste containing food would be stored appropriately (covered) and regularly removed from site for disposal to reduce the likelihood of attracting pests and vermin (including birds). Recyclable materials such as paper, cardboard, plastics, glass, ferrous, and non-ferrous containers would be stored at recycling bins for collection by an authorised contractor and recycled off-site. Where recycling is not feasible, waste would be collected and stored in designated waste storage areas for collection by an authorised contractor for off-site disposal at a licenced waste facility.

21.5.2 Resource use

21.5.2.1 Materials selection and use

The project would require a wide range of materials during construction. Typical materials and resources would likely include:

- soil
- water
- bitumen, cement, concrete, plastics, paints and timber
- chemicals and materials including diesel and other fuels, gases, herbicides, oils, greases, lubricants, paints and epoxies
- gravel and sand for concrete production
- metal.

The majority of materials required for the construction of the project are considered common construction materials. Metals required are considered relatively abundant, with the project not likely to impact availability. Opportunities to utilise recycled materials in the project would be explored during detailed design and construction.

Due to the relatively small scale of the project, demand for materials is not considered high. In consideration of the materials for the project, the resulting impact would be low.

21.5.2.2 Energy and fuel use

Construction of the project would require use of energy and fuels to power plant, equipment and construction traffic. Fuels would likely include non-renewable sources such as diesel and unleaded petrol.

Electricity needs on-site would likely be provided by connection of the construction site offices to the electricity network. A generator would be used where it is not practicable to obtain power from the electricity network. Energy use would include fuel consumption associated with construction traffic (including deliveries and workforce movements). Local sourcing of materials where practicable would ensure minimisation of energy and fuel use.

21.5.2.3 Water

As described in Chapter 14 (Hydrology, flooding and water) water would be required during construction for:

- soil and fill conditioning
- dust suppression on WTG and associated construction sites, and on access tracks through the use of a water spray attached to a tanker vehicle
- concrete production and washout, concrete pours, and WTG foundations
- vehicle and equipment wash down
- general worker facilities.

The majority of potable water utilised for the construction compound and amenities would be imported and is likely to be sourced through a commercial arrangement with Edward River Council, neighbouring councils including Murray River Council and Hay Shire Council or a local water cartage supplier.

Non-potable water would be utilised for construction would be sourced from existing surface WALs during construction.

The total water demand is estimated at approximately 180 megalitres per year during construction. The following approximate volumes of water would be required for construction of the project:

- 150 kilolitres per day for concrete production
- 200 kilolitres per day for road construction
- 100 kilolitres per day for dust suppression works
- 10 kilolitres per day for ablutions and drinking water (potable water)
- 10 kilolitres per day for toilets
- 30 kilolitres for day for vehicle and equipment washdowns
- 100 kilolitres for firefighting tanks.

Arrangements for water supply would be confirmed during detailed design. This would include consideration of options for minimising water use, for example reuse.

21.6 Assessment of potential impacts – operation

During operation, the main source of waste material is expected to be from vegetation maintenance with small quantities of other waste materials generated from maintenance activities such as replacement of fittings and equipment, general domestic waste, and wastewater from operation and maintenance personnel. Disposal of waste generated during operation is not anticipated to result in significant adverse environmental impacts as removal of waste generated would be managed through the application of standard environmental mitigation measures.

Resources used during operation would include, and not limited to:

- water
- wastewater
- electricity
- fuel.

While the project would result in some increased demand on local and regional resources, it would be unlikely that the project alone would result in any resource becoming scarce or in short supply.

Wastewater from operation and maintenance of the project would be managed through a dedicated on-site wastewater management system.

21.7 Mitigation measures

Proposed mitigation measures to mitigate potential impacts from waste management and resource use associated with the project are detailed in Table 21.2.

Table 21.2 Waste management and resource use mitigation measures

Ref	Identified mitigation measure	Timing	Applicable location(s)
WM1	Waste streams will be segregated to avoid cross-contamination of materials and maximise reuse and recycling opportunities.	Construction	All locations
WM2	All waste generated and surplus spoil to be removed from construction of the project will be transported to appropriately licensed waste disposal or transfer facilities.	Construction	All locations
WM3	All waste will be assessed, classified, managed and disposed of in accordance with the Waste Classifications Guidelines (NSW EPA, 2014b)	Construction and operation	All locations
WM4	Waste generated during operation will be managed in accordance with standard maintenance practices and processes for the identification, classification, handling and management of waste.	Operation	All locations
WM5	A licensed on-site wastewater management system will be installed to treat and dispose of wastewater from the operation and maintenance facility.	Operation	Operation and maintenance facility

21.7.1 Interaction between measures

Mitigation measures in other chapters that are relevant to waste management and resource use include:

- Chapter 14 (Hydrology, flooding and water), specifically measures for a soil and water sub-plan as part of the Construction Environmental Management Plan (CEMP) to address potential erosion and sedimentation impacts during spoil handling and management stockpile management procedures
- Chapter 17 (Traffic and access), specifically measures for a traffic and access sub-plan as part of the CEMP to address potential traffic and transport impacts from spoil haulage
- Chapter 18 (Hazards and risk), specifically measures that address handling of hazardous materials
- Chapter 19 (Soils and contamination), specifically measures that address management of other contamination risks including management of construction materials, spoil and waste.

21.7.2 Managing key uncertainties

Waste quantities and resource use including materials, energy, and water use, would be confirmed during the detailed design phase, prior to construction commencing. Measures would target recovery, recycling and reuse of construction waste where practicable, and any waste that cannot be reused on-site would be transported to an appropriately licensed facility.

21.7.3 Managing residual impacts

Residual impacts associated with waste and resource use following the implementation of mitigation measures are negligible in both construction and operational phases. Further management would not be required.

22 Cumulative impacts

This chapter summarises potential cumulative impacts associated the project and identified mitigation measures to address these impacts. This chapter summarises information in technical papers 1 to 16 and chapters 7 to 21.

22.1 Summary of key findings

Cumulative impacts have the potential to occur when benefits or impacts from a project interact or overlap with benefits or impacts from other projects and potentially result in a larger overall effect (positive or negative) on the environment or local communities. Potential cumulative impacts associated with the project were assessed in line with the Cumulative Impact Assessment Guidelines for State Significant Projects (the Guidelines) (Department of Planning, Industry and Environment (DPIE), 2022a).

Combined incremental cumulative impacts (combined effect of the identified incremental impacts on a sensitive receiver or area) may be experienced by the following:

- Sensitive receiver 3 (Everslee) may experience both noise and visual impacts during construction.
- Local communities and residents within Edward River, Hay, Balranald and Murray River Local Government Areas (LGAs) in New South Wales (NSW), and Gannawarra and Swan Hill LGAs in Victoria, may experience social and economic impacts during construction and operation.
- Groundwater beneath the project site is considered to have a low likelihood for contamination. However, if groundwater is encountered during construction, there is potential for cumulative impacts associated with groundwater and contamination.
- Landholders within and nearby to the project site may experience cumulative impacts from loss of agricultural land and changes to aerial application operations.

Issue-specific cumulative impacts (cumulative impact of the project and other relevant future projects on relevant matters) may include the following:

- Biodiversity – minor cumulative impacts to wildlife connectivity, habitat corridors, and bird and bat impacts.
- Land use – negligible cumulative impacts to agricultural practices and production.
- Landscape character and visual amenity – negligible cumulative impacts to road users of Maude Road and Booroorban-Tchelery Road.
- Social – potential for negative and positive cumulative impacts including changes to social cohesion and decreased sense of safety as well as improvements to local and regional economies.
- Economic – minor cumulative impacts related to sourcing materials, labour and accommodation. The project would also provide positive economic impacts to the local area, NSW and beyond.
- Noise and vibration – potential for minor cumulative noise impacts at Sensitive receiver 1 (Tchelery Homestead) (associated receiver) from simultaneous construction of the project and Baldon Wind Farm, with no significant cumulative impact during operation.
- Traffic and access – minor cumulative impacts associated with overlapping peak workforce traffic, oversize overmass (OSOM) and heavy vehicle traffic and road works on public roads to accommodate OSOM movements.

The combined cumulative impact assessment considered the combined effect of the different cumulative impacts of the project on key matters, sensitive receptors or important features with other relevant future projects. Construction of the project and other relevant future projects have potential to result in cumulative impacts associated with social and economic conditions, traffic movement, landscape and visual amenity and land use:

- local communities and residents have potential to experience cumulative benefits of the project and other relevant future projects from increased employment opportunities, increased income and improvements in socio-economic conditions from implementation of multiple benefit sharing programs
- potential adverse cumulative impacts may be experienced by local road users and landholders
  - road users have potential to experience cumulative impacts from increased OSOM and heavy vehicles traffic movements, visual impacts of both the project and Project EnergyConnect (NSW – Eastern Section) and increased apprehension of the safety of roads
  - local landholders have potential to experience minor cumulative impacts associated with impacts to agricultural activities, associated income and changes to sense of place and rural aesthetic.

During operation, local communities would likely continue to experience cumulative benefits from benefit sharing programs. Additionally, minor cumulative impacts associated with changes to landscape character and land use from operation of multiple energy-related projects. Potential cumulative impacts during decommissioning would be minor and likely associated with movements of OSOM and heavy vehicles and potential employment opportunities.

Effective implementation of proposed mitigation measures is anticipated to appropriately mitigate potential cumulative impacts to local road users, landholders and communities.

22.2 Setting the context

Potential cumulative impacts associated with the project were assessed in line with the Guidelines (DPIE, 2022a).

The Guidelines define cumulative impacts as those arising as a result of incremental, sustained and combined effects of human action and natural variations over time that can be both positive and negative. These impacts can be caused by the compounding effects of a single project or multiple projects in an area, and by the accumulation of effects from past, current and future activities as they arise. When a project is assessed in isolation, the environmental impacts (or benefits) may not be considered significant. However, when combined with other projects, the resultant cumulative effects may result in a greater extent, magnitude or duration of impact than may otherwise be generated separately by each project.

22.3 Assessment method

The cumulative impact assessment (CIA) method involved the following key tasks:

- identifying relevant future projects to be included in the CIA
- assessing and evaluating the potential cumulative impacts of relevant future projects, including identification of any issues likely to have cumulative impacts during construction and/or operation of the project through the following assessment types:
  - incremental assessment – effects of the project on the baseline conditions of relevant matters considered within chapters 7 to 21 of this Environmental Impact Statement (EIS)
  - combined incremental assessment – the combined effect of the identified incremental impacts on a sensitive receiver or area
  - issue-specific CIA – the cumulative impact of the project and other relevant future projects on relevant matters, such as biodiversity

- combined CIA – the combined effect of different issue-specific cumulative impacts of the project and other relevant future projects on a sensitive receiver or area

- identifying appropriate mitigation measures to manage potential cumulative impacts.

22.3.1 Selection of relevant future projects

Initial scoping to identify relevant future projects was carried out as part of preparing the Tchelery Wind Farm Scoping Report (WSP, 2023). Further review and investigation has occurred as part of the EIS preparation to confirm the relevant future projects for CIA.

Based on the scale and nature of the potential impacts of the project and other relevant future projects, the cumulative impact study area for the project is a 100 kilometre radius around the project site. This included the LGAs of Edward River, Murrumbidgee, Carrathool, Hay, Balranald, and Murray River in NSW and Gunnawarra and Swan Hill in Victoria. Based on the anticipated extent and nature of potential cumulative impacts, technical papers may have considered relevant future projects within a smaller study area than the cumulative impact study area.

Within the cumulative impact study area, potentially relevant future projects were identified from the following data sources with the most recent searches conducted in February 2025:

- Department of Planning, Housing and Infrastructure Major Projects search
- Environment Protection and Biodiversity Conservation (EPBC) Act Public Portal
- Western Regional Planning Panel.

22.3.1.1 Projects with potential for cumulative impacts

Identified relevant future projects are listed in Table 22.1 and shown on Figure 22.1. As described in Chapter 3 (Project description), construction of the project is expected to commence in 2027 and the project would be fully operational by 2030. It is anticipated that overall construction would take three years.

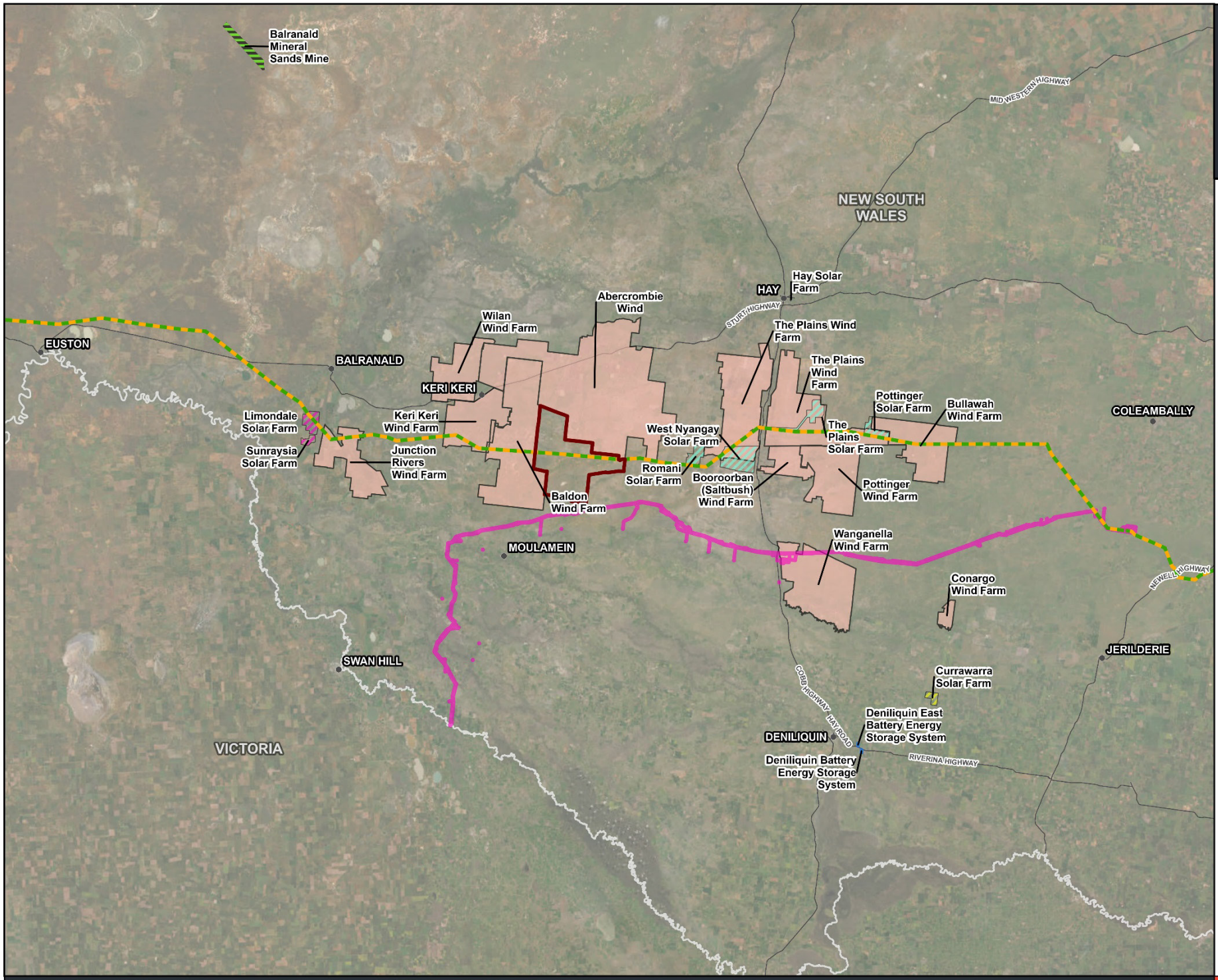
Table 22.1 Relevant future projects with potential to contribute to cumulative impacts

Project	Proponent	Scope	Distance and direction from Tchelery Wind Farm	Project timeline
Project EnergyConnect (NSW – Eastern Section) (Approved)	Transgrid	Transmission line connecting the existing Buronga substation and existing Wagga 330 kilovolt (kV) substation. A new 330 kV substation would be constructed at Dinawan.	Traverses the project	— construction commenced late 2022 and was expected to take 18 months — operation was planned for August 2024.
Baldon Wind Farm (Proposed)	Baldon Wind Farm Pty Ltd	Proposed wind farm with an estimated generation capacity of 1,400 megawatts (MW).	Directly west of the project	— construction to commence in Q4 2025 — operation commence in Q2 2029 and — operate for 30 years.
Keri Keri Wind Farm (Proposed)	Acciona Energy Australia Global Pty Ltd	Proposed wind farm proposed that would supply 884 MW with a footprint of 573 hectares. Includes a Battery Energy Storage System (BESS) that would store 200 MW/ 800 megawatt-hours (MWh).	7.5 kilometres west	— construction expected to start late 2027 — commissioning and operation 2029 — operate for 30 years.

Project	Proponent	Scope	Distance and direction from Tchelery Wind Farm	Project timeline
Romani Solar Farm (Proposed)	Samsung C&T Renewable Energy Australia Pty Ltd	Proposed solar farm 44 kilometres southwest of Hay covering 1,810 hectares. Includes a BESS that would store 150 MW/300 MWh.	25 kilometres east	— construction planned for 2025 — operation planned for 2026 — operate for 30 to 40 years.
Abercrombie Wind Farm (Proposed)	Abercrombie Wind Farm Pty Ltd	Proposed wind farm with 348 Wind Turbine Generators (WTGs) and a BESS and transmission infrastructure.	25 kilometres north	— construction planned for 2028 — operation planned for 2032 — operate for 35 years.
Wilan Wind Farm (Proposed)	Kilara Utilities Pty Ltd	Proposed wind farm proposed to be developed 25 kilometres east of Balranald.	35 kilometres northwest	— construction was planned for 2024, however is likely to start 2026 pending development application (DA) approval — operation expected by 2029 — operate for 30 years.
Junction River Wind Farm (formerly Burrawong Wind Farm) (Proposed)	BayWa r.e. Projects Australia Pty Ltd	Proposed wind farm with 96 WTGs, up to four BESSs and ancillary infrastructure.	40 kilometres west	— construction planned for 2025 — operation by 2029 — operate for 35 years.
West Nyangay Solar Farm (Proposed)	Australian Solar Farms	Proposed solar farm covering 5,500 hectares 40 kilometres south of Hay.	40 kilometres east	— unknown construction and operation timelines.
Victoria to NSW Interconnector West (Proposed)	Transgrid	New electrical connection between NSW and Victoria.	45 kilometres southeast	— construction is expected to take two years commencing in 2026 — planned to be completed by 2028 and operational in 2029 — operational duration unknown.
Booroorban (Saltbush) Wind Farm (Proposed)	Hay Plains WF Pty Ltd	Proposed wind farm with 70 WTGs located 43 kilometres south of Hay.	50 kilometres east	— construction planned for 2028 — commissioning planned for 2030 — operate for 30 to 40 years.
Limondale Solar Farm (Operational)	Overland Sun Farming Pty Ltd	Operational solar farm with an estimated nominal capacity in the order of 250 MW.	55 kilometres west	— operational since 2021 — operate for 30 years.

Project	Proponent	Scope	Distance and direction from Tchelery Wind Farm	Project timeline
Pottinger Wind Farm (Proposed)	Pottinger Renewable Pty Ltd	Proposed wind farm proposed to cover 26,000 hectares 60 kilometres south of Hay.	60 kilometres east	— construction expected 2026 — operation expected 2027 — operate for up to 35 years.
Wanganella Wind Farm (Proposed)	Equis Wind Farm Australia Pty Ltd	Proposed wind farm with 105 WTGs with a capacity of 840 MW.	60 kilometres southeast	— construction planned for 2027 — commissioning planned for 2029 — operational duration unknown.
The Plains Wind Farm (Proposed)	ENGIE	Proposed wind farm with a capacity of 1,350 MW with a footprint of 1,996 hectares.	65 kilometres east	— construction planned for 2027 — operation around 2030 — operate for at least 30 years.
The Plains Solar Farm (Proposed)	ENGIE	Proposed solar farm to supply 996 gigawatt-hours per year.	65 kilometres east	— construction planned for Q4 2026 — operation planned for 2028 — operate for 30 years.
Hay Solar Farm (Approved)	Overland Sun Farming Pty Ltd	Solar farm with an estimated nominal capacity of 110 MW.	70 kilometres northeast	— development approval issued in 2017 — construction was planned to be completed by 2025 — operate for 30 years.
Sunraysia Solar Farm (Operational)	Sunraysia Solar Farm Two Pty Ltd	Operational solar farm located 17 kilometres south of Balranald covering 1,000 hectares	70 kilometres northwest	— construction complete — operate for 30 years.
Pottinger Solar Farm (Proposed)	Pottinger Renewables Pty Ltd	Proposed solar farm with a capacity of 300 MW.	70 kilometres east	— construction expected 2026 — operation expected 2028 — operate for up to 50 years.
Balranald Mineral Sands Mine (Approved)	Iluka Resources Ltd	Mineral sands mine for processing ore extracted from the Balranald Project.	75 kilometres west	— construction and operation commencement unknown — planned to be operational for 9 years followed by 5 years of rehabilitation, closure and decommissioning.
Bullawah Wind Farm (Proposed)	Bullawah Wind Farm Pty Ltd	Proposed wind farm with up to 143 WTGs, a BESS, ancillary infrastructure and temporary construction facilities.	80 kilometres east	— construction planned for mid-to-late 2025 and expected to take 48 months — operate for 30 years.

Project	Proponent	Scope	Distance and direction from Tchelery Wind Farm	Project timeline
Conargo Wind Farm (Proposed)	Squadron Renewable Energy Developments Pty Ltd	Proposed wind farm with 53 WTGs, a BESS, ancillary infrastructure and temporary facilities.	90 kilometres east	— construction planned to commence in 2027 — operation planned to commence in 2028 or 2029 — operate for 30 years.
Deniliquin East Battery Energy Storage System (Proposed)	BESS Artic Pty Ltd	Proposed 100 MW BESS.	95 kilometres southeast	— construction was planned to begin in 2024 and be completed by 2025, however is currently at 'Prepare EIS' stage — operate for 25 years.
Deniliquin Battery Energy Storage System (Proposed)	AE BESS 4 Pty Ltd	Proposed 120 MW/480 MWh BESS.	95 kilometres southeast	— construction planned to begin in March 2027 and take about 12 months — operation planned for March 2028 — operate for 35 years.
Currawarra Solar Farm (Approved)	RES Australia Pty Ltd	Solar farm located 25 kilometres south of Deniliquin.	100 kilometres southeast	— construction was planned for 2018 — operation planned for 2020 — operate for 30 years.



wsp

Tchelery Wind Farm

Figure 22.1
Relevant future projects with potential for cumulative impacts

Legend

- Project site
- Existing 220 kV transmission line and proposed Project EnergyConnect - eastern section

Wind Farm

- Proposed
- Approved
- Under construction
- Operational

Solar Farm

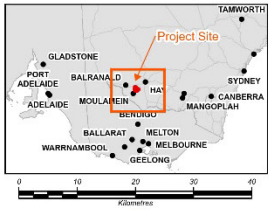
- Proposed
- Approved
- Under construction
- Operational

BESS

- Proposed
- Victoria to NSW Interconnector West (proposed)

Non-Renewable Project

- Proposed
- Under construction



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:1,300,000 Date: 10/04/2025

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22.4 Cumulative impacts

22.4.1 Overview

The potential cumulative impacts that may occur with each relevant future project are identified in Table 22.2 and discussed in the following sections. Refer to Figure 22.2 for location of sensitive receivers.

22.4.2 Incremental assessment

Incremental assessment of the potential impacts of the project on each relevant matter is provided in chapters 7 to 21 and within the relevant technical papers.

22.4.3 Combined incremental assessment

Combined incremental assessment considered the combined effect of matters discussed in chapters 7 to 21 on any one sensitive receiver or area.

Sensitive receiver 3 (Everslee) has potential to experience both noise and visual impacts from the project. Technical paper 5A (Landscape and visual impact assessment) identified Sensitive receiver 3 (Everslee) as having potential to experience visual impacts. Technical paper 9A (Construction noise and vibration impact assessment) determined construction of the project has potential to impact Sensitive receiver 3 (Everslee) under a conservative worst case scenario.

Local communities and residents may experience cumulative impacts from social and economic impacts of the project. The project is anticipated to contribute to the local economy and socio-economic conditions in the region through increased employment opportunities during construction and the benefit sharing program during operation. Negative cumulative impacts related to social and economic conditions include potential changes to community cohesion, reduced availability or capacity of services such as health care, food and short term accommodation.

Construction activities such as construction of WTGs, construction of temporary and permanent auxiliary infrastructure, and construction of water supply have potential to encounter groundwater. Groundwater beneath the project site was determined to have a low likelihood for contamination. As such, potential cumulative impacts associated with groundwater and contamination during construction are anticipated to be low.

During operation, landholders within and nearby the project site may experience cumulative impacts associated with loss of agricultural land and changes to aerial application operations. Landholders would be provided with the ‘as constructed’ location and height information of WTGs and overhead transmission lines to ensure aerial application operations can be carried out safely.

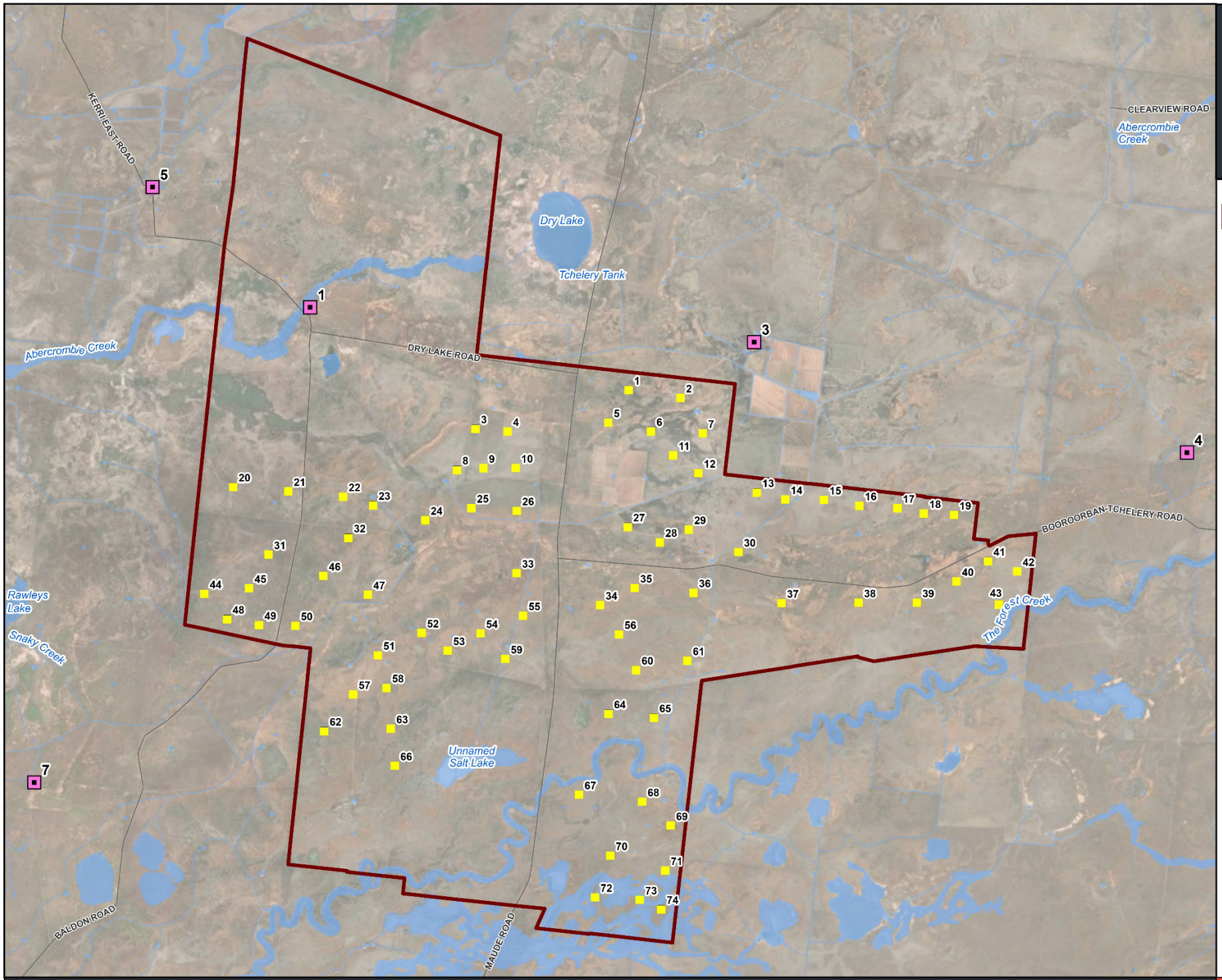
Mitigation measures within chapters 7 to 21 are anticipated to appropriately mitigate potential combined incremental cumulative impacts to Sensitive receiver 3 (Everslee), local communities and the landscape.

Table 22.2 Potential cumulative impacts for each relevant future project

Relevant future project	Type of cumulative impact with the project														
	Biodiversity	Aboriginal heritage	Non-Aboriginal heritage	Land	Landscape character and visual amenity	Social	Economic	Hydrology, flooding and water quality	Air quality	Noise and vibration	Traffic and access	Hazards and risk	Soils and contamination	Groundwater	Waste management and resource use
Project EnergyConnect (NSW – Eastern Section)	■	□		□	□		□	□							
Baldon Wind Farm	■	□		□		■	□	□		■	□				
Keri Keri Wind Farm	■	□		□		■	□	□		□	□				
Romani Solar Farm		□		□		■	□				□				
Abercrombie Wind Farm	■	□		□		■	□				□				
Wilan Wind Farm	■	□		□		■	□				□				
Junction River Wind Farm	■	□		□			□				□				
West Nyangay Solar Farm		□		□			□								
Booroorban (Saltbrush) Wind Farm	■	□		□			□				□				
Limondale Solar Farm	■			□			□								
Pottinger Wind Farm	■			□			□				□				
Wanganella Wind Farm	■			□			□				□				
The Plains Wind Farm	■			□			□				□				

Relevant future project	Type of cumulative impact with the project														
	Biodiversity	Aboriginal heritage	Non-Aboriginal heritage	Land	Landscape character and visual amenity	Social	Economic	Hydrology, flooding and water quality	Air quality	Noise and vibration	Traffic and access	Hazards and risk	Soils and contamination	Groundwater	Waste management and resource use
The Plains Solar Farm															
Hay Solar Farm															
Sunraysia Solar Farm															
Pottinger Solar Farm															
Bullawah Wind Farm															
Currawarra Solar farm															
Balranald Mineral Sands Mine															
Conargo Wind Farm															
Deniliquin East Battery Energy Storage System															
Deniliquin Battery Energy Storage System															
Victoria to NSW Interconnector West															

Negligible to minor potential for cumulative impacts
Minor to medium potential for cumulative impacts



wsp

Tchelery Wind Farm

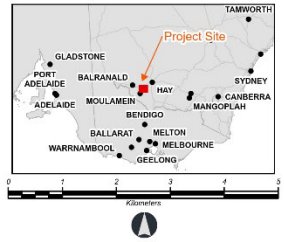
Figure 22.2
Sensitive receivers

Legend

- Project site
- Wind turbine generator
- Sensitive receptor

Context

- Existing road
- Watercourse
- Waterbody



Coordinate system: GDA 1994 MGA Zone 55

Scale ratio correct when printed at A4

1:140,000 Date: 10/04/2025

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22.4.4 Issue-specific cumulative impact assessment

The issue-specific CIA considered the cumulative impact of the project and other relevant future projects on the matters identified in the following sections.

22.4.4.1 Biodiversity

Assessment of potential cumulative impacts associated with biodiversity involved a conservative assessment of cumulative impacts to native vegetation and threatened species, wildlife connectivity and habitat corridors, and bird and bad impacts.

The total impact to native vegetation and impacted Threatened Ecological Communities (TECs) and threatened species of the project and other relevant future projects indicates the following:

- about 13,961.27 hectares of cumulative native vegetation would be impacted
- about 535,885 cumulative ecosystem credits would be required
- about 613,800 cumulative species credits would be required.

The project would contribute about 4.32 per cent to cumulative native vegetation impacts in the area. Given this small percentage, the project is not expected to contribute a significant amount of cumulative biodiversity impacts to the area.

With regard to wildlife connectivity and habitat corridors, a review of other relevant future projects indicates:

- many of the relevant future projects occur on land where the connectivity of native vegetation and habitat corridors has been previously compromised by clearing for agricultural land uses
- the relevant future projects are likely to result in short term impacts resulting in species relocating outside of the development footprints. Once construction is completed, species are expected to move back into habitats adjacent to the relevant project
- the relevant future projects are likely to reduce the integrity of current corridors and connectivity.

Overall, the project would have a minor contribution to the cumulative impacts to wildlife connectivity and habitat corridors. It should be noted that the project traverses a relatively disturbed landscape that contains agricultural land and existing transmission lines.

A review of other relevant future projects indicates that between 6,104 and 12,208 birds would be cumulatively impacted by the project and other wind farm projects within a 100 kilometre radius. Between 12,208 and 19,184 bats would be cumulatively impacted by the project and other wind farm projects within a 100 kilometre radius. The project is expected to contribute about 4.24 per cent to cumulative bird and bat impacts, in relation to other wind farm projects located within a 100 kilometre radius of the project site.

22.4.4.2 Land

Potential cumulative impacts on land use and agricultural for relevant future projects were considered in Technical paper 4 (Agricultural impact assessment).

All identified relevant future projects have relatively little impact on agricultural production, generally allowing agricultural activities to continue across most of the respective project sites. The amount of agricultural land taken out of production is generally small in relation to the total project site, and very small relative to the total regional agricultural area. Consequently, the effect on regional agricultural production would be minimal and no impact to the number of persons employed in the agricultural sector would be expected.

Cumulative impacts on agriculture in the region arising from the project being constructed and operated close to relevant future projects would be negligible.

22.4.4.3 Landscape character and visual amenity

Technical paper 5A (Landscape and visual impact assessment) identified potential for cumulative impacts associated with Project EnergyConnect (NSW – Eastern Section), that would pass through the project site. As such, road users of Maude Road and Booroorban-Tchelery Road would experience cumulative visual impacts as both the project and Project EnergyConnect (NSW – Eastern Section) would be visible from these roads. Impacts to road users would be minimal, as such cumulative impacts related to landscape character and visual amenity are anticipated to be negligible.

22.4.4.4 Social

Potential social cumulative impacts from relevant future projects were considered in Technical paper 6 (Social impact assessment).

There is potential for social cumulative impacts from Baldon Wind Farm, Keri Keri Wind Farm, Romani Solar Farm, Abercrombie Wind Farm and Wilan Wind Farm, including:

- changes to community cohesion (high and medium unmitigated cumulative impact during construction and operation, respectively)
- reduced sense of safety due to an inflow of workforces (high and low unmitigated cumulative impact during construction and operation, respectively)
- apprehension of the safety of roads from increased construction and heavy vehicles and traffic delays (medium and low unmitigated cumulative impact during construction and operation, respectively)
- changes to availability of essential services and private rentals (high unmitigated cumulative impact during construction and operation)
- increased demand for emergency services (medium and low unmitigated cumulative impact during construction and operation, respectively)
- impacts to tangible and intangible cultural heritage values (high and medium unmitigated cumulative impact during construction and operation, respectively)
- impacts to health and wellbeing from changes to amenity (low unmitigated cumulative impact during construction and operation)
- impacts to sense of place from reduced rural aesthetic (high unmitigated cumulative impact during construction and operation)
- increased competition amongst local employers (high and low unmitigated cumulative impact during construction and operation, respectively)
- disruptions to agricultural activities and associated income (low unmitigated cumulative impact during construction and operation)
- impacts to ability of community members make or influence project decisions (medium and low unmitigated cumulative impact during construction and operation, respectively).

There is also potential for positive cumulative impacts including:

- increased employment opportunities and ability to transfer workforce and skills (medium and low cumulative benefit during construction and operation, respectively)
- improvements in the local and regional economy (high cumulative benefit during construction and operation)
- increased income, increased opportunities to improve socio-economic conditions of the community, and diversify hosting landholder's income through the benefit sharing program (high cumulative benefit during construction and operation).

Implementation of mitigation measures would maximise the project benefits and reduce all potential impacts to low level, with the exception of diminished sense of place and aesthetics values due to changes to landscape during operations that would result in a medium residual impact.

Other relevant future projects located greater than 35 kilometres from the project site were not considered applicable to consideration of cumulative social impacts.

22.4.4.5 Economic

Potential cumulative economic impacts would include difficulty in sourcing materials, labour and accommodation during the project.

Due to the low proportion of employment and materials likely to be utilised during the development phase, nearby relevant future projects are unlikely to result in competition for labour and materials. During construction, the project would rely on a substantial workforce sourced from outside the region. This would require significant accommodation to house this fly-in, fly-out workforce. Over 2,000 economic study area residents are employed in the construction industry, indicating some capability to utilise a construction workforce from within the economic study area. However, the capacity of this workforce may be impacted by the large number of upcoming projects if their construction phases overlap. Mitigation measures in Technical paper 7 (Economic impact assessment) are expected to mitigate potential cumulative economic impacts associated with construction of the project.

The economy of the economic study area is well-suited to support the operational phase of the project. Operation and decommissioning of the project would require employees from within the economic study area. Some professional and technical services may require support from outside the economic study area. Cumulative impacts during operation and decommissioning are anticipated to be negligible.

22.4.4.6 Noise and vibration

Potential noise and vibration cumulative impacts from relevant future projects were considered in Technical paper 9A (Construction noise and vibration impact assessment).

Assessment of potential cumulative noise and vibration identified relevant future projects within six kilometres of the project site. Cumulative vibration impacts are considered highly unlikely to arise from adjoining projects and were not considered further.

One relevant future project, Baldon Wind Farm, was identified as having potential to result in cumulative impacts. The Noise Impact Assessment for Baldon Wind Farm (Sonos, 2024) indicates that construction noise impacts may occur at several properties. Sensitive receiver 1 (Tchelery Homestead) may experience noise levels up to three decibels higher than predicted for either project, where construction activities coincide. Mitigation measures in Technical paper 9A (Construction noise and vibration impact assessment) and Table 22.3 are expected to appropriately mitigate potential noise cumulative impacts during construction.

During operation, the cumulative WTG noise of the project and Keri Keri and Baldwon Wind Farm is expected to be 35 A-weighted decibels (dB(A)) or less at non-associated dwellings. In addition, the change in noise level due to multiple wind farm projects at any associated dwelling with a predicted noise level of greater than 35 dB(A) would be negligible.

22.4.4.7 Traffic and access

Potential cumulative traffic and access impacts were identified through a review of publicly available information and environmental impact assessments.

Potential cumulative impacts related to traffic and access include:

- overlapping OSOM and heavy vehicle traffic on roads such as Sturt Highway, Maude Road and Cobb Highway
- overlapping peak workforce traffic
- roadworks on public roads to accommodate OSOM movements.

However, potential cumulative traffic impacts are considered to be minor and no additional mitigation measures are proposed, considering the following:

- Sturt Highway, Maude Road and Cobb Highway would have adequate road capacity to accommodate any overlapping traffic
- all identified relevant future projects appear to either involve a small scope of work or generate minimal traffic movements during construction and/or operation
- it is unlikely that these projects would all be under construction concurrently.

22.4.4.8 Other issues

Cumulative impacts associated with Aboriginal heritage, historic heritage, hydrology, flooding and water, air quality and greenhouse gases, soils and groundwater, and waste management and resource use are not anticipated. This is due to the relatively minimal or negligible impact expected to these matters from the project and other relevant future projects. Further, impacts associated with these matters are anticipated to be localised. Overall, no further mitigation measures would be required for impacts associated with these matters.

22.4.5 Combined cumulative impact assessment

The combined cumulative impact assessment considered the combined effect of the different cumulative impacts of the project on key matters, sensitive receptors or important features with other relevant future projects.

22.4.5.1 Construction

Construction of the project and other relevant future projects have potential to result in cumulative impacts associated with social and economic conditions, traffic movement, landscape and visual amenity and land use.

Potential cumulative benefits of the project and other relevant future projects include increased employment opportunities and income, and improvements in local and regional economies and socio-economic conditions. These benefits would primarily be the result of construction workforces required during construction periods and benefit sharing programs. A benefit sharing program has been committed to by Neoen for the project. Other relevant future projects that also propose a benefit sharing program or similar include but are not limited to Baldon Wind Farm, Keri Keri Wind Farm, Romani Solar Farm, Abercrombie Wind Farm, Junction River Wind Farm and West Nyangay Wind Farm.

Potential adverse cumulative impacts may be experienced by local road users and landholders.

Road users may experience a cumulative impact associated with traffic, social, and landscape and visual impacts. Road users on Maude Road and Booroorban-Tchelery Road have potential to experience cumulative visual impacts from Project EnergyConnect (NSW – Eastern Section) in addition to traffic impacts from overlapping peak workforces, OSOM and heavy vehicles and road works associated with OSOM movements. Further Technical paper 6 (Social impact assessment) noted potential for increased apprehension of the safety of roads from the increased presence of OSOM and heavy vehicles.

Potential cumulative impacts to local landholders are considered to be minor and are associated with changes to agricultural production and land use in the region. Technical paper 4 (Agricultural impact assessment) and Technical paper 6 (Social impact assessment) both note the project and other relevant future projects have potential to result in minor cumulative impacts to agricultural activities and associated income. Technical paper 6 (Social impact assessment) also notes the potential for a high unmitigated impact to sense of place and rural aesthetic as a result of the development of multiple energy-related projects in the region.

Effective implementation of proposed mitigation measures is anticipated to appropriately mitigate potential cumulative impacts to road users and local landholders.

As a workforce accommodation camp is proposed for the project, cumulative impacts associated with accommodation of the construction workforces for other relevant future projects are not anticipated to result from the project.

22.4.5.2 Operation

During operation, potential cumulative impacts may include improvements to socio-economic conditions and changes to landscape character and land use. Cumulative social and economic benefits are expected to be experienced by local communities and residents during operation as a result of multiple benefit sharing programs. Similarly, as other relevant future projects, in particular wind farms, become operational, local landholders would have potential to experience minor cumulative impacts associated with changes to land use and landscape character within the region.

22.4.5.3 Decommissioning

Cumulative impacts during decommissioning of the project are anticipated to be minimal. Potential cumulative impacts would include increased presence of heavy and OSOM vehicles in the surrounding road network. Additionally, there is potential for increased employment opportunities for local residents during decommissioning.

Overall, the combined cumulative impact of the project and identified relevant future projects is not anticipated to be significant. Implementation of mitigation measures in Table 22.3 and within chapters 7 to 21 is expected to appropriately mitigate potential cumulative impacts.

22.5 Mitigation measures

Avoidance and minimisation of incremental impacts detailed in chapters 7 to 21 would avoid and minimise potential cumulative impacts between the project and relevant future projects. Refinement of the project design and further construction planning would aim to further avoid and minimise environmental impacts where practicable, including impacts from the project contributing to potential cumulative impacts, as described in Sections 22.4.2 to 22.4.5.

Proposed mitigation measures to mitigate potential cumulative impacts associated with the project are detailed in Table 22.3.

Table 22.3 Cumulative impact mitigation measures

Ref	Mitigation measure	Timing	Applicable location(s)
CI1	Coordination and engagement with proponents and/or construction contractors of relevant future projects will occur, where practicable, during design refinements, construction and operation to confirm and manage potential cumulative impacts. Coordination and engagement will include: — providing regular construction program updates — identifying potential conflict points with other relevant future projects, for example proximity of work sites, or shared construction access routes and traffic management requirements — developing mitigation strategies in order to manage conflicts that may arise, where practicable.	Design refinement and construction	All locations

22.5.1 Managing key uncertainties and residual impacts

There are inherent uncertainties and limitations related to CIA for EIS including challenges obtaining information and data about other projects, the certainty, timing and sequencing of other projects and the implications for over or underestimating impacts. Key uncertainties for the incremental assessment for the project are further explained in the relevant technical papers. Mitigation measures proposed for the key matters considered in the CIA aim to deal with uncertainties associated with the CIA through coordination and engagement.

23 Justification and conclusion

This chapter provides justification for the carrying out of the project, considering the environmental, social and economic impacts assessed in this Environmental Impact Statement (EIS). The justification incorporates the strategic need for the project, demonstrates how the project objectives are achieved and provides an evaluation of the overall findings of the EIS, including how it addresses the relevant statutory requirements. This chapter also provides a conclusion on the significance of environmental impact of the project and additional licences and approvals that may be required.

23.1 Justification for the project

The project has been assessed in line with the requirements of Division 4.7, Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to determine the environmental, economic and social costs and benefits. The project would result in the following key benefits:

- direct response to Commonwealth and State climate change commitments such as the Paris Agreement (United Nations (UN), 2015), the 2024 Integrated System Plan (ISP) (Australian Energy Market Operator (AEMO), 2024), NSW Climate Change Policy Framework (Office of Environment and Heritage (OEH), 2016), the New South Wales (NSW) Net Zero Plan Stage 1: 2020-2030 (Department of Planning, Industry and Environment (DPIE), 2020b), the Electricity Infrastructure Roadmap (DPIE, 2020a)
- supplying around 577 megawatts (MW) and up to 350 MW Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh) towards the targeted 2.5 gigawatts (GW) for the South West Renewable Energy Zone (REZ)
- enhancing energy reliability and security in the National Electricity Market (NEM)
- contributing to capacity gaps in the electricity market following the planned closure of major coal-fired generators
- providing opportunities for local and regional investment, opportunities for local contractors, suppliers and businesses, increased employment opportunities and contributions to a Community Benefit Fund
- improving host landholder property access due to new and upgraded access tracks.

The project would generate employment in the region, generating an expected total impact on employment from the project up to 530 full-time equivalent (FTE) employees during peak project construction and 20 FTE employees during project operation.

23.2 Suitability of the project

The site selection, layout and size of the project have been developed in consideration of several alternatives to ensure the project would result in maximum benefits for the local area and region in the long term, while minimising impacts to the environment. The location of the project is suitable for the following reasons:

- it would be located within the South West REZ
- it has consistent wind speeds confirmed by the data collected from on-site meteorological masts, ideal for large-scale wind energy generation
- existing and approved transmission infrastructure would be located within the project site, providing a direct connection to dispatch electricity to the NEM
- it largely comprises areas that have been previously disturbed and/or historically cleared, associated with the agricultural land use
- the project would provide for a compatible land use and support the ongoing agricultural use of the project

- there are minimal nearby dwellings, and the project provides for sufficient separation distances to non-associated dwellings to minimise noise, visual, hazard and air quality impacts associated with the construction and operation of the project
- the current design has been developed to maximise the use of existing disturbed areas and avoid and minimise potential impacts to identified biodiversity and Aboriginal cultural heritage values. Environmental mitigation measures would be implemented to mitigate residual environmental, social and economic impacts associated with the project
- there are no current minerals, coal or petroleum and gas titles within the project site.

23.3 Ecologically sustainable development

Clause 192(1)(f) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) identifies content for an EIS including reasons justifying the carrying out of the development, activity or infrastructure, considering biophysical, economic and social factors, including the principles of ecologically sustainable development set out in Clause 193.

The project is consistent with the four principles of ecologically sustainable development outlined in Clause 193 of the EP&A Regulation as follows.

23.3.1 Precautionary principle

The precautionary principle (as defined as in clause 193(2) of the EP&A Regulation) provides that '…if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation'. In 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
- an assessment of the risk-weighted consequences of various options.

The EIS has assessed potential impacts on the environment from the project and provided appropriate mitigation measures. Specialist reports have been prepared for key environmental issues and residual risks have been identified and managed. The assessments carried out and documented in the EIS and technical papers are consistent with accepted scientific and assessment methods and have considered relevant statutory and agency requirements and guidelines. The assessments have provided sufficient data to understand the site, environmental conditions and potential impacts of the project and how mitigation measures would minimise those impacts.

Field investigations and community consultation commenced early in the project development phase with the aim of gathering data on the existing environmental condition of the project and surrounding land to integrate environmental considerations into project refinement and to provide scientific evidence and local community knowledge for impact assessment in the EIS. Field data, along with desktop data, has informed development of the project including location of Wind Turbine Generators (WTGs) and project infrastructure, transmission line alignment, location and design of the workforce accommodation camp and vehicular access with the aim to avoid or minimise potential impacts where practicable. The key design strategies to avoid or minimise impacts of the project are summarised in Table 23.1.

Table 23.1 Key strategies to avoid and minimise impacts

Aspect	Strategy
Aboriginal heritage	— project has been designed to avoid all heritage items as a first principle, where this is not practicable, design refinements have prioritised the avoidance and minimisation of impacts and harm at locations of moderate and above scientific significance as well as moderate and high archaeological potential — all areas of potential archaeological deposits (PADs) have been avoided by project design refinements — surface collection and salvage of artefacts, photographic recording of hearths, exclusion zones and ongoing consultation with Registered Aboriginal Parties would occur.
Biodiversity	— project refined to reduce the number of WTGs from 120 to 74 to reduce the overall disturbance footprint and amount of vegetation clearing required for the project — project has aimed to avoid impacts on biodiversity as a first principle, where this is not practicable, design refinements have prioritised the avoidance and minimisation of impacts on threatened ecological communities, areas of high abundance of hollow-bearing trees (HBTs), raptor nests, candidate species habitat, riparian and wetland areas, bird strike and ecological connectivity — project site selected to avoid potential impacts on ecological values of nearby Yanga State Conservation Area.
Hazard and risks	— Asset Protection Zones (APZs) have been designed to minimise the risk of ignition from project infrastructure and risk to infrastructure from bushfires.
Hydrology, flooding and water	— project design has minimised locating WTGs and other project infrastructure in proximity to watercourses, areas of inundation and riparian corridors — underground transmission lines crossing The Forest Creek have been designed for underboring construction methods to avoid impacts to the watercourse.
Land	— project site selected within the South West REZ to minimise cumulative impacts to property and land use — project has been designed to allow for continuation of existing agricultural operations within the project site in consultation with the landholder — construction and operation periods refined following consultation with the landholder to consider lambing periods.
Landscape character and visual amenity	— project site selected within the South West REZ to minimise additional cumulative impacts to landscape character and visual amenity — WTG layout and location of key project infrastructure has been designed to maximise the distance to existing dwellings — BESS has been setback from adjacent properties and Booroorban-Tchelery Road and Maude Road to minimise visual impacts — design refinements to electricity connection infrastructure has prioritised proximity to the existing 220 kilovolt (kV) transmission line and distance from private dwelling viewpoints.
Noise and vibration, air quality	— WTG layout and location of key project infrastructure has been designed to maximise the distance to existing dwellings.
Social and economic	— Community Benefit Sharing Scheme designed in response to early community engagement.

Mitigation measures have been proposed, where feasible and practicable, to minimise and manage potential impacts to the environment where impacts have not been able to be avoided (refer to Appendix F (Mitigation measures)).

23.3.2 Intergenerational equity

The principle of intergenerational equity (as defined in clause 193(4) of the EP&A Regulation) provides that '…the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.'

Intergenerational equity concerns the quality of life that future generations can expect, resulting from choices we make today. Renewable energy developments, like the project, contribute to achieving key objectives of the 2024 ISP (AEMO, 2024) by enabling consumer affordability, maintaining system reliability and security while meeting government emissions and renewable energy policies. The introduction of additional low emission energy generation into the NEM would provide a more secure electricity supply in the near term and would help facilitate the longer-term transition of the energy sector to low emission energy generation sources, benefiting current and future generations.

The project is consistent with the NSW and Australian Government targets for reduction of greenhouse gas (GHG) emissions and investment in renewable energy technology and would support regional investment and development. As detailed in Chapter 2 (Strategic context), the project responds to intergenerational equity by facilitating the NSW Transmission Infrastructure Strategy (Department of Planning (DPE), 2018) objectives to:

- unlock private sector investment in priority transmission infrastructure projects
- deliver least-cost energy to customers through to 2040 and beyond
- build on existing programs to reduce household and business energy bills and enhance security in energy supplies.

Not proceeding with the project would reduce the security of future NSW electricity supply, particularly as coal-fired generators continue to be retired.

The project has been designed, to the greatest extent practicable, to avoid and minimise impacts, and to respond to the issues raised by the community and stakeholders. Design and construction method for the project would be further developed with the objective of further avoiding and minimising potential impacts on the local and regional environment, and the local community.

23.3.3 Conservation of biological diversity and ecological integrity

The principle of conservation of biological diversity and ecological integrity (as defined in clause 193(5) of the EP&A Regulation) provides that '…the conservation of biological diversity and ecological integrity should be a fundamental consideration.' Conservation of biological diversity and ecological integrity relates to conserving the variety of living animal and plant life from all sources and maintaining the diversity and quality of ecosystems and enhancing their capacity to adapt to change and provide for the needs of future generations.

The development and assessment of the project has been carried out with the aim of identifying, avoiding, minimising and mitigating impacts to biological diversity and ecological integrity. This assessment has been informed by field and desktop investigations for the project site and port to site haulage routes. As summarised in Table 23.1, the project has been designed and refined to reduce the overall disturbance footprint and amount of vegetation clearing required for the project.

Where a significant residual impact has been identified, offsets are required to compensate for the residual impacts. Offset for threatened species and ecological communities have been determined in accordance with the NSW Biodiversity Assessment Method (BAM) and would be delivered in accordance with the NSW Biodiversity Offset Scheme. The Matters of National Environmental Significance (MNES) species which require species credits to offset residual impacts associated with the project include:

- flora
  - *Brachyscome papillosa,* Mossgiel Daisy
  - *Eleocharis obicis*, Spike Rush
  - *Lepidium monoplocoides*, Winged Pepper-cress
  - *Maireana cheelii*, Chariot Wheels
  - *Swainsona murrayana*, Slender Darling-pea
- fauna
  - *Litoria raniformis*, Southern Bell Frog.

White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project would impact on approximately 0.83 hectares of this TEC, marginally increasing fragmentation at the local scale and resulting in a small reduction in the extent of this TEC within the locality. However, given the small area of clearing required and the previously disturbed habitat present, the project is considered unlikely to have a residual significant impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Where potential impacts cannot be avoided, mitigation measures would be implemented to reduce the impact as far as practicable. Biodiversity offsets for the project (as outlined in Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report)) have been designed to protect biological diversity and ecological integrity for future generations.

23.3.4 Improved valuation and pricing and incentive mechanisms

Improved valuation and pricing and incentive mechanisms relate to the consideration of environmental factors in the value of assets and services. The valuation of the project has considered both the estimated development cost, associated construction, waste disposal and biodiversity offsetting requirements for the construction phase of the project. Ongoing operational costs would be managed by Neoen's existing management systems.

Construction and operation of the project would provide positive economic activity to the regional and NSW economy. Over the entire life of the project, a total of $569.78 million and $2,205.55 million in economic output is estimated to be supported for the economic study area and NSW, respectively. During construction, the project is likely to support up to 134.30 FTE jobs per year in the economic study area, and up to 984.31 FTE jobs per year in NSW. The Benefit Fund and Planning Agreement developed for the project would seek to maximise benefits for the local and regional community.

The project has been developed to minimise potential impacts on the environment to the extent practicable, as described in Section 23.3.1. Design refinement has been primarily focussed on avoiding or minimising the potential for environmental impacts, including the reduction of costs associated with biodiversity offsets. Further, the construction and operation of the project would be subject to an Environment Protection Licence (EPL), including conditions that relate to pollution prevention and monitoring, and the implementation of best practice.

23.4 Conclusion

The project would provide long term, strategic benefits to NSW, as well as provide direct local and regional environmental, social and economic benefits. The project would have the key benefits:

- strategic:
  - supplying around 577 MW and up to 350 MW BESS with a maximum energy storage capacity of 1,450 MWh to the NEM and contributing towards the targeted 2.5 GW for the South West REZ
  - enhancing energy reliability and security in the NEM
  - contributing to capacity gaps in the electricity market following the planned closure of major coal-fired generators
- social and economic:
  - providing opportunities for local and regional investment, opportunities for local contractors, suppliers and businesses, increased employment opportunities and contributions to a Community Benefit Fund
  - improving host landholder property access due to new and upgraded access tracks
  - during peak construction, generating up to 530 FTE roles
  - during operation, generating up to 20 FTE roles
- environmental:
  - suitability of the site, in particular, its location within the South West REZ close to existing and approved transmission infrastructure
  - compatibility of land use to support the ongoing agricultural use of the project site
  - sufficient separation distances to non-associated landholders to minimise noise, visual, hazard and air quality impacts associated with construction and operation of the project
  - avoiding and minimising impact to identified environmental values.

In the absence of the project, the needs of NSW for generation capacity or the Commonwealth and NSW climate change commitments to transition to renewable energy generation and GHG reductions would not be supported. Further, the future security and reliability of electricity supply in NSW would be weakened as a result of planned closures of coal-fired power stations by 2030. In addition, not proceeding with the project would result in loss of financial benefit as over the entire life of the project, a total of $569.78 million and $2,205.55 million in economic output is estimated to be supported for the economic study area and NSW, respectively.

Overall, the project is consistent with the principles of ecologically sustainable development, and the objectives of the EP&A Act.

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Appendix A

Secretary's Environmental Assessment Requirements (SEARs) compliance table

A statutory compliance table is provided to identify all the relevant statutory requirements and where they have been addressed in this EIS.

Table A.1 Secretary's environmental assessment requirements

Requirement	Item	Where addressed in this EIS
General requirements	The Environmental Impact Statement (EIS) must meet the minimum form and content requirements as prescribed by Part 8, of the Environmental Planning and Assessment Regulation 2021 (the Regulation) and must have regard to the State Significant Development Guidelines and the NSW Wind Energy Framework. In particular, the EIS must include:	A checklist is provided in Appendix B (Statutory compliance).
	— a stand-alone executive summary	Executive summary.
	— a full description of the development, including: — details of construction, operation and decommissioning, including any staging of the development or refurbishing of turbines over time — all infrastructure and facilities, such as substations, transmission lines, construction compounds, concrete batching plants, internal access roads, and road upgrades (including resulting from over mass/over dimensional traffic haulage routes) and any infrastructure that would be required for the development, but the subject of a separate approvals process) — plans for any buildings — the Project Area (as per Table 1 of the SSD guidelines – preparing environmental impact statement) and Development Footprint (disturbance areas including but not limited to areas for infrastructure, road works, access tracks, defendable space, fencing and temporary laydown) — high-quality site plans and maps at an adequate scale with dimensions showing: — the location and dimensions of all project components including coordinates in latitude/ longitude and maximum AHD heights of the turbines — existing infrastructure, land use, and environmental features in the vicinity of the development, including nearby residences and approved residential developments or subdivisions within 6 km of a proposed turbine, and any other existing, approved or proposed wind farms in the region	Details of project staging, infrastructure and facilities, buildings, areas assessed, and micro-siting are provided in Chapter 3 (Project description). Refer to Chapter 6 (Approach to assessment of impacts) for high-quality plans of project components. Refer to chapters 7 to 21 for details of existing infrastructure, land use, and environmental features of the project site.

Requirement	Item	Where addressed in this EIS
	— the development corridor that has been assessed, including any allowance for micro-siting of turbines and identification of the key environmental constraints that have been considered in the design of the development — consolidated list and GIS data of coordinates of wind turbines, project infrastructure and relevant receivers and distances to potentially impacted receivers; and — details of the progressive rehabilitation of the site	
	— a list of any approvals that must be obtained before the development may commence	Chapter 4 (Statutory context). Appendix B (Statutory compliance).
	— consistency in information presented in the EIS and all technical reports, including distances, development footprint, project design and infrastructures proposed, construction timeframes and receiver numbers	Throughout EIS.
	— demonstrate the suitability of the site and viability of wind resources for the project and include high quality maps showing the wind resource	Section 2.6 in Chapter 2 (Strategic context). Chapter 3 (Project description).
	— the terms of any proposed voluntary planning agreement with the relevant local council	Section 5.1.3 in Chapter 5 (Engagement).
	— a risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment	Chapter 6 (Approach to assessment of impacts).

Requirement	Item	Where addressed in this EIS
	— an assessment of the likely impacts of the development on the environment and any other significant issues identified in this risk assessment, focusing on the specific issues identified below, including: — a description of the existing environment likely to be affected by the development using sufficient baseline data — an assessment of the likely impacts of all stages of the development (which is commensurate with the level of impact), including any cumulative impacts of the site and existing or proposed developments in the region, in accordance with the Cumulative Impact Assessment Guideline (DPIE, 2022), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice and including the NSW Wind Energy Guidelines for State Significant Wind Energy Development (2016) — a description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development, including details of consultation with any affected non-associated landowners in relation to the development of mitigation measures and any negotiated agreements with these landowners, and draft management plans for specific issues as identified below; and — a description of the measures that would be implemented to monitor and report on the environmental performance of the development, including adaptive management strategies and contingency measures to address residual impact	Refer to chapters 7 to 21 for an assessment of likely impacts of the project, including a description of the existing environment and mitigation measures to avoid, mitigate, offset or monitor potential impacts. Refer to Appendix F (Mitigation measures) for a consolidated list of mitigation measures. Assessment of potential cumulative impacts of the project are provided in Chapter 22 (Cumulative impacts).
	— a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; and	Appendix F (Mitigation measures).

Requirement	Item	Where addressed in this EIS
	— a detailed evaluation of the merits of the project as a whole having regard to: — the requirements in Section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), and how the principles of ecologically sustainable development have been incorporated in the design, construction and ongoing operations of the development — the environmental, economic and social costs and benefits of the development, having regard to the predicted electricity demand in NSW and the National Electricity Market, NSW's Climate Change Policy Framework, NSW's Net Zero Plan Stage 1: 2020 - 2030 and the greenhouse gas savings of the development — feasible alternatives to the development and its key components including project design alternatives to avoid impacts to areas of biodiversity value and areas of archaeological sensitivity, opportunities for shared infrastructure with proposed developments in the region and the consequences of not carrying out the development; and — the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses including rural villages, rural dwellings, subdivisions, land of high scenic value, conservation areas, strategic agricultural land, state forests, minerals and coal resources, triangulation stations, tourism facilities, existing or proposed wind farms, and the capacity of existing electricity transmission network to accommodate the development; and	Appendix B (Statutory compliance) addresses requirements of Section 4.15 of the EP&A Act) Refer to Chapter 2 (Strategic context) for consideration of NSW climate change policies and analysis of feasible options and alternatives. Refer to Section 4.1.1 in Chapter 4 (Statutory context) for details of how the project has incorporated principles of ecologically sustainable development. Refer to Chapter 10 (Land) for assessment of potential land use conflicts.
	— a detailed consideration of the capability of the project to the security and reliability of the electricity system in the National Electricity Market, having regard to local system conditions and the Department's guidance on the matter.	Chapter 2 (Strategic context) Chapter 23 (Justification and conclusion).
	Estimated development cost and employment — Provide the estimated development cost (EDC) of the development, prepared in accordance with the relevant planning circular using the Standard Form of EDC Report.	Chapter 3 (Project description).
	— Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the development, including details of the methodology to determine the figures provided.	Chapter 3 (Project description). Chapter 13 (Economic). Technical paper 7 (Economic impact assessment).

Requirement	Item	Where addressed in this EIS
	The development application must be accompanied by: — the consent of the owner/s of the land (as required in Section 23(1) of the EP&A Regulation); and — a declaration from a Registered Environmental Assessment Practitioner that the EIS includes the information specified in the Department's Registered Environmental Assessment Practitioner Guidelines.	Received. Declaration.
Key issues		
Landscape and visual	a detailed assessment of the visual impacts of all components of the project (including turbines, transmission lines, substations, 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 residences (including approved developments, lodged development applications and dwelling entitlements)	Refer to Section 11.6 in Chapter 11 (Landscape character and visual amenity) for an assessment of potential impacts to landscape character and visual amenity. Technical paper 5A (Landscape and visual impact assessment). Technical paper 5B (Shadow flicker assessment).
	— cumulative impacts with the proposed Keri Keri Wind Farm, Baldon Wind Farm and Wilan Wind Farm	Chapter 22 (Cumulative impacts). Technical paper 5A (Landscape and visual impact assessment). Technical paper 5B (Shadow flicker assessment).
	— the project design to avoid or mitigate visual impacts; and	Section 11.3 and 11.7 in Chapter 11 (Landscape character and visual amenity). Technical paper 5A (Landscape and visual impact assessment). Technical paper 5B (Shadow flicker assessment).
	— amenity values of any scenic or significant vistas and road corridors in the public domain.	Section 11.5 in Chapter 11 (Landscape character and visual amenity). Technical paper 5A (Landscape and visual impact assessment).

Requirement	Item	Where addressed in this EIS
Noise and vibration	— an assessment of the wind turbine noise in accordance with the NSW Wind Energy: Noise Assessment Bulletin (EPA/DPE, 2016)	Section 16.6.1 in Chapter 16 (Noise and vibration). Technical paper 9B (Operation noise impact assessment).
	— an assessment of the noise generated by ancillary infrastructure in accordance with the NSW Noise Policy for Industry (EPA, 2017)	Section 16.6.2 in Chapter 16 (Noise and vibration). Technical paper 9B (Operation noise impact assessment).
	— assessment of the construction noise under the Interim Construction Noise Guideline (DECC, 2009) and a draft noise management plan if the assessment shows construction noise is likely to exceed applicable criteria)	Refer to Section 16.5.1 in Chapter 16 (Noise and vibration) for assessment of construction noise. Technical paper 9A (Construction noise and vibration impact assessment).
	— assessment of the traffic noise under the NSW Road Noise Policy (DECCW, 2011)	Section 16.5.3 in Chapter 16 (Noise and vibration). Technical paper 9A (Construction noise and vibration impact assessment).
	— an assessment of vibration under the Assessing Vibration: A Technical Guideline (DECC, 2006); and	Section 16.5.2 in Chapter 16 (Noise and vibration). Technical paper 9A (Construction noise and vibration impact assessment).
	— assessment of the cumulative noise impacts (considering other developments in the area).	Chapter 22 (Cumulative impacts). Technical paper 9A (Construction noise and vibration impact assessment). Technical paper 9B (Operation noise impact assessment).

Requirement	Item	Where addressed in this EIS
Biodiversity	— an assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 (NSW), the Biodiversity Assessment Method (BAM) and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must: — be prepared using the approved BDAR template — document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM — assess impacts associated with all ancillary infrastructure, including transport route road upgrades — assess any indirect impacts to nearby conservation areas and nature reserve; and — be finalised by an accredited assessor and BAM-compliant within 14 day of submission	Chapter 7 (Biodiversity). Technical paper 1 (Biodiversity development assessment report).
	— an assessment of 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, including impacts to Abercrombie Creek, The Forest Creek and Dry Lake	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
	— an assessment of 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 mitigation measures	Section 7.5 in Chapter 7 (Biodiversity). Technical paper 1 (Biodiversity development assessment report), including Draft Bird and Bat Adaptive Management Plan.
	— a cumulative impact assessment of biodiversity values in the region from nearby developments; and	Chapter 22 (Cumulative impacts). Technical paper 1 (Biodiversity development assessment report). including Draft Bird and Bat Adaptive Management Plan.
	— if an offset is required, include details of any strategy to offset any residual impacts of the development in accordance with the BC Act.	Section 7.7 in Chapter 7 (Biodiversity). Technical paper 1 (Biodiversity development assessment report).

Requirement	Item	Where addressed in this EIS
Heritage	— an assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010), including results of archaeological test excavations (if required)	Section 8.5 in Chapter 8 (Aboriginal heritage). Technical paper 2 (Aboriginal cultural heritage assessment). Technical paper 17 (Port to site due diligence archaeological assessment).
	— evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010); and	Section 8.3.3 in Chapter 8 (Aboriginal heritage). Technical paper 2 (Aboriginal cultural heritage assessment).
	— an assessment of the impacts to historic heritage having regard to the NSW Heritage Manual.	Chapter 9 (Historic heritage). Technical paper 3 (Historic heritage assessment). Technical paper 17 (Port to site due diligence archaeological assessment).
Transport	— an assessment of the construction, operational and decommissioning traffic impacts of the development on the local and State road network	Section 17.5 and 17.6 in Chapter 17 (Traffic and access). Technical paper 10 (Transport impact assessment).
	— details of the peak and average traffic volumes (including light, heavy and over-mass and over-dimensional vehicles/heavy vehicles requiring escort and construction worker transportation) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel)	Section 17.5 and 17.6 in Chapter 17 (Traffic and access). Technical paper 10 (Transport impact assessment).
	— 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	Section 17.5 and 17.6 in Chapter 17 (Traffic and access). Technical paper 10 (Transport impact assessment).

Requirement	Item	Where addressed in this EIS
	— an assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-mass/over-dimensional traffic haulage routes from port) during construction, operation and decommissioning	Section 17.5 and 17.6 in Chapter 17 (Traffic and access). Technical paper 10 (Transport impact assessment).
	— an assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown Land 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	Section 17.5 and 17.6 in Chapter 17 (Traffic and access). Technical paper 10 (Transport impact assessment).
	— a cumulative impact assessment of traffic from nearby developments; and	Chapter 22 (Cumulative impacts). Technical paper 10 (Transport impact assessment).
	— 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), clear figures of proposed road upgrades (including the site access points), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road and/or rail authority.	Section 17.7 in Chapter 17 (Traffic and access). Technical paper 10 (Transport impact assessment).
Water and soils	— a site water balance for the development, quantify water demand, identify water sources (surface and groundwater), including any licensing requirements, and determine whether an adequate and secure water supply is available for the development	Section 14.5.2 and 14.6.2 in Chapter 14 (Hydrology, flooding and water). Technical paper 8 (Hydrology, flooding and water impact assessment). Technical paper 16 (Groundwater impact assessment).

Requirement	Item	Where addressed in this EIS
	— an assessment of the likely impacts of the development (including flooding and flood modelling) on surface water and groundwater resources traversing the site and surrounding watercourses (including their Strahler Stream Order), drainage channels, wetlands, riparian land, farm dams, groundwater dependent ecosystems and acid sulfate soils, related infrastructure, adjacent licensed water users and basic landholder rights, and measures proposed to monitor, reduce and mitigate these impacts	Section 14.5 and 14.6 in Chapter 14 (Hydrology, flooding and water). Section 19.5 and 19.6 in Chapter 19 (Soils and contamination). Section 20.5 and 20.6 in Chapter 20 (Groundwater). Technical paper 8 (Hydrology, flooding and water impact assessment). Technical paper 15 (Soils and contamination impact assessment). Technical paper 16 (Groundwater impact assessment).
	— where the project involves works within 40 metres of the high bank of any river, lake or wetlands (collectively waterfront land), identify likely impacts to the waterfront land, and how the activities are to be designed and implemented in accordance with the DPI Guidelines for Controlled Activities on Waterfront Land (2018) and (if necessary) Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (DPI 2003); and Policy & Guidelines for Fish Habitat Conservation & Management (DPI, 2013)	Chapter 7 (Biodiversity). Section 14.5 and 14.6 in Chapter 14 (Hydrology, flooding and water). Technical paper 1 (Biodiversity development assessment report). Technical paper 8 (Hydrology, flooding and water impact assessment).

Requirement	Item	Where addressed in this EIS
	— a description of the measures to minimise surface and groundwater impacts, including how works on erodible soil types would be managed and any contingency requirements to address residual impacts in accordance with the Managing Urban Stormwater: Soils and Construction series of guidelines	Section 14.7 in Chapter 14 (Hydrology, flooding and water). Section 19.7 in Chapter 19 (Soils and contamination). Section 20.8 in Chapter 20 (Groundwater). Technical paper 8 (Hydrology, flooding and water impact assessment). Technical paper 15 (Soils and contamination impacts assessment). Technical paper 16 (Groundwater impact assessment).
	— a preliminary investigation into potential contamination across the site, in accordance with the *State Planning Policy (Resilience and Hazards) 2021* (as required).	Chapter 19 (Soils and contamination) Technical paper 15 (Soils and contamination impact assessment).
Air quality	— an assessment of risks of dust generation and propose mitigation measures designed in accordance with the Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales (DECC, 2022).	Refer to Section 15.5 and 15.6 in Chapter 15 (Air quality and greenhouse gases) for an assessment of risks of dust generation. Refer to Section 15.7 in Chapter 15 (Air quality and greenhouse gases) for proposed air quality mitigation measures.
	— demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050).	Chapter 2 (Strategic context). Chapter 15 (Air quality and greenhouse gases).

Requirement	Item	Where addressed in this EIS
Land	— a detailed justification of the suitability of the site and that the site can accommodate the proposed development having regard to its potential environmental impacts, permissibility, strategic context and existing site constraints	Chapter 2 (Strategic context). Chapter 23 (Justification and conclusion).
	— an assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including: — flood prone land, agricultural land, irrigated lands, Crown Lands, travelling stock routes, mining, quarries, mineral or petroleum rights — a soil survey to determine the soil characteristics and consider the potential for erosion to occur; and — a cumulative impact assessment of nearby developments;	Section 10.5 and 10.6 in Chapter 10 (Land) Refer to Section 14.5 and 14.6 in Chapter 14 (Hydrology, flooding and water) for assessment of impacts associated with flooding. Chapter 19 (Soils and contamination) Chapter 22 (Cumulative impacts) Technical paper 4 (Agricultural impact assessment). Technical paper 8 (Hydrology, flooding and water impact assessment). Technical paper 15 (Soils and contamination impacts assessment).
	— an assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning, including: — consideration of the zoning provisions applying to the land, including subdivision (if required) — completion of a Land Use Conflict Risk Assessment in accordance with — the Department of Industry's Land Use Conflict Risk Assessment Guide; and assessment of impact on agricultural resources and agricultural production on the site and region — the development potential of that land, in accordance with the development rights guidance in the Attachment A.	Refer to Section 10.4 in Chapter 10 (Land) for consideration of land zoning at the project site. Refer to Section 10.7 in Chapter 10 (Land) for a Land Use Conflict Risk Assessment. Refer to Section 10.5 and 10.6 in Chapter 10 (Land) for assessment of potential impacts to agricultural resources and production. Refer to Section 10.8 in Chapter 10 (Land) for assessment of potential impacts to development rights. Technical paper 4 (Agricultural impact assessment).

Requirement	Item	Where addressed in this EIS
Hazards and risk	— Aviation Safety: — 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, and use of emergency helicopter access — identify aerodromes within 30 km of the turbines and consider the impact to nearby aerodromes and aircraft landing areas — 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	Refer to Section 18.4.1 in Chapter 18 (Hazards and risk) for identification of aerodromes nearby to the project site. Refer to Section 18.5.1 in Chapter 18 (Hazards and risk) for assessment of potential impacts to aviation safety including obstacle limitations surfaces, aerodromes, aircraft landing areas and aerial application of agricultural fertilisers. Technical paper 11 (Aviation impact assessment).
	— 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 radio communication services, which may include the installation and maintenance of alternative sites	Section 18.4.4 and 18.5.4 in Chapter 18 (Hazards and risk). Technical paper 13A (Telecommunications impact assessment).
	— 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, including an assessment against the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields	Section 18.4.3 and 18.5.3 in Chapter 18 (Hazards and risk). Technical paper 13B (Electric and magnetic fields assessment).
	— Bushfire – identify potential hazards and risks associated with bushfires / use of bushfire prone land, 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; and	Section 18.5.2 in Chapter 18 (Hazards and risk). Technical paper 12 (Bushfire risk assessment).

Requirement	Item	Where addressed in this EIS
	— Dangerous Goods – a preliminary risk screening completed in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021	Section 18.5.5 in Chapter 18 (Hazards and risk). Technical paper 14 (Preliminary hazard analysis).
	— Blade Throw – assess blade throw risks, including consideration of battery energy storage facilities; and	Section 18.5.6 in Chapter 18 (Hazards and risk). Technical paper 14 (Preliminary hazard analysis).
	— Battery Energy Storage System – a Preliminary Hazard Analysis (PHA), prepared in accordance with the *Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' and Multi-level Risk Assessment* (DoP, 2011). The PHA must consider all recent standards and codes and verify separation distances to onsite and off-site receptors to prevent fire propagation and compliance with *Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning* (DoP, 2011) and include the key design parameters identified in the PHA within the project description. The PHA must consider the effect of bushfire on batteries or other components of the BESS.	Section 18.5.6 in Chapter 18 (Hazards and risk). Technical paper 14 (Preliminary hazard analysis).
Social impact	— an assessment of the social impacts in accordance with the Social Impact Assessment Guideline (DPE, 2023) and SIA Guideline – Technical Supplement (DPE, 2023) and consideration of construction workforce accommodation.	Section 12.5 and 12.6 in Chapter 12 (Social). Technical paper 6 (Social impact assessment).
Economic	— any benefits of the economic impacts or benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure services, and details of how the construction workforce will be managed to minimise local impacts, including a consideration of the construction workforce accommodation.	Chapter 13 (Economic). Technical paper 7 (Economic impact assessment).
Waste	— identify, quantify and classify the likely waste streams to be generated throughout all stages of the project, and describe the measures to be implemented to reduce waste generation, manage, reuse, recycle and safely dispose of this waste.	Section 21.5, 21.6 and 21.7 in Chapter 21 (Waste management and resource use).
Plans and documents	The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Part 3 of the Regulation. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include high quality files of maps and figures of the subject site, proposal, and proposed road upgrades.	Chapter 3 (Project description) and throughout the EIS.

Requirement	Item	Where addressed in this EIS
Legislation, Policies and Guidelines	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, a list of some of the legislation, policies and guidelines that may be relevant to the assessment of the project can be found at: — https://www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework/Improving-assessment-guidance — https://www.planningportal.nsw.gov.au/major-projects/assessment/policies-and-guidelines ; and — https://www.dcceew.gov.au/environment/epbc/publications#assessments	Chapter 4 (Statutory context).
Engagement	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners. The EIS must:	Chapter 5 (Engagement).
	— detail how engagement undertaken was consistent with the Undertaking Engagement Guide: Guidance for State Significant Projects (DPIE, 2021); and	Chapter 5 (Engagement).
	— describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	Chapter 5 (Engagement).

Requirement	Item	Where addressed in this EIS
	In particular you must consult with: — the relevant local, State or Commonwealth Government authorities, service providers, community groups, affected landowners, exploration licence holders, quarry operators, mineral title holders and irrigation channel owners; and — carry out detailed consultation with the following: — Edward River Council — NSW Aboriginal Land Council — DPE's Biodiversity, Conservation and Science Directorate — Heritage NSW — NSW Local Land Services — DPE Water Group — WaterNSW — Environment Protection Authority — Crown Lands — Regional NSW – Mining, Exploration & Geoscience — Department of Primary Industries – Agriculture and Fisheries divisions — Transport for New South Wales — Transgrid — Department of Customer Service – Telco Authority — Fire & Rescue NSW — NSW Rural Fire Service — Commonwealth Department of Defence — Civil Aviation Safety Authority — Airservices Australia — Murray-Darling Basin Authority.	Chapter 5 (Engagement). Chapter 10 (Land). Technical paper 1 (Biodiversity development assessment report). Technical paper 2 (Aboriginal cultural heritage assessment). Technical paper 3 (Historic heritage assessment). Technical paper 8 (Hydrology, flooding and water quantity and quality). Technical paper 10 (Transport impact assessment). Technical paper 11 (Aviation impact assessment). Technical paper 12 (Bushfire risk assessment). Technical paper 13A (Telecommunications impact assessment). Technical paper 13B (Electric and magnetic fields assessment). Technical paper 15 (Soils and contamination impact assessment). Technical paper 16 (Groundwater impact assessment).
Expiry date	If you do not lodge a Development Application and EIS for the development by 30 April 2025 the department intends to revise these SEARs to reflect the guidance in the Renewable Energy Planning Framework, published on 12 November 2024.	

Appendix B

Statutory compliance

B1 Statutory compliance

This appendix outlines the environmental planning statutory requirements for consideration in the environmental assessment of the project.

B1.1 NSW Planning Framework

B1.1.1 Consideration under Environmental Planning and Assessment Act 1979 (EP&A Act)

The matters for consideration and where they have been addressed in this Environmental Impact Statement (EIS) is provided in Table B.1.

Table B.1 Section 4.15 Matters for consideration

Matters for consideration	Where addressed in this EIS
a the provisions of	
(i) any environmental planning instrument that apply to the land to which the development application relates	Table B.3 (Appendix B)
(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) that apply to the land to which the development application relates	Table B.3 (Appendix B)
(iii) any development control plan that apply to the land to which the development application relates	Not applicable under section 2.10 of the Planning Systems SEPP, that excludes the application of development control plans to State Significant Development (SSD) projects
(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 that apply to the land to which the development application relates	Section 2.5 and Section 5.1.3
(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	Appendix A
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	Chapters 7–22
c the suitability of the site for the development that apply to the land to which the development application relates	Section 2.3 and Section 23.2
d any submissions made in accordance with this Act or the regulations	To be addressed following public exhibition
e the public interest.	Chapter 5 (Engagement) Chapter 12 (Social)

B1.1.2 Objects of the EP&A Act

Consideration of the project against the objects of the EP&A Act is provided in Table B.2.

Table B.2 Objects of the EP&A Act

Object		Consideration
1	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,	The project has considered impacts to the community and social and economic impacts of the project have been assessed (refer to Chapter 12 (Social) and Chapter 13 (Economic)). Overall, the project represents an investment in new large-scale renewable energy, with total generation capacity of about 577 megawatt (MW) and an up to 350 MW Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh), providing a significant contribution to the volume of renewable energy needed to transition away from coal-fired power generation. As discussed in Chapter 2 (Strategic context), the project would also provide opportunities for local and regional investment including opportunities for contractors, suppliers and businesses, increased employment opportunities and contributions to a Community Benefit Fund.
2	to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment	The principles of ecologically sustainable development have been considered in the planning and development of the project. Further details are provided in Chapter 23 (Justification and conclusion). The project is consistent with the Australian Government's climate change initiatives in facilitating the longer-term transition of the energy sector to low-emission energy sources (refer to Chapter 2 (Strategic context)).
3	to promote the orderly and economic use and development of land,	The project would promote the orderly and economic use and development of land by providing a renewable energy source and enhancing the region's capability to generate renewable energy consistent with the objectives of the South West Renewable Energy Zone (REZ). Consultation with the host and adjacent landholders and other key stakeholders has occurred during the design process that has enabled their views, operating practices and use of their land to be considered. The project has been developed to minimise impacts on existing land uses, as far as practicable.
4	to promote the delivery and maintenance of affordable housing,	The project would not impact the delivery or maintenance of affordable housing.

Object	Consideration
5 to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,	The project design and refinement process considered a range of constraints to avoid and/or minimise impacts on the environment (refer to Chapter 2 (Strategic context)), with a particular focus on the avoidance or impact minimisation of important biodiversity values. The impacts on biodiversity have been assessed in Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report) in accordance with the Biodiversity Assessment Method. The assessment found that while the project has been refined to avoid and minimise impacts to biodiversity values where practicable, direct impacts are expected to a number of native plant community types and threatened species and their habitats identified under the (NSW) *Biodiversity Conservation Act 2016* (BC Act) and (Cth) *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). These impacts would primarily be attributed to the removal of vegetation and threatened ecological communities. Indirect impacts include adjacent vegetation, edge effects, transport of weeds, pests and pathogens and risk of collision with WTGs. Prescribed impacts include habitat connectivity, man-made waterbodies, WTG strike and vehicle strike. Measures to minimise impacts to native vegetation and threatened species have occurred as part of design refinement and would continue throughout subsequent phases of the project including the implementation of a Biodiversity Management Plan as part of the Construction and Environmental Management Plan and Operation Environmental Management Plan. An Adaptive Management Plan would be required before construction of the project to manage impacts that are difficult to anticipate or evaluate. On 20 December 2023, the Commonwealth Department of Climate Change Energy, the Environment and Water (Cth DCCEEW) determined the project to be a controlled action under the EPBC Act due to the impact on listed threatened species and communities. The determination also confirmed that the project would be subject to the Assessment Bilateral Agreement between the Australian Government and NSW Government. Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report) provide further assessment on potential impacts on Matters of National Environmental Significance (MNES) and recommend mitigation measures to avoid or minimise these impacts. During finalisation of the project design, opportunities to further avoid or minimise impacts would be investigated. An offsets strategy would be implemented to address residual impacts of the project on biodiversity.

Object		Consideration
6	to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),	The impacts on Aboriginal and Historic heritage have been assessed (refer to Chapter 8 (Aboriginal heritage) and Chapter 9 (Historic heritage), and the corresponding Technical paper 2 (Aboriginal cultural heritage assessment) and Technical paper 3 (Historic heritage assessment). The project has been designed to avoid direct impacts on heritage items or sites, as far as practicable. No historic heritage sites/items have been identified within the project site. As such, the project would not result in any direct impacts to historic heritage. The project has potential to directly impact up to 13 Aboriginal sites and partially impact three sites that are generally of low to moderate significance. All areas of potential archaeological deposits have been avoided. Opportunities to further avoid or minimise these impacts through micro-siting would be considered during detailed design, where practicable. Where impacts cannot be avoided, a range of mitigation and management measures would be implemented in consultation with Registered Aboriginal Parties.
7	to promote good design and amenity of the built environment,	The project would result in some amenity impacts to the built environment due to construction and/or operational impacts including noise, air (dust) and visual amenity. These impacts would be minimised as far as practicable through the mitigation measures summarised in Appendix F (Mitigation measures).
8	to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,	Design, construction and maintenance of buildings would be carried out in accordance with applicable standards and the construction contractors or Neoen's management systems as applicable. The health and safety of workers would also be managed in accordance with the contractors or Neoen's management systems as applicable. The permanent infrastructure associated with the project including WTGs, substation infrastructure and transmission lines would be operated in accordance with Neoen's public safety and technical requirements.
9	to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,	Neoen are seeking approval for the project under Part 4, Division 4.7 of the EP&A Act. The project would be assessed under the Bilateral Agreement between the Australian Government and the NSW Government. Therefore, a single EIS has been prepared to address the requirements set out by the Department of Planning, Housing and Infrastructure (DPHI) and Cth DCCEEW. Consultation completed to date is outlined in Chapter 5 (Engagement). This has included engagement with relevant Australian, NSW and local government agencies. Ongoing consultation would continue through construction, operation and decommissioning of the project.

Object	Consideration
10 to provide increased opportunity for community participation in environmental planning and assessment.	Community and stakeholder consultation for the project commenced in 2019 and has been ongoing since this time. Consultation is also proposed to continue throughout the future stages of the project. A summary of the consultation completed to date, including a summary of the outcomes from this consultation, is provided in Chapter 5 (Engagement). The EIS public exhibition period allows the community and other stakeholders opportunity to review and make comment via submission to the DPHI. Following public exhibition, Neoen would prepare a submissions report that responds to the comments and feedback received on the EIS. This process provides further opportunity for community participation in the planning and assessment process for this project.

The relevant mandatory provisions of the EP&A Act are identified in Table B.3.

Table B.3 EP&A Act mandatory considerations

Statutory reference	Consideration
Section 4.36 Development that is SSD	The project is declared SSD through the application of Clause 2.6 (1) in conjunction with Clause 20 of Schedule 1 of the Planning Systems SEPP being for the purpose of electricity generating works and having an estimated development cost exceeding $30 million.
Section 4.37 Staged SSD	The project application does not seek consent for a staged development.
Section 4.38 Consent for SSD	The NSW Minister for Planning and Public Spaces or their delegate is the consent authority for the project and an EIS is required to be lodged to the DPHI.
Section 4.39 Regulations – SSD	The relevant regulations establish the form and content requirements for the EIS and the requirements for the consultation process, which is described throughout Chapter 5 (Engagement).
Section 4.40 Evaluation	The application is to be determined under Section 4.15 of the EP&A Act (refer to Table B.1 (Appendix B)).

B1.1.3 Approvals or authorisations that are not required or cannot be refused

Section 4.41 of the EP&A Act states the following approvals, permits are not required for an approved SSD, including:

- *Fisheries Management Act 1994:* potential impact on key fish habitat has been considered in Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report)
- *Heritage Act 1977:* potential impact on historic heritage has been considered in Chapter 9 (Historic heritage) and Technical paper 3 (Historic heritage assessment)
- *National Parks and Wildlife Act 1979*: the project would impact on Aboriginal cultural heritage as discussed in Technical paper 2 (Aboriginal cultural heritage assessment) that involved consultation with Aboriginal communities
- *Rural Fires Act 1997*: a bushfire risk assessment has been prepared (refer to Chapter 18 (Hazards and risk) and Technical paper 12 (Bushfire hazard assessment))
- *Water Management Act 2000*: potential impact on water quality has been considered in Chapter 14 (Hydrology, flooding and water quality) and Technical paper 8 (Hydrology, flooding and water impact assessment).

Section 4.42 of the EP&A Act lists legislation that must be consistently applied to SSD projects. For the project, approvals would include:

- Environment Protection Licence under the *Protection of the Environment Operations Act 1997*
- road occupancy license for work in or over a public road under the *Roads Act 1993*.

B1.1.4 Other relevant NSW legislation

A statutory compliance table is provided to identify all the relevant statutory NSW requirements and where they have been addressed in this EIS.

Table B.4 Other relevant legislation to the project

Legislation	Requirement	Where addressed in this EIS
(NSW) *Aboriginal Land Rights Act 1983*	This Act establishes the NSW Aboriginal Land Council and Local Aboriginal Land Councils and requires these bodies to: — take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law — promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area. Under this Act, Aboriginal Land Councils can claim Crown Land which, if granted, is transferred as freehold title. 'Claimable Crown Lands' includes Crown Lands that are not lawfully used or occupied and that are not needed, nor likely to be needed, for an essential public purpose. It may be that some Crown Land in the project has been claimed by an Aboriginal Land Council. There are however provisions to exclude land from a claim if it is required for an essential public purpose, such as a transmission line. Consultation has occurred with Aboriginal communities and NSW Crown Lands as part of the EIS.	Chapter 5 (Engagement) Chapter 8 (Aboriginal heritage) Technical paper 2 (Aboriginal cultural heritage assessment)
(NSW) *Biodiversity Conservation Act 2016* (BC Act)	This Act aims to conserve threatened species, populations and ecological communities through ensuring appropriate assessment, management and regulation of actions that may damage critical or other habitat for a listed threatened species, or may otherwise significantly affect a threatened species, population or ecological community. A Biodiversity Development Assessment Report (BDAR) has been prepared in accordance with the BC Act.	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)

Legislation	Requirement	Where addressed in this EIS
(NSW) *Biosecurity Act 2015* (Biosecurity Act)	Under the Biosecurity Act, all plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment Chapter 10 (Land) Technical paper 4 (Agricultural impact assessment)
(NSW) *Climate Change (Net Zero Future) Act 2023*	The *Climate Change (Net Zero Future) Act 2023* commits the NSW government to effective action on climate change to ensure a sustainable and fair future for the people, economy and environment of NSW.	Chapter 4 (Statutory context) Chapter 15 (Air quality and greenhouse gases)
(NSW) *Contaminated Land Management Act 1997* (CLM Act)	The CLM Act outlines the circumstances in which notification to the Environment Protection Authority (EPA) is required in relation to the contamination of land. A soils and contamination impact assessment has been undertaken to inform the design of the project and in preparation of the EIS .	Chapter 19 (Soils and contamination) Technical paper 15 (Soils and contamination impact assessment)
(NSW) *Crown Land Management Act 2016*	The Act sets out the requirements for ownership, use and management of Crown Land in NSW, including where councils and other organisations can deal with Crown Land. Under the Crown Land Management Regulation 2018, landowner's consent is not required for a development application for SSD.	Chapter 4 (Statutory context) Chapter 5 (Engagement)
(NSW) *Dangerous Goods (Road and Rail Transport) Act 2008* (Dangerous Goods Act)	The Dangerous Goods Act regulates the transport of dangerous goods by road and rail in order to promote public safety and protect property and the environment. Based on the implementation of standard and proven management measures and adherence to relevant legislation, the risk associated with on-site storage, handling and transport of dangerous goods and hazardous materials would be considered negligible.	Chapter 17 (Traffic and access) Chapter 18 (Hazards and risk)
(NSW) *Electricity Infrastructure Investment Act 2020* (EII Act)	Section 23 of the EII Act identifies REZs in NSW. The project area is located within the South West REZ, that may support up to 2.5 GW of additional transmission capacity. The project would contribute to renewable energy generation in NSW.	Chapter 4 (Statutory context)

Legislation	Requirement	Where addressed in this EIS
(NSW) *Electricity Supply Act 1995* (ES Act)	The ES Act requires network operators to take appropriate action to ensure public safety. This includes infrastructure considered to be a potential cause of bushfire. 'Appropriate action' can include modifying the infrastructure, removing risky structures/items in proximity to the infrastructure, and trimming/removing vegetation.	Chapter 18 (Hazards and risk) Technical paper 12 (Bushfire hazard assessment)
(NSW) *Fisheries Management Act 1994* (FM Act)	The FM Act aims to conserve, develop and share the fishery resources of the State for the benefit of present and future generations, and applies to all waters within the area occupied by the project. Pursuant to Sections 201, 205 and 219 of the FM Act, works and activities required for a proposal, may be undertaken under the authority of a permit. Under Section 4.41 of the EP&A Act these permits are not required for SSD.	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
(NSW) *Heritage Act 1977* (Heritage Act)	The Heritage Act is administered by the Heritage Council, under delegation by Heritage NSW within NSW DCCEEW. The Heritage Act seeks to conserve items of environmental heritage significance in NSW. Heritage Council must be notified if a relic is uncovered or if an item listed on a Government Agency's Section 170 Heritage Register is demolished. Section 139 specifies that a person must not disturb or excavate land knowing, or suspecting, that the action may result in the discovery, exposure, movement, damage or destruction of a relic, unless the work is undertaken in accordance with an excavation permit. Section 146 requires that the discovery or location of a relic must be notified to the Heritage Council unless the Heritage Council is aware of the relic's location. Under Section 4.41 of the EP&A Act approval is not required for under the Heritage Act for SSD.	Chapter 9 (Historic heritage) Technical paper 3 (Historic heritage assessment)
(NSW) *Land Acquisition (Just Terms Compensation) Act 1991* (Land Acquisition Act)	The Land Acquisition Act was introduced in relation to the acquisition of land on just terms by authorities of the State with the objective of simplifying and expediting the compulsory acquisition process while ensuring compensation on just terms for the owners of land that is acquired by an authority of the State when the land is not available for public sale.	Chapter 4 (Statutory context) Chapter 10 (Land use)
(NSW) *Local Land Services Act 2013*	Establishes regional Local Land Services (LLS) that are responsible for the integrated management of local land services including agricultural production, biosecurity, travelling stock reserves and other related aspects.	Chapter 10 (Land) Technical paper 4 (Agricultural impact assessment)

Legislation	Requirement	Where addressed in this EIS
(NSW) *National Parks and Wildlife Act 1974* (NPW Act)	The NPW Act aims to conserve nature and objects, places or features of cultural value. Under the provisions of Section 86 of the NPW Act, a person must not harm or desecrate a known Aboriginal object unless authorised by an Aboriginal heritage impact permit issued under Section 90 of that Act. Under Section 4.41 of the EP&A Act an Aboriginal heritage impact permit is not required for SSD.	Chapter 8 (Aboriginal heritage) Technical paper 2 (Aboriginal cultural heritage assessment)
(NSW) *Native Title Act 1994* (Native Title Act)	The Native Title Act provides for the recognition of Native Title in relation to land or waters in NSW in accordance with the *Commonwealth Native Title Act 1993.* The Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department Climate Change, Energy, the Environment and Water, 2010) stipulates that where relevant, consultation must be conducted with Native title holders or registered native title claimants in accordance with the *Native Title Act 1994*.	Chapter 8 (Aboriginal heritage) Technical paper 2 (Aboriginal cultural heritage assessment)
(NSW) *Protection of the Environment Operations Act 1997* (POEO Act)	The POEO Act is administered by the EPA and establishes the procedures for environmental control, and for issuing environmental protection licences regarding matters such as waste, air, water and noise. Assessment of on-site noise sources is guided by the Noise Policy for Industry 2017 (EPA, 2017), which is applicable to industrial noise sources including electricity supply and generation. An environment protection licence (EPL) is required under Chapter 3 of the Act to undertake a scheduled activity or scheduled development work. Under Schedule 1 Clause 17 The wind farm requires an EPL as it is considered SSD and would produce more than 30 megawatts of electrical power.	Chapter 16 (Noise and vibration) Chapter 14 (Hydrology, flooding and water quality) Chapter 15 (Air quality) Chapter 19 (Soils and contamination) Chapter 20 (Groundwater) Chapter 21 (Waste management and resource use)
(NSW) *Roads Act 1993* (Roads Act)	The project would require consent from the appropriate road authority under Section 138 of the Roads Act for works undertaken on public roads. Part 9 of the Roads Act nominates the requirements for undertaking works within a public road, including the requirement to obtain consent under Section 138 for carrying out works in, on or over a public road, and the digging up or disturbance of the surface of a public road. Under Section 4.42 of the EP&A Act consent must be provided under the Roads Act for SSD consistent with the project approval.	Chapter 17 (Traffic and access) Technical paper 10 (Transport impact assessment)

Legislation	Requirement	Where addressed in this EIS
(NSW) *Rural Fires Act 1997* (RF Act)	The RF Act establishes the NSW Rural Fire Service, defines its functions, and makes provision for the prevention, mitigation and suppression of rural fires. A bushfire safety authority is not required under Section 100B of the RF Act; however, bushfire risk is addressed in the EIS.	Chapter 18 (Hazards and risk) Technical Paper 12 (Bushfire hazard assessment)
(NSW) *Soil Conservation Act 1938*	Provisions for the conservation of soil resources and farm water resources enables areas to be designated as 'areas of erosion hazard' and allows the Soil Conservation Commissioner to issue notices aimed at preventing soil erosion or land degradation.	Chapter 19 (Soils and contamination) Chapter 21 (Waste management and resource use)
(NSW) *Waste Avoidance and Resource Recovery Act 2001* (WARR Act)	The WARR Act aims to encourage the most efficient use of resources to reduce environmental harm in accordance with the principles of ecologically sustainable development. The project would consume some natural resources and would produce waste.	Chapter 21 (Waste management and resource use)
(NSW) *Water Management Act 2000* (WM Act)	Under Section 4.41 of the EP&A Act a water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 is not required for SSD.	Chapter 14 (Hydrology, flooding, and water quality) Chapter 20 (Groundwater) Technical paper 8 (Hydrology, flooding and water impact assessment) Technical paper 16 (Groundwater impact assessment)
(NSW) *Work Health and Safety Act 2011*	The Act provides work health and safety regulations for the management of contaminated waste such as asbestos as well as consideration of health and safety hazards to on-site workers associated with normal construction operations.	Chapter 18 (Hazards and risk)

B1.1.5 Consideration of NSW environmental planning instruments

Key environmental planning instruments have been considered in relation to the assessment of the project as summarised in Table B.5.

Table B.5 Consideration of key Environmental Planning Instruments (EPIs) for the project

Environmental planning instrument	Requirement	Where addressed in this EIS
(NSW) State Environmental Planning Policy (Planning Systems) 2021	Under Clause 2.6 (1) of the Planning Systems SEPP, a development is classified SSD if: **a** the development on the land concerned in, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and **b** the development is specified in Schedule 1 or 2. Schedule 1, Clause 20 of the Planning Systems SEPP identifies 'electricity generating works' as SSD if it meets the following criteria: 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 an estimated development cost of more than $30 million, or **b** has an estimated development cost of more than $10 million and is located in an environmentally sensitive area of State significance. The project involves development for the purpose of electricity generating works using wind power that has an estimated development cost of more than $30 million and as such is permissible with consent and is considered SSD.	Chapter 4 (Statutory context)
(NSW) State Environmental Planning Policy (Biodiversity and Conservation) 2021	The Biodiversity and Conservation SEPP aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.	Chapter 4 (Statutory context) Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)

Environmental planning instrument	Requirement	Where addressed in this EIS
(NSW) State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)	Chapter 3 of the Resilience and Hazards SEPP aims to impose conditions on potentially hazardous or offensive development to reduce or minimise any adverse impacts. During construction, operation and decommissioning of the project, potentially dangerous goods and hazardous substances are likely to be transported to and from the project and may be stored on-site. Typically, the materials and chemicals would only be required in small amounts and below an amount that would trigger requirements for consideration as a hazardous or offensive industry under the Resilience and Hazards SEPP. The project includes a BESS, that can pose a hazard in the event that a fault in the battery storage system escalates into a fire. In accordance with Clause 4.6 (1) of the Resilience and Hazards SEPP, a consent authority must not consent to the carrying out of development on any land unless: **a** it has considered whether the land is contaminated, and **b** if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and **c** if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.	Chapter 4 (Statutory context) Chapter 18 (Hazards and risk) Chapter 19 (Soils and contamination) Technical paper 15 (Soils and contamination impact assessment)
(NSW) State Environmental Planning Policy (Primary Production) 2021	This SEPP aims to facilitate the orderly economic use and development of land for primary production and reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources. The SEPP is also intended to identify land which has been declared to be State significant agricultural land. Draft mapping indicates that there is some State significant agricultural land on the project site associated with the irrigated areas.	Chapter 10 (Land) Technical paper 4 (Agriculture impact assessment)

Environmental planning instrument	Requirement	Where addressed in this EIS
(NSW) State Environmental Planning Policy (Transport and Infrastructure) 2021	Clause 2.36 of the Transport and Infrastructure SEPP permits 'development for the purpose of electricity generating works' to be carried out with development consent on land within a prescribed non-residential zone. The project area is zoned RU1 – Primary Production under the Wakool Local Environment Plan 2013 (Wakool LEP) and Conargo Local Environment Plan 2013 (Conargo LEP) that is a prescribed rural zone.	Chapter 4 (Statutory context)
Wakool Local Environment Plan 2013 (Wakool LEP) Conargo Local Environment Plan 2013 (Conargo LEP)	Clause 5.10 of each of the relevant LEPs identifies the need to conserve Aboriginal objects and Aboriginal places of heritage significance within each of the LGAs. Clause 5.10 of each of the relevant LEPs identifies the need to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views within each of the LGAs. Each of the LEPs identify a schedule of registered heritage items and conservation areas. Clause 5.21 of each of the relevant LEPs identifies flood-related planning controls relevant to each of the LGAs including allowance for development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change. Part 2 of each of the LEPs identifies the relevant land zonings for each of the LGAs and the applicable permitted and prohibited development types.	Chapter 8 (Aboriginal heritage) Chapter 9 (Historic heritage) Chapter 10 (Land) Chapter 14 (Hydrology, flooding and water quality) Technical paper 2 (Aboriginal cultural heritage assessment) Technical paper 3 (Historic heritage assessment) Technical paper 4 (Agricultural impact assessment) Technical paper 8 (Hydrology, flooding and water impact assessment)

B1.1.6 EP&A Regulation 2021 checklist

How the EIS has addressed the form and contents requirements for an EIS as required under the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) is provided in Table B.6.

Table B.6 Requirements of Part 8, Division 5 of the EP&A Regulation

Requirement	Where addressed in the EIS
Section 190 – Form of environmental impact statement	
1 An environmental impact statement must contain the following information: **a** the name, address and professional qualifications of the person by whom the statement is prepared,	EIS declaration page Chapter 1 (Introduction)
b the name and address of the responsible person,	EIS declaration page
c the address of the land:	EIS declaration page Chapter 1 (Introduction) Chapter 3 (Project description)
i to which the development application relates, or	
ii on which the activity or infrastructure to which the statement relates will be carried out,	
d a description of the development, activity or infrastructure	Chapter 3 (Project description)
e an assessment by the person who prepared the statement of the environmental impact of the development, activity or infrastructure, dealing with the matters referred to in this Division	Chapter 7 (Biodiversity) Chapter 8 (Aboriginal heritage) Chapter 9 (Historic heritage) Chapter 10 (Land) Chapter 11 (Landscape character and visual amenity) Chapter 12 (Social) Chapter 13 (Economic) Chapter 14 (Hydrology, flooding and water) Chapter 15 (Air quality and greenhouses gases) Chapter 16 (Noise and vibration) Chapter 17 (Traffic and access) Chapter 18 (Hazards and risk) Chapter 19 (Soils and contamination) Chapter 20 (Groundwater) Chapter 21 (Waste management and resource use) Chapter 22 (Cumulative impacts)

Requirement	Where addressed in the EIS
2 The person preparing the statement must have regard to— **a** for State significant development—the State Significant Development Guidelines, or **b** for State significant infrastructure—the State Significant Infrastructure Guidelines.	This EIS has been prepared having regard to the State Significant Development Guidelines – preparing an Environmental Impact Statement (Department of Planning, Industry and Environment, 2021).
3 An environmental impact statement must also contain a declaration by a relevant person that— **a** the statement has been prepared in accordance with this Regulation, and **b** the statement contains all available information that is relevant to the environmental assessment of the development, activity or infrastructure, and **c** the information contained in the statement is not false or misleading, and **d** for State significant development or State significant infrastructure—the statement contains the information required under the *Registered Environmental Assessment Practitioner Guidelines*.	EIS declaration page
Section 192 – Contents of the environmental impact statement	
1 An environmental impact statement must contain the following:	
a a summary of the environmental impact statement,	Executive summary
b a statement of the objectives of the development, activity or infrastructure,	Chapter 1 (Introduction)
c an analysis of feasible alternatives to the carrying out of the development, activity or infrastructure, considering its objectives, including the consequences of not carrying out the development, activity or infrastructure,	Chapter 2 (Strategic context)
d an analysis of the development, activity or infrastructure, including:	Chapter 3 (Project description)
i a full description of the development, activity or infrastructure, and	Chapter 3 (Project description)
ii a general description of the environment likely to be affected by the development, activity or infrastructure and a detailed description of the aspects of the environment that are likely to be significantly affected, and	Chapter 7 (Biodiversity) Chapter 8 (Aboriginal heritage) Chapter 9 (Historic heritage) Chapter 10 (Land) Chapter 11 (Landscape character and visual amenity) Chapter 12 (Social) Chapter 13 (Economic) Chapter 14 (Hydrology, flooding and water) Chapter 15 (Air quality) Chapter 16 (Noise and vibration)

Requirement		Where addressed in the EIS
		Chapter 17 (Traffic and access) Chapter 18 (Hazards and risk) Chapter 19 (Soils and contamination) Chapter 20 (Groundwater) Chapter 21 (Waste management and resource use) Chapter 22 (Cumulative impacts)
	iii the likely impact on the environment of the development, activity or infrastructure, and	Chapter 7 (Biodiversity) Chapter 8 (Aboriginal heritage) Chapter 9 (Historic heritage) Chapter 10 (Land) Chapter 11 (Landscape character and visual amenity) Chapter 12 (Social) Chapter 13 (Economic) Chapter 14 (Hydrology, flooding and water) Chapter 15 (Air quality) Chapter 16 (Noise and vibration) Chapter 17 (Traffic and access) Chapter 18 (Hazards and risk) Chapter 19 (Soils and contamination) Chapter 20 (Groundwater) Chapter 21 (Waste management and resource use) Chapter 22 (Cumulative impacts)
	iv a full description of the measures to mitigate adverse effects of the development, activity or infrastructure on the environment, and	Appendix F (Mitigation measures)
	v a list of the approvals that must be obtained under another Act or law before the development, activity or infrastructure may lawfully be carried out,	Appendix B (Statutory compliance)
e	a compilation, in a single section of the environmental impact statement, of the measures referred to in paragraph (d)(iv),	Appendix F (Mitigation measures)
f	the reasons justifying the carrying out of the development, activity or infrastructure, considering biophysical, economic and social factors, including the principles of ecologically sustainable development set out in section 193.	Chapter 23 (Justification and conclusion)

B1.2 Commonwealth legislation

B1.2.1 Consideration of the Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Part 3 of the EPBC Act provides for a referral to the (Australian) Minister for the Environment and Water for a project that is likely to have a significant impact on the following:

- MNES
- an action by the Commonwealth or a Commonwealth agency which has, would have or is likely to have a significant impact on the environment
- an action which has, would have or is likely to have a significant impact on the environment on Commonwealth land, no matter where it is to be carried out.

These issues are considered in Table B.7.

Table B.7 Consideration of EPBC Act requirements

MNES	Matter that may be affected by the project
World heritage properties	None
National heritage places	None
Wetlands of international importance	None within 100 kilometres of the proposal site
Commonwealth listed threatened species and ecological communities	Where a significant residual impact has been identified, offsets are required to compensate for the residual impacts. Offset for threatened species and ecological communities have been determined in accordance with the NSW Biodiversity Assessment Method (BAM) and would be delivered in accordance with the NSW Biodiversity Offset Scheme. The Matters of National Environmental Significance (MNES) species which require species credits to offset residual impacts associated with the project include: — flora — Brachyscome papillosa, Mossgiel Daisy — Eleocharis obicis, Spike Rush — Lepidium monoplocoides, Winged Pepper-cress — *Maireana cheelii*, Chariot Wheels — *Swainsona murrayana*, Slender Darling-pea — fauna — *Litoria raniformis*, Southern Bell Frog. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is listed as a Threatened Ecological Community (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The project would impact on approximately 0.83 hectares of this TEC, marginally increasing fragmentation at the local scale and resulting in a small reduction in the extent of this TEC within the locality. However, given the small area of clearing required and the previously disturbed habitat present, the project is considered unlikely to have a residual significant impact on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

MNES	Matter that may be affected by the project
Commonwealth listed migratory species	The project is unlikely to have a significant impact on the Curlew Sandpiper (*Calidris ferruginea*), a Commonwealth listed migratory species, however the operational phase of the wind farm poses a risk of collision resulting in injury or mortality to Curlew Sandpiper.
Nuclear action	None
Commonwealth marine area	None
Great Barrier Reef Marine Park	None
Protection of water resources from coal seam gas development and large coal mining	None

B1.2.2 Other Commonwealth legislation

A statutory compliance table is provided to identify all the relevant statutory Commonwealth requirements and where they have been addressed in this EIS.

Table B.8 Other relevant legislation to the project

Legislation	Requirement	Where addressed in this EIS
(Cth) *Civil Aviation Regulation 1988*	The *Civil Aviation Regulations 1988* sets out the requirement for applicant to consult with Civil Aviation Safety Authority (CASA) for the potential risk posed by tall wind towers in line with the Advisory Circular – 'Obstacles (wind farms) outside the vicinity of a CASA certified aerodrome'.	Chapter 18 (Hazards and risk) Technical paper 11 (Aviation impact assessment)
(Cth) *Native Title Act 1993*	The Commonwealth *Native Title Act 1993* provides for recognition of Native Title and establishes ways in which future dealings affecting native title may proceed, sets the standards for those dealings and establishes a mechanism for determining claims to native title. Section 8 states that the *Native Title Act 1993* is not intended to affect the operation of any law of a State or a Territory that is capable of operating concurrently with the Act. The Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (Department of Environment, Climate Change and Water, 2010) stipulates that, where relevant, consultation must be conducted with Native Title holders or registered Native Title claimants. There are no active native title claims within the project site.	Chapter 8 (Aboriginal heritage) Technical paper 2 (Aboriginal cultural heritage assessment)
(Cth) *Radiocommunications Act 1992*	The *Radiocommunications Act 1992* mandates that all electrical component installed in Australia must comply with the Act and associated notices.	Chapter 18 (Hazards and risk) Technical paper 13A (Telecommunications impact assessment)
(Cth) *Water Act 2007* (Water Act)	The *Water Act 2007* allows the Commonwealth in conjunction with the Basin States (South Australia, Victoria, New South Wales, Queensland, and the Australian Capital Territory) to manage Australia's largest water resource, the Murray-Darling Basin, in the national interest. Notably it gives functions to the Bureau of Meteorology in reporting of water information and transferred the powers and functions of the Murray-Darling Basin Commission to the Murray-Darling Basin Authority through the Murray-Darling Basin Agreement.	Chapter 14 (Hydrology, flooding, and water) Technical paper 8 (Hydrology, flooding and water impact assessment)

B1.2.3 EPBC Regulations checklist

Table B.9 identifies the form and content requirements of the EIS in accordance with Schedule 4 of the Environment Protection and Biodiversity Conservation Regulations 2000 (EPBC Regulations) as required by the supplementary Secretary's Environmental Assessment Requirements and indicates where they have been addressed in the EIS.

Table B.9 Schedule 4 of the Environment Protection and Biodiversity Conservation Regulation 2000 checklist

Requirement		Where addressed in this EIS
1	General information	
1.01 The background of the action including:		
a	The title of the action	Tchelery Wind Farm
b	The full name and postal address of the designated proponent	Section 1.1
c	a clear outline of the objective of the action	Section 1.2.2
d	The location of the action	Section 1.2 and Figure 1.1
e	The background to the development of the action	Section Background
f	How the action related to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affection by the action	Chapter 22 (Cumulative impacts) Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
g	The current status of the action	Neoen is currently seeking approval for the Project under Part 4, Division 4.7 of the EP&A Act
h	The consequences of not proceeding with the action	Section 2.6
2	Description	
2.01 A description of the action, including:		
a	All the components of the action	Chapter 3 (Project description)
b	The precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts	Chapter 3 (Project description)
c	how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts	Chapter 3 (Project description)
d	relevant impacts of the action	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report) Chapter 22 (Cumulative impacts)
e	proposed safeguards and mitigation measure to deal with relevant impacts of the action	Appendix F (Mitigation measures)
f	any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action;	Chapter 4 (Statutory context) Appendix B (Statutory compliance)

Requirement	Where addressed in this EIS
g to the extent reasonably practicable, any feasible alternatives to the action, including: **i** if relevant, the alternative of taking no action	Section 2.6
ii a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action;	Section 2.6
iii sufficient detail to make clear why any alternative is preferred to another;	Section 2.6
h any consultation about the action, including: **i** any consultation that has already taken place;	Chapter 5 (Engagement)
ii proposed consultation about relevant impacts of the action	Chapter 5 (Engagement)
iii if there has been consultation about the proposed action—any documented response to, or result of, the consultation;	Chapter 5 (Engagement)
iv identification of affected parties, including a statement mentioning any communities that may be affected and describing their views	Chapter 5 (Engagement)
3 Relevant impacts	
3.01 Information given under paragraph 2.01(d) must include:	
a a description of the relevant impacts of the action	Chapter 7 (Biodiversity) Chapter 22 (Cumulative impacts) Technical paper 1 (Biodiversity development assessment report)
b a detailed assessment of the nature and extent of the likely short term and long term relevant impacts	Chapter 7 (Biodiversity) Chapter 22 (Cumulative impacts) Technical paper 1 (Biodiversity development assessment report)
c a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible	Chapter 7 (Biodiversity) Chapter 22 (Cumulative impacts) Technical paper 1 (Biodiversity development assessment report)
d analysis of the significance of the relevant impacts	Chapter 7 (Biodiversity) Chapter 22 (Cumulative impacts) Technical paper 1 (Biodiversity development assessment report)
e any technical data and other information used or needed to make a detailed assessment of the relevant impacts	Chapter 7 (Biodiversity) Chapter 22 (Cumulative impacts) Technical paper 1 (Biodiversity development assessment report)

Requirement		Where addressed in this EIS
4	Proposed safeguards and mitigation measures	
4.01 Information given under paragraph 2.01(e) must include:		
a	a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;	Appendix F (Mitigation measures)
b	any statutory or policy basis for the mitigation measures	Mitigation measures have been prepared in accordance with the NSW Biodiversity Assessment Method and Biodiversity Offset System requirements
c	the cost of the mitigation measures	The cost of mitigation measures has not yet been calculated. The retirement of biodiversity credits would constitute the vast majority of costs and would be subject to finalisation of offset strategy and extent of clearing ultimately required. Biodiversity offsets are discussed in Chapter 7 (Biodiversity) and Technical paper 1 (Biodiversity development assessment report)
d	an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing	Appendix F (Mitigation measures)
e	the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program	DPHI is responsible for the establishment of compliance requirements for the project including assigning obligations to consult with other relevant agencies
f	a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.	Appendix C (Construction Environmental Management Plan Outline) Appendix F (Mitigation measures)

Requirement	Where addressed in this EIS
5 Other approvals and conditions	
5.01 Information given under paragraph 2.01(f) must include:	
a details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:	Chapter 4 (Statutory context) Appendix B (Statutory compliance)
i what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy	Chapter 6 (Approach to assessment of impacts) Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
ii how the scheme provides for the prevention, minimisation and management of any relevant impacts;	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
b a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action	No approval has been obtained for the action to date
c a statement identifying any additional approval that is required;	Chapter 4 (Statutory context) Appendix B (Statutory compliance)
d a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.	Appendix F (Mitigation measures)
6 Environmental record of person proposing to take the action	
6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:	
a the person proposing to take the action; and	Nil
b for an action for which a person has applied for a permit, the person making the application.	Nil
6.02 If the person proposing to take the action is a corporation— details of the corporation's environmental policy and planning framework.	Biodiversity Policy (Neoen, 2023) Neoen Health, Safety and Environmental (HS&E) Policy Sustainability Framework

Requirement	Where addressed in this EIS
7 Information sources	
7.01 For information given in a draft public environment report or environmental impact statement, the draft must state:	
a the source of the information; and	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
b how recent the information is; and	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)
c how the reliability of the information was tested; and	The information presented in the EIS is the most recent available. The information has been prepared by specialist consultants with many years' of experience. Qualifications are provided in Technical paper 1 (Biodiversity development assessment report).
d what uncertainties (if any) are in the information.	Chapter 7 (Biodiversity) Technical paper 1 (Biodiversity development assessment report)

Appendix C

Construction Environmental Management Plan (CEMP) outline

Design
for a better
future /

Neoen Australia Pty Ltd

Tchelery Wind Farm

Construction Environmental Management Plan outline

April 2025

Question today
Imagine tomorrow
Create for the future

Tchelery Wind Farm
Construction Environmental Management Plan outline

Neoen Australia Pty Ltd

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Rev	Date	Details
A	23/04/2025	Draft CEMP outline

Template amendment sheet

Date	Reviewed by	Reason for amendment	Section No.	Page No.	Approved by

Completed Plan approval list

Approvers		Signature	Date
Author (Owner)			
Reviewed			
Approved			

WSP acknowledges that every project we work on takes place on First Peoples lands.
We recognise Aboriginal and Torres Strait Islander Peoples as the first scientists and engineers and pay our respects to Elders past and present.

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Glossary

Term/abbreviation	Definition/expanded text
EMS	Environmental management system
CEMP	Construction Environmental Management Plan

DRAFT

1 Background

This section would provide an introduction to the CEMP and an overview of the project including the project location and site history, construction activities, project objectives and the planning approval pathway.

1.1 Introduction

1.2 Project description

1.2.1 Site history and current status

1.2.2 Construction

Table 1.1 Construction activities

Construction stage	Activities

1.3 Project planning approval pathway

DRAFT

2 Construction Environmental Management requirements

This section would outline the structure, purpose and objectives of the CEMP as well as relevant legislative requirements, approval conditions and any environmental management sub-plans.

2.1 Construction Environmental Management Plan

2.2 Legislative requirements and obligations

Table 2.1 Relevant legislation and obligations

Type	Regulator	Title
Legislation	*NSW Environment Protection Authority (EPA)*	*Work Health and Safety Act 2011*

2.3 Approval conditions

DRAFT

3 Neoen environmental management system

This section would outline Neoen's relevant environmental management policies that will be implemented during construction.

3.1 Environmental policy

Table 3.1 Neoen environmental management policies

Policy	Details

3.2 Environmental management system

DRAFT

4 Roles and responsibilities

This section would detail the responsibilities and accountabilities for implementation of the CEMP. Details of the key personnel would be provided in this section including their role and contact details. The responsibilities for each key contact would be clearly listed and defined in this section.

4.1 Structure and responsibilities

Table 4.1 Key contacts

Role	Name and position	Qualification	Telephone	Roles and responsibilities
Construction contractor				
Environmental consultant				
Environmental consultant (compliance monitoring)				

4.1.1 Construction contractor responsibilities

4.1.2 Environmental consultant responsibilities

4.1.3 Environmental consultant (compliance monitoring) responsibilities

4.1.4 Site worker responsibilities

DRAFT

5 Environmental management during construction

This section would outline the conditions of approval and management required for key matters assessed in the EIS, such as noise and vibration.

5.1 Conditions of approval

Table 5.1 Conditions of approval

Condition of approval	Action	Frequency

5.2 Construction environment management project specific requirements

5.2.1 [Key matter 1]

These sections will include relevant mitigation measures and management required during construction.

Table 5.2 [Key matter 1] mitigation measures

Impact	Mitigation measure	Responsibility	Relevant location

5.2.2 [Key matter 2]

DRAFT

6 Environmental monitoring and review

This section would outline the key compliance monitoring and audits required to be completed during construction. The frequency, scope, responsibility and reporting requirements for each aspect and/or stage would be detailed.

6.1 Environmental monitoring and reporting

Table 6.1 Monitoring and reporting

Action	Responsibilities	Frequency
Site inspection		

6.2 Auditing

DRAFT

7 Stakeholder and community engagement

This section would provide a summary of community consultation carried out to date and detail any proposed consultation to be carried out during construction. This section would provide guidance on how complaints and disputes would be managed and resolved.

7.1 Government agency consultation

Table 7.1 Government agency consultation

Agency	Date consulted	Details of consultation	Where addressed

7.2 Community consultation

Table 7.2 Community consultation

Community group	Date consulted	Details of consultation	Where addressed

7.3 Complaints handling

Table 7.3 Complaints register

Complainant	Complaint	Where addressed

7.4 Dispute resolution

DRAFT

8 Environmental incident and non-conformance

This section would outline the procedure to be followed in the event of an environmental incident or non-conformance.

Table 8.1 Incident register

Incident	Responsibility	Contact details	Agency contact

DRAFT

9 Documentation and record keeping

This section would be used to document completion of compliance monitoring and auditing.

Table 9.1 Compliance monitoring

Monitoring type and location	Conducted by	Date completed	Outcome of monitoring

Table 9.2 Project site audit

Audit type and location	Conducted by	Date completed	Outcome of audit

Table 9.3 Management plan review

Management plan review	Conducted by	Date completed	Outcome of audit

Table 9.4 Licencing review

Licencing review	Conducted by	Date completed	Outcome of audit

DRAFT

10 CEMP review

This section would detail reviews completed of the CEMP that would occur at a minimum every 12 months, or as required.

10.1 Review

Table 10.1 CEMP version control

Version	Outcome of review	Date completed	Reviewed by

DRAFT

About Us

WSP is one of the world's leading engineering professional services consulting firms, bringing together approximately 65,000+ talented people around the globe. We are technical experts who design and provide strategic advice on sustainable solutions and engineer Future ReadyTM projects that will help societies grow for lifetimes to come. wsp.com

Appendix D

Community Engagement Plan

NEOEN



TCHELERY WIND FARM
COMMUNITY ENGAGMENT PLAN

Version	V6
Released	17 04 2025
Document Owner	Aniruddha Deshpande, Project Manager

1.1 Document Control

Author	
Position:	Project Manager
Incumbent:	Aniruddha Deshpande
Approved by	
Position:	Head of Communications and Engagement
Incumbent:	Lisa Stiebel
Approval Date:	17 April 2025
Related Documents	
1.	First Nations Engagement Plan
2.	Community Information Booklet (Appendix A)
3.	Social Risk Matrix (Appendix C, to be developed at later stage, if relevant)
4.	Local Participation Plan (to be developed at later stage, if relevant)

History			
Version	**Nature of change**	**Author**	**Date**
V1	Creation	Aniruddha Deshpande, Project Manager	17/03/2023
V2	Update – Engagement summary	Aniruddha Deshpande, Project Manager	22/05/2023
V3	Update – Engagement summary, Competitor map	Aniruddha Deshpande, Project Manager	19/06/2023
V4	Update - Post Scoping report, EIS, Engagement	Aniruddha Deshpande, Project Manager	20/06/2024
V5	Update – Pre EIS submission consultation update	Aniruddha Deshpande, Project Manager	13/02/2025
V6	Update – EIS submission	Aniruddha Deshpande, Project Manager	17/04/2025

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PURPOSE

This Community Engagement Plan (CEP) was developed during the development phase by Aniruddha Deshpande, Project Manager with oversight from the Lisa Stiebel, Head of Communication and Engagement starting in March 2023.

This document identifies the community engagement approach and objectives for the Tchelery Wind Farm and surrounding communities. It was developed in accordance with the global best practice guidelines. It outlines the overall framework across the phases of the project lifecycle (from development through construction to operations) and proposed plans. It also provides a summary of the key stakeholders including landholders, neighbours, local community and local government.

Neoen understands that the success of the Tchelery Wind Farm is dependent to a large extent on the development of genuine, open and ongoing relationships with key stakeholders and members of the local community. We recognise the importance of ensuring a “no surprises” dynamic with the local community and are committed to developing and nurturing long-term relationships between our team and the various project stakeholders.

The CEP is a key element of the Community Engagement Toolkit depicted in Table 1. It is one of the three tools, along with the stakeholder register and the project website, that will accompany the project from early feasibility stage to decommissioning.

Safety First

Neoen have a policy of safety first across all our projects and activities. Staff and community safety is a baseline essential to ensure engagement can proceed. Wherever there is a conflict between the approach and guidelines outlined in this Community Engagement Plan and the safety of our staff or the general public then appropriate safe practices will take priority.

Distribution

It is intended that the CEP is part of the hand over from project manager to project manager as the project progresses from development to construction to operations. It should also be shared with nominated EPC and O&M contractors so that it can be incorporated into their site management plans to ensure our approach is consistent and coordinated. It is also designed to be a useful backgrounder for new Neoen staff members or those attending future community events.

Review

Once developed, the CEP is a live document which will be updated progressively during the project’s development phase and then reviewed and handed over at the following project milestones:

- Financial close (handover to Construction Manager)
- Completion of construction (handover to Asset Manager)

It will also be informed by changing circumstances, community feedback and ongoing improvements in Neoen’s community engagement approach, so that our communication and engagement remain:

- Relevant to the project’s evolving needs, issues and outcomes
- Responsive and tailored to the needs of key stakeholders and local community
- At the leading edge of industry and global best practice

NEOEN

Community Engagement Toolkit by Project Stage

DEVELOPMENT | CONSTRUCTION | OPERATION

1	2	3	4	5	6	7	8
Site Selection	Feasibility	Planning & Approvals	Post DA Lodgement	Pre-Construction	Construction	Operation	Decommissioning
Host landowner information & FAQ's Social Feasibility Scan Stakeholder Register	Stakeholder Register Community Engagement Plan Neighbour information & FAQ's, benefit options Council & stakeholder Presentation Indigenous Engagement Guidelines Benefit Calculators Website (template)	Stakeholder Register Community Engagement Plan Website Feedback Survey 1800 number Community Info Day Checklist & templates Job interest register Indigenous Participation Plan (if relevant) Benefit-sharing program models & matrix	Stakeholder Register Community Engagement Plan Website 1800 number Job Interest Register (if relevant) Indigenous Participation Plan Newsletter template	Stakeholder Register Community Engagement Plan Website 1800 number Complaints Register Benefit-sharing Program finalised Job interest register Indigenous Participation Plan (if relevant) Local Employment & Networking Session Handover to Construction Manager & EPC	Stakeholder Register Community Engagement Plan Website 1800 number Complaints Register Indigenous Participation Plan (if relevant) Site Tour information pack Event sponsorship Guidelines Handover to Asset Manager & O&M	Stakeholder Register Community Engagement Plan Website 1800 number Complaints Register Indigenous Participation Plan (if relevant) Community Celebration Benefit-sharing Program delivery Visitor information pack	Stakeholder Register Community Engagement Plan Website 1800 number Complaints Register End of Project Life information pack

Responsibility

Over the many years of the Tchelery Wind Farm's development and lifecycle, the people responsible for and engaged in the implementation of the CEP will change.

Table 1 outlines the movement in responsibility across the project lifecycle.

Table 1: Responsibility for CEP

Stage	Project Stages	Proposed Timing	Responsibility for CEP
1	Site selection	Q2 2022	Jang Kim Development Project Manager
2	Feasibility	Q3 2022	Jang Kim Development Project Manager
3	Planning and approvals	Q4 2022 – Q3 2025	Aniruddha Deshpande Development Project Manager
4	Post DA lodgement	April 2025	Aniruddha Deshpande Development Project Manager
5	Pre-construction	Q3 2026	Aniruddha Deshpande Development Project Manager
6	Construction	Q1 2027-Q1 2030	TBD, Construction Project Manager As per Construction Environmental Management Plan (CEMP)
7	Operation	Q1 2030 – 2060	TBD, Asset Manager As per Operation Environmental Management Plan (OEMP)
8	Decommissioning	2061-2062	As per Decommissioning Environmental Management Plan (DEMP)

1. COMMUNITY ENGAGEMENT APPROACH

1.1 Our approach

Stakeholder and community engagement are led by Neoen's project managers with support from community engagement specialists. We consider it important that trusting relationships are developed between the people on the ground who know the project the best, and the stakeholders that are part of and connected to their region and local community. Due to the rural nature of the community, our overall approach to consultation for the Tchelery Wind Farm will be open, relaxed, flexible and responsive.

Neoen have a vertically integrated business model, meaning that we 'develop to own' our projects. This model is unusual in the industry, affording us a clear advantage over our competitors in respect to community engagement – our starting point is the clear understanding that we will be long term neighbours and participants in the local community for the lifetime of the project. As such we are able to establish and nurture relationships, embrace partnerships and innovation, confident that we will be there to see projects and benefits to fruition.

1.2 Our values

As a company Neoen has a clear set of values that underpin and guide our work. How these internal values translate into our external approach to building relationships with communities is described in Table 2.



Integrity
We operate with integrity, whatever we do, whenever and wherever we do it.
We work with partners who abide by the same rules.



Commitment
We uphold all our commitments, internal and external.
We believe in hard work and take pleasure in seeing a good job well done.



Audacity
We believe we can become a world leader in renewable energy.
We have the audacity to operate globally, imagining, designing and implementing competitive, effective energy solutions.



Esprit de corps
We are loyal to each other and form a close-knit team.
We are proud of our company, our goals and our accomplishments.

Table 2: Principles and practice

Value & Principle	In practice
Integrity Mutual Respect	– We provide a space for genuine dialogue where people can participate in respectful discussions.
Integrity Transparency	– We demystify the development process for local stakeholders and clearly communicate which points, when and to what extent they are able to influence decisions. – We are transparent about how and why decisions are made.
Integrity Inclusiveness	– We reach out to involve key stakeholders and the local community so they can play a part in decisions that affect them. – We provide a range of opportunities and avenues for ongoing and meaningful dialogue, allowing for detailed and timely discussions.
Commitment Responsiveness	– We communicate well and are responsive to emerging issues, concerns and ideas.

	– We provide timely information and ensure people have time to digest information, understand the project and make informed decisions.
Commitment Mutual Benefit	– We seek shared outcomes of mutual benefit for the local host community over the long term.
Audacity Innovation	– We deliver engagement beyond regulatory conditions and compliance – We are open to and pursue bold and creative ideas and solutions tailored to and driven by the local context of the project.
Esprit de corps Relationship building	– We build and nurture long term local relationships and make meaningful links with local leaders and organisations. – We provide many avenues for interaction across the project lifecycle.
Esprit de corps Celebration	– We value and celebrate community; our own and those of the communities we work with. – We enjoy celebrating our successes together.

1.3 Industry Best Practice

Our approach to engaging stakeholders is informed by the Public Participation Spectrum developed by the International Association of Public Participation (IAP2) and widely adopted as a framework for structuring consultation by the renewables industry. The approaches and spectrum are represented in the Table 3.

Table 3: Spectrums of engagement

Spectrum	Inform	Consult	Involve	Collaborate	Empower
Community engagement objective	– Provide balanced and objective information – assist the community in understanding all aspects of the project, including possible problems/issues	– Obtain feedback from the community on plans, options and/or decisions	– Work directly with the community throughout all stages of the project – ensure community concerns and aspirations are consistently understood and considered	– Partner with the community in each aspect of planning, development and decision- – making, including the development of alternatives and the identification of the preferred solution	– Community leads the development of the renewable energy project – Place decision-making in the hands of the community
Promise to community	– Keep the community informed through all stages of development, including issues and delays	– Keep the community informed – listen and acknowledge suggestions and concerns – provide feedback on how input	– Work with the community to ensure concerns and aspirations are directly reflected in the alternatives developed	– Look to the community for direct advice and innovation in formulating solutions – incorporate advice and recommendations into	– Implement what the community decides

		influenced the decision	– provide feedback on how input influenced the decision	decisions to the maximum extent possible	
Community engagement outcomes	– Securing a good site to install the renewable energy facility – gaining planning permission – meeting compliance regulations	– Minimising objections – effectively managing complaints – good stakeholder relations – a level of community awareness and trust in the project	– Long-term broad local social acceptance and knowledge of the project – strengthened local relationships and trust – local advocates for renewable energy	– Broad community participation, support and awareness – some sense of local ownership – greater community benefit and strong local relationships and trust – timely development and easier planning approval – some sharing of benefits beyond investors	– Benefit sharing program tailored to the local context – Harness the skills and capital of the community – Upskill community members to manage the project – Largely community owned and controlled

This CEP aims to move our engagement activities and benefit sharing approach along the spectrum listed above so that across our project portfolio we are:

- **Involving** the community in the development, construction and operation of the Wind farm
- **Collaborating** with the community to ensure that local advice and insights are shaping our approach to engagement and benefit sharing
- **Empowering** the community to shape key elements of the project, such as co-designing the long-term framework of the shared benefits program

1.4 Emerging trends

Table 3 in the prior section shows that differing levels of participation are legitimate, depending on the goals, timeframes, resources and levels of interest/concern in the decision to be made. At all levels of engagement, it is fundamental to define the promise and ensure it is clearly understood by both the

decision makers and the stakeholders to be engaged. The following Figure 1[1] shows the emergent key elements of best practice as of 2018.



Figure 1: Key elements of best practice

Stakeholders groups are likely to have differing communication and engagement needs. A level of engagement is therefore necessarily assigned to each stakeholder identified. It is possible for the level of engagement to alter at different milestones of the project; as a consequence, some stakeholders will be assigned more than one level of engagement. Each level of engagement is a valid one, provided it is delivered in a meaningful way and to a group that expects to be engaged with at that level.

The project team will engage broadly but understands there are stakeholders seeking different levels of engagement in the project. Stakeholder level of interest will evolve over the duration of the project and this analysis will be updated regularly to reflect changes and emerging issues or opportunities. A detailed Stakeholder Register incorporating the stakeholders and communities affected and/or interested in the project is maintained by the manager responsible for the CEP.

[1] Lane, T., Wood, E. Hall, N., Webb, A. and Mey, F. Enhancing Social Outcomes from Wind Development in Australia: Evaluating Community Engagement and Benefit Sharing. Clean Energy Council, Melbourne.

1.5 Objectives

1. Foster a transparent and open approach to the development of Tchelery Wind Farm and ensure 'no surprises' for the local community.

2. Keep the community and stakeholders informed about Tchelery Wind Farm through the provision of accurate, timely and factual project information.

3. Identify and address community and stakeholder concerns and maintain transparency in the project design, implementation and ongoing operations.

4. Involve stakeholders and community regarding key decisions.

5. Identify opportunities for First Nations engagement, participation and benefit-sharing in Tchelery Wind Farm.

6. Identify opportunities for local business involvement and local employment in the construction and operations of Tchelery Wind Farm and where appropriate develop a Local Participation Plan.

7. Co-design, develop and deliver a benefit sharing program in collaboration with the community, and in partnership with local stakeholders where possible.

8. Develop long-term relationships and partnerships with community and stakeholders.

1.6 Community Engagement Framework

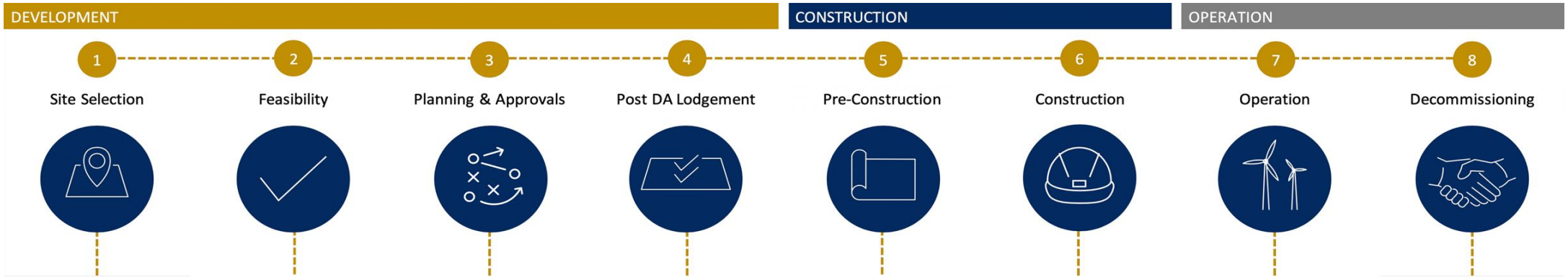
An eight-phased approach will guide the implementation of community engagement strategy in alignment with each of the project stages.

Key project activities and milestones are outlined on the page below, with the associated community engagement activities on the following page.

Section 3 provides detailed project-specific information on the community engagement approach and strategy for Tchelery Wind Farm.

NEOEN

Project Activities and Milestones by Stage



Site Selection	Feasibility	Planning & Approvals	Post DA Lodgement	Pre-Construction	Construction	Operation	Decommissioning
Desktop survey Identify potential landowners Fatal flaw assessment Meet and negotiate with landowners Enter options to lease	Meet and discuss with neighbours Mapping of site constraints Commence development application (DA) studies Preliminary project design Internal approval to proceed	Completion of studies and surveys Preparation of DA Investigate power purchase agreement (PPA) options Connection inquiries Refining detailed project design	Begin procurement process Finalise detailed design Commence PPA negotiations Commence grid connection application process	DA approval Finalise procurement and appoint EPC and O&M contractor Finalise connection agreement Finalise PPA agreement Secure project finance leading to 'financial close' Development Manager hands over to Construction Manager	Mobilise on site Civil, mechanical & electrical installation Commissioning Generation commences Construction Manager hands over to Asset Manager	Ongoing asset maintenance and management Generation and revenue tracking & optimisation	Explore business case for site renewal Cease or extend landowner contracts Removal of infrastructure Site rehabilitation

Table 4: Community engagement activities by project stage

Development			Construction		Operation	
1	2	3	4	5	6	7
Site selection	**Feasability**	**Planning & Approvals**	**Pre-construction**	**Construction**	**Operation**	**Decommissioning**
Social Feasibility Scan (Political and neighbour) Face-to-face meetings with host landowners Establish stakeholder register on the CRM	Develop the Community Engagement Plan Identify and meet Traditional Owners Face-to-face meetings with neighbours Council & MP briefings *# Coordinate with Social Impact Assessment consultant (NSW)*	Co-develop a First Nations Engagement Plan (if required) Discussion on CLO and First Nations support and budget Meetings with fire authorities and local groups including Council briefings Finalise & include in financial model: – Benefit-Sharing OPEX – Artwork CAPEX – Environmental 'above & beyond' initiative CAPEX Launch website including project email, 1800#, 'Work with Us' register & feedback survey Send 1st newsletter (& set-up bi-annual updates to the community) Community Info Session(s) Hold host landowner dinner(s) and update(s) *# Gather and leverage Social Impact Assessment results*	Develop a Local Participation Plan (if required) Distribute bi-annual newsletters Establish Complaints register Identify benefit-sharing opportunities Hold a Local Employment & Networking Session Present at the nearest local school Share 'Work with Us' register with EPC Hold a 'start of construction' event	'Welcome to Country' event on-site Bi-annual newsletter and website updates SMS alerts (as required) Host landowner and neighbour meetings Video updates Council & MP briefings Sponsor local event(s) and deliver artwork commitment Finalise environmental 'above & beyond' initiative	Hold community celebration event Deliver Benefit-Sharing program (First Nations, Neighbour Benefit Scheme and Community) Annual newsletter and website update Host landowner, Council & MP briefings Facilitate site tours and school open days Manage complaints Review community engagement and lessons learnt	Communicate decommissioning process Landowner and council briefings Update website Engagement with local land care groups

2. PROJECT CONTEXT

2.1 Context narrative

Tchelery Wind Farm is a renewable energy project with the ability to provide affordable, reliable power to New South Wales consumers. Fully constructed, the project would include up to 74 wind turbines providing a total generation capacity of up to 577 megawatts (MW) and up to 350 MW a Battery Energy Storage System (BESS) with a maximum energy storage capacity of 1,450 megawatt-hours (MWh).

The project location was chosen as it meets several criteria that will allow it to become a competitively priced project for NSW consumers. Some of the criteria taken into account include:

- Strong wind resource;
- Suitable site topography;
- Low population and thus distances to involved and neighbouring dwellings; and
- Located within a strong part of the electricity network (ability to connect into EnergyConnect (NSW – Eastern Section) or existing 220kV transmission line crossing the project).

2.2 Background and development to date

The project site was first identified in late 2018 and engagement with landholders commencing soon thereafter. The project was on hold until late 2021 to confirm the progress of Project Energy Connect. The contract negotiations were finalised in mid-2022.

Initial feasibility studies have occurred throughout 2022 and up to March 2023 followed by detailed surveys in 2023 and 2024, including:

- A fatal flaw assessment;
- Development of a preliminary wind turbine layout based on Vortex wind data;
- A preliminary on-site ecological assessment to confirm some of the flora and fauna species present within the project site;
- Spring seasonal ecological survey;
- Commencement of neighbour engagement;
- Introduction to Neoen and proposed project to Edward River, Hay shire and Murray River Council planning team via phone and email. A presentation introducing the Tchelery Wind Farm project to Edward River and Hay Shire Council planning team in Jan-Feb 2023. A presentation introducing the project was tabled in the Edward River Councillors' meeting on 4 April 2023;
- The first community information session on 22nd February 2023 at Moulamein Bowling Club;
- Installation of a SODAR machine to monitor the wind resource in March 2023;
- Meeting with neighbours, community, local organisations, Registered Aboriginal Parties in February and April 2024.
- Draft reports prepared by WSP, external specialists and meetings with DPHI and BCD
- Numerous site visits by ecologists and archaeologists between 2022 and 2024 and site visit by social impact specialists in 2024 to understand conditions at the site
- The second community drop-in session was held on the 4th and 5th of March 2025 in Moulamein, Hay and Deniliquin. Project update was provided to Edward River Council' and Hay Shire Council's planning team via a face to face meeting and to the local and federal MPs via email letter.

The project is now in the final stages of Planning & Approvals phase. We are targeting submission of the Environmental Impact Statement, alongside the full Development Application, to the NSW Department of Planning, Housing and Infrastructure (DPHI) for the 28th of April 2025.

2.3 Site location

The Tchelery Wind Farm will be located near Keri Keri in the Riverina Murray region of NSW, Figure 2. The project would be approximately 790 kilometres (by road) west of Sydney, 35 kilometres (by road) east of Keri Keri, 30 kilometres (by road) north east of Moulamein, and 79 kilometres (by road) east of Balranald. The project is within the Edward River Local Government Area (LGA), south of the Sturt Highway. The project site is traversed by Maude Road (north-south) and Boorooban-Tchelery Road (east-west).

Neoen acknowledges the Traditional Owners of the land on which the TWF is located are the Wamba Wamba and Perrepa Perrepa peoples. The Project is located within the Deniliquin Local Aboriginal Land Council (LALC) boundary which is mainly composed of Nari Nari, Wemba Wemba (Wamba Wamba) peoples.

Existing land uses of the project site and surrounds are predominately livestock grazing and some areas of cropping.

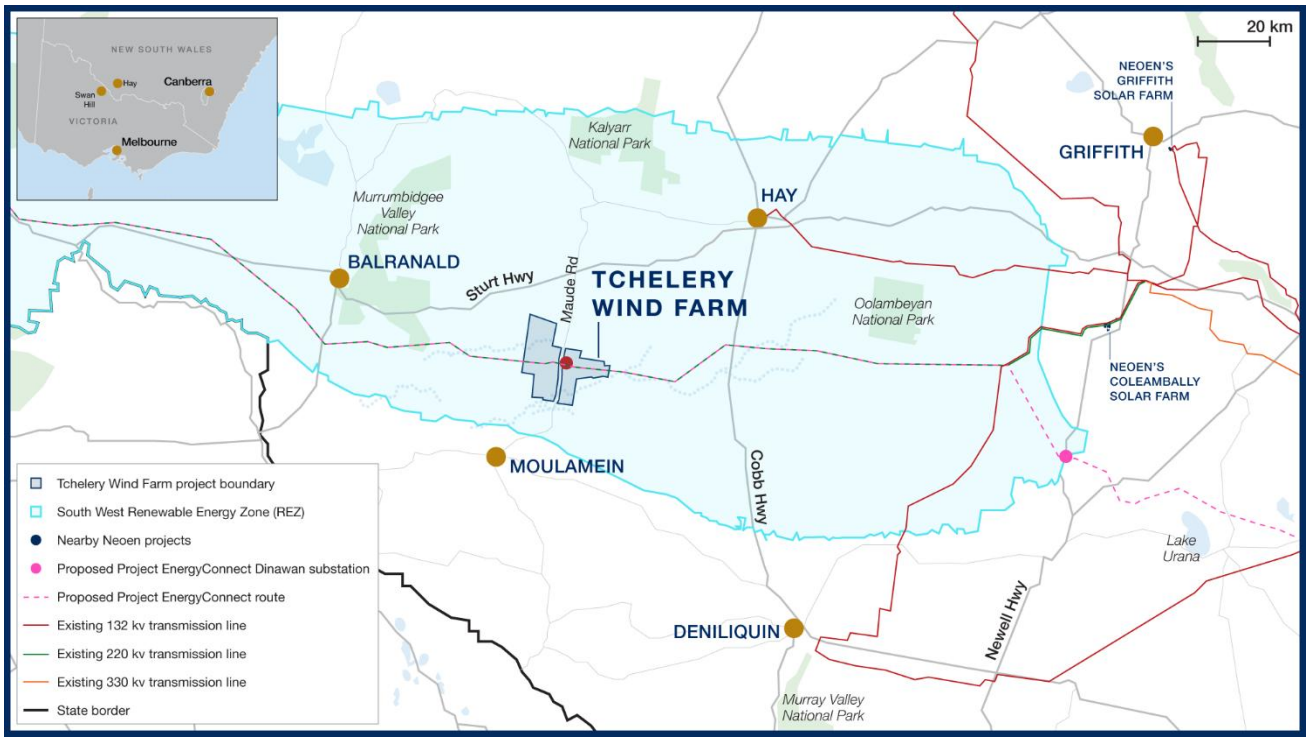
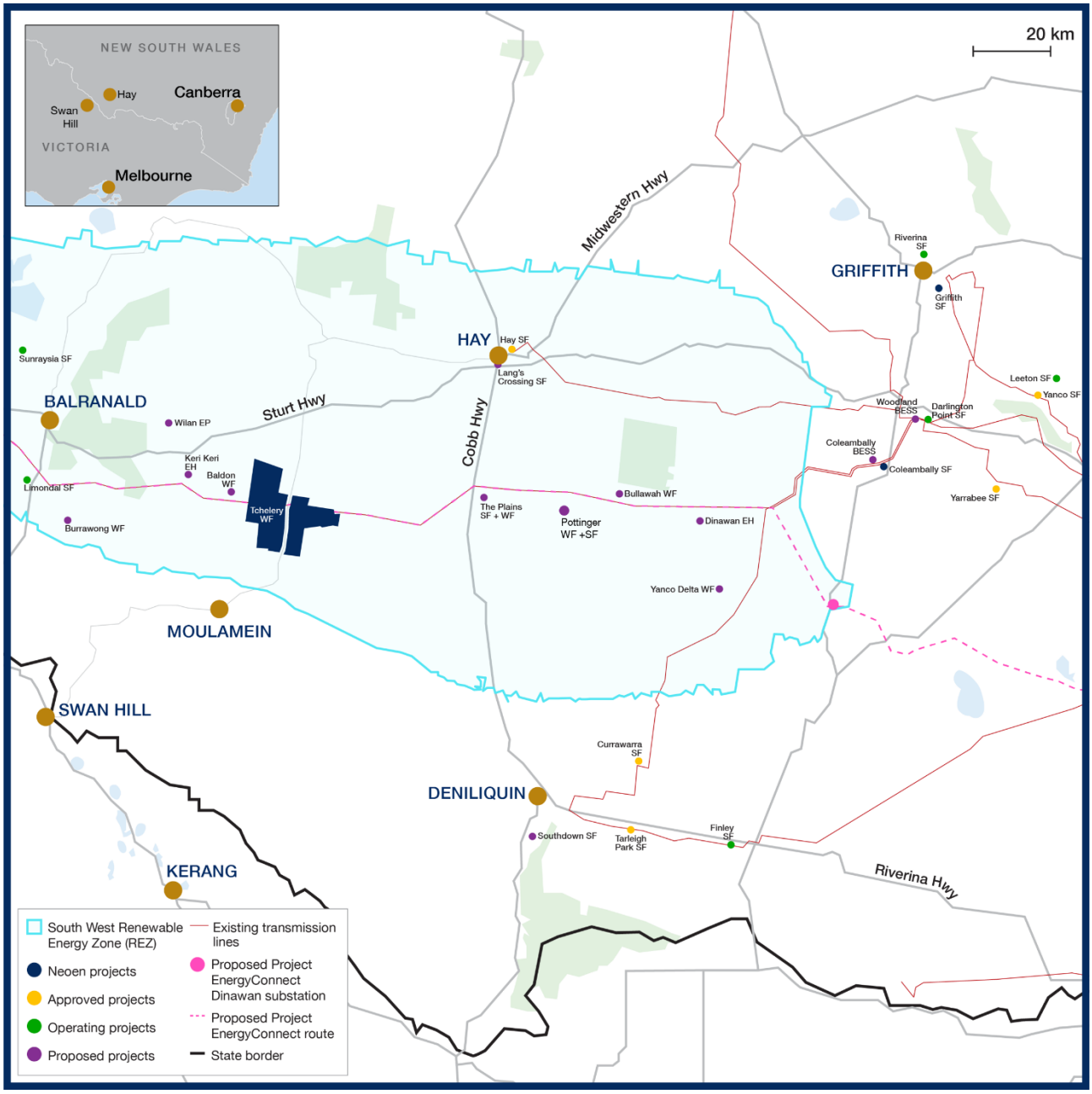


Figure 2: Tchelery Wind Farm Site Location

The NSW Government is committed to the development of Renewable Energy Zones (REZs) to actively plan, invest and develop NSW's REZ electricity network infrastructure, and facilitate beneficial renewable energy generation in each REZ. The Tchelery wind farm is located in the proposed South West Renewable Energy Zone, announced by the New South Wales Government in November 2022. Relevant State Significant Developments (SSDs) in the region [in and just beyond South West REZ] include:

- Keri Keri Wind Farm
- Keri Keri Solar Farm
- Baldon Wind Farm
- Hay Solar Farm
- Limondale Solar Farm
- Sunraysia Solar Farm
- Burrawong Wind Farm
- Wilan Wind Farm
- EnergyConnect (NSW – Eastern Section)
- Yanco Delta Wind Farm

- Tarleigh Park Solar Farm
- Currawarra Solar Farm
- Southdown Solar Farm
- The Plains Solar Farm
- The Plains Wind Farm.
- Bullawah Wind Farm
- Dinawan Energy Hub
- Coleambally Solar Farm
- Woodland BESS
- Coleambally BESS
- Darlington Point Solar Farm
- Yanco Solar Farm
- Leeton Solar Farm
- Yarrabee Solar Farm
- Griffith Solar Farm
- Riverina Solar Farm
- Finley Solar Farm
- Pottinger Wind Farm
- Pottinger Solar Farm



2.4 Community Overview

The broad community around the proposed Tchelery Wind Farm is centred in the suburbs and localities of Moulamein, Hay and Balranald. According to the Australian Bureau of Statistics[2] 2016 Census Table 5 is representative of the area.

Table 5: Total Population Study Map – Moulamein, Balranald & Hay

Demographics	Moulamein	Balranald	Hay
Estimated Population	489	1240	2300
Median Age	48	47	47
Aboriginal and/or Torres Strait Islander	12	110	201
Non-Indigenous	410	988	1,841
Indigenous status not stated	64	144	264
Median Weekly household Income	$1,116	$1,197	$1,152
Total Dwellings	273	695	1,198
Education			
Bachelor Degree level and above	29	88	131
Advanced Diploma and Diploma level	30	62	116
Certificate level IV	12	26	70
Certificate level III	11	113	281
Year 12	44	141	275
Occupation			
Managers	60	90	149
Labourers	33	91	178
Community and Personal Service Workers	25	72	109
Machinery Operators and Drivers	16	66	81
Technicians and Trades Workers	14	66	160
Clerical and Administrative Workers	14	43	108
Sales Workers	9	29	86

[2] https://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20QuickStats

Professionals	7	62	94
Industry			
Sheep Farming (Specialised)	24	-	39
Local Government Administration	20	40	42
Grain-Sheep or Grain-Beef Cattle Farming	18	20	-
Hospitals (except Psychiatric Hospitals)		27	29
Aged Care Residential Services	15	-	-
Primary Education		-	43
Combined Primary & Secondary Education		26	-
Other Fruit and Tree Nut Growing		31	-
Pig Farming	10	-	-
Home Ownership			
Owned outright	85	198	381
Owned with a mortgage	45	104	218
Rented	40	128	256

3. COMMUNITY ENGAGEMENT STRATEGY

3.1 Needs-based approach

Each key stakeholder has a different need across each phase of the Tchelery Wind Farm's lifecycle. To address this nuance, a needs-based approach is described for each of the key stakeholders to this project in Table 6.

Table 6: Key stakeholders

Stakeholder Group	Overview	Objectives – Needs based approach	Activities – per development phase
Host Landowners	Residents who are hosting wind farm on their land.	Ongoing communication and discussions as project progresses. Contribution to the project's progress, ability to provide local knowledge, advice, and input. Involvement in co-development of Community Benefit-sharing Scheme.	One-on-one meetings Email or Letterbox drops with updates Invitations & involvement in community events
Adjacent and near neighbours up to 4km	Residents owning land adjacent to the project site have the potential to be affected by the visual impact of the wind farm and/or battery and the noise from heavy vehicle traffic associated with the construction phase.	To create and maintain a close connection with direct adjacent neighbours of the Tchelery Wind Farm. To keep neighbours informed about the project from early in the project planning process and provide opportunities to raise issues and provide feedback. To ensure that neighbours share in the benefits of the project. Involvement in co-development of Community Benefit-sharing Scheme.	Benefit-sharing mechanism to be developed based on visual impact or proximity of wind turbine generators to the respective neighbours' dwellings. One-on-one engagement Invitation to be provided a private viewing of photomontages depending on the distance and aspect of their dwelling. Letterbox drop (or email) with updates Invitation to community events
Wind near neighbours: 4 – 8km	Residents owning land adjacent to the project site have the potential to be affected to some extent by	To keep neighbours informed about the project from early in the project planning phase.	One-on-one engagement

	the visual impact of the wind farm and potentially some noise from heavy vehicle traffic associated with the construction phase.	To provide opportunities to raise issues and provide feedback. Involvement in co-development of Community Benefit-sharing Scheme.	Letterbox drop (or email) with updates. Invitation to community events
Neighbourhood Moulamein 2733	The local people living within the Moulamein township adjacent to the project.	To keep neighbours informed about the project from early in the project planning phase. To provide opportunities to raise issues and provide feedback. Involvement in co-development of Community Benefit-sharing Scheme.	Letterbox drop Project Updates Invitation to community events
Local Government	We will work with the Edward River Council to shape the Community Engagement Strategy and Benefit Sharing Program.	To ensure a positive and collaborative relationship with the LGA that can support the long term goals of the community.	One-on-one engagement Project briefings & updates Invitation to community events Pre-DA meeting
Neighbouring Local Government	We will work with the Hay Shire and Murray River Council to build positive relationship as a neighbour	To ensure a positive and collaborative relationship with the LGAs that can support the long-term goals of the community.	One-on-one engagement Project briefings & updates Invitation to community events
State MP	Ms Helen Dalton MP, Member of Legislative Assembly for Murray	To ensure the local member is kept updated about the project and its progress	Project briefing by NSW State Leader Invitation to community events
Federal MP	The Hon. Sussan Ley MP Federal Member for Farrer	To ensure the local member is kept updated about the project and its progress	Project update by NSW State Leader Invitation to community events
Traditional Owners – Indigenous community	We seek to engage and understand what elements of the project are culturally relevant and/or sensitive.	Engaging with local Aboriginal groups beyond planning requirements,	Develop First Nations Engagement Plan Invitation to community events

Nari Nari, Wemba Wemba (Wamba Wamba), Perrepa Perrepa. peoples		such as Cultural Heritage Management Plans.	
Local Fire Authority	Representatives from the NSW Rural Fire Service	To ensure project activities abide by safety and regulatory requirements	Provide indicative design plans and updates on the project to prepare for any local fire and emergency safety requirements
Schools, TAFEs and Universities	Moulamein Pre-School Moulamein Public School Local schools - Edward River, Hay and Murray River Local TAFE - Edward River, Hay and Murray River	To ensure organisations are updated on education and vocational opportunities associated with the project. To use the opportunity of a local renewable project to dovetail relevant & practical educational content into the syllabus.	Information and project updates provided and invitation to future networking engagement. Opportunities for site visits for local schools.
Business groups / industry stakeholders	We will seek to engage and collaborate with local businesses and business networks around what opportunities may be available such as sourcing for the wind farm development.	To ensure Neoen is benefiting the local business through it's renewable energy projects.	To ensure project activities abide by safety and regulatory requirements
Wind farm opponents	We will seek to identify those issues that are of concern to local wind farm opponents.	To be accessible, help to address concerns proactively, and to have a best practice complaints system in place.	Complaints process implemented and transparent.
Advocacy groups	Moulamein Community Development Group Sustainability groups (if any) Community energy groups (if any)	Discussion on community energy and zero emissions targets Potential for partnerships	Update / presentation on project Invitations to community events
Community organisations	Local Rotary / Lions Club	To understand a project and be able to update their members. To participate in / benefit from Community Benefit-sharing Scheme	Update/presentation on project Invitations to community events

Names and contact details can be accessed via the Stakeholder Register.

3.2 Sustained engagement across project lifecycle

As well as being oriented towards the needs of individual stakeholder groups, the engagement is also planned and staged in line with the project's eight phases.

A summary of proposed activities is shown on page 12, noting that this will change as the project progresses.

3.3 Facilitating opportunities for involvement

Local Participation

One of our key areas of focus for the broader local community is facilitating the involvement of local jobseekers and businesses in the construction and operation of the wind farm to ensure a strong regional economic benefit.

During feasibility & planning/approvals phases expressions of Interest for work are invited and received through adverts, information days and the project website. A job register for internal use is created to ensure reference during construction and operation phases can be made to list of interested workers.

In the pre-construction phase a Local Employment & Supplier Networking Session will be held in nearby towns, with invitations going out to those on the job register and local employment agencies, ensuring they have the opportunity to meet with the appointed construction contractors.

A more detailed Local Participation Plan will be developed following the outcome of the development application.

First Nations Engagement

During the development stage we engage with traditional owners and depending on local context and requirements we co-develop a Cultural Heritage Management Plan or a Cultural Heritage Arrangement.

We also explore the option of co-developing an First Nations Engagement Plan with the Indigenous community. The plan focusses on three elements:

- Respecting Cultural Heritage
- Maximising Participation
- Benefit-Sharing

Please refer to the FNEP prepared for Tchelery Wind Farm for details of approach, and engagement.

Education

We explore opportunities to work with local schools and colleges, both at primary and secondary, to support education in renewable energy generation, the electricity grid and electricity market.

Neoen has launched a Learning Hub website: https://www.neoenlearning.com/

The Learning Hub is a suite of education resources for upper primary (years 5-6 in Australia), lower secondary students (years 7-8) and upper secondary (years 9-12).

In partnership with the Canberra Institute of Technology, Neoen recently launched Futureville, a new game to help students find their ideal career in renewable energy. Designed for Years 9–12, Futureville advocates for the diversity of jobs needed and available.

These interactive activities and lesson plans are designed to support awareness, understanding and curiosity about renewable energy.

During operations we offer opportunities for site visits from local schools, and will be developing more specific educational content, materials and visitor packs.

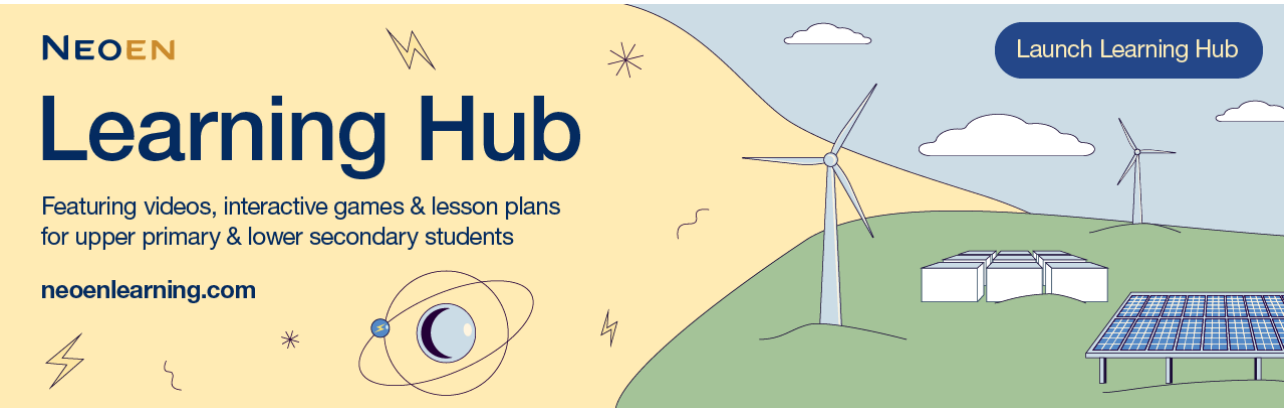


Figure 3: Learning Hub Snippet

4. COMMUNITY ENGAGEMENT ACTIVITY

4.1 Engagement Channels

4.1.1 Project Website

The Tchelery Wind Farm project website was set up at www.tchelerywindfarm.com.au during the early stages of development to provide clear and accessible information about the project to the community. The project website will be regularly updated with project updates throughout the full lifecycle of the project. This is currently managed and overseen by the Tchelery Wind Farm's Project Manager.



Figure 4: Snippet of the Tchelery Wind Farm webpage

The project website also provides information on other project contact points and suggests a number of ways for people to provide comment on the project. These include, but are not limited, to:

- Email us contact@tchelerywindfarm.com.au or call 1800 966 030
- Complete a feedback survey
- Details about community events (including the project Community Information Session)
- A complaints page that is added once the project receives development consent
- A 'visit us' will be included on the page, once the project is constructed and under operation
- See project documents, including project maps (Concept Plan and location)

4.1.2 Project e-mail

The project's e-mail is contact@tchelerywindfarm.com.au. The e-mail remains with the project for its lifetime.

E-mails sent to this address can be accessed from the e-mail domain and are also forwarded to the e-mail of the Project Manager.

4.1.3 1800 Number

The project's 1800 number is 1800 966 030. The number remains with the project for its lifetime.

Calls to this number is forwarded to mobile of the Project Manager. They are forwarded during office hours Mon-Friday 9am-5.30pm, with a project specific recorded answering message at other times. Messages are sent to the project email address.

4.1.4 Local Media Advertising

The Tchelery Wind Farm's community information session was held on the 23rd of February 2023. The was advertised to the general public in local media via the Wongi on 14th and 21st Feb 2023; the Swan Hill Guardian on the 3rd, 14th and 17th of February 2023; and Koondrook Barham Bridge Newspaper on the 2nd and 16th of February 2023.

Community information session held on the 4th and 5th of March 2025 in Hay, Deniliquin and Moumalein and was advertised in the Swan Hill Guardian on the 14th Feb 2025, 25th Feb 2025, 28th Feb 2025 and 4th March 2025; Gannawarra 18th Feb 2025, 25th Feb 2025 and 4 March 2025; North West Farmer 21st Feb 2025; and Koondrook Barham Bridge Newspaper on the 13th Feb 2025, 20th Feb 2025 and 27th Feb 2025.

See Appendix B for a copy of the flyer that was advertised in local media.

4.2 Host Landholder consultation

The project site was first identified in late 2018 and engagement with landholders commencing soon thereafter. The project was on hold until late 2021 to confirm the progress of Project Energy Connect. The contract negotiations were finalised in mid-2022.

Neoen initiated work on this project in early-2022 and commenced initial discussions with the host landholders. The consultation involved one-on-one meetings to discuss the project. Over the past two years, Aniruddha Deshpande, Project Manager has been in regular contact with the landholders to provide updates on the progress and the development via emails, in-person meetings and phone calls.

4.3 Agency consultations

Neoen, with WSP's support, has consulted and sought advice from relevant government agencies in preparation of the Scoping Report.

Neoen have presented the proposed project in front of the planning teams at Edward River Council and Hay Shire Council. The Murray River Council has been informed of the proposed development and efforts have been made to provide a briefing to the planning team. Neoen will continue to be in regular contact with the relevant councils with the project updates. Neoen is aiming to provide a briefing to the councillors of all three councils as the project progresses.

Ms Helen Dalton MP, Member of Legislative Assembly for Murray and The Hon. Sussan Ley MP, Federal Member for Farrer have been notified and updated about the project and will be kept up to date as the project progresses.

Neoen has informed the Local Aboriginal Land Councils (LALC), Local Schools and RFS about the project. We aim to engage with the Local Schools to explore opportunities to work with them to support education and training in renewable energy generation, the electricity grid and electricity market. We will continue engaging and consulting with LALCs, RFS and relevant agencies about the project.

4.4 Community Information Session

On 23rd February 2023, Neoen hosted a Community Information Session with an open invite to the general public. A total of 9 people attended, including a few of key stakeholders and representatives from the local area.

A Community Information Booklet that was distributed at the Community Information Session, and also printed on A1 corflute posters for community viewing. Additionally, a largescale map of the project location and concept plan were provided to the community.

After the event, the community was invited to provide comments and feedback on the project via the project's SurveyMonkey feedback form, as also shared on the website. A link to the feedback form was shared via email to the participants on a voluntary basis.

The Community Information Session was held at the Moulamein Bowling Club in Moulamein.

The second community information session was held on the 4th and 5th of March 2025 in Hay, Deniliquin and Moumalein. See Appendix A for a copy of the Community Information Booklet that was distributed at the Community Information Session. The members of the community who attended were interested in the project and how it was going to bring local employment and investment in the region. The main.

4.5 Engagement through WSP Social Impact Assessment

A third-party Social Impact Assessment (SIA) process undertaken by WSP runs in parallel to Neoen's engagement. The SIA is informed by the NSW Social Impact Assessment Guideline for State Significant Projects, 2023. The assessment includes (i) describing the existing social environment (ii) undertaking engagement, mainly through interviews (iii) evaluating the identified social impacts (iv) identifying recommended management measures. The SIA adheres to the principles of inclusivity and transparency with participants informed about the objectives of interviews and how their input would shape the SIA.

The SIA process and community engagement are independent but linked. Their shared aim is to understand and minimise potential negative impacts and maximise positive ones, leading to greater social acceptance. Within the context of the South West REZ this includes the context of potential cumulative social impacts, such as engagement fatigue during development and accommodation concerns during construction as well as the need to coordinate benefit-sharing over the long term.

The Social Impact Assessment (SIA) engagement undertaken by WSP gathered insights from those potentially affected by the project across February - March 2024. This included a four-day field trip to consult key stakeholders, community representatives and neighbours. A variety of consultation methods were adopted including face-to-face interviews (with individuals and groups), phone interviews and an online questionnaire. The method of consultation was tailored to best suit the needs of the stakeholders and community representatives. Finally, in February 2025, the SIA team engaged with the Edward River Council through an online interview. The discussion centered on confirming potential social impacts and gathering feedback on management and mitigation measures

A total of 12 SIA-specific interviews were completed including with Edward River Council, Balranald Shire Council, Hay Shire Council and Murray River Council. Engagement with Aboriginal and/or Torres Strait Islander organisations (including Deniliquin LALC) and local community members. The SIA team also participated on the first day of the Cultural Heritage field work with the Representatives of Aboriginal Party (RAPs).

Please refer to the SIA technical paper for more details on the methodology, engagement and findings of the assessment.

4.6 Engagement Summary

4.6.1 Community stakeholders

Stakeholder / Group	Date and method	Key Theme / Feedback Consultation Activity	Neoen Response
Host Landowners	2022 – April 2025 In-person meetings, email, and phone calls	Introduction to the Project, planning process, project schedules and updates. Consultation and coordination for project related studies such as cultural heritage, ecology, noise, etc. The response has been positive and supportive.	Neoen will continue to engage and consult regularly and to seek feedback throughout the project life.
Adjacent and 3 of 4 near neighbours up to 8km	Oct 2022 – April 2025 In-person meetings, email, and phone calls	Introduction to the Project. Consultation and coordination for noise studies. Key themes discussed: traffic, noise, visual impact. Most of the close neighbours are signed with other renewable energy developers. The response has been favourable and collaborative.	Neoen will continue to engage and consult regularly and to seek feedback throughout the project life.
Neighbourhood Moulamein 2733	23 Feb 2023 Community event (advertised in two local newspapers, a local magazine and on project website)	The event was advertised in two local newspapers, a local magazine and on Project website. Key themes discussed: Accommodation in Moulamein, use of local content, local employment, Community Benefit Sharing Scheme, Water Source, Traffic, Visual and Noise.	Neoen will continue to engage regularly with the community to understand and address their questions and concerns, as well as to identify opportunities to use local service providers.

	Nov 2023, April 2024, Nov 2024, March 2025, April 2025 One-to-one meetings Event sponsorship and brochure distrubution	The response has been generally positive, particularly towards economic, jobs and community benefits. Community members were interested in support towards aged care, education, and gardens.	
Traditional Owners – Indigenous community	May 2022 - April 2025 Email, phone, letter, newspaper One-to-one meetings	Invitation sent to Registered Aboriginal Parties (RAPs) to be involved in Aboriginal Heritage Cultural Assessment Report (ACHAR) process. Registration of interest received from four RAPs for involvement in ACHAR process. Survey methodology was shared with the registered RAPs. No changes or updates to the survey method were requested. The surveys have been scheduled for 19th of June and RAPs invited to participate. Email sent introducing Neoen, the Project and including an invitation to the community event. Neoen followed up via phone call to invite to the community session. (no RAP representative attended the event). Neoen identified First Nations stakeholder contacts at the event. One-to-one meetings were undertaken with Deniliquin Local Aboriginal Land Council (Deniliquin LALC), YARKUWA and other RAPs. The response has been favourable.	Neoen to continue engagement consultation for the project development, ACHAR process and on First Nations Benefit Sharing Scheme.

4.6.2 Government Agencies

Stakeholder / Group	Date and method	Key Theme / Feedback Consultation Activity	Neoen Response
Edward River Council, Local Government	December 2022 – April 2025 Email, virtual meeting, phone calls, one-to-one meetings	Letter sent via email introducing Neoen Australia and the the Project followed by a virtual meeting to brief the Council's planning team on the project. Key themes discussed: Project planning, Accommodation, Community Benefit Sharing Scheme, Project lifecycle and Decommissioning. The response has been positive and collaborative. Invitation sent to Council for the community event. Project presentation was submitted for discussion at the Council meeting held on 4 April 2023. Submitted and received an approval from installation of 2 met masts within the project site.	Neoen to continue engaging and consulting with the Council as the project progresses.

		Project status update provided to the lead planner at the Council on 23 Jan 2025 In person meeting has been scheduled to present the Project to the General Manager and planning team of the council, prior to DA submission. Initiated discussions on community benefit sharing.	
Hay Shire Council, Neighbouring Local Government	December 2022 – April 2025 Email, Virtual meeting, phone, one-to-one meetings	Letter sent via email introducing Neoen Australia and the the Project, followed by a virtual project briefing to the Council's planning team in Nov 2023. In-person meeting took place in Nov 2023 and Nov 2024 with the economic officer of the shire. Key theme: Accommodation, Community Benefit Sharing Scheme, Project lifecycle The response has been positive and collaborative. The planning team members were interested in support towards educational projects/fundings Invitation to the community event.	Neoen to continue engaging with the Council as the project progresses. Neoen to schedule a time with the Council to provide a briefing at the Council meeting..
Murray River Council, Neighbouring Local Government	December 2022 – March 2025 Email, Virtual meeting, phone	Letter sent via email introducing Neoen Australia, and the Project, followed by a phone call to discuss the Project and to request a meeting with the planning team and the Councillors.	Neoen to continue engaging with the Council as the project progresses.

		A virtual meeting took place in Nov 2023. Key theme: Accommodation, Community Benefit Sharing Scheme, Project lifecycle The response has been positive and collaborative. The planning team members were interested in support towards educational projects/fundings Invitation sent to the community event.	Neoen to schedule a time with the Council to provide a briefing at the Council meeting.
Balranald Shire Council, Neighbouring Local Government	Jan-April 2024 Email, Virtual meeting, phone, in person meeting	Letter sent via email introducing Neoen Australia, and the Project, followed by a phone call to discuss the Project and to request a meeting with the planning team and the Councillors. A virtual meeting took place in Feb 2024 followed by an in person meeting in April 2024. Key theme: Accommodation, Community Benefit Sharing Scheme, Project lifecycle The response has been positive and collaborative. The planning team members were interested in support towards educational projects/fundings	Neoen to continue engaging with the Council as the project progresses.

		Invitation sent to the community event.	
State MP Mrs Helen Dalton, Member for Murray	25 Jan 2023 13 March 2025 Email	Letter sent via email on 25 Jan 2023 introducing Neoen Australia and the Project and including an invitation to the community event in Moulamein. No response received. Letter sent via email on 13 March 2025 to provide an update on the project and the community drop in session. No response received.	Neoen to continue engagement by providing regular project updates and by continuing to invite Mrs Helen Dalton to future community events.
Federal MP Hon Sussan Ley, Member for Farrer	31 Jan 2023 13 March 2025 Email	Letter sent via email introducing Neoen Australia and the Project and including an invitation to the community event in Moulamein. Response received acknowledging the letter and apologies for being unable to attend. Letter sent via email on 13 March 2025 to provide an update on the project and the community drop in session. No response received.	Neoen to continue engagement by providing regular project updates and by continuing to invite the Hon Sussan Ley to the future community events.
Local Fire Authority, NSW RFS Deniliquin Fire and Rescue Zone Office	Jan 2023 and April 2024 Email and phone In person meeting	Phone call to both the local fire authorities introducing Neoen Australia, the Project including invitation to the community session followed by an email containing the same information.	Neoen to engage and consult with Deniliquin RFS and local fire brigades for the Project's design. The Project is out of Fire and Rescue jurisdiction Neoen to provide regular project updates.

Regional West 3 – Riverina Local Fire Brigade, Moulamein		During the call, RFS member confirmed that they will not be able to attend the community session. However, they will pass on the information and invite to local brigades in the project area. (no one from fire authority attended the community event) During the call, Fire and Rescue member confirmed that the Project area is not within Fire and Rescue catchment area. Met with a representative of Moulamein fire brigade Key themes: Project benefits to fire fighting and community, accommodation, visual impact The response was favourable.	
Local Emergency Services, SES Southern Zone	Jan 2023 Email	Introduction sent via email to Neoen and the Project Invitation sent to the community event No response received	Neoen to provide regular updates about the project.
Schools	Jan 2023 Feb-April 2025 Email and Phone	Introduction sent via email to the local school (Moulamein Pre-school and Public School) about the educational resources available through Neoen's Learning Hub and Invitation to the community event. Neoen has sponsors Yabby Races 2025 held by the Moulamein Pre-School on the 19th of April 2025. No response received	Neoen to engage with the Moulamein Pre-school and Public School school and explore opportunities to collaborate.

Heritage NSW	May-June 2022 Email	Notification of ACHAR consultation commencement and request to provide list of interested parties sent via email Response via email with list of potential Aboriginal parties	Neoen to continue engagement consultation for the Project development and ACHAR process.
Biodiversity and Conservation Department, NSW DPHI	March 2023 - Feb 2025 Email, virtual meeting	Early consultation to present the biodiversity study findings to date and to seek feedback. Presentation, memo summarizing findings to date was shared. Early consultation was received positively by BCD. Neoen and WSP has continued regular engagement with BCD to keep them updated about the project and seek advice. Based on their advice, Neoen has completed almost all of the specialist studies.	Neoen to continue consultation with BCD through the next phases of the project
Transport for NSW, NSW DPHI	Jan 2024 - Feb 2025 Email, virtual meeting	Early consultation to present the transport study findings to date and to seek feedback. Presentation, memo summarizing findings to date was shared. Early consultation was received positively by TfNSW	Neoen to continue consultation with TfNSW through the next phases of the Project Neoen to set up a meeting in May to discuss the EIS report post DA submission

		Virtual meeting with TfNSW on 13 Feb 2025 to discuss the route to site for the Project. TfNSW team also showed interest to meet post DA submission	

4.6.3 Key Themes and feedback

Category	Feedback	Neoen Response
Community Benefit-sharing	Stakeholders' views were canvassed through a survey and at the community event. There was strong support for benefit-sharing ideas relating to aged care, nursing support and education	Neoen to explore opportunities to collaborate with the schools and aged care homes. Neoen to engage with community members and Councils to develop the community benefit sharing scheme.
Economic, environmental, and social impacts	The stakeholders were positive towards the economic benefits that the Project will bring to the region. There were concerns about the environmental social impact such as from noise, visual, traffic and cumulative impact from the multiple projects in the area.	Neoen will undertake detailed study on economic, environmental, and social impact during EIS phase of the project. Neoen will work closely with the Project's neighbours, community and the Councils to address these concerns.
Local employment and supply chain	The community is interested in local employment and supply chain to boost the local economy.	Job registration form has been created on the Project website to register interest in the supply chain.
Renewable energy	The community is positive and overall supportive of renewable energy projects in the region. There was some disgruntlement expressed that the NSW Government had not consulted with the community about the establishment of a REZ in their region.	Neoen to continue engaging with the community to maintain positive support for the developments

4.7 Engagement outcomes

Overall, the participants of the community sessions indicated a moderate to high level of interest for the project which was primarily a result of their interest in renewable energy development and employment. Due to the presence of other renewable energy projects and given that this area is part of the South West REZ, there is a higher than usual community awareness of the impacts and benefits of renewable energy projects. Given the number of projects in the region, there is probably going to be some confusion, which we will address in the future by developing clear maps showing which projects are where and belong to who. Cumulative impacts & cumulative benefits will need to continue to be considered.

We have opened lots of channels of communications and for community to get involved in the Project for its development and thereby development of the community. We believe we have made a positive early start towards building a social licence for the project. At this stage there are no major social risk or negative impacts identified. Neoen will continue actively engaging with the community to ensure continued positive interest in the Project.

Early engagement indicates that the community is supportive of renewable energy projects in the region, in particular in relation to the economic benefits, job creation and community benefit-sharing.

Key risks and issues raised during engagement to date (and brief outline of proposed mitigation measures) are:

- Workforce accommodation (develop a detailed accommodation strategy, include considering option for a workers camp)
- Road safety due to increased traffic during construction (feedback to be integrated into Traffic Management Plan)
- Constrained healthcare system and pressure on health services likely to be exacerbated (consideration of innovative approaches within the benefit-sharing scheme)
- Impact on capacity of emergency services
- Cumulative impacts from multiple projects (coordination within other projects in pre-construction period)
- Lack of consultation by NSW Government about establishing a REZ (this feedback was provided to EnergyCo)

Engagement fatigue due to multiple projects (adapt future engagement with this in mind)

5. COMMUNITY BENEFIT SHARING

To ensure both short and long-term benefits flow through to the community as a result of the establishment and operation of Tchelery Wind Farm, we establish a Community Benefit Sharing Program (CBSP).

The CBSP will be designed to deliver benefits to key stakeholders in the community in a way that aims to meet their needs and aspirations. Specifically, our objectives are to:

- deliver significant and meaningful improvements to the community surrounding Tchelery Wind Farm;
- ensure a wide range of different stakeholder groups benefit from Tchelery Wind Farm;
- empower the community to shape the design and implementation of the different initiatives;
- build support for renewable energy in the [project area].

The majority of initiatives will be delivered during the construction and operations phase.

In alignment with Neoen's organisational vision, it is important that the benefit be a true benefit and be tailored to meet each distinct communities' need.

From an industry best practice standpoint, several principles are seen as being helpful guides in developing or assessing a benefit sharing strategy, as outlined in Table 7 below[3]:

Table 7: Benefit sharing principles

Principle	Description
Appropriate	– Benefit sharing is tailored to local circumstances, culture and need, helping to address (not create or reinforce) patterns of conflict or inequality. It makes sense and is appropriate in the local context. – The local community provides guidance on how benefit sharing can create a positive, lasting and meaningful impact for their local community. We work with the local community to develop specific benefit sharing strategies that respond to their unique local context and need.
Flexible	– Benefit sharing is an aspect of project development that will greatly benefit from being open to community involvement, influence and negotiation. Having the flexibility to respond to local context will ensure benefit sharing has the best and biggest local impact. – The lifecycle of renewable energy developments is significant (25 years or more), a lot can change in a community during that period of time. Therefore, it is important to build in flexibility so that benefit sharing can evolve as the community needs do.
Transparent	– The benefit sharing strategy is transparently available to the community and provides a clear and understandable rationale for the various programs and who is eligible to participate. – Benefits are freely given for the sake of sharing the proceeds of the project and building relationships. Benefit sharing must not come with conditions of silence or consent.
Integrated	– Benefit sharing seeks to integrate the project owner/operators as valuable community members by building links and relationships into the community. – The benefit sharing approach is integrated with Neoen's broader approach to community engagement and project development.

[3] Lane, T & Hicks, J, (forthcoming) Benefit Sharing Options for Renewable Energy, 2019, Clean Energy Council

Mutually Beneficial	– The approach is designed to bring mutual benefit to local communities and the project.
Proportionate	– The benefits are perceived as being proportionate to the scale of the project and the level of change or disturbance experienced by local people. Given community members living closest to projects experience greater impacts, they should receive a proportionate benefit.
Strategic	– Create a positive legacy in the local community. Look to bring ongoing and lasting value to the local area. Integrate benefit sharing opportunities with broader strategies by building local partnerships.
Accountable	– Systems and processes are deployed to ensure the credibility and reputation of the benefit sharing program. – Benefit sharing is managed in a transparent and accountable way that involves local stakeholders.

5.1 Scope of the CBSP

This CBSP does not include:

- required activities under our permit conditions such as for visual screening
- annual council rates payments or fire levies (where applicable)
- host landowner payments;
- the value of local jobs and investment.

However, it is worth noting that these activities will all deliver significant value to the community.

The proposed annual total amount for Tchelery Wind Farm CBSP will be determined once the community need and appropriate benefit sharing options have been determined.

5.2 Benefit-Sharing Mechanisms

Neoen have a number of mechanisms to enable benefits to be shared in a meaningful and equitable way. Community input will be sought into these options (and any other local ideas) at the community information sessions held in the lead up to planning permit submission and via the community feedback survey. Indicative options can be found in Table 8.

The final program is likely be a mix of 3-4 benefit-sharing mechanisms from the following list:

- Contribution to the Council and community through Planning Agreement
- Community Benefit Fund
- Community co-investment
- Investment to address specific local issue – e.g. poor mobile coverage, aged care and education

Table 8: Options for benefit sharing

Option	Pros	Cons	Requirements	Constraints
Near Neighbour payments	Provides benefit-sharing option for near neighbours who may be most affected by the project, particularly during construction.	Can be difficult to ascertain an appropriate radius. Can be perceived by some as 'buying out' neighbours.	Needs to be tailored to the local context. Must be offered without conditions in relation to complaints, avoidance of compliance activities etc. Must be equally applied and transparent.	Population, topography, visual impact, scale. Not applicable to involved landholders.
Community Benefit Fund	Can create strong regional economic development outcomes. Can create a strong legacy in community.	Local government can negotiate to 'own' the fund – which may result in a higher cost of administration and potential politicisation of the program. There can be a lack of sophisticated local programs or projects to apply to fund– may need to co-develop.	Strong governance with community representation. Strong evaluation and acquittal. Flexible funding streams to enable longer term projects to access the fund. Consider other existing regional funding bodies and look to enhance or offer point of difference.	Not applicable to committed activities funded by any level of government. A goal of $1050/MW per annum of fund to be allocated to projects within TBD local community.
Education & Training	Can contribute towards local schools to support learning about renewables and our future energy system Can contribute towards strengthening engagement with education institutions	Long process to establish a strong and curriculum aligned courses	Needs to be inline with the Australian and State's educational curriculum Linkages with local schools & teachers for uptake	Consider the budget allocation and how this may impact on other benefit sharing items.

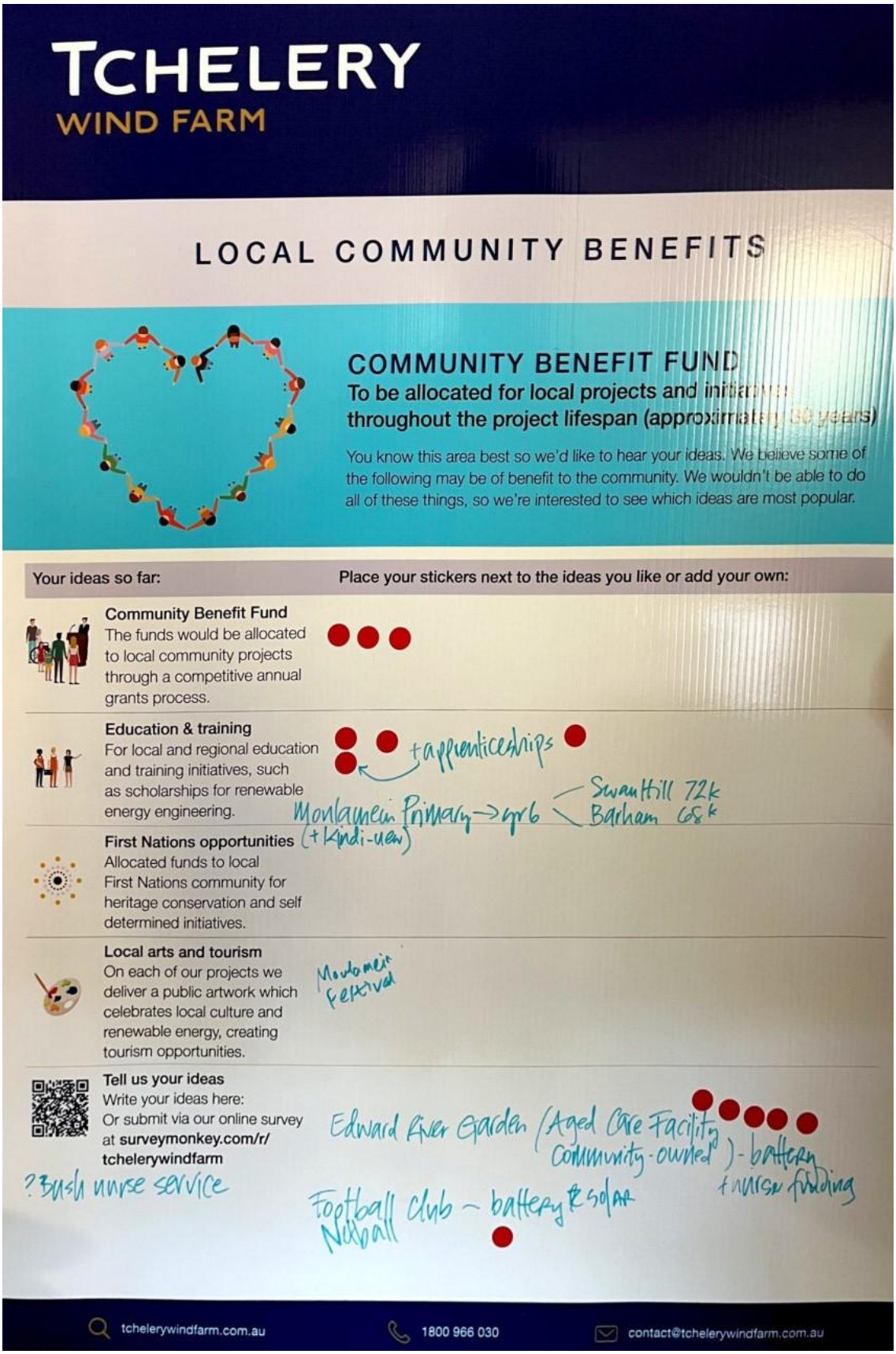
First Nations opportunities	Can contribute towards community development, heritage conservation and self-determined initiatives.	Can be difficult to ascertain the appropriate Registered Aboriginal Parties. CBS funds cannot be allocated to businesses	Needs to be tailored to the local context. Needs to consider appropriate cultural protocols.	Consider the budget allocation and how this may impact on other benefit sharing items.
Local Arts and Tourism	Can contribute towards diversification of local economy	Increased use and pressure on local resources Major tourism projects fall out of budget or scope of the CBS. CBS funds cannot be allocated to businesses	Needs to be tailored to the local context. Consider other existing local tourism businesses	Consider the budget allocation and how this may impact on other benefit sharing items.
Investment to address specific local issue	Can enable direct solutions to broader community needs/issues.	Longevity of solution and appropriateness of solution can be difficult to establish.	Community needs assessment to harvest ideas and then validate a chosen approach.	Consider the budget allocation and how this may impact on other benefit sharing items.

5.3 Community Response & Ideas

The Figure 5 below shows the responses and ideas received during the community information session held. We will include these ideas during co-design of the community benefit scheme.

The local councils, businesses, and trade bodies are generally supportive of the project, acknowledging the efforts made by Neoen to address community concerns. The Edward River Council, in particular, has shown strong interest in the prospect of a benefit fund that could provide lasting opportunities for community

Neoen is currently developing their strategy for community benefit fund and totals and is in discussion with the council to determine the same.



groups and major infrastructure projects. Access to high-quality infrastructure and services for vulnerable community members through this fund is a key feature of the scheme.

Figure 5: Community response on benefits sharing options 22 Feb 2023

6. COMPLAINTS MANAGEMENT PROCESS

The following process has been developed in accordance with the Australian / New Zealand Standard Guidelines for complaint management in organisations and in consideration of recommendations from publications by the National Wind Farm Commissioner:

The process for managing complaints and concerns raised by community members involves several key steps including receiving, registering, investigating, responding to and addressing complaints stakeholders.

Contact details for complaints made via telephone or in written form are contained in Table 9.

Table 9: Complaint lodging contact details

Project website	**https://tchelerywindfarm.com.au/**
Telephone number (toll-free)	1800 966 030
E-mail	contact@tchelerywindfarm.com.au
Mail	Level 6/16 Marcus Clarke Street, Canberra, ACT 2601

The contact details in Table 9 will be published on the project's public website, alongside an outline of the complaints and investigation process. This information will also be made available in community consultations that occur in the lead up to construction commencement, and at any community consultation that is held during the construction period.

Step 1: Receive and register a complaint

Contact is received from community members may be received through the following methods: verbally either in person or via telephone or in written form via electronic mail and/or via the website.

It may be an inquiry, a concern or a complaint. If it is an inquiry or a concern we will respond directly to this and simply record this interaction in the stakeholder register.

If it is a complaint then the following procedure is followed:

Upon the receipt of a complaint, a set of standardised information will be collected, recorded and filed to ensure an efficient and standardised process.

The following information will be collected from community members:

- The complainant's name and address;
- A unique reference number is to be communicated to the complainant.
- Any applicable turbine or monitoring mast reference number;
- The complainant's concerns including date, time, prevailing conditions and description of the complaint

This information must then be recorded in the relevant project's Complaints Register

Step 2: Acknowledging complaint

A non-urgent complaint will be acknowledged by the responsible Project Manager (see Table 1) within 3 business days of the complaint being submitted. If it's an urgent complaint then a response will be within 24 hours. This acknowledgement will be made via phone or email with any written correspondence dated and kept on file.

The acknowledgement will include:

- A summary of the complaint; with a reference number provided
- The opportunity to clarify issues relating to the complaint or a request for further information if required.
- The proposed investigation approach; and
- An estimated timeframe in which the stakeholder can expect to receive a response.

Where a complaint can be easily resolved or is better categorised as a request by stakeholder for additional information, it may be appropriate for the Project Manager to immediately respond to the stakeholder.

Step 3: Investigating complaint

The Project Manager is responsible for ensuring all complaints are investigated and that all reasonable attempts to seek a resolution are made. The investigation may be delegated to an appropriate Neoen staff member. Accurate records of the investigation must be maintained including records of meetings, discussions and activities.

The investigation may involve:

- Site visits, particularly in the instance of reported property damage;
- Consultation with Neoen staff or contractors, including senior management when required;
- Acquiring monitoring data and evidence (e.g. for noise or dust complaints); and
- Contacting external stakeholders.

Step 4: Responding to stakeholders/complaint

Following the investigation, the results, including details of the findings and proposed resolution, will be clearly explained to the complainant. In most circumstances, it will be at this stage that the complainant will determine if the resolution is satisfactory.

Step 5: Closing the complaint

If the process has been concluded appropriately then the Project Manager will close the complaint and make a file-note to this effect in the Complaints Register. Formal written correspondence must also be issued to the complainant confirming that the complaint has been closed.

If the complainant is not satisfied with the investigation and resolution then the complainant has a right of review. This will be undertaken by the Head of Communications and Engagement to ensure that the complaint process has been properly followed.

If the complainant is not satisfied with Neoen's investigation and proposed resolution, the complainant will be advised by Neoen that they have the ability to contact the National Wind Farm Commissioner. Neoen will provide complainants with the relevant contact details, as seen in Table 10
.

Table 10: Alternative complaint contacts

State body (as identified in DA0	Email / number
Australian Energy Infrastructure Commissioner (https://www.aeic.gov.au/)	aeic@aeic.gov.au
Edward River Council	council@edwardriver.nsw.gov.au 03 5898 3000

Step 6: Recording and registering the complaint

Upon the closing of a complaint, the following information will be updated in the Complaints Register with the additional following details:

- The process of investigation that was undertaken to resolve the complaint;
- What the proposed resolution was:
- Whether this was accepted and how it was implemented;
- Whether or not the complaint has been resolved to the satisfaction of the complainant.
- The reason why the complaint was closed;

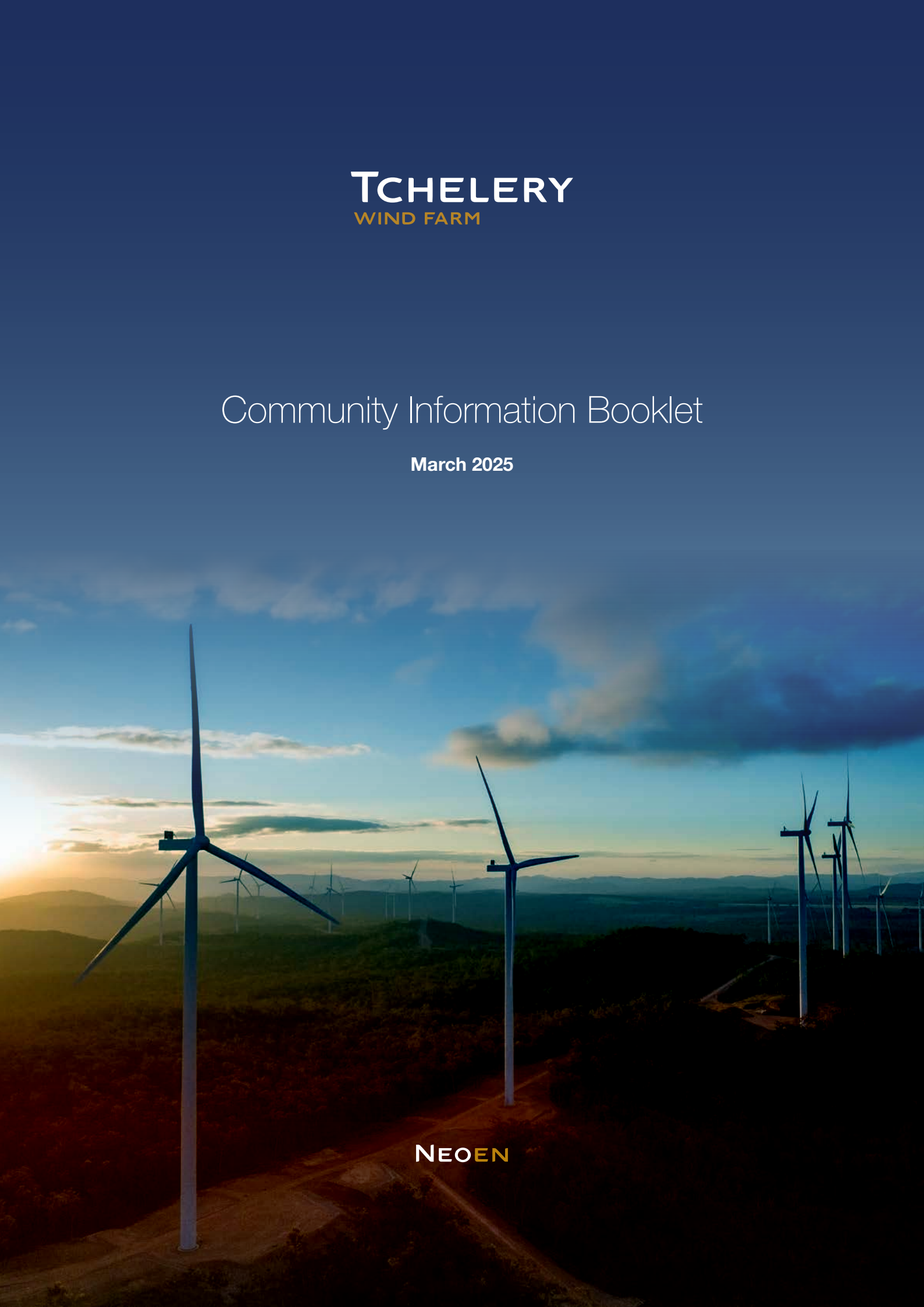
APPENDICES

APPENDIX A. Community Information Booklet

TCHELERY
WIND FARM

Community Information Booklet

March 2025



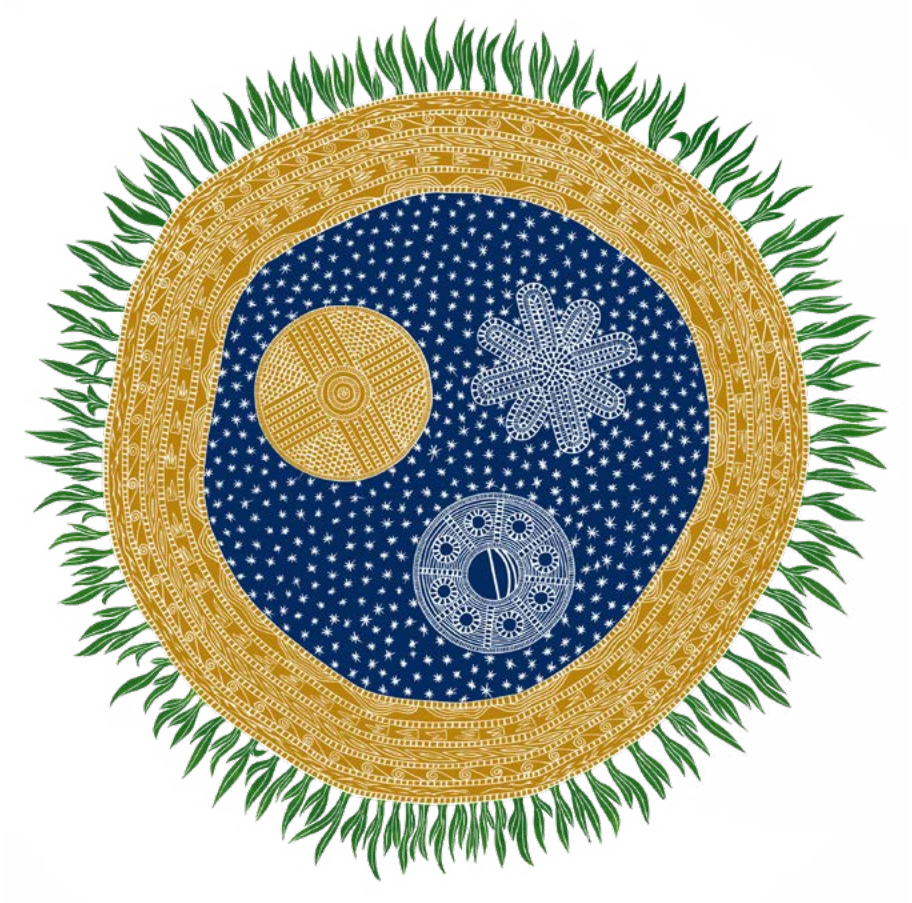
NEOEN

Acknowledgement of Country

Neoen acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to land, waters and culture.

We pay our respects to their Elders – past and present.

In particular, we acknowledge the Wamba Wamba & Perrepa Perrepa people, Traditional Owners of the land on which Tchelery Wind Farm will harvest the energy of the wind.



RAP ARTWORK

Celebrating Renewal

Teho Ropeyarn, 2022

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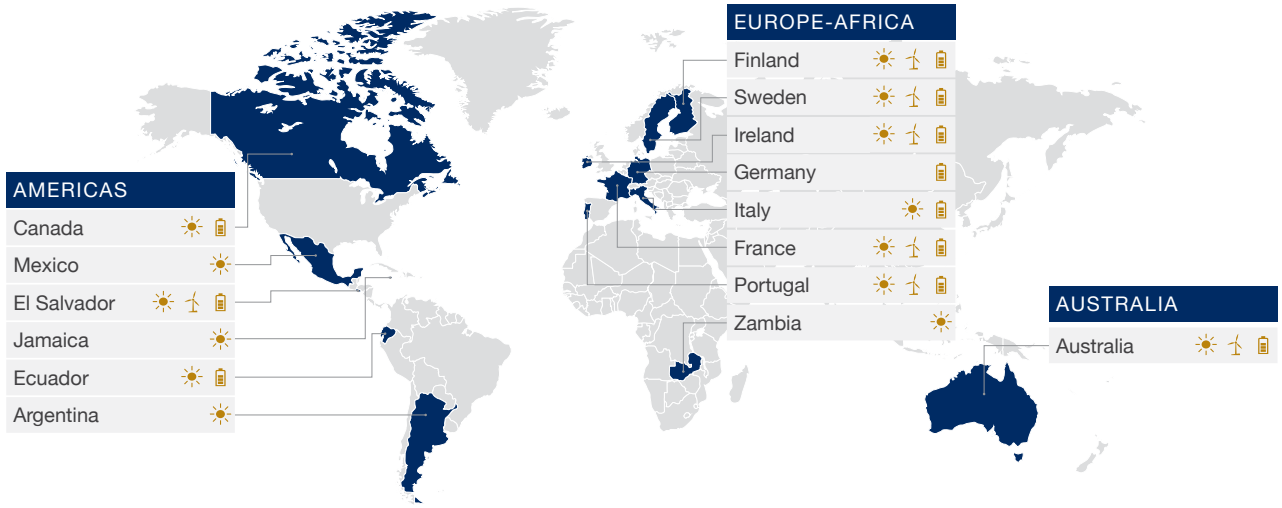
Bushfire prevention & management 17

NEOEN

Neoen produces clean energy from renewable sources such as sunlight and wind using mature, tried and tested technologies. We are also leaders in energy storage.

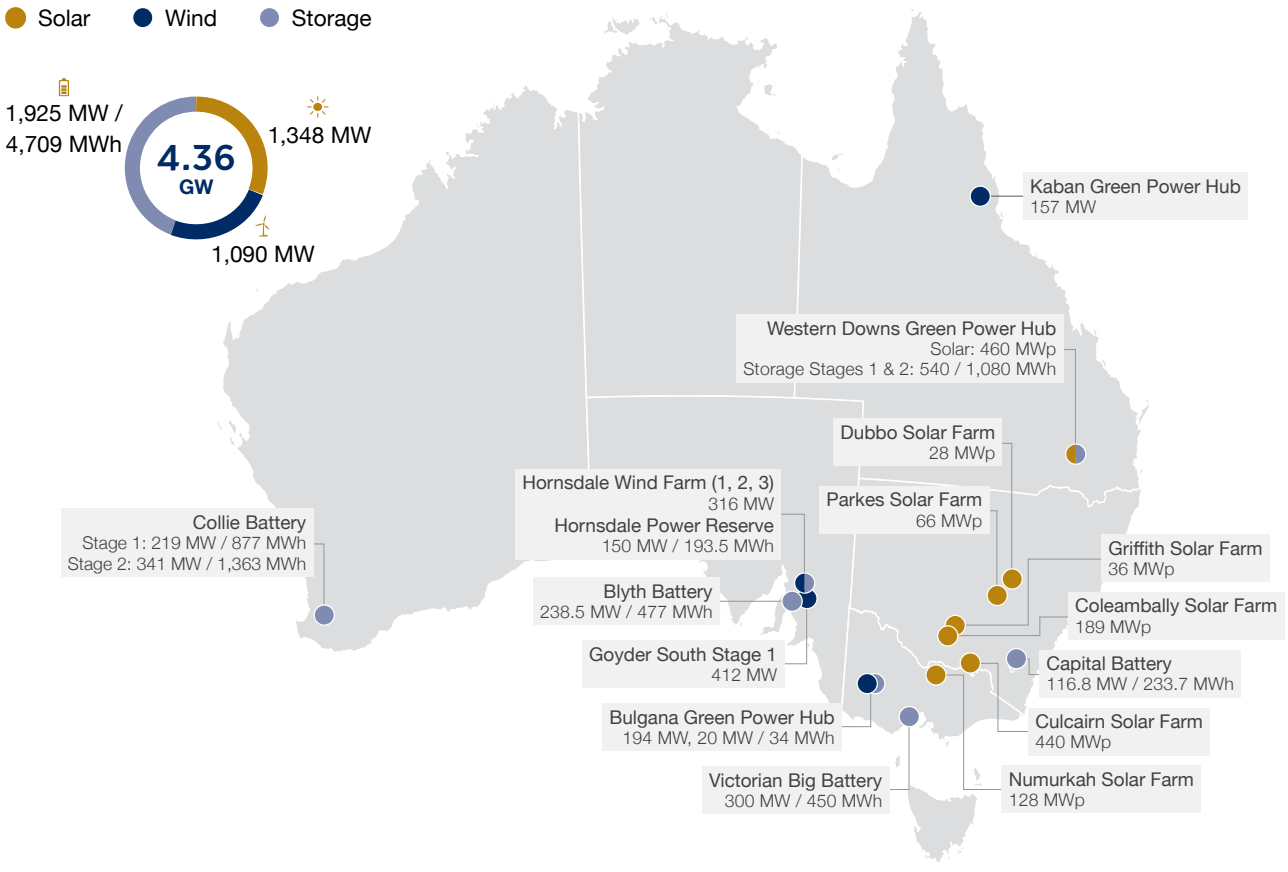
Globally

Neoen has a presence in 15 countries with over 8 GW of assets in operation and under construction worldwide.



In Australia

Since 2012, Neoen Australia has developed over 4.3 GW of projects across six states and territories.



Australia's largest renewable energy company

Long-term ownership

Neoen is a long-term asset owner of projects with a 30+ year lifespan.

We are looking to grow our portfolio to reach 10 GW globally by 2025.

Mature player in Australia

Neoen is Australia's largest renewable energy company with 4.3 GW and more than $7 billion of assets either operating or under construction.

We have proven experience in partnering with stakeholders to develop, build, commission and operate power plants in the Australian electricity market.

Trusted energy supplier

Neoen is a trusted supplier of clean energy to major energy consumers including Coles, Energy Australia, AGL and BHP.

We have contracts with governments in South Australia, Victoria, New South Wales, Western Australia and Queensland as well as with the Australian Energy Market Operator.

We are known for our professionalism and delivery track record.

100% renewables

Neoen is not involved in any other energy business streams outside of the investment, construction, and operation of renewable energy assets.

There is no other part of the Neoen company that will impact on the social, carbon, or ecological standing of Neoen: we are a 100% clean renewable energy company.



Leaders in the energy transition



Hornsdale Wind Farm

IN OPERATION SINCE 2017

316 MW, South Australia

Distributed over $1 million in community benefit-sharing to people living in and around Jamestown.

Kaban Green Power Hub

IN OPERATION SINCE 2023

157 MW, Queensland

Supplying 100% clean energy to CleanCo to help Queensland achieve a net zero future. One of the wind turbines on this asset has an artwork that celebrates the cultural heritage of its Traditional Owners.





Goyder South Stage 1

UNDER CONSTRUCTION

412 MW, South Australia

Combined with output from our Blyth Battery, the wind farm will deliver a 24/7 green energy solution to BHP's Olympic Dam mine under an innovative baseload contract.

Nearby Neoen projects



Culcairn Solar Farm

UNDER CONSTRUCTION

440 MWp, New South Wales

Neoen's largest solar farm in NSW. The project has a focus on maximising local employment, particularly female and First Nations participation.

Coleambally Solar Farm

IN OPERATION SINCE 2018

189 MWp, New South Wales

One of twelve successful projects that received funding from the Australian Renewable Energy Agency (ARENA) in 2016. Coleambally helped demonstrate the feasibility of sustainable, affordable and reliable renewable energy from large-scale solar projects.





Griffith Solar Farm

IN OPERATION SINCE 2018

36 MWp, New South Wales

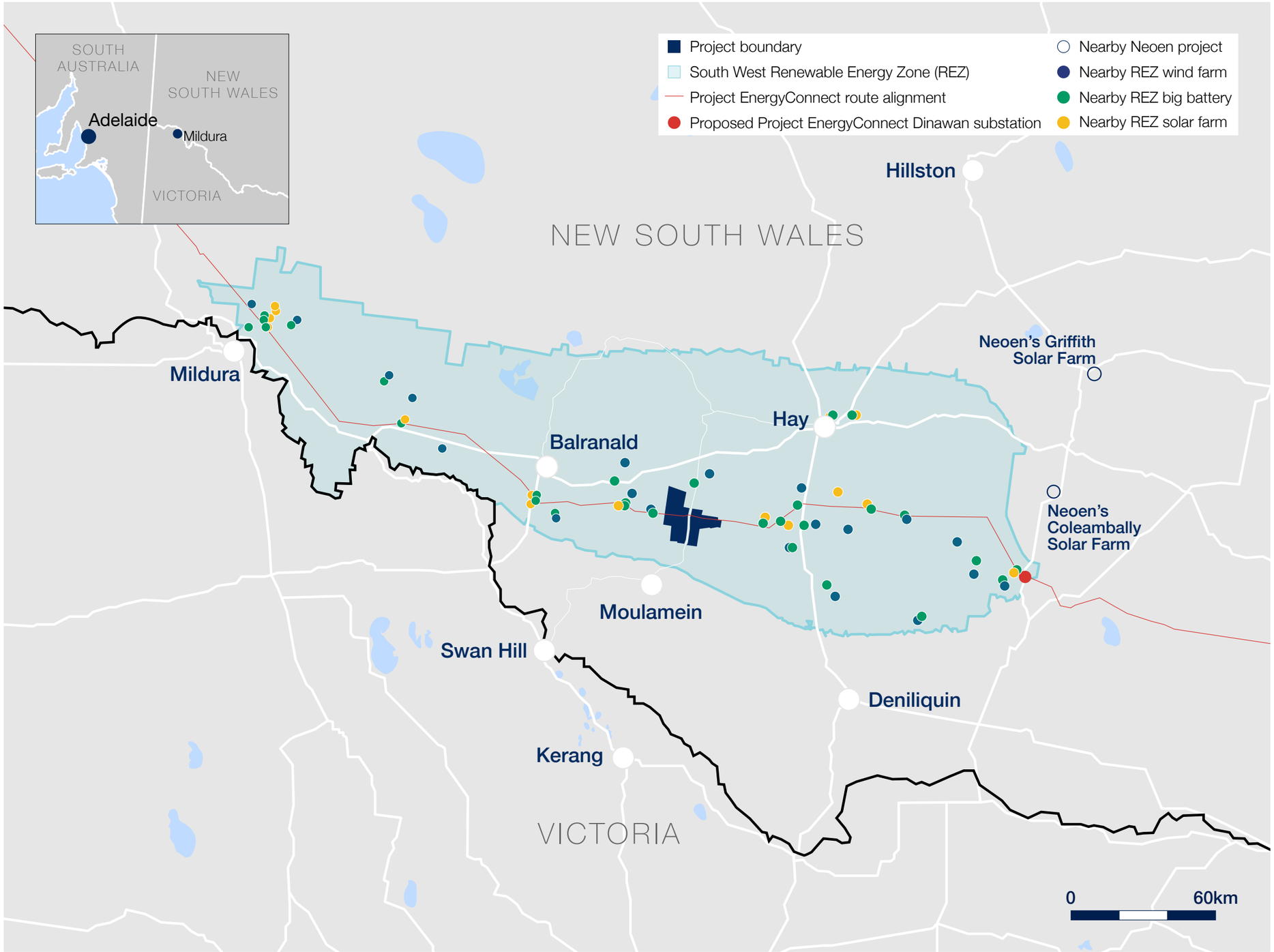
Over 112,320 panels spanning over 200 hectares with sheep grazing comfortably underneath to reduce dry grass.

Neoen & the South West Renewable Energy Zone

The Tchelery Wind Farm will be located in the proposed South West Renewable Energy Zone (SWREZ), approximately 30 km north-east of Moulamein.

There are about 19.8 GW of wind, 10.4 GW of battery and 6 GW of solar projects proposed within the SWREZ.

Tchelery Wind Farm, including ancillary infrastructure, is proposed to be located on freehold land titles with a total area of approximately 28,000 hectares. The turbines will be installed on the flat land of freehold properties.



Tchelery Wind Farm

The site



Up to
74 turbines



Electricity into the **new 330kV Project EnergyConnect** or the existing **220kV powerline**



Up to **350 MW / 1,450 MWh** battery storage

Helping the climate

The proposed wind farm is expected to generate:

2.12 GWh annually
which is equivalent to:

1,443,500 tonnes of CO_2 emissions displaced

375,000 homes powered

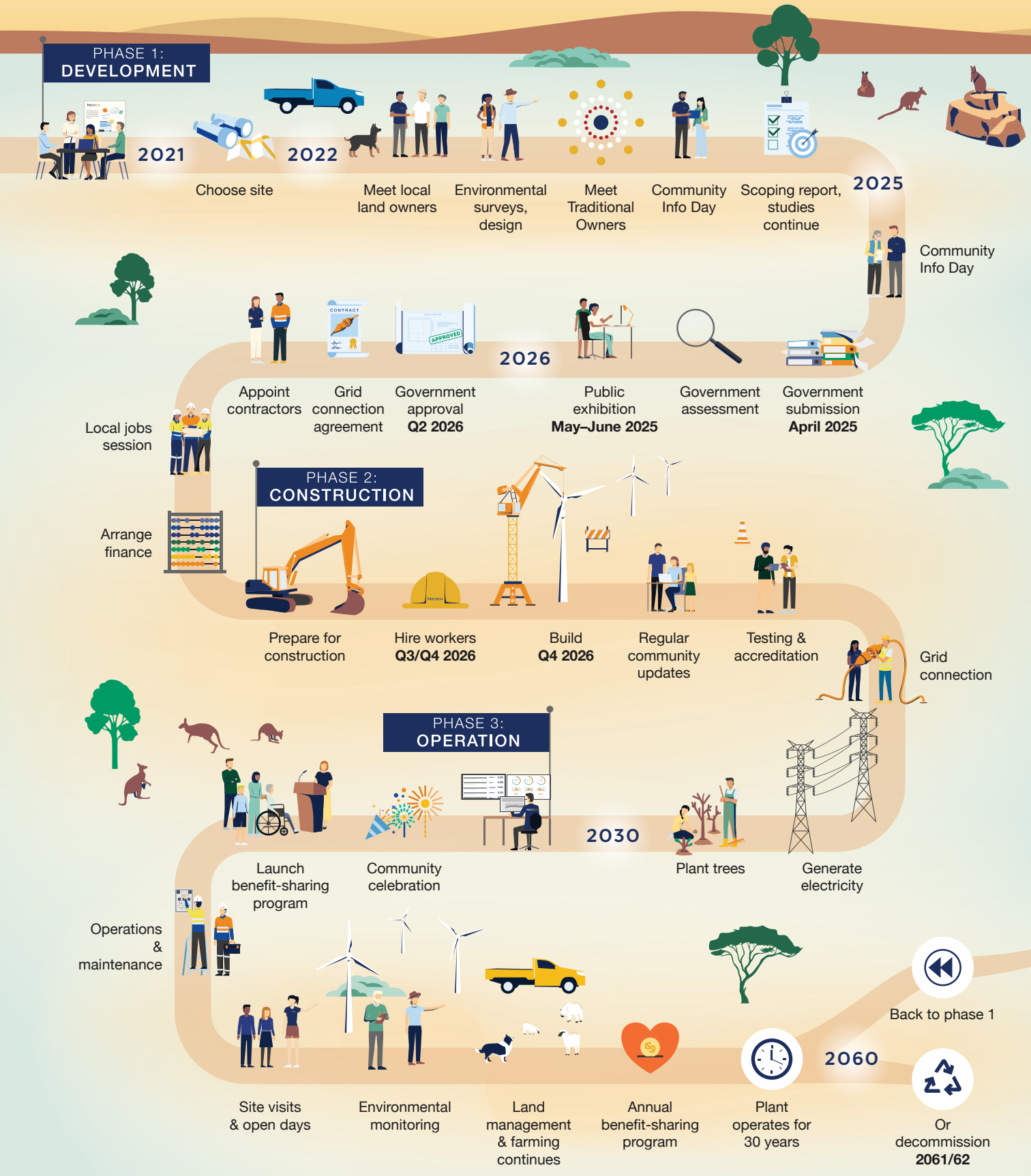
626,500 cars off the road

14 million trees planted



Project lifecycle

We are aiming to submit a Development Application to the Department of Planning, Housing and Infrastructure in April 2025. There will be a public exhibition period during which community members will be able to view our submission and express views on the project.



Project layout

Over the past two years, we have completed surveys and studies to develop a preliminary design to minimise the project's impact on the environment and the community.

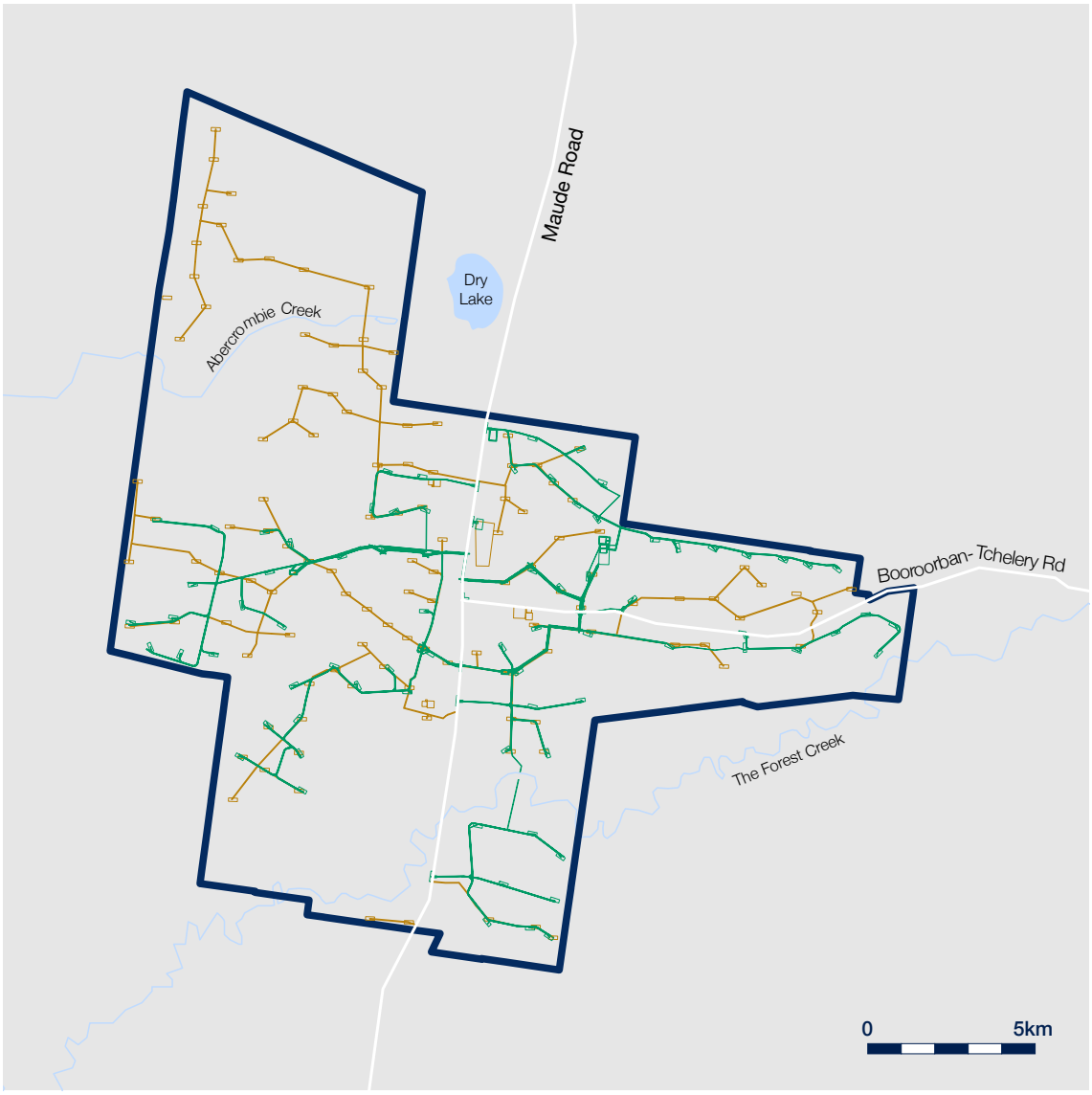
A meteorological mast was installed in 2022 and it has collected valuable data.

The design has been modified to improve overall outcomes from the project.



Refined Layout for Development Application Submission

Project site Former layout Current layout



Project refinements



Noise

Noise modelling has been undertaken to inform the design and ensure our wind farm complies with state and federal government regulations.

Background noise monitoring has been completed at the site and will be used for compliance testing once the wind farm becomes operational.

Cultural Heritage

Several First Nations heritage sites were identified as part of the detailed studies over the last few years. Our project layout and design has been updated to avoid and/or minimise any impact on them, including on potential archaeological deposits.





Ecological Surveys

Our surveys confirmed the presence of threatened flora and fauna, namely:

- Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions and
- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions.

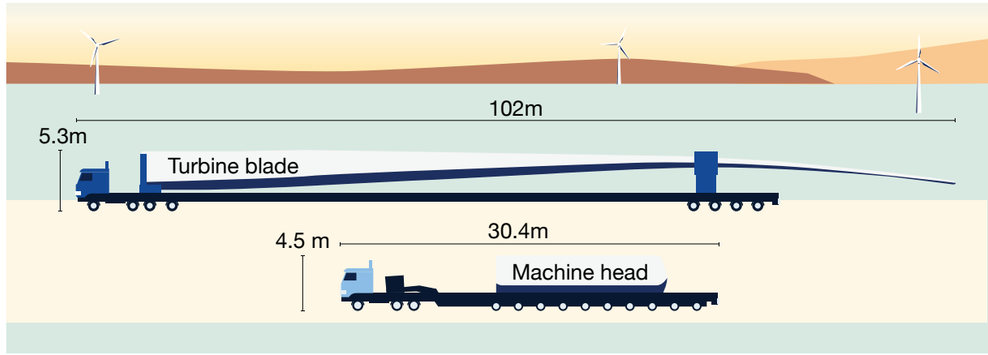
Potential impacts are currently being assessed by ecologists as part of preparing our Environmental Impact Statement which will meet the planning guidelines of the NSW Government.

Proposed transportation route

Following consultations with key stakeholders, we are currently exploring options for transportation and the route from port to site. Currently, route options to site include either Mayfield North, NSW or Port Adelaide, SA.

During construction, traffic would consist of both light vehicles for transporting workers and heavy/over-sized vehicles for delivery of materials, plant and turbine components. The project would generate increased local traffic volumes during the construction phase, with minimal traffic impacts anticipated during operations. During pre-construction and construction periods we will minimise disruption to local schedules and programs. The turbine components are oversized and heavy equipment, delivered by skilled and certified drivers with escort vehicles to ensure road safety as needed. Turbine components expected to be delivered include:

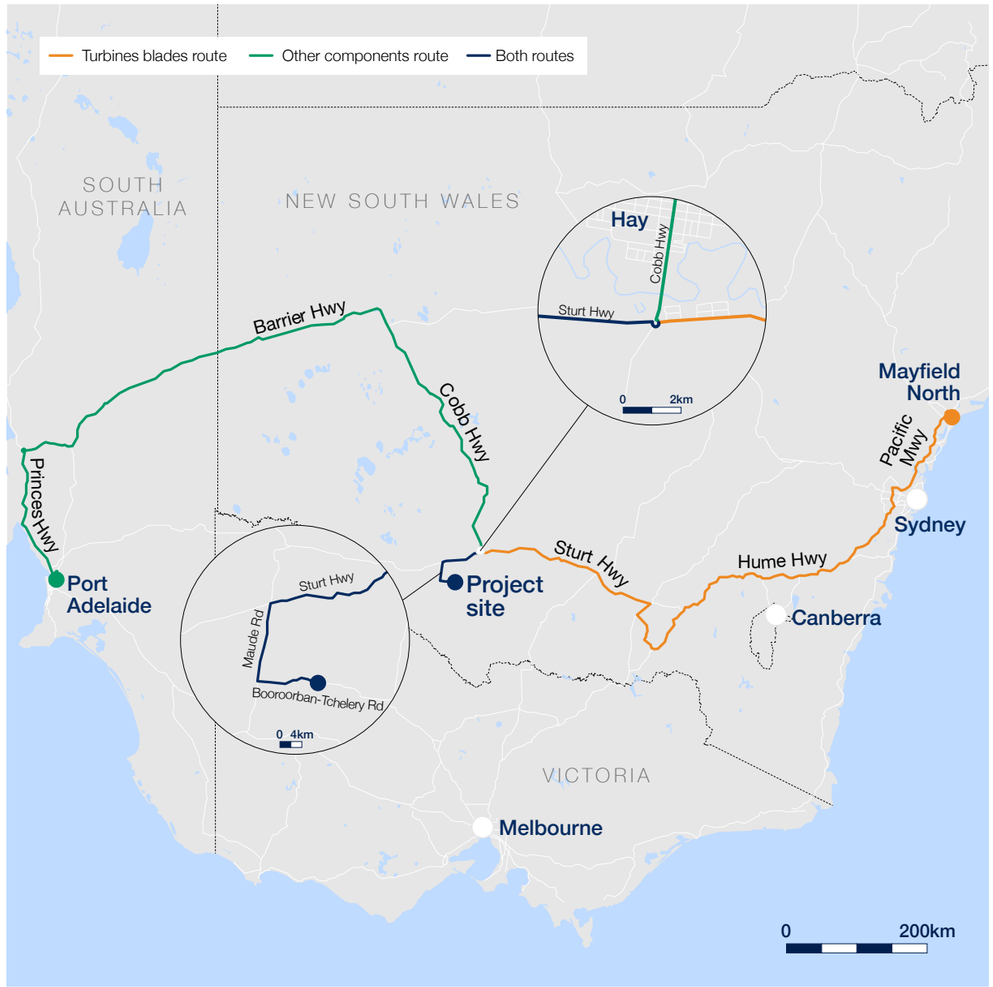
- Nacelles
- Hubs
- Generator / drive trains
- Blades
- Tower sections





Images of turbine components in transit





Visual studies

We conducted a landscape and visual impact assessment using a range of desktop and field studies to assess and mitigate the potential impact of the proposed wind farm in accordance with the New South Wales Government's planning requirements.

Existing view south from Maude Road



Photomontage showing indicative location of the proposal



Existing view south from Booroorban-Tchelery Road



Photomontage showing indicative location of the proposal



Construction workforce

The Tchelery Wind Farm is expected to create up to 530 jobs at peak construction and 20 new, permanent positions during operations.

For job seekers

Engineering, Procurement & Construction (EPC) Contractor

Electrical	Civil & Mechanical		Substation
Electricians	Concreters	Plant Operator	Electricians
Electrical Apprentices	Construction Fitter	Surveyors	Electrical Apprentices
Electrical Engineers	Foreman / Supervisors	Traffic Controllers	Electrical Engineers
Electrical Trade Assistants	General Labour	Traffic Engineers	Electrical Trade Assistants
Wind Turbine Technicians	Mechanical Engineer	Truck Driver	Wind Turbine Technicians
		Water Cart Driver	

For Suppliers

Goods and services expected to be procured through our EPC contractor:

Accommodation	Freight	Septic pump out services
Cleaners	Fuel	Small equipment hire
Crane (minor lifts)	Material testing	Transport (minor)
Concrete supply (off site supply)	Operation & maintenance facility construction	Waste management (liquid & solid)
Earthworks plant (wet & dry hire)	Quarry products	Water (construction & potable)
Fencing and gates	Safety Products (local)	Welding & engineering fabrication (site services)
Food and catering service	Security	

Anyone interested in working on the project can register their interest via our project website: tchelerywindfarm.com.au/work-with-us

In the pre-construction period, we will hold a Local Employment & Supplier Networking session.



We monitor our assets 24/7

The Tchelery Wind Farm will be monitored around the clock by our manned Operations Control Centre (OCC) in Canberra, which already oversees our operating assets across Australia.

The OCC will coordinate with our Asset Manager in the Canberra/Sydney office as well as with the local maintenance team on site to ensure safe, effective and compliant operations of our proposed wind farm.

The OCC will manage Neoen's interactions with the National Electricity Market: a wholesale electricity market which spans the eastern and south-eastern coast of Australia. The NEM supplies electricity to homes and businesses in NSW.

Electricity retailers purchase electricity from generators, like Neoen, either directly or indirectly through the NEM. The market works as a pool or spot market, where power supply and demand are instantly matched via a centrally coordinated dispatch process overseen by the Australian Energy Market Operator (AEMO).

1 ST

Renewable energy generator chosen by AEMO to supply network stability services



Local benefits

Neoen will make an **annual commitment** under the Community Benefit-Sharing Program to provide significant benefits to communities living around our Tchelery Wind Farm.

Funding will be available if the project goes into operations and will continue for its 30+ year lifespan. We aim to fund local projects and initiatives in one of the following growth areas:



Arts, culture & events



Disaster relief & emergency services



Education & training



Energy efficiency & environment



First Nations Initiatives



Aged care, health & well-being

Scan the QR code to submit your ideas



Artwork commitment

We create an artwork on all our projects with an energy capacity of over 50 MW. This commitment aims to celebrate renewable energy as well as the culture, history or flora and fauna of the local region in which we build and operate our project.

Environmental Above & Beyond initiatives

We are committed to supporting local, environmental and biodiversity initiatives in the areas in which we own and operate our projects. This initiative is 'above & beyond' our offset requirements on a project with an energy capacity of over 50 MW.



Case Study: New equipment for emergency support services

Coleambally Rescue Squad is part of VRA Rescue NSW. The squad has been active in the Murrumbidgee Shire since its formation in 1976.

Contributions from Neoen's Coleambally Solar Farm helped the Squad purchase new stabilisation equipment for their Light Rescue Vehicle.





Resources for schools

Developed by Neoen, the Learning Hub is designed for students in Years 5 to 12 to learn the basics of electricity, the impacts of renewable energy sources and possible careers in the sector.

We encourage you to use and share this free resource now available via neoenlearning.com.

About wind turbines

New turbine models are larger than their predecessors. Often during permitting, higher hub and tip heights will be requested to accommodate the next generation.

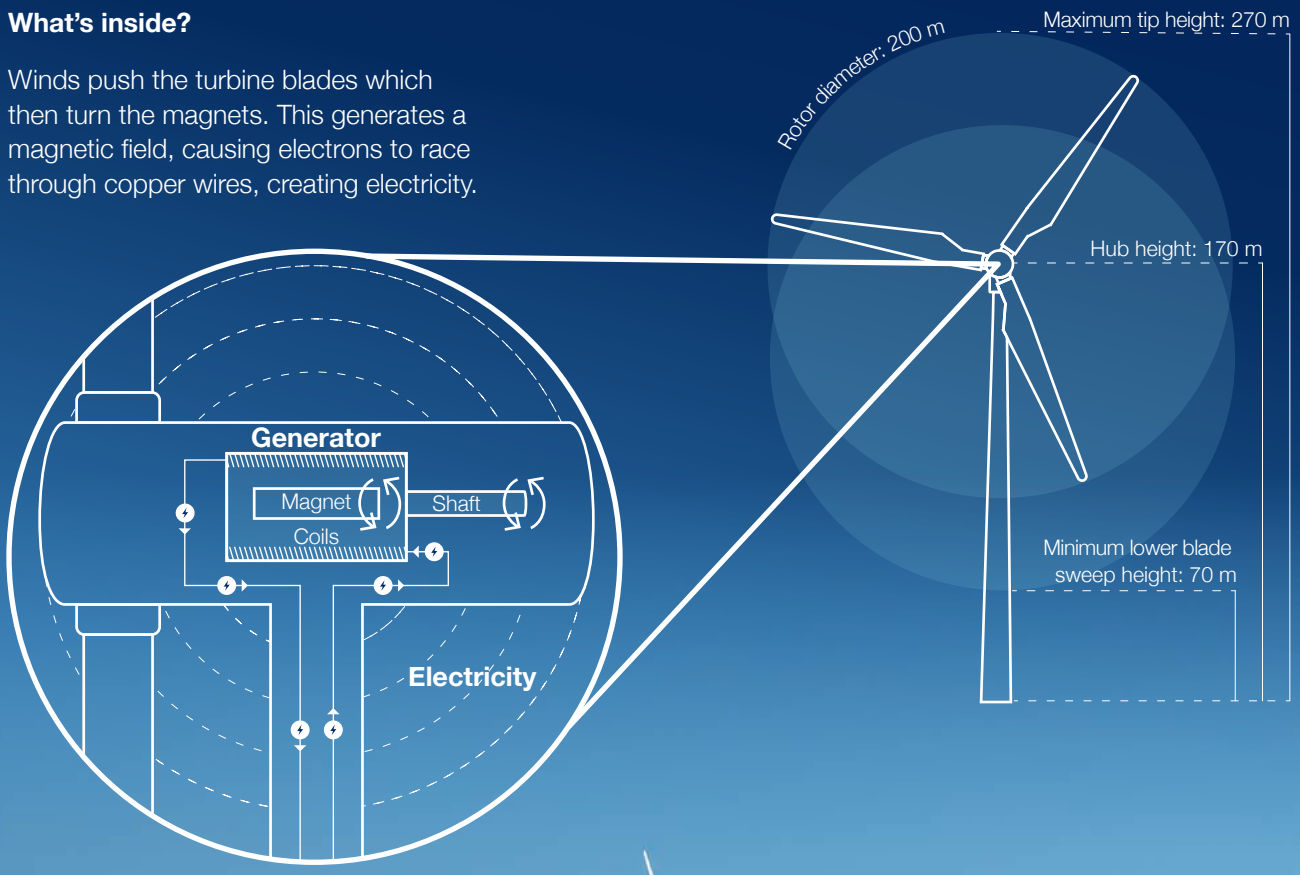
Larger turbines generate more and cheaper energy because they can access higher wind speeds at higher elevations. They are spaced further apart (approximately 500–1,000m depending on the project) and have lower rotational speeds than smaller turbines.

Larger turbines generate savings in civil and electrical costs because they require less concrete, roads and cables per unit of energy generated. This reduces carbon emissions, construction traffic, and vegetation clearance. Their blades are also above the flight paths of most birds, which greatly reduces the impact to avifauna.

To learn more, watch a video on the Learning Hub:

What's inside?

Winds push the turbine blades which then turn the magnets. This generates a magnetic field, causing electrons to race through copper wires, creating electricity.





About big batteries

What can a big battery do?

To maintain electrical grid stability, a big battery discharges electrical power into the network in response to frequency changes. The battery can lower the cost of these service markets which results in lower electricity prices for everyday consumers.

Inertia

Like a cruise control button in your car, inertia services are a way of maintaining stability of the grid. The advanced power inverters associated with a big battery can emulate the inertia services that are currently provided by an ageing fleet of fossil fuel power plants. This service is currently being used at our Hornsdale Power Reserve.

Transmission network support

Grid-scale batteries provide dynamic millisecond responses so existing transmission lines operate at full capacity. Like adding another lane to a freeway, the battery can unlock additional capacity on existing transmission networks – saving customers millions of dollars in expensive transmission line upgrades.

Firming renewables

Grid-scale batteries can store wind and solar energy, then discharge it when the wind isn't blowing and the sun isn't shining, ensuring renewables are always firmly reliable.

Battery technology

- Custom designed, dust and waterproof cabinets made of galvanised steel (similar to shipping containers)
- White or light coloured to assist with heat management
- Each cabinet has its own internal thermal management system
- Meets all safety/bushfire risk requirements
- Industrial inverters are used to convert DC to AC power when discharging and AC to DC power when charging

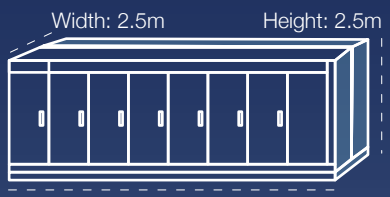
Proposed Tchelery Wind Farm battery:

Up to
350 MW
power capacity

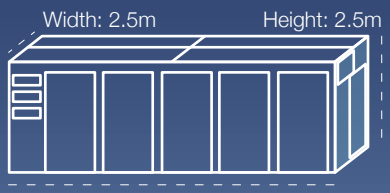
Up to
1,450 MWh
energy storage

92,000x
more capacity than a 13.5 kWh household battery

Battery



Inverter





Bushfire prevention & management

Neoen takes fire safety and mitigation very seriously on all its projects.

As a long-term owner and operator of renewable energy projects, we work with the local rural fire service from the early stages of development to construction and operation.

Our projects involve building new infrastructure and we are committed to ensuring that in doing so, we do not put unnecessary additional pressure on valuable local resources (such as fire fighting) or bring unmitigated risk to the natural environment and communities surrounding our project sites.

Benefits of wind farms

- → The height of turbines, coupled with lightning protection systems, reduce the chance of lightning strikes on nearby trees which may otherwise start a fire
- → Wind turbines and meteorological masts can be fitted with cameras for smoke and fire detection, increasing visibility and early detection
- → Construction of additional high-quality roads/access tracks that can be used in a bushfire emergency
- → Asset Protection Zones around turbines and maintained roads act as additional fire breaks, helping slow fires down in an emergency
- → Water tanks are installed on site to guarantee reserves for fire fighting purposes only
- → On-site monitoring personnel are trained and can detect and be first responders to a fire event
- → Additional eyes on the ground to detect and raise alarms during an emergency



With over 22 assets in operation or under construction across six Australian states and territories, Neoen has a proven track record of collaborating with the following authorities:

Are wind turbines a fire risk and how will this be mitigated?	All electrical infrastructure comes with a level of fire risk, but the risk from wind turbines is extremely low. Additionally, wind farms have requirements around keeping vegetation below certain levels to manage fuel loads, and offer benefits such as additional fire breaks, water reserves, fire trails and monitoring in remote areas of a region. Neoen ensures that our wind farms comply with all relevant requirements from the local and state government fire authorities. Early detection and manned surveillance (with 24/7 monitoring) also help reduce fire risks from campfires and arson, improving security across the project area.
How would the ability to fight fires in the area, using light aircraft and heavy water bombers, be affected by turbines?	If there is a fire emergency, Neoen would stop all wind turbines and park the rotor blades to facilitate operation of fire fighting aircraft i.e., turbines will be locked in a "Y" position during the fire to make them safer to fly around. This has been carried out successfully and is a standard practice in other areas/jurisdictions. Aircraft (likely helicopters) would need to avoid the wind turbines and follow relevant visual flight rules. There is also significant space between turbines which allows helicopters to fly between them. Pilots view turbines as no different from tall structures and hazards such as power lines, transmission towers, mountains and valleys. Any requirements associated with aerial fire fighting are included in the Bushfire Emergency Management Plan developed in consultation with the fire authorities and in accordance with the state government's planning requirements for wind farms.
How can wind turbines prevent a fire risk?	**1.** Turbine height, coupled with lightning protection systems, reduces the chance of lightning strikes on nearby trees and property which may start a fire. **2.** Turbines are fitted with advanced smoke detection systems. When smoke is detected, an alarm shuts down the wind turbine for safety purposes and a signal is sent to our on-site technician who assess the situation as per our approved response protocols. They will alert the fire authority in the event of a bushfire risk or emergency. Turbines also have a fire suppression system which can activate an environmentally-friendly gas suppressant to cool a fire and remove oxygen to extinguish flames. **3.** Asset Protection Zones around the site have vegetation maintained below certain levels and free of debris that pose a fire risk.



TCHELERY
WIND FARM

tchelerywindfarm.com.au

Aniruddha Deshpande, Project Manager

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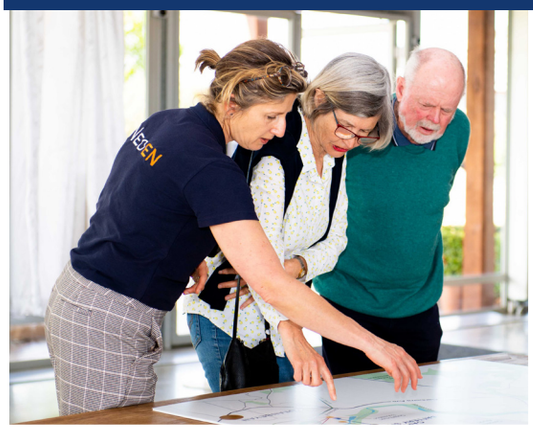
1800 966 030

APPENDIX B: Community Information Session Advertisement

TCHELERY
WIND FARM

COMMUNITY INFO SESSION

MARCH 2025







Neoen is holding multiple Community Information Sessions to share updates on the proposed Tchelery Wind Farm and hear your thoughts on the project. Following feedback from local councils, the community and detailed studies over the last two years, we have made several project refinements.

We invite members of the community to learn about the updated project layout, its community benefit-sharing program and meet our team.

Tuesday, 4 March

4:00 pm – 6:30 pm
Deniliquin RSL Club,
Mountbatten Room
72 End Street, Deniliquin

Wednesday, 5 March

11:00 am – 1:00 pm
Moulamein Bowling Club
Endeavour Drive, Moulamein

4:00 pm – 6:30 pm
Hay Bowling Club
408 Murray Street, Hay

View past project submissions:

planningportal.nsw.gov.au/
major-projects/projects/tchelery-wind-farm

tcheleywindfarm.com.au

TCHELERY WIND FARM

COMMUNITY DROP-IN SESSION

Thursday 23 February

2 pm to 5 pm

Moulamein Bowling Club

Endeavour Dr, Moulamein NSW 2733



Keeping the community informed

Neoen will be holding a Community Drop-In Session to share project information and hear your thoughts on the proposed Tchelery Wind Farm. The proposed project is a wind farm hosting up to 120 turbines.

Come along to meet members of our project team, view maps and learn more about the project. The Tchelery Wind Farm is expected to bring significant community benefits and investment to the local and regional economy.

If you cannot attend the session but would like further information, please contact us on the details below or visit our project website.

For more information:

contact@tchelerywindfarm.com.au 1800 966 030 https://tchelerywindfarm.com.au/

Appendix E

First Nations Engagement Plan

NEOEN



PROJECT NAME

First Nations Engagement Plan

Version	V2
Released	17 04 2025
Document Owner	Project Manager

Author	
Position:	Project Development Manager
Incumbent:	Aniruddha Deshpande
Reviewed by	
Position:	First Nations Engagement Advisor
Incumbent:	Julie-Ann Lambourne
Review Date:	17/04/2025
Approved by	
Position:	Head of Communications and Engagement
Incumbent:	Lisa Stiebel
Approval Date:	17/04/2025
Related Documents	
1.	Community Engagement Plan (CEP)
2.	
3.	
4.	

History

Version	Nature of change	Author	Date
V1	First release	Aniruddha Deshpande, Project Manager	14/02/2025
V2	Update – EIS submission	Aniruddha Deshpande, Project Manager	17/04/2025

Contents

1 Document purpose 4
2 Responsibility for plan 6
3 Neoen's engagement approach 7
4 Traditional Owners 10
5 Principles and deliverables 12
6 Maximising participation 15
7 Benefit-sharing 17
8 Reporting and monitoring 18

1 Document purpose

This First Nations Engagement Plan (**FNEP**) for Tchelery Wind Farm (the **Project)** was developed during the post development approval (**DA**) stage by Aniruddha Deshpande (Project Manager) with input from the Head of Communications and Engagement and First Nations Engagement Advisor at Neoen Australia Pty Ltd (Neoen).

This document identifies the engagement, participation and employment approach and objectives in relation to members of the First Nations communities for the Project. It was developed in accordance with the principles and best practice guidelines outlined in *The Interim Engaging with First Nations People and Communities on Assessments and Approvals*[1] published by the Australian Government's Department of Climate Change, Energy, The Environment and Water in 2023. It is also informed by the Clean Energy Council's Leading Practice Principles: *First Nations and Renewable Energy Projects*[2] published in 2024.

The FNEP forms part of the Community Engagement Toolkit, refer to Table 1. It is linked to the Project's Community Engagement Plan (**CEP**) which outlines and details Neoen's comprehensive and multi-layered approach to stakeholder and community engagement from development through to construction and operations that is specific to each of Neoen's projects.

1.1 Distribution

The FNEP is handed over as part of Neoen's hand over procedures from the Development Manager to the Construction Manager then from the Construction Manager to the Asset Manager as the Project progresses from development to construction and operations.

The FNEP will also be embedded into our contracts with nominated "engineering, procurement and construction" (**EPC**) and "operations and maintenance" (**O&M**) contractors to ensure that our approach and requirements are consistent, coordinated and flow down through the tiers of subcontractors to all levels of the Project.

1.2 Review

Once developed, the FNEP is a live document which will be updated progressively during the Project's development phase and then reviewed and handed over at the following project milestones:

- Start of construction – prior to handover to Construction Manager
- Start of operations – prior to handover to Asset Manager

It will also be informed by feedback from First Nations community members and changing circumstances.

[1] Australian Government, Department of Climate Change, Energy, The Environment and Water, The Interim Engaging with First Nations People and Communities on Assessments and Approvals under *Environment Protection and Biodiversity Conservation Act 1999* (interim guidance), 2023. dcceew.gov.au/environment/epbc/publications/engage-early

[2] Leading Practice Principles: First Nations and Renewable Energy Projects © 2024 by Clean Energy Council and KPMG. assets.cleanenergycouncil.org.au/documents/resources/reports/Leading-Practice-Principles-First-Nations-and-Renewable-Energy-Projects.pdf

Table 1: *Community engagement activities by project stage*

Development			Construction		Operation	
1	2	3	4	5	6	7
Site selection	**Feasability**	**Planning & Approvals**	**Pre-construction**	**Construction**	**Operation**	**Decommissioning**
Social Feasibility Scan (Political and neighbour) Face-to-face meetings with host landowners Establish stakeholder register on the CRM	Develop the Community Engagement Plan Identify and meet Traditional Owners Face-to-face meetings with neighbours Council & MP briefings *# Coordinate with Social Impact Assessment consultant (NSW)*	Co-develop a First Nations Engagement Plan (if required) Discussion on CLO and First Nations support and budget Meetings with fire authorities and local groups including Council briefings Finalise & include in financial model: – Benefit-Sharing OPEX – Artwork CAPEX – Environmental 'above & beyond' initiative CAPEX Launch website including project email, 1800#, 'Work with Us' register & feedback survey Send 1st newsletter (& set-up bi-annual updates to the community) Community Info Session(s) Hold host landowner dinner(s) and update(s) *# Gather and leverage Social Impact Assessment results*	Develop a Local Participation Plan (if required) Distribute bi-annual newsletters Establish Complaints register Identify benefit-sharing opportunities Hold a Local Employment & Networking Session Present at the nearest local school Share 'Work with Us' register with EPC Hold a 'start of construction' event	'Welcome to Country' event on-site Bi-annual newsletter and website updates SMS alerts (as required) Host landowner and neighbour meetings Video updates Council & MP briefings Sponsor local event(s) and deliver artwork commitment Finalise environmental 'above & beyond' initiative	Hold community celebration event Deliver Benefit-Sharing program (First Nations, Neighbour Benefit Scheme and Community) Annual newsletter and website update Host landowner, Council & MP briefings Facilitate site tours and school open days Manage complaints Review community engagement and lessons learnt	Communicate decommissioning process Landowner and council briefings Update website Engagement with local land care groups

2 Responsibility for plan

Over the years of the Project's development and lifecycle, the people responsible for and engaged in the implementation of the FNEP will change.

Table 2 outlines the movement in responsibility across the Project's lifecycle.

Table 2: Responsibility for the First Nations Engagement Plan

Project Stages		Proposed Timing	Responsibility for FNEP
1	Site selection	Q2 2022	Jang Kim Development Project Manager
2	Feasibility	Q3 2022	Jang Kim Development Project Manager
3	Planning & approvals	Q4 2022-Q3 2025	Aniruddha Deshpande Development Project Manager
4	Pre-construction	April 2025	Aniruddha Deshpande Development Project Manager
5	Construction	Q1 2027 – Q1 2030	TBD, Construction Project Manager As per Construction Environmental Management Plan (CEMP)
6	Operation	Q1 2030 - 2060	TBD, Asset Manager As per Operation Environmental Management Plan (CEMP)
7	Decommissioning	2061 - 2062	As per Decommissioning Environmental Management Plan (DEMP)

3 Neoen's engagement approach

3.1 Reconciliation

Neoen is committed to maximising the long-term opportunities and benefits for First Nations communities that building, owning and operating the Project affords.

Neoen is committed to reconciliation as demonstrated through its Reconciliation Action Plan (RAP). Neoen's RAP identifies and details practical actions that can drive the organisation's contribution to reconciliation both internally and in the communities in which it operates.

Neoen acknowledges the importance of supporting First Nations communities to set their own priorities and directions for the progression of their communities.

Our 'develop to own' business model (not on-selling the projects that we build) is relatively rare in the renewables industry. This provides strong pathways with respect to developing meaningful and ongoing relationships with local First Nations communities and businesses. Our starting point is the clear understanding that we will be neighbours and participants in the community for the lifetime of the Project.

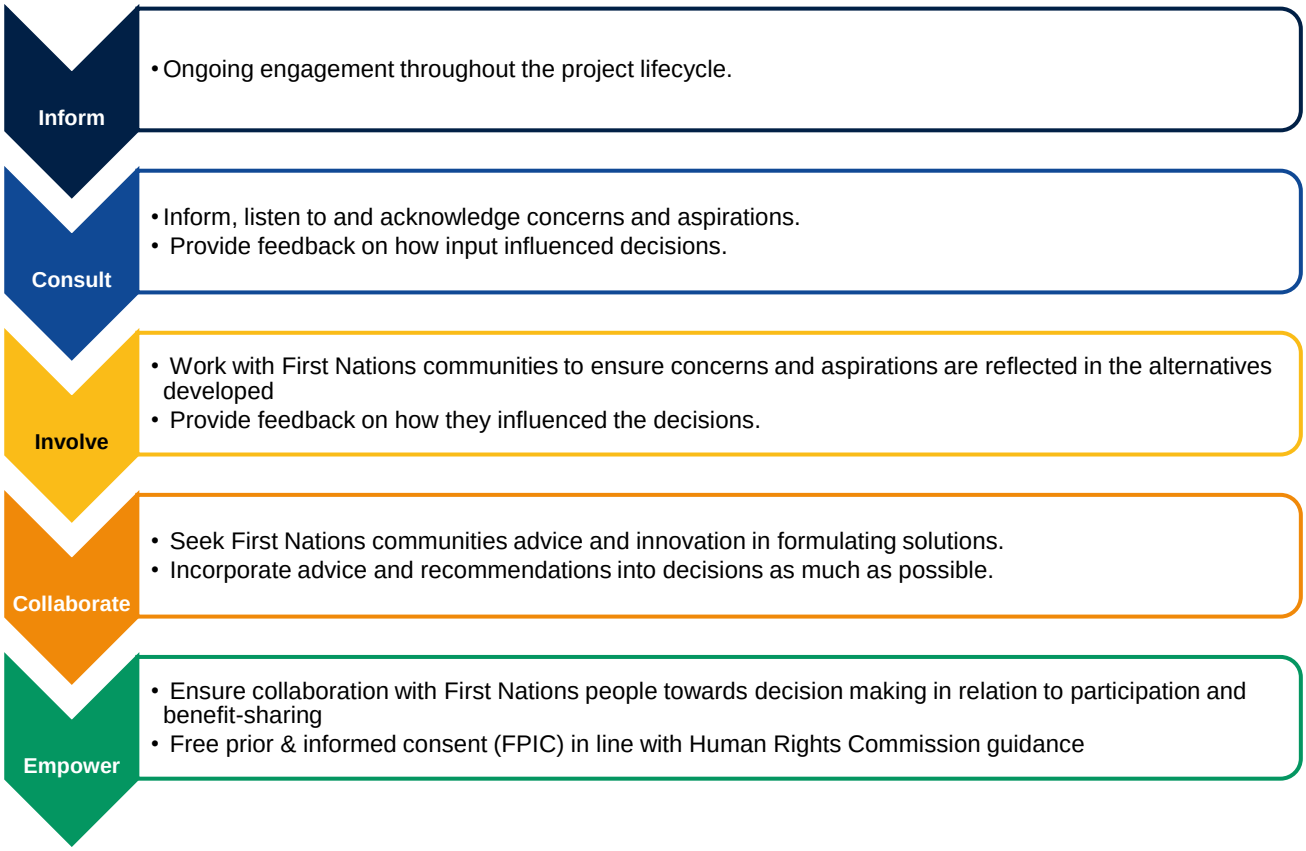
We seek to develop and nurture local First Nations initiatives, partnerships and innovation with the confidence that we will be there to see projects through from development to the final stages of operations in years to come.

Our aim is to move towards working in partnership with Traditional Owners and Aboriginal and Torres Strait Islander peoples and community on their path to self-determination, reconciliation and finding equitable outcomes for First Nations people.

3.2 Spectrum of engagement

Stakeholder groups have differing communication and engagement needs. The level of engagement for First Nations stakeholders is typically set at the involve and collaborate levels of engagement shown below in **Figure 1** and where possible in relation to benefit-sharing moves towards empowerment.

***Figure 1**: First Nations Project Engagement*



3.3 Elements of engagement

Neoen's approach to First Nations engagement aims to incorporate three main elements:

1. Respecting Cultural Heritage

Cultural Heritage assessments and surveys are conducted during feasibility and early development stages, and engagement culminates in the preparation, negotiation and signing of a Cultural Heritage Management Plan. This aspect of engagement is a legal obligation and abides by regulations the state level – a table listing the relevant laws and standards is on page 87 of the CEC's Leading Practice Principles guide. This element of engagement is covered in the Project's CHMP and is not repeated in this document.

2. Maximising Participation

Discussions in relation to potential First Nations participation in the Project commence during development. These seek to understand and support First Nations communities' capabilities and future plans. It may include the appointment of a First Nations Participation Officer prior to construction to help the Project reach any nominated employment and supply chain targets during construction and operations phases. This aspect of the Project's engagement is covered in Section **6**.

3. Benefit-sharing

Discussions relating to long-term sharing of benefits by the Project with First Nations communities may be included within the negotiation of the CHMP or separately. These seek to understand and support First Nations communities' capabilities and future plans. Benefit-sharing is usually on an annual basis for the operating lifetime of a project. This aspect of the Project's engagement is covered in Section **7**.

3.4 Stages of engagement

In recognising that First Nations peoples have an integral role as the custodians of Australia's land and natural environment, we intend that consultation and engagement with the relevant First Nations group(s) will occur during each phase of development, as outlined in **Table 3**.

These activities will be conducted concurrently with other engagement as outlined in **Table 1** and detailed in the Project's overarching Community Engagement Plan.

***Table 3**: Engagement activities by project stage*

Stage		Responsibility for FNEP
1	Site selection	– High-level assessment of project site.
2	Feasibility	– Conduct Fatal Flaw Analysis of potential planning, environmental, cultural heritage, and hazard constraints to inform the likely risks to proceeding with a nominated study area. This analysis determines whether there are any native title claims or determinations – Engage a cultural heritage consultant – Conduct a Cultural Heritage Assessment which includes a summary of any registered First Nations or historical heritage items on heritage databases and the contact details of the relevant First Nations groups or Registered First Nations Cultural Heritage Bodies (such as Land Councils) – Mapping of First Nations stakeholders.
3	Planning & approvals	– Contact key First Nations stakeholders by email, letter or phone and identify appropriate community leaders – Hold face-to-face meetings with identified Traditional Owner representatives and broader First Nations communities. – Commence statutory process to negotiate a Cultural Heritage Management Plan (CHMP) – Mitigation and monitoring measures agreed – Cultural heritage surveys completed prior to Financial Close.

		– Native title due diligence conducted prior to Financial Close. – Co-design of First Nations Engagement Strategy – Development of First Nation jobseeker, training, and supply chain networks – Recruit First Nations Participation Officer (if required) – Coordination with EPC contractor & subcontractors
4	Pre-construction	– Deliver First Nations Participation targets – Conduct Cultural Heritage training as part of site induction – Cultural Heritage monitors may be on site during construction activities – Financial commitments under the CHMP
5	Construction	– Deliver First Nations Participation targets – Conduct Cultural Heritage training as part of site induction – Cultural Heritage monitors may be on site during construction activities – Financial commitments under the CHMP
6	Commissioning & Operation	– Project launch includes Welcome to Country and culturally appropriate ceremonies – Fulfil annual benefit-sharing commitments under the CHMP – Ongoing engagement with First Nations stakeholders as per agreed schedule
7	Decommissioning	– Engagement with First Nations stakeholders in relation to decommissioning activities. – CHMP will conclude.

4 Traditional Owners

4.1 Overview

The Project is located within the Deniliquin Local Aboriginal Land Council (LALC) boundary which is mainly composed of Nari Nari, Wemba Wemba (Wamba Wamba) peoples. The Traditional Owners of the land on which the Project is located are the Nari Nari, Wemba Wemba (Wamba Wamba), Perrepa Perrepa country.

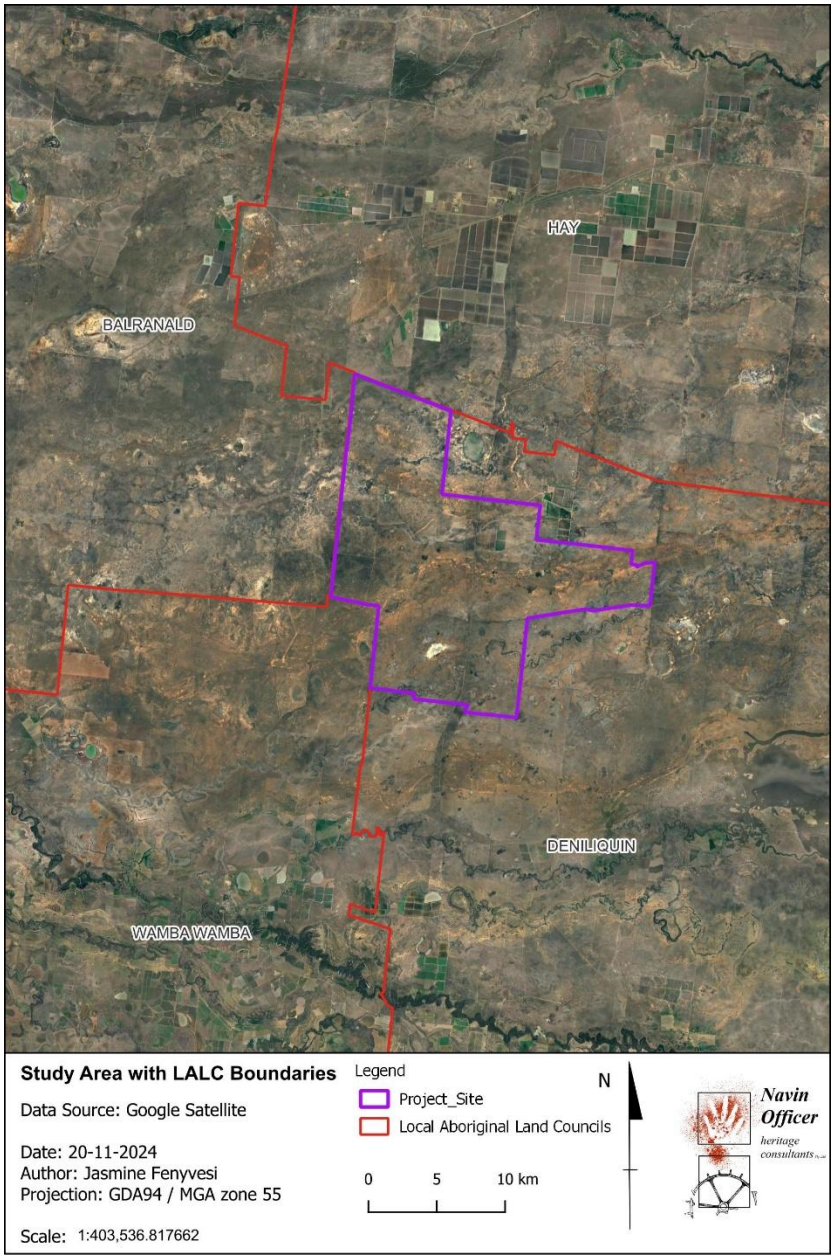


Figure 2 Project area indicating the Local Aboriginal Land Council boundaries

4.2 Nari Nari, Wemba Wemba (Wamba Wamba) peoples

The Nari Nari, Wemba Wemba (Wamba Wamba) and Perrepa Perrepa. peoples are represented locally by Deniliquin Local Aboriginal Land Council (DLALC). Registered Aboriginal Parties (RAP's) also include representatives of Yarkuwa Indigenous Knowledge Centre Aboriginal Corporation (YIKCAC) and Barap Wamba.

The Nari Nari and Wemba Wemba & Perrepa Perrepa are two distinct groups of Traditional Owners with deep cultural and historical connections to the lands and waters of southeastern Australia, particularly in the regions of New South Wales (NSW) and Victoria.

The Nari Nari people are an Aboriginal group from the Riverina region, predominantly around the Murrumbidgee River. The Nari Nari are part of the broader cultural grouping known as the **Wiradjuri** nation, although they are a separate group with their own language and cultural practices. They are known to have a deep spiritual and physical connection to the lands surrounding the Murrumbidgee River, and their traditional lifestyle was closely tied to the river's resources, such as fish and waterfowl, as well as the fertile land for agriculture.

The Wemba Wemba & Perrepa Perrepa people are another Aboriginal group who traditionally inhabited the Mallee and Wimmera regions of northwestern Victoria and southwestern New South Wales. Their traditional country extended from the northern reaches of the Murray River and parts of the Loddon River, to the west near the Grampians. The Wemba Wemba people traditionally engaging in hunting, fishing, and gathering, with a strong focus on the seasonal cycles of the land and waterways. Their territory was rich in resources, with a complex system of governance and a deep spiritual connection to the land.

Table 4: Traditional Owners overview

Overview	Traditional Owners information
Corporation or body	Deniliquin Local Aboriginal Land Council
Language (language family)	Kulin
Alternative names	Wamba Wamba, Womba, Weumba, and Waamba
Approximate size	Estimated 8,300km^2 of tribal land
Local Government Areas	Gannawarra, Swan Hill, Edward River Council, Murray River Council Covers both Victorian and New South Wales sides of the Murray River
Location	Around the Loddon and Murray Rivers in Victoria and New South Wales. Their territory extended from Kerang in Victoria to Barham in New South Wales.
Cultural Heritage adviser	TBC

5 Principles and deliverables

The principles of culturally appropriate First Nations engagement and how we translate them into actions and deliverables are outlined below.

Principle 1: Identify and acknowledge Traditional Owners and communities

We acknowledge and respect that local governance structures, where are projects are located including pre-development, can vary between different First Nations communities, and it is important that we identify the traditional owners, their governing structures, leaders and authorities to be involved. We undertake Cultural Heritage Assessments to locate details for the correct First Nations parties. Advice may also be sought from State Departments, Land Councils, or other local authorities.

Action & Deliverables		Responsible	Status
1	Undertake Cultural Heritage Assessment in early feasibility stage to identify relevant native title claimants in project area.	Development PM	Complete
2	Early engagement with the identified Traditional Owners. Work with prescribed body corporates and/or organisations and their boards and/or representatives to identify and involve identified representatives.	Development PM / FNEA / CLO	Ongoing

Principle 2: Demonstrate cultural awareness & sensitivity

Project Managers and team members ensure they are familiar with and adhere to culture protocols in First Nations communities, and that they are aware of the history of Aboriginal and Torres Strait Islander peoples and their communities.

It is important to ensure that resources are allocated for travel or other costs to enable stakeholders to attend meetings or seek legal advice on cultural heritage agreements.

Action & Deliverables		Responsible	Status
1	Cultural Awareness Training undertaken by project team members prior to meeting with First Nations communities	Development PM / CLO IPO / FNEA	Commence Q3 2025
2	Develop Cultural Protocols in consultation with the Project community	Development PM / CLO IPO / FNEA	Commence Q2 2025
3	Cultural Awareness developed by the Project included in site inductions during construction and operations	PM / CLO IPO/ FNEA	Commence Q4 2026
4	Project launch (after construction is complete) includes culturally appropriate ceremony in consultation with the Project community	PM / CLO IPO / FNEA	Commence Q1 2030

Principle 3: Build trust and enduring partnerships

To support the development of enduring partnerships, Project Managers commit to early engagement with First Nations peoples and communities at the pre-referral stage. Appropriate timeframes for consultation should be set, and there should be ongoing communication for the duration of the Project, including approvals, implementation, and future management.

Action & Deliverables		Responsible	Status
1	Undertake early and sustained engagement from the early Planning & Approvals stage	Development PM	Complete
2	Provide appropriate timeframes for consultation, negotiation and development of Cultural Heritage Management Plan	Development PM / FNEA	Complete
3	Appoint Indigenous Participation Officer (IPO) to support engagement and drive outcomes	Development PM / FNEA	TBC
4	Development engagement and report schedule for project's lifecycle in consultation with local First Nations communities	PM / IPO / FNEA	TBC

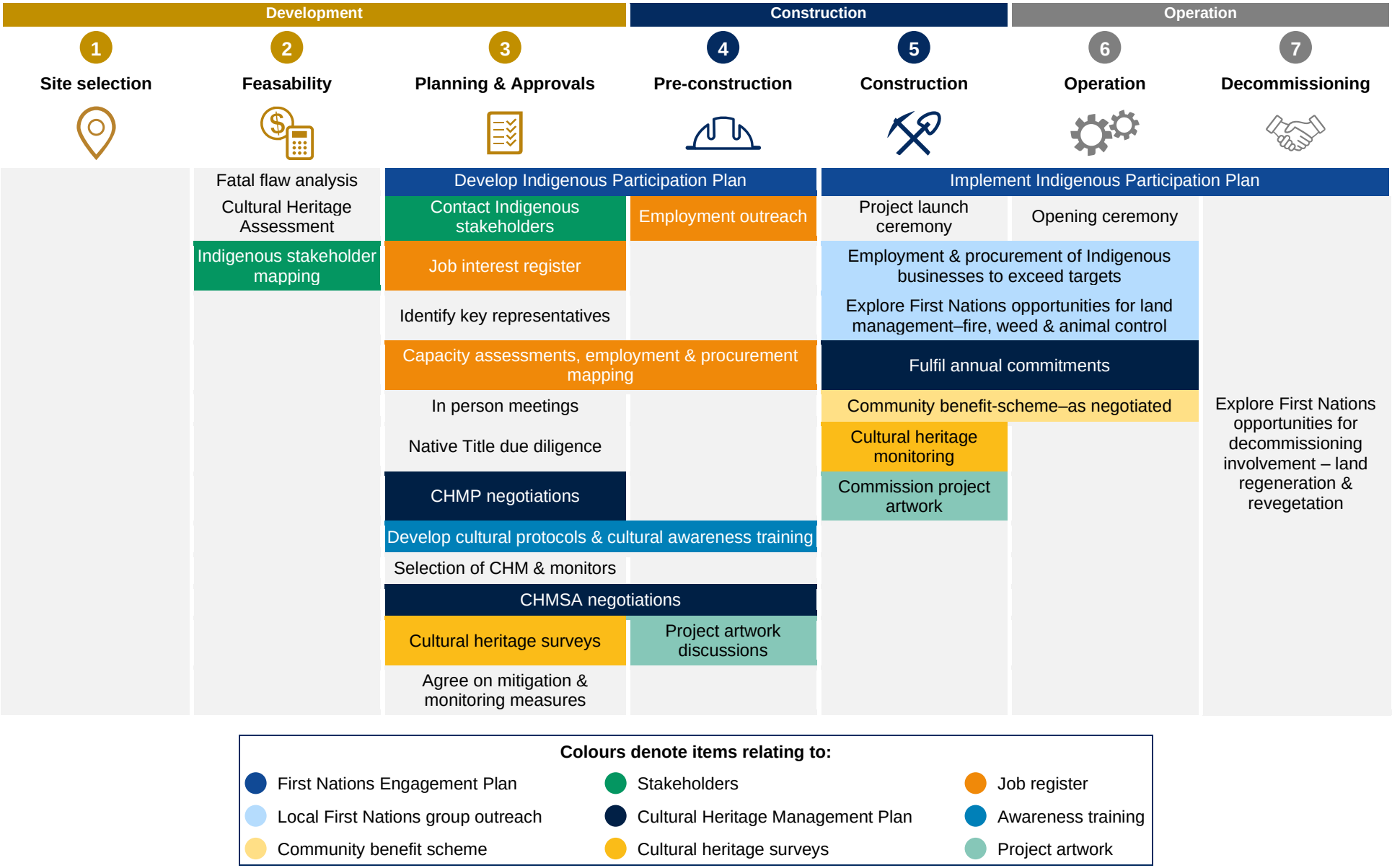
Principle 4: Ensure consultation and engagement process is informed by First Nations peoples and communities

Each community is different, and it is important to determine what issues are of particular importance, and how a particular community would like to be involved throughout the consultation and engagement process. Project Managers will ask identified Traditional Owner representatives how they would like to be involved and engaged in a project, and what they would like to see from the developer.

Additionally, Local Elders often possess a wealth of knowledge about their traditional lands and community including local cultural heritage, which is valuable in planning projects to avoid areas of key significance.

Action & Deliverables		Responsible	Status
1	Involve local First Nations representatives in discussions and negotiations relating to the Cultural Heritage Management Plan and First Nations Engagement Plan	PM / IPO/ FNEA	Commence Q3 2025
2	Reflect and support First Nations community aspirations and capacity building through maximising participation outcomes	PM / IPO / FNEA	Commence Q3 2025
3	Reflect community priorities through tailored benefit-sharing initiatives in Cultural Heritage Management Plan	Development PM / FNEA	Commence Q2 2026

Figure 3: *First Nations engagement by project stage*



6 Maximising participation

6.1 Overview

A key objective of Neoen's engagement is to maximise First Nations Participation both in terms of direct employment of First Nations people on the Project and procurement of goods and services from First Nations businesses.

6.2 Prioritising Traditional Owners

The priorities in terms of targeting employment and supply chain outcomes are as follows, noting that these may be adjusted subject to ongoing discussions with Nari Nari, Wemba Wemba (Wamba Wamba):

- Traditional Owners of the land on which the Project is located - the Nari Nari, Wemba Wemba (Wamba Wamba) peoples
- Jobseekers from other First Nations groups living in the area, including wider Wiradjuri group
- First Nations jobseekers from Riverina Murray region of NSW
- First Nations jobseekers from across NSW and beyond

6.3 Employment and procurement mapping

Neoen will proactively map First Nations businesses and job seekers. It will work closely with the EPC and O&M in the early stages of the Project to identify work packages from the contractors as well as employment opportunities.

Action & Deliverables		Responsible	Status
1	Establish Jobseeker Register on the Project website	PM	Complete
2	Work with Traditional Owner groups to develop and employment outreach strategy (e.g. webinars, email notifications)	IPO / FNEA	Commences Q1 2026
3	Consult with the Nari Nari, Wemba Wemba (Wamba Wamba) in relation to their preferred labour hire, employment agencies and training partners	IPO / FNEA	Commences Q1 2026
4	Build a database of First Nations job seekers in Simply Stakeholders with an emphasis on Traditional Owners	IPO	TBC
5	Build a database of local First Nations businesses in Simply Stakeholders using NSW Indigenous Chamber of Commerce, , ICN gateway, and other government database, Supply Nation, search engine	IPO / FNEA	TBC
6	Map First Nations businesses and job seekers to contractor work packages	IPO / FNEA	TBC

6.4 Training and capacity building

Neoen will consult with Traditional Owners and will identify and work with various organisations and/or employment and training providers to provide assistance to First Nations job seekers.

Action & Deliverables		Responsible	Status
1	Consult with Nari Nari, Wemba Wemba (Wamba Wamba) to understand their expectation, capacity and goals for participation in the Project	IPO / FNEA	TBC
2	Assess whether the Nari Nari, Wemba Wemba (Wamba Wamba) are wanting to conduct a skills audit and how this can best be resourced and implemented	IPO / FNEA	TBC
3	Liaise with local employment services and Traditional Owners's to understand employment challenges for local First Nations people	IPO	TBC
4	Work with local employment services to identify training opportunities and funding to address barriers	IPO	TBC

6.5 Setting and tracking targets

Neoen will ensure accountability and transparency by setting clear targets for First Nations employment and supply chain outcomes. These targets are communicated to the EPC and O&M contractors at the 'Request for Proposal' stage when they are tendering for the Project. The appointed contractors must then communicate these through the tiers of their subcontractors. Progress against targets will be tracked and monitored in line with the reporting requirements outlined in Section **8**.

	Action & Deliverables	Responsible	Status
1	According to initial mapping undertaken, set targets for % First Nations employment 'balance of plant' work hours (to ensure retention metric is based in) and $ total supply chain spend	CLO / IPO / FNEA	Commences Q4 2025
2	Liaise with local First Nations and employment networks to confirm and adjust targets	CLO / IPO	Commences Q1 2026
3	Include FNEP and targets in Request for Proposal from EPC and O&M contractors	PM / Procurement / FNEA	Commences Q1 2026
4	Track, report and monitor progress against targets and remediate as needed	EPC & Construction Manager / FNEA	Commences Q4 2026

6.6 First Nations participation targets

	Targets
1	TBC% First Nations employment 'balance of plan' work hours (to ensure retention metric is baked in) during construction
2	TBC% First Nations 'balance of plant' procurement from First Nations suppliers and businesses during construction
3	Minimum $TBC total supply chain spend with First Nations suppliers and businesses during construction
4	TBC – targets once project reaches operations

7 Benefit-sharing

7.1 Overview

As a long-term owner and operator of its projects Neoen is committed to and has benefit-sharing on all projects in its portfolio. There can be multiple layers of benefit-sharing – (i) with neighbours (ii) with the wider community and (iii) with Traditional Owners. First Nations benefit-sharing can take many forms, and Neoen is guided by the self-determined goals and aspirations of the First Nations communities.

7.2 Benefit-sharing

Benefit sharing discussions are yet to being undertaken with Nari Nari, Wemba Wemba (Wamba Wamba) peoples. Neoen is willing to commit to a benefit sharing fund for the Nari Nari, Wemba Wemba (Wamba Wamba) peoples. The fund will involve a $TBC payment per annum (excluding GST and subject to CPI adjustment, per the terms of the agreement to be discussed). The fund will be paid after the construction works commencement date and continue for the life of the project.

	Action & Deliverables	Responsible	Status
1	TBC	Construction Manager	To be delivered
2	TBC	Asset Manager	To be delivered
3		Asset Manager	To be delivered
4		Asset Manager	To be delivered

7.3 Project artwork

Details if we have made this commitment to the First Nations group.

	Action & Deliverables	Responsible	Status
1	TBC	Construction Manager	To be delivered
2		Asset Manager	
3		Asset Manager	
4		Asset Manager	

8 Reporting and monitoring

8.1 Contractor Reporting Commitments

The EPC contractor will be required to follow the key principles, strategies and goals of the First Nations Engagement Plan and to deliver on the targets which will be included within their monthly reporting requirements during construction.

First Nations Target & Reporting Metric	EPC Internal Reporting	Neoen External Reporting
TBC% First Nations Employment – BOP work hours	Monthly EPC Report	Quarterly or annually
TBC% First Nations Procurement – BOP	Monthly EPC Report	Quarterly or annually
$TBC in First Nations business contracts – total $ value	Monthly EPC Report	Quarterly or annually

The O&M contractor will be required to report annually on any targets relating to the operations phase.

8.2 Neoen monitoring and reporting regime

The Project team will continue to engage with the Nari Nari, Wemba Wemba (Wamba Wamba) peoples in relation to the principles, strategies and goals of the FNEP, and how these are being actioned and delivered.

This will include holding regular meetings to advance, monitor and report on employment outcomes, provide Project updates and proactively address any concerns.

Project stage	Meeting frequency (or as agreed with TO's)
Pre-construction	Twice per year
Construction	Twice per year
Operations	Annually

The agenda will include the following:

- CHMP – update & progress report
- FNEP – update & progress report
- Neoen RAP update
- Concerns and issues
- FNEP Review

Appendix F

Mitigation measures

F1 Mitigation measures

A consolidated list of mitigation measures for the project is provided in Table F.1.

Table F.1 Consolidated list of mitigation measures

Ref	Mitigation measure	Timing	Applicable locations
Biodiversity			
B1	The locations of threatened ecological communities and habitat for threatened species will be considered and potential impacts avoided or minimised to the greatest extent practicable during finalisation of the detailed design and construction methodology. This will include micro-siting of infrastructure, including wind turbine generators, within the subject land. Sensitive areas to be avoided during detailed design and sensitive areas (including species polygons, buffered threatened species locations and areas of Threatened Ecological Communities) will be identified on sensitive area plans using spatial data.	Detailed design Pre-construction	Identified sensitive areas
B2	Micro-siting of temporary construction infrastructure (including site offices, compounds and access tracks) will be carried out to minimise vegetation clearing and disturbance of watercourses within the subject land to the extent practicable. This will include: — prioritising areas of low biodiversity value — utilising existing access tracks, where feasible — locating waterway crossings at narrow width locations.	Pre-construction Construction	All locations
B3	Biosecurity impacts will be addressed as part of the Construction Environmental Management Plan and will include measures to protect against: — movement and introduction of exotic species into the subject land, and — movement and introduction of pathogens into the subject land.	Pre-construction Construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
B4	Biodiversity management will be developed as part of the Construction Environmental Management Plan implemented for the duration of construction. The plan will include (as a minimum): — location and extent of areas of vegetation clearance and habitat disturbance, and how these will be suitably demarcated on site if required — location and extent of areas to be protected (for example retained vegetation, hollow bearing trees, nests, burrows and other habitat features (including applicable buffers to habitat features) located inside the construction area or in close proximity to the clearing areas — measures to be implemented on site to clearly demarcate areas to be retained as 'no go areas'. 'No go area' demarcation devices will be established prior to the commencement of clearing works in each construction area and be maintained throughout the construction phase.	Pre-construction Construction	All locations
B5	Pre-clearing surveys will be completed by a suitability qualified ecologist prior to clearing at each location. The proposed clearing extents will be marked out on site prior to the pre-clearing surveys. Pre-clearing surveys will be carried out within 48 hours prior to the commencement of clearing works in each construction area. During the surveys, the ecologist will: — survey the proposed clearing extent — identify any fauna that will require relocation prior to clearing, including inspection of any built structures and wooden fence posts to be demolished — confirm that biodiversity exclusion zones are demarcated — confirm that hollow bearing trees within and adjacent to the clearing extents are prominently marked/tagged. The results of the pre-clearing survey will be used to update and confirm the accuracy of sensitive area maps.	Pre-construction Construction	All locations
B6	All relevant project personnel, including relevant sub-contractors will be trained on biodiversity management protocols and requirements for the project, through inductions, toolbox talks and targeted training, and provided with sensitive area maps (showing clearing boundaries and exclusion zones) and updates as required. Inductions and training will be completed prior to commencement of work for all relevant personnel.	Construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
B7	The predicted clearing of native vegetation by the project identified in the Biodiversity Development Assessment Report will be monitored against the recorded clearing. A revised Biodiversity Assessment Method (BAM-C) calculation on the project's final disturbance to biodiversity post construction will be completed. Any additional credit liability identified will be met as part of the biodiversity offset requirements within the biodiversity offset package.	Construction	Construction area
B8	A species unexpected finds protocol will be implemented if threatened ecological communities or flora and fauna species not assessed in the biodiversity assessment are identified in the disturbance area.	Construction	Construction area
B9	Guidelines and procedures for maintenance of the project will be developed prior to and implemented during operation as part of the Operation Environmental Management Plan or equivalent. These guidelines and procedures will cover the following: — vegetation clearing and maintenance commitments in the Biodiversity Development Assessment Report and Environmental Impact Statement — avoiding access and disturbance in areas of high biodiversity conservation significance; outside of the areas required for construction — avoiding maintenance of vegetation that does not need to be maintained during operation.	Prior to operation	Operation area
B10	Vegetation rehabilitation will be completed in all areas of temporary construction through seedbank protection protocols, including: — retainment and stockpiling of topsoil during construction in a manner that does not caused degradation to seed viability — spreading of stockpiled topsoil in all temporary construction areas as soon as practicable.	Construction Post-construction	Construction areas
B11	Construction activities within features known to support Southern Bell Frog will be avoided during breeding season where practicable.	Construction	Irrigation channels and farm dams known to support breeding populations of Southern Bell Frog.
B12	Lighting designs will be in accordance with the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023e).	Detailed design	Operation area

Ref	Mitigation measure	Timing	Applicable locations
B13	Guidelines and procedures to reduce risk to waterbodies, water quality and hydrology within the project site will be developed and implemented and will include measures that: — control the erosion of the banks of irrigation channels during and following construction — control the sedimentation of waterbodies including human-made structures like irrigation channels, farm dams and table drains — limit changes in hydrology within the project site through micro-siting project features away from gilgai complexes where practicable, demarcating gilgai outside of the development footprint as 'no go zones' and limit vehicle movement during excessively wet periods to reduce risk of vehicle rutting.	Detailed design, construction, post-construction	Areas associated with waterbodies.
B14	Mitigation and monitoring measures will be developed and included in the Bird and Bat Adaptive Management Plan.	Detailed design Pre-construction Operational phase monitoring	Aerial habitats within the Rotor Swept Area
B15	Impacts to threatened and non-threatened fauna species will be mitigated through strict site policies including: — vehicle speed limited to 40 kilometres per hour within the project site — vehicle speed further reduced during wet weather and any required night works, to reduce the risk of vehicle strike with the threatened Southern Bell Frog — vehicle movements will be restricted to the final development footprint and established tracks only to reduce off-track impacts — construction activities will be limited to daylight hours to reduce risk to nocturnal fauna species.	Construction	Construction area
Aboriginal heritage			
AH1	All portions of artefact scatters and isolated finds that are to be directly impacted require surface collection and salvage prior to construction commencement in those areas.	Pre-construction	All locations
AH2	Hearths that are to be directly impacted will be subject to photographic recording and sampling of hearth material prior to disturbance.	Pre-construction	All locations
AH3	No areas of potential archaeological deposits will be impacted by the project.	Construction and operation	All locations
AH4	Retrieved archaeological materials will be stored in appropriate, secure facilities confirmed in consultation with the relevant Aboriginal stakeholders. The strategy for the long term conservation of salvaged or collected Aboriginal objects will be determined in consultation with the Registered Aboriginal Parties.	Construction and operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
AH5	Construction planning and management will make sure that indirect impacts that could potentially result in a loss of known heritage values due to harm will not occur. Indirect harm could result from physical disturbance from surface water drainage or construction workers driving over sites that are to be protected.	Construction and operation	Operation and maintenance facility
AH6	Aboriginal heritage exclusion zones will be established to protect sites, including known features/items of significance that have been identified and will remain in situ throughout construction	Pre-construction	All locations
AH7	Aboriginal heritage zones will be demarcated by a suitably qualified archaeologist in consultation with the Registered Aboriginal Parties prior to the commencement of construction at each location. Suitable controls include temporary site fencing and, where required, sediment control. Fencing will consist of high visibility construction style fencing that is not to be removed or altered during all works. Signage will be included to indicate no-go areas.	Pre-construction and construction	All locations
AH8	Aboriginal Cultural heritage awareness training will be carried out for all personnel working on the project prior to the personnel participating in construction activities. The training will cover features of heritage significance within and adjacent to project locations and project protocols that must be complied with to minimise and manage potential impacts to those features.	Pre-construction, construction and operation	All locations
AH9	If at any time during construction, any items of potential Aboriginal archaeological or cultural heritage significance outside previously recorded sites or potential archaeological deposits, or human remains are discovered, they will be managed in accordance with the Aboriginal Heritage Unexpected Finds Protocol in Appendix 5 of Technical paper 2 (Aboriginal cultural heritage assessment).	Construction	All locations
AH10	If at any time during construction, any items of potential Aboriginal archaeological or cultural heritage significance outside previously recorded sites are discovered at pinch points along the port to site haulage route, the unanticipated discovery protocols outlined in Appendix 2 of Technical paper 17 (Port to site due diligence archaeological assessment) will be followed.	Construction	Pinch points along the port to site haulage route.
Historic heritage			
HH1	In the event that historical archaeological relics not assessed or anticipated are found during construction, all works in the immediate vicinity will cease immediately, and a qualified archaeologist will be contacted to assess the area and provide advice before works resume.	Construction	All locations
HH2	Protocols for the unexpected discovery of archaeological material and/or suspected human remains will be followed during construction activities involving ground surface disturbance and excavation (refer to Appendix 1 of Technical paper 3 (Historic heritage assessment)).	Construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
Agriculture			
L1	To minimise disruption to agricultural activities: — the host landholder will be consulted regarding any required adjustments to property infrastructure (fences, access tracks, etc) and the proposed timing and location of construction works, especially where some restriction on vehicular or stock movements will be necessary. These requirements will be included in the Construction Environmental Management Plan and will be provided to the construction contractor — property infrastructure (such as gates) will be managed in accordance with host landholder requirements (provided access is not limited or restricted) — any damage to property infrastructure caused by construction will be repaired in a timely manner in consultation with the host landholder — use of existing roads, tracks and other existing disturbed areas will be prioritised, where practicable — where access is required across open spaces, care will be exercised to ensure that minimum damage is caused to the surface by confining vehicular or plant movement, as far as practicable, to one route.	Detailed design and construction	All locations
L2	Disturbed areas will be stabilised and appropriately rehabilitated to achieve as close as practicable pre-impacted condition as soon as practicable following the completion of construction work at each location.	Construction	All locations
L3	Procedures will be implemented so that potential impacts or conflicts between livestock and construction activities are appropriately managed. Procedures will be developed in consultation with the host landholder and will include management of: — noise intensive activities during sensitive periods within the livestock production cycle (such as lambing and calving) — vehicle movements and other activities within the vicinity of livestock — movement of stock away from potential stressors created by construction activities.	Construction and operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
L4	Construction and operation activities will conform to the biosecurity protocols pre-agreed with the host landholder including, as required: — recording of the name, location, date and time of visit for all persons entering the properties — project vehicles will be washed down prior to entering any agricultural areas, and vehicles will be washed down when moving between paddocks with known weed infestations — temporary or permanent fencing will be installed where required around facilities (such as the construction compound, concrete batching plants, materials storage and laydown areas and operation and maintenance facility) to conform to biosecurity protocols — new or existing infestations of any priority weed or unidentified weed will be reported to the appropriate weed management authority.	Construction and operation	All locations
L5	Where present, weeds will be managed in consultation with the host landholder.	Construction	All locations
L6	Fencing and access arrangements, such as locked gates and requirements for opening and closing of gates, will be determined in consultation with host landholder. Any damage caused by maintenance activities will be repaired promptly.	Operation	All locations
L7	Where present within the operational footprint, weeds will be managed in accordance with the *Biosecurity Act 2015* and the Murray Regional Strategic Weed Management Plan 2017–2022.	Operation	All locations
L8	The project site will be returned to pre-development condition at the end of the project's operational life in consultation with the host landholder. All above ground infrastructure will be removed. Hardstand surfaces, access tracks and other bare areas surplus to the host landholder's requirements will be rehabilitated to native pasture which may include addition of topsoil, restored drainage, and restoration of vegetation. Underground infrastructure (such as power lines and footings) will be removed to a depth of 500 millimetres below ground surface; however, may otherwise remain in consultation with the landholder. Any contamination or waste will be removed or managed in consultation with the host landholder and according to relevant legislation. Weed infestations will be controlled during the decommissioning process, if practicable.	Decommissioning	All locations
L9	Travelling stock reserves and Crown land will be managed in accordance with consultation with Crown Lands and Local Land Service.	Construction, operation and decommissioning	Maude Road

Ref	Mitigation measure	Timing	Applicable locations
Landscape character and visual amenity			
LV1	Screening vegetation and a private agreement will be offered for Dwelling 3 (Everslee) at 4026 Maude Road, Moulamein, between the dwelling and the wind turbine generators to supplement the existing intervening vegetation if agreed. Alternatively, a private agreement will be established between Neoen and the landholder.	Construction and operation	4026 Maude Road, Moulamein
LV2	Lighting at temporary construction compounds and the temporary workforce accommodation camp will be designed and operated in accordance with Australian and New Zealand Standard AS/NZ 4282:2023 Control of the obtrusive effects of outdoor lighting.	Construction	Road construction compound, construction workforce amenities and construction compound
LV3	Any operational lighting at the battery energy storage system will be designed in accordance with the Australian and New Zealand Standard AS/NZ 4282:2023 Control of the obtrusive effects of outdoor lighting, be minimised and sensors will be used where practicable to minimise light spill and skyglow.	Operation	BESS
LV4	To reduce the visual impact on the existing dark sky from permanent lighting installed at select wind turbine generators, the following measures will be implemented: — apply lighting principles from the National Light Pollution Guidelines for Wildlife (DCCEEW, 2023e), summarised as: — only add artificial light for specific and defined purposes, and only in the required location and for the specified duration — use smart control technology for better controlled and targeted artificial light management — light only the intended object or area – keep lights close to the ground, directed and shielded — use light intensity appropriate for the activity (only the minimum number and intensity of lights to meet the lighting objectives) — use non-reflective, dark-coloured surfaces — use lights with reduced or filtered-out blue, violet and ultraviolet wavelengths — install Australian Dark Sky Alliance approved light fittings where practicable.	Construction	Wind turbine generators

Ref	Mitigation measure	Timing	Applicable locations
Social			
SI1	Continue to implement a Community Engagement Plan. The plan will be reviewed on an annual basis with feedback from key stakeholders. The plan will include the following: — designation of a community engagement team or officer — establishment of effective communication channels to address community concerns while disseminating relevant information — implementation and management of the community benefit sharing scheme — monitor and publicly report progress and outcomes of social mitigation measures in an annual basis.	Pre-construction, construction	Local and regional social locality
SI2	Prepare and implement an Accommodation and Employment Strategy in consultation with relevant local councils to: — encourage local hiring through engagement with local employment agencies and via relevant local mediums of information — prioritise employment opportunities for local Aboriginal and/or Torres Strait Islander individuals to support their economic empowerment and inclusion — identify local skills gaps and possible initiatives for workforce training — propose measures to promote wellbeing of the workforce and a positive interaction with local community, that may include promoting workforce participation in community life (sports, events, volunteering), cultural awareness training, providing healthy food options and implementing health and safety assessments — provide details of how workforce will be accommodated during the construction of the project accommodation camp — provide opportunity for a nurse at workforce accommodation camp to avoid overburdening local health services — enable local housing for permanent staff to benefit the community and contribute to housing availability.	Pre-construction, construction and operation	Local and regional social locality

Ref	Mitigation measure	Timing	Applicable locations
SI3	Implement and coordinate an Emergency Response Strategy in collaboration with the Rural Fire Service. The strategy will involve: — implementation of a structured communication protocol between the Rural Fire Service, the construction contractor and Neoen. This measure aims to facilitate proactive dialogue and establish working relationships, enabling the exchange of insights, coordination of emergency response plans, and implementation of effective fire prevention strategies — implement preventive measures to avoid bushfires and other emergencies, such as clearing vegetation within a radius, to be determined during detailed, design around the wind turbine generators — maintain clear roads for emergency access, conducting regular maintenance on internal roads to mitigate damage from rain.	Pre-construction, construction and operation	Local and regional social locality
SI4	An Australian Industry Participation Plan (AIPP) will be prepared and implemented that will: — identify services and goods that could be sourced locally (quarry materials, catering, transport, cleaning, stationery) — identify the capacity of local and Indigenous businesses and suppliers to be ready for potential additional demand — provide local and Indigenous procurement targets — identify tailored 'meet-the-contractor' events for local and Aboriginal businesses to learn about potential opportunities associated with the delivery of the project — monitor the availability of key goods and services to the local community when procured locally.	Pre-construction, construction and operation	Local and regional social locality
SI5	A complaints management system will be maintained throughout the construction period and operation period. The complaints management system will include the following (at a minimum): — contact details for a phone line and email address for ongoing stakeholder contact throughout the project — details of all complaints received will be recorded — target timeframe for responding to complaints — verbal and written responses describing what action will be taken will be provided to the complainant (or as otherwise agreed by the complainant) — an avenue for escalating unresolved complaints.	Construction and operation	Local and regional social locality

Ref	Mitigation measure	Timing	Applicable locations
SI6	Neoen will participate and collaborate in the Renewable Energy Zone Industry Reference or Working Group (if established) to: — coordinate benefit sharing efforts among renewable energy developers within the Renewable Energy Zone — collaborate with renewable energy developers in the area to address cumulative impacts related to service provision, transportation, and road maintenance.	Construction and operation	Local and regional social locality
SI7	Neoen's financial contributions to a Community Benefit Sharing Scheme will be consistent with the Benefit Sharing Guideline (DPHI, 2024b). In the case of Tchelery Wind Farm, the total contribution will be $1,050 per megawatt per year based on actual installed capacity, paid over the life of the development, and indexed to the greater of Consumer Price Index, and 2.5 per cent. Neoen's contribution to the Community Benefit Sharing Scheme will be distributed into two streams: — a Community Benefit Fund, administered by the Council(s) under a Planning Agreement — Community Initiatives, including legacy initiatives, to be tailored to local feedback and administered by Community Enterprise Foundation (the philanthropic arm of Bendigo and Adelaide Bank). These decisions would be made by a Local Advisory Committee, which would consist of representatives from the Council(s), community and Neoen. Initiatives that may be included in the program can be focussed on following growth areas: — arts, culture and events — disaster relief and emergency services: — education and training — energy efficiency and environment — First Nations — health and well-being.	Construction and operation	Local and regional social locality
Economic			
EC1	Prior to commencing construction and responding to actual regional demands at that time, Neoen will prepare an accommodation strategy for the project in consultation with relevant stakeholders. This strategy will include the following: — plans to ensure there is sufficient accommodation for the peak workforce associated with the construction phase of the project — measures to address any specific cumulative impacts arising associated with concurrent infrastructure projects under construction in the economic study area.	Pre-construction and construction	Economic study area

Ref	Mitigation measure	Timing	Applicable locations
EC2	A local workforce strategy (if required) will be developed for the project in collaboration with local councils and key stakeholders. This strategy will encompass, but not be limited to: — maximising employment prospects for residents in the economic study area, including plans to inform local communities about opportunities and obligations regarding project-related work both before and during construction — implementing and evaluating strategies for training and apprenticeships tailored for Aboriginal people, youth, and women. This involves consulting with local contractors and relevant stakeholders such as Aboriginal groups, youth organisations, and women's groups to identify and create suitable training and educational pathways — establishing communication channels with local councils in the economic study area concerning workforce numbers and scheduling for both construction and operational phases — devising strategies to mitigate the potential displacement of workers from existing industries.	Pre-construction, construction and operation	Economic study area
EC3	To mitigate potential impacts on business and industry, the project will: — prioritise local business opportunities in project procurement practices and encourage contractors to prioritise the sourcing of local goods and services whenever feasible — collaborate with economic study area councils and business associations to address local business needs and identify necessary skills for enhancing local business readiness — assess the needs in the economic study area and, based on this, explore the implementation of training programs to enhance local skills and boost the availability of local labour.	Pre-construction, construction and operation	Economic study area
Hydrology, flooding and water quality			
FL1	Infrastructure and landforms within the limit of works will be designed and implemented/formed with drainage works and away from existing watercourses where practicable to minimise potential scour and erosion risks associated and geomorphological changes to watercourses from surface water runoff.	Construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
FL2	Detailed construction planning will consider flood risk at construction areas. This will include: — identifying of measures that will be implemented to not worsen flood impacts of any temporary construction facilities downstream and on any habitable property and infrastructure during construction up to and including the five per cent annual exceedance probability design flood event — confirming project site layouts avoid or minimise, to the fullest extent practicable, obstruction of overland flow paths and to limit the extent of flow diversion required — ensure local drainage is included in earthworks design for the compound site — bund stockpiles to protect from inundation and minimise the storage of materials susceptible to damage by water — locate stockpiles on higher ground within the site compound, where practicable — prepare a Flood Emergency Management Plan that provides the project site with specific actions to take should a flood warning be issued for the Edward River. This will include moving equipment to higher ground or raising equipment.	Construction	All locations
FL3	Water supply options and management will be carried out in accordance with agreements between the construction contractor and the relevant landholder. These agreements will be in place prior to construction and will be evidenced with consultation between the relevant landholder and the contractor.	Construction	All locations containing construction camp
FL4	A Soil and Water Management sub-plan to the Construction Environmental Management Plan will be developed and implemented in consultation with a Certified Professional in Erosion and Sediment Control during construction. The plan will detail the processes, responsibilities and measures to manage potential soil and water quality impacts in accordance with the principles and requirements in: — Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom 2004), and Volumes 2A and 2C (NSW Department of Environment, Climate Change and Water 2008), commonly referred to as the ‘Blue Book’ — Best Practice Erosion and Sediment Control (IECA – 2008) — Guidelines for Controlled Activities on Waterfront Land (NRA, 2018).	Construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
Air quality			
AQ1	Access tracks will be clearly marked and maintained.	Construction	All locations
AQ2	Speed limits for construction vehicles and equipment will be implemented on unsealed access tracks and hardstand areas.	Pre-construction and construction	All locations
AQ3	Any material spilled will be promptly cleaned up.	Pre-construction and construction	All locations
AQ4	Clearing and ground disturbance will be kept to the minimum necessary and progressively rehabilitated as construction is completed in each location, where practicable.	Construction	All locations
AQ5	Stockpiles will be located, shaped and seeded for longer term topsoil stockpiles in a strategic manner to minimise dust erosion from exposed surfaces.	Construction	All locations
AQ6	Dust controls will be used (such as water sprays or dust capture systems) for construction phase concrete batching plant and crushing and screening plant.	Construction	All locations
AQ7	Regular inspections/audits will be conducted to monitor air quality controls during construction.	Construction	All locations
AQ8	All loads will be covered when transporting loose material off site.	Pre-construction and construction	All locations
GHG1	Equipment and vehicles will be regularly serviced and maintained to optimise efficiency.	Pre-construction, construction and operation	All locations
GHG2	Fuel and energy efficient equipment and vehicles will be selected, where practicable.	Pre-construction and construction	All locations
GHG3	Options will be reviewed to consider use of alternative materials in construction to concrete, such as fly ash as a supplementary cementitious material and reclaimed aggregate.	Detailed design	All locations
GHG4	Steel with high recycled content will be utilised where technically practicable and cost effective.	Detailed design, pre-construction, construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
Noise and vibration			
NV1	As part of development of the design refinement and construction methodology, all reasonable and feasible mitigation measures will be considered, confirmed and implemented to minimise construction noise impacts and to avoid exceedances of the applicable noise goals at adjacent sensitive receivers where practicable. Measures that may achieve this outcome may include, but not limited to the following: — portable temporary noise screens will be erected adjacent to stationary or long term static noise sources, or noise generating items, where reasonable and feasible — spotters, 'smart' reversing alarms, or broadband reversing alarms will be used in place of traditional tonal beeper reversing alarms, particularly on equipment where reversing alarms are frequently in use such as rollers, loaders or compactors, where required and reasonable, and there is no risk to safety — noise source controls, such as the use of the adequate class mufflers, will be used reduce noise from all plant including cranes, excavators and trucks, where required and reasonable — the offset distance between noisy plant items and sensitive receivers will be maximised, where reasonable and feasible — machinery will be operated in a manner which reduces maximum noise level events such as shaking excavator buckets, dropping materials into trucks from a height or steel on steel contact, where required — construction plant and equipment will be turned off when not in use.	Detailed design/ pre-construction/ construction	All locations where exceedances of the applicable construction noise criteria are predicted at nearby sensitive receivers
NV2	Opportunities to reduce exceedances of the applicable construction noise goals through the implementation of administrative controls will be examined, confirmed and implemented where reasonable and feasible. Controls to be considered will include, but not limited to the following: — environmental awareness training and inductions for site personnel will include noise mitigation techniques/measures to be implemented when on site and accessing the project site — noise-intensive works will be limited to less sensitive construction hours (ie away from early morning and late afternoon periods) as far as practicable, when working in the vicinity of sensitive receivers — plant and equipment will be well maintained to ensure that excessive noise is not generated — for any works outside standard work hours an out of hours works protocol will be developed to mitigate any identified impacts.	Detailed design/ pre-construction/ construction	All locations where exceedances of the applicable construction noise are predicted at nearby sensitive receivers

Ref	Mitigation measure	Timing	Applicable locations
NV3	Opportunities to reduce the impacts associated with construction noise levels through the implementation of proactive community consultation will be examined, confirmed and implemented where reasonable and feasible. Controls to be considered will include, but not limited to the following: — sensitive receivers potentially affected by the works will be notified of the commencement of construction activities at least five days prior to works starting. The notification will describe the nature of and duration of works, expected noise levels and details of where sensitive receivers can contact project representatives — the community will be kept regularly informed of noise intensive activities in the immediate area — if genuine noise complaints are received, the complainant will be offered the opportunity for noise monitoring to be carried out to confirm the noise level at the receiver. Where the noise monitoring confirms that the applicable noise predictions are being exceeded, the construction methodology will be reviewed and changes implemented to reduce construction noise levels to be compliant with noise predictions where reasonable and feasible.	Pre-construction	All locations where exceedances of the applicable construction noise criteria are predicted at nearby sensitive receivers.
NV4	In consultation with Baldon Wind Farm, where reasonable and feasible: — plan noisy construction activities and avoid simultaneous noisy construction works where impacts are predicted — plan periods of high traffic generation and/or the delivery of oversized plant or structures.	Pre-construction/ construction	All locations
NV5	Vibration sensitive Aboriginal heritage items that have potential to be impacted by the project works will be confirmed prior to the commencement of vibration generating works in proximity to relevant structures. Suitable, item specific criteria will be developed for heritage items and vibration impacts at these locations will be managed before commencement of construction. This may include the use of alternative construction methods that generate lower levels of ground vibration and the installation of vibration monitors while vibration intensive activities are conducted.	Detailed design	All heritage items where exceedance of the applicable vibration criteria are predicted
NV6	Pre-construction noise modelling of the wind turbine generators will be conducted to ensure compliance with the project criteria established by the Secretary's Environmental Assessment Requirements.	Pre-construction	Wind turbine generators
NV7	Pre-construction noise modelling of the Battery Energy Storage System and ancillary infrastructure will be conducted to ensure ongoing compliance with project criteria established by the Secretary's Environmental Assessment Requirements.	Pre-construction	Battery energy storage system and ancillary infrastructure

Ref	Mitigation measure	Timing	Applicable locations
Traffic and access			
T1	All accesses will be designed to accommodate the design vehicle(s) requiring access, and in accordance with relevant Austroads guidelines (where applicable). Intersection and access point upgrades will include the following (with localised widening, sealing and modifications required to both Maude Road and Booroorban-Tchelery Road): — Maude Road/Sturt Highway — Maude Road/Booroorban-Tchelery Road — Maude Road/Entrance 1 — Maude Road/Entrance 2 — Maude Road/Site Compound — Maude Road/Entrance 3 — Maude Road/Entrance 4 — Maude Road/Entrance 5 — Booroorban-Tchelery Road/Entrance 6 — Booroorban-Tchelery Road/Entrance 7 — Booroorban-Tchelery Road/Entrance 8 — Booroorban-Tchelery Road/Entrance 9.	Detailed design	Project site access Along oversize overmass vehicle construction routes (where/if required)
T2	Traffic control plans will be prepared in consultation with the relevant road authorities. The plans will be implemented by licenced traffic management contractors. Necessary road occupancy licences and road related work approvals will be obtained prior to the commencement of relevant works.	Construction	Construction routes, access tracks, construction compound and workforce accommodation camp accesses
T3	All accesses will be designed to accommodate the required construction vehicle(s) requiring access, and in accordance with relevant Austroads guidelines (where applicable). Road safety audits and routine inspections will be completed on a regular basis.	Construction	Construction routes, access tracks, construction compound and workforce accommodation camp accesses

Ref	Mitigation measure	Timing	Applicable locations
T4	The following road safety measures will be implemented with regard to driver management during construction: — a Driver Code of Conduct will be developed and implemented. The code will define acceptable driver behaviour for proposal personnel to promote road safety and ensure that the impacts of construction-related vehicle movements on local roads and the local community are minimised — in-vehicle monitoring systems (IVMS) will be installed in relevant vehicles to monitor load limits and fatigue management — a Driver Fatigue Management Plan will be developed and implemented as part of the Construction Environmental Management Plan, and will incorporate appropriate measures to manage driver fatigue risks, including, but not limited to: — planning of regular breaks — mapping locations of driver rest areas along the proposed construction routes.	Construction	Construction routes, access tracks, construction compound and workforce accommodation camp accesses
T5	Access tracks used for construction sites, construction compounds and the workforce accommodation camp will be maintained to safe standard.	Construction	Access tracks
T6	Pre- and post-construction road dilapidation surveys and regular monitoring during construction will be completed along all nominated construction routes on local roads. Where rectification works are required due to project impacts, consultation with the appropriate road authority will be carried out to confirm the scope of the work required.	Pre-construction Construction	Local roads
T7	Road Occupancy Licence(s) will be sought for all temporary lane closures (as required). Where road closures are likely to result in a significant traffic impact (for example short term full road closure and long term temporary lane/road closures), prior consultation will be carried out with potentially affected stakeholders (for example landowners, emergency services, transport services) and relevant approval(s) obtained from the relevant roads authority. Where feasible, temporary road closures will be planned to occur outside of the traffic peak periods to minimise impacts to the road network.	Construction	Construction routes Stringing sites

Ref	Mitigation measure	Timing	Applicable locations
T8	Access to host and neighbouring properties will be maintained throughout construction where feasible. Where that is not feasible, temporary alternative access arrangements will be provided following consultation with affected landholders and in accordance with the requirements of the pre-construction and construction Community Engagement Plan. Disruptions to property access and traffic will be notified to affected landholders at least five days prior and in accordance with the relevant community consultation processes outlined in the Construction Environmental Management Plan.	Construction	All areas affected by construction
T9	Safe pedestrian and cyclist access will be maintained where the project interacts with existing pedestrian or bicycle facilities. Where this is not feasible, temporary alternative access arrangements will be provided following consultation with affected stakeholders and the relevant roads authority.	Construction	Areas affected by construction that may apply to the project site internally
T10	A Vehicle Movement Plan will be prepared that identifies the construction vehicle route(s) (including oversize overmass vehicle routes) to be used during construction. The Vehicle Movement Plan will also include details of activities of adjoining land uses and awareness of public safety measures (for example entering urban areas from the highways) to provide guidance to drivers of construction vehicles travelling to and from project locations. Ongoing consultation will be carried out with Transport for NSW regarding the use of State roads for oversize overmass vehicle routes.	Construction	Construction routes
T11	The following maintenance and safety measures will be implemented at relevant locations along each of the access tracks, construction compounds and workforce accommodation camp access: — appropriate line marking and signage at access points — wheel cleaning facility as required at access points/intersections — signage to indicate trucks turning — monitoring of vehicle queuing at project site access intersections along the public road network — potential use of road plates, propping (or similar) over culverts where required — improvements to existing roads at new access points which may include importing or stabilising material if required.	Construction	Access tracks
TP12	Further analysis of sign gantries along Port River Expressway and Port Wakefield Road will occur to ensure safe clearance for oversize overmass vehicles from travel from Port Adelaide.	Detailed planning	Construction routes

Ref	Mitigation measure	Timing	Applicable locations
Hazards and risk			
AV1	Details of wind turbine generators exceeding 100 metres above ground level will be reported to Civil Aviation Safety Authority as soon as practicable after forming the intention to construct or erect the proposed object or structure, in accordance with Civil Aviation Safety Regulation 1998 Part 139.165(1)(2).	Pre-construction	All wind turbine generators and wind monitoring towers
AV2	'As constructed' details of wind turbine generator coordinates and elevation will be provided to Airservices Australia, by submitting the form at this webpage: https://www.airservicesaustralia.com/wp-content/uploads/ATS-FORM-0085_Vertical_Obstruction_Data_Form.pdf to the following email address: vod@airservicesaustralia.com	Construction and post construction	All wind turbine generators and wind monitoring towers
AV3	Any obstacles above 100 metres above ground level (including temporary construction equipment) will be reported to Airservices Australia Notice to Airmen office until they are incorporated in published operational documents. With respect to crane operations during construction of the project, a notification to the Notice to Airmen office will include, for example, the following details: — the planned operational timeframe and maximum height of the crane; and — either the general area within which the crane will operate and/or the planned route with timelines that crane operations will follow.	Construction	All locations
AV4	Details of the wind farm will 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.	Pre-construction	All locations
AV5	To facilitate the flight planning of aerial application operators, details of the project, including the 'as constructed' location and height information of wind turbine generators and overhead transmission lines will be provided to landholders so that, when asked for hazard information on their property, the landholder may provide the aerial application pilot with all relevant information.	Construction and operation	All locations
AV6	The rotor blades, nacelle and the supporting tower of the wind turbine generators will be painted non-reflective off-white, typical of most wind turbine generators operational in Australia. No additional marking measures are required for wind turbine generators.	Pre-construction	All wind turbine generators

Ref	Mitigation measure	Timing	Applicable locations
AV7	The following markings will be implemented in consideration of potential day visual flight rules aerial work operations in accordance with National Airspace Safeguarding Framework Guideline D: — obstacle marking for at least the top third of the tower and be painted in alternating contrasting bands of colour — marker balls or high visibility flags or high visibility sleeves placed on the outside guy wires — guy wire ground attachment points in contrasting colours to the surrounding ground/vegetation.	Pre-construction, construction	Wind monitoring towers
AV8	Lighting of wind turbine generators and ancillary infrastructure will be designed to minimise potential amenity impacts by using the lowest intensity lighting suitable for the site: — lighting is required for the most critical wind turbine generators (for example turbines at highest elevations and/or around the project perimeter) — lighting of turbines and ancillary infrastructure will be designed to minimise potential amenity impacts by using the lowest intensity lighting suitable for the site. Consultation with Civil Aviation Safety Authority and Airservices Australia would inform the lighting plan.	Pre-construction	All wind turbine generators and wind monitoring towers
AV9	Transmission lines and/or supporting poles that are located where they could adversely affect aerial application operations will be identified in consultation with local aerial application operators and marked in accordance with Civil Aviation Safety Regulation 1998 Part 139 Manual of Standards 2019 Chapter 8 Division 10 Section 8.110 (7) and Section 8.110 (8).	Pre-construction	Overhead transmission line locations
AV10	The applicant or operator will consider the guidance contained in the National Council for Fire and Emergency Services 'Wind Farms and Bushfire Operations' (AFAC, 2018) to ensure: — liaison with the relevant fire and land management agencies is ongoing and effective — access is available to the site by emergency services for on-ground firefighting operations — wind turbines are shut down immediately during emergency operations — where practicable, blades will be stopped in the 'Y' or 'rabbit ear' position, as this positioning allows for the maximum airspace for aircraft to manoeuvre underneath the blades and removes one of the blades as a potential obstacle.	Construction and operation	All wind turbine generators and wind monitoring towers

Ref	Mitigation measure	Timing	Applicable locations
AV11	The following triggers for review of the risk assessment will be considered: — prior to construction to ensure the regulatory framework has not changed — following any significant changes to the context in which the assessment was prepared — following any near miss, incident or accident associated with operations considered in this risk assessment.	Construction and operation	All wind turbine generators and wind monitoring towers
BF1	A comprehensive Bushfire Emergency Management and Evacuation Plan will be prepared in consultation with local Rural Fire Service District Office and Fire Rescue NSW, in accordance with NSW Rural Fire Service's Guide to Developing a Bushfire Emergency Management and Evacuation Plan (2014) and meet the requirements of Australian Standard AS3745-2010 Planning for Emergencies in facilities. The Bushfire Emergency Management and Evacuation Plan will inform operational and emergency management practices at the facility, effectively describe all fire hazards and provide clear actions and accountabilities for their management, including: — protocols for the relocation of workers to nominated safe refuge zones during a bushfire emergency, either within or remote to the work zone (Bushfire Emergency Management and Evacuation Plan) — emergency procedures for fires within, and in the vicinity of, wind turbines — protocols for the management of bushfire risk and fuel management during construction and operation. This will include the restriction and/or prevention of certain activities that present bushfire risks on days with a fire danger rating of equal to or greater than 'high', and as directed by relevant State authorities, and maximum (safe) operational wind speed and temperature conditions and operating procedures to limit fire risk — training to inform workers of bushfire risks and preventative actions, including risks associated with the operation (and maintenance) of vehicles, plant and equipment — site infrastructure plan, including water supply — site access and internal access track plan — location of asset protection zones and their continued maintenance protocols — location of hazards (physical, chemical) that may impact firefighting operations.	Pre-construction, construction and operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
BF2	The Construction Environmental Management Plan will also include strategies and measures for: — management of hazardous materials and dangerous goods — management of other hazards and risks to the general public and the environment.	Pre-construction and Construction	All locations
BF3	To effectively manage and mitigate ignition and fire risk from activities such as hot works, high risk fire tasks, vegetation clearing and management and onsite operation of vehicles, contractors will need to implement the following bushfire mitigation measures: — two mobile water supplies with a minimum capacity of 500 litres each (for example tanks on utes or standalone tankers) will be made available on-site — during the Bushfire Danger Period (usually October to April), the use of construction equipment, slashers and mulching machines in areas where rock is known to occur or excessive grass has built up, will be accompanied by the mobile water supply, equipped with a pump and hose — requirements from Rural Fire Service and Total Fire Ban will be strictly followed — precaution will be used during all external hot works with shielding and a water supply (ie mobile water supply or fire extinguisher) provided — motor vehicles will not be driven across long cured (dry) vegetation (grass and crops) and will be equipped with a nine kilogram water fire extinguisher — operators of diesel-powered trucks will be made aware of the risk of ignition of vegetation posed by the exhaust emission system. These trucks will be equipped with a nine kilogram water fire extinguisher — electrical equipment used during construction will be checked for potential faults — chemicals will be managed and stored in accordance with safety data sheet requirements — management protocols will be introduced to reduce the risk of ignition from discarded cigarettes — first-aid equipment will be provided, such as fire extinguishers (and where possible, portable fire hose reels at all construction portables/buildings on site), in the vicinity of all construction activities and in site-based vehicles.	Construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
BF4	Asset protection zones for critical asset areas are to be established in accordance with Figure 10 and Table 8 of Technical paper 12 (Bushfire risk assessment) as follows: — wind turbine generators: Ranging from five to 13 metres, with a 50 metre broader managed area around each wind turbine generator — battery energy storage system: 22 metres — batching plant: 15 metres — collector substation: 15 metres — construction compound: 15 metres — workforce accommodation camp: 15 metres — laydown area: 15 metres — operations and maintenance facility: 15 metres — switchyard: 22 metres — southwestern collector substation: 22 metres — western batching plant: 15 metres — western collector substation: 22 metres.	Construction and Operation	Wind turbine generators
BF5	The asset protection zones will must be maintained to the standards of an Inner Protection Area for the life of the project.	Construction and operation	All locations
BF6	Essential equipment will be designed and housed in such a way as to minimise the impact of bushfires on the capabilities of the infrastructure during bushfire emergencies. It will also be designed and maintained so that it will not serve as a bushfire risk to surrounding vegetation.	Pre-construction, construction and operation	All locations
BF7	Static water supply will be provided as two mobile water supplies with a minimum capacity of 500 litres each (for example tanks on utes or standalone tankers) will be made available on-site during operation.	Operation	All locations
BF8	Air Services Australia will be notified of the locations of meteorological masts to be recorded in the Tall Structures Database. Warning lights or visible markers (such as orange balls) will be installed on all masts to minimise risks during aerial firefighting operations.	Construction and operation	Meteorological masts
BF9	Protocols will be established for the rapid shut down of wind turbine generators in emergency situations identifying who has the authority to direct turbine shut-down procedures.	Operation	Wind turbine generators
BF10	Essential equipment will be designed and housed in such a way as to minimise the impact of bushfires on the capabilities of the infrastructure during bushfire emergencies. It will also be designed and maintained so that it will not serve as a bushfire risk to surrounding vegetation.	Pre-construction	All locations

Ref	Mitigation measure	Timing	Applicable locations
BF11	The actual location of the workforce accommodation camp (and other structures such as site offices, operation and maintenance building and material storage) will be confirmed as the design is refined, the asset protection zones will be large enough in most circumstances to allow placement of these buildings at less than 19 kilowatts of radiant heat. Any refuge buildings will be beyond 10 kilowatts of radiant heat. It is recommended buildings used for accommodation within 100 metres of bushfire prone vegetation are constructed to comply with AS3959 – Construction of buildings in bushfire-prone areas.	Pre-construction	All locations
TC1	The Bureau of Meteorology will be consulted as follows: — inform the Bureau of any changes in the wind farm, including varying the layout of the farm, changing the location of a turbine more than 100 metres, or altering turbine height — inform the Bureau at least two weeks, if practical, before any planned shut-down of the wind farm (for maintenance or any other reason) so that the Bureau may calibrate its weather radar system — collaborate with the Bureau in the event of severe weather conditions to assist in matters of community safety.	Construction and operation	All locations
TC2	If the construction activities are to impact any of the existing survey marks, the proponent will seek assistance from registered surveyor to move or remove the survey marks in consultation with the NSW Government via the following website: https://www.spatial.nsw.gov.au/surveying.	Construction	All locations
TC3	If a change is required to the project layout, the recommended buffers of the telecommunication services must be maintained to avoid any impact.	Construction and operation	All locations
TC4	Neoen will offer a private agreement with homeowners should satellite services be impacted by the project.	Construction and operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
HM1	The selection process will consider that the battery energy storage system will be: — designed and constructed to meet the requirements of Underwriters Laboratory 9540 Standard for Safety of Energy Storage Systems and Equipment (UL 9540) (Underwriters Laboratory, 2022) — design so that configuration of the lithium-ion batteries modules for the 'as constructed' project will be consistent with a configuration determined by the Underwriters Laboratory 9540A testing to achieve no propagation — has been subject to rigorous factory acceptance testing prior to dispatch from the supplier — has incorporated adequate instrumentation, interlocks and alarms to minimise the risk of the lithium-ion batteries incubation period (the time at a particular temperature at which thermal runaway is likely to initiate) being approached by shutting down modules/racks and alarming unsafe temperatures or other unsafe conditions such as: — loss of cooling — charge/discharge voltage or current outside design parameters — internal electrical resistance outside design parameters during charging or discharge — rack fail-to-trip detected — inverter/charge fail-to-trip detected — designed to maintain separation distances between containers to reduce the risk of accident propagation in accordance with manufacturer's instructions, appropriate standards/guidelines that may include National Fire Protection Association 855 Standard for the Installation of Stationary Energy Storage Systems (NFPA 855) (National Fire Protection Association, 2022) and Property Loss Prevention Data Sheet 5-33 Lithium-Ion Battery Energy Storage Systems (FM Global, 2023) and in line with testing conditions set during type testing for Underwriters Laboratory 9540A.	Pre-construction	Battery energy storage system
HM2	The project will require an effective fire suppression plan that can be implemented over the full duration of the fire event should the fire safety strategy involve suppression (for example as per Property Loss Prevention Data Sheet 5-33 Lithium-Ion Battery Energy Storage Systems (FM Global, 2023) requirements).	Construction and operation	Battery energy storage system
HM3	The project will incorporate lightning protection at the site to reduce the risk of lightning initiating a lithium-ion batteries hazard event.	Pre-construction	Battery energy storage system

Ref	Mitigation measure	Timing	Applicable locations
HM4	The battery energy storage system will have external visual and audible alarms that will be initiated should the battery management system detect a thermal runaway event.	Construction and operation	Battery energy storage system
HM5	The site will be equipped with adequate fire safety systems (for example provision of fire water tanks, hydrant booster sets and fire water containment) that will be determined following completion of detailed design, and the bushfire assessment and the Fire Safety Study.	Construction and operation	All locations, specially battery energy storage system
HM6	Battery energy storage system area will be designed to ensure emergency services will have clear access and egress to all areas of the site (including alternate access and egress routes) that may require an emergency response.	Pre-construction	Battery energy storage system
HM7	The substation and transformers will be designed, installed, operated and maintained in accordance with: — Australian/New Zealand Standard AS/NZS 60076.1:2014 Power transformers General — Australian/New Zealand Standard AS/NZS 60076.2:2013 Power transformers Temperature rise for liquid immersed transformers — Australian/New Zealand Standard AS/NZS 60076.5:2012 Insulated bushings for alternating voltages above 1000 V — Australian/New Zealand Standard AS/NZS 60076.6:2013 Power transformers Loading guide for oil-immersed power transformers — Australian Standard AS 60296:2017 Fluids for electrotechnical applications – Unused mineral insulating oils for transformers and switchgear — Australian Standard AS 2067-2016 Substation and High Voltage Installations exceeding 1 kV AC. — Australian Standard AS 2374.8-2000 Power Transformers – Application Guide.	Pre-construction, construction and operation	Substation location
HM8	Final Hazard Analysis (FHA) will be completed for the project after final design is complete to reflect changes in the project layout and equipment selection.	Pre-construction	All locations
HM9	Lithium-ion batteries will be transported to site by a suitably accredited freight company using dangerous goods licensed vehicles and drivers.	Pre-construction	Port to site haulage route

Ref	Mitigation measure	Timing	Applicable locations
HM10	A Fire Safety Study will be prepared in accordance with the guidelines of Hazardous Industry Planning Advisory Paper 2 (DoP, 2011e) and will: — address the requirements of Fire and Rescue NSW's Large-scale external lithium-ion battery energy storage systems – Fire safety study considerations — consider the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence — consider the requirements of the Fire Management Plan that will be prepared in consultation with NSW Rural Fire Service. The Fire Management Plan describes the methods and resources needed to manage and extinguish lithium battery fires and the management of a defendable asset protection zone as described in Planning for Bush Fire Protection 2019.	Pre-construction	All locations
HM11	The Fire Safety Study will inform the requirements of an Emergency Plan that will be prepared in accordance with Hazardous Industry Planning Advisory Paper 1 (DoP, 2011f) in consultation with relevant emergency services organisations (ie Fire and Rescue NSW, NSW Rural Fire Service, NSW Ambulance and relevant local emergency management services). The Emergency Plan will inform the requirements of an Emergency Services Information Package (ESIP) that will be prepared in accordance with Fire and Rescue NSW Fire Safety Guidelines – Emergency services information package and tactical fire plans (FRNSW, 2019). Both the Emergency Plan and EP and the Emergency Services Information Package will: — inform first responders of site-specific features and safety measures required to ensure they are able to undertake their duties effectively — include agency-specific standard operational guidelines.	Construction and operation	All locations
HM12	First responders will be made aware of hazards (including those specific to lithium-ion batteries and electrical hazards that pose a threat during emergency response) and appropriate responses to hazardous events in post construction inductions for first responders.	Construction and operation	All locations
HM13	Site security will include perimeter fencing and closed-circuit television monitoring of the battery energy storage system facility entrance and electrical substation.	Construction and operation	Battery energy storage system and substation areas
HM14	An exclusion zone for combustible materials (including vegetation) will be maintained within of 20 metres around all substation equipment to reduce the risk of fire propagation from or to the transformers.	Operation	Substation
HM15	On-site vehicle speed and traffic flow directions within the site will be managed based on the assessment of on-site hazards and the location of the battery energy storage system, switchroom and control room.	Construction and operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
HM16	Training will be provided for all personnel responsible for operations, maintenance and emergency response.	Construction and operation	All locations
HM17	Hot work/safe work procedures will be prepared for any maintenance works on battery energy storage system or electrical transformers.	Operation	Battery energy storage system and Substation
HM18	Routine preventative maintenance, interlock testing and condition monitoring (for example thermography, insulating oil analysis) of battery energy storage system lithium-ion batteries modules and electrical transformers will be carried out.	Operation	Battery energy storage system and substation
HM19	All waste batteries will be disposed of in a safe and responsible manner by suitably licensed waste contractors.	Operation and decommissioning	Battery energy storage system
HM20	Consultation with adjacent landholders and associated dwellings will occur to ensure they are aware of the hazards associated with the battery energy storage system and understand the emergency systems and protocols (visual and audible alarms, communications from site, evacuation plans) that will be implemented in the event of a thermal runaway event. The outcome of this consultation will be reflected in the Emergency Management Plan that will be completed provided approval for the project is granted.	Operation	Relevant adjacent properties
BT1	The final design and equipment selection for the windfarm will be subject to a Final Hazard Analysis (FHA).	Pre-construction	All locations
Soils and contamination			
SC1	Wind turbine generator structure foundations, and ancillary construction sites will be positioned to avoid disturbance to any known farm dams, where practicable.	Detailed design and pre-construction	All wind turbine generator locations
SC2	Disturbance to areas of medium risk of contamination will be avoided or minimised where practicable during construction. This includes the position of wind turbine generator foundations and other structural features. Areas of medium risk of contamination that will be disturbed by construction activities will be further investigated including completion of a site inspection. Where considered to be required, a Phase 2 investigation will be completed in accordance with National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended in 2013. Mitigation measures identified through phase 2 investigations will be implemented for the project.	Detailed design and pre-construction	Locations mapped as medium risk for contamination
SC3	Prior to ground disturbance in areas of potential acid sulfate soils occurrence (for example in low-lying areas surrounding former or current lakes and riverbeds), testing will be carried out to determine the presence of actual and/or potential acid sulfate soil. If acid sulfate soils are encountered, they will be managed in accordance with the Acid Sulfate Soil Manual (ASSMAC, 1998) and Neoen HSE Guideline.	Pre-construction and construction	Locations containing potential acid sulfate soils or acid sulfate soils

Ref	Mitigation measure	Timing	Applicable locations
SC4	Prior to ground disturbance, a visual inspection will be carried out in accordance with the Department of Land and Water Conservation (2002) Site investigations for urban salinity for the presence of saline soils. Areas where evidence of salting is observed will be subject to further testing as required. If salinity is confirmed, excavated soils will be managed in accordance with Book 4 Dryland Salinity: Productive use of Saline Land and Water (DECC, 2008a) to prevent impacts from salinity. Erosion controls will be implemented in accordance with Blue Book (Landcom, 2004). The re-use of excavated saline soils in low salinity areas will be prevented.	Pre-construction and construction	All locations
SC5	During ground disturbance, excavated material will be segregated as per the different encountered soil layers (ie topsoil, natural) and stockpiled for subsequent backfilling purposes. Topsoil will be separated to ensure placement at ground level during backfilling.	Construction	All locations
SC6	The discovery of previously unidentified contaminated material will be managed in accordance with a contamination unexpected finds protocol (refer to Appendix A of Technical paper 15 (Soils and contamination impact assessment)).	Construction	All locations
SC7	Construction materials, spoil and waste will be suitably stored to minimise the potential for soil, groundwater or water quality impacts. More specifically with reference to the guidelines specified in managing Urban Stormwater: Soils and construction (Landcom, 2004). Erosion and sediment controls will be developed and implemented to mitigate any runoff or infiltration impacts.	Construction	All locations
SC8	All chemicals, fuels or other hazardous substances will be stored in accordance with the supplier's instructions and relevant legislation, Australian Standards and applicable guidelines. The location of the bunded enclosures will be shown on site plans.	Construction and operation	All locations
SC10	Emergency spill procedures will be implemented to avoid and manage accidental spillages of fuels, chemicals or fluids during operation and maintenance activities in accordance with the Neoen Health, Safety and Environment Guideline. Environmental spill kits will be provided at strategic, accessible locations, and staff will be trained in spill response procedures.	Construction and operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
Groundwater			
GW1	A Soil and Water Management sub-plan will be prepared as part of the Construction Environmental Management Plan and contain details of appropriate measures if groundwater is encountered during construction. The sub-plan will include but is not limited to: — appropriate design of fuel and oil storage areas — use nominated and bunded fuel and chemical storage areas — provision of spill kits for cleaning up chemical, oil and fuel spillages — training for personnel — procedure for managing any intercepted shallow groundwater — procedures for soil storage (including any potential contaminated soil) and erosion control.	Pre-construction	All locations
GW2	In the event that groundwater is encountered during excavations, any dewatering volumes will be recorded and managed in accordance with the *Water Management Act 2000*.	Construction	Areas of intercepted groundwater
GW3	If groundwater is to be used as a water supply during construction, it will be from existing groundwater bores. Extraction volumes from water supply bores will be licensed, monitored, and recorded. Regular analysis of extracted volumes will be completed against existing applicable water access licence and approval requirements.	Construction	Existing water supply bores
GW4	Direct impacts to registered bores, including WaterNSW monitoring bore GW0036720, will be avoided, where practicable. If the bores are not required to be removed during construction, then they will be clearly demarcated to protect the infrastructure. Where impact is unavoidable and a bore will require decommissioning, it will be replaced in a similar nearby location in consultation with the bore owner and landowner.	Construction	All locations
GW5	Emergency spill procedures will be implemented to avoid and manage accidental spillages of fuels, chemicals or fluids during operation and maintenance activities in accordance with the Neoen Health, Safety and Environment Guideline. Environmental spill kits will be provided at strategic, accessible locations, and staff will be trained in spill response procedures.	Operation	All locations

Ref	Mitigation measure	Timing	Applicable locations
GW6	All chemicals or other hazardous substances at the substation will be stored in bunded and weatherproof facilities away from drainage lines, and in accordance with supplier's instructions and relevant legislation, Australian Standards and applicable guidelines. The capacity of the bunded area will be at least 130 per cent of the largest chemical volume contained within the bunded area. The location of the bunded enclosure/s will be shown on site plans in the Construction Environmental Management Plan.	Operation	Planned substation
Waste management and resource use			
WM1	Waste streams will be segregated to avoid cross-contamination of materials and maximise reuse and recycling opportunities.	Construction	All locations
WM2	All waste generated and surplus spoil to be removed from construction of the project will be transported to appropriately licensed waste disposal or transfer facilities.	Construction	All locations
WM3	All waste will be assessed, classified, managed and disposed of in accordance with the Waste Classifications Guidelines (NSW EPA, 2014b)	Construction and operation	All locations
WM4	Waste generated during operation will be managed in accordance with standard maintenance practices and processes for the identification, classification, handling and management of waste.	Operation	All locations
WM5	A licensed on-site wastewater management system will be installed to treat and dispose of wastewater from the operation and maintenance facility.	Operation	Operation and maintenance facility
Cumulative impacts			
CI1	Coordination and engagement with proponents and/or construction contractors of relevant future projects will occur, where practicable, during design refinements, construction and operation to confirm and manage potential cumulative impacts. Coordination and engagement will include: — providing regular construction program updates — identifying potential conflict points with other relevant future projects, for example proximity of work sites, or shared construction access routes and traffic management requirements — developing mitigation strategies in order to manage conflicts that may arise, where practicable.	Design refinement and construction	All locations

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