NORTHERN TABLELANDS WIND FARM

SCOPING REPORT



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Natalie Green  15 September 2025

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GLOSSARY AND ABBREVIATIONS

Term / Acronym	Description
ABS	Australian Bureau of Statistics
ACHAR	Aboriginal cultural heritage assessment report
AEMO	Australian Energy Market Operator
AHD	Australian height datum
AHIMS	Aboriginal Heritage Information Management System
Application	Application for Development Consent under Part 4.7 of the EP&A Act; and Determination under Part 9 of the EPBC Act.
Applicant	Northern Tablelands WF Project Pty Ltd
Associated residence	A residence on privately-owned land in respect of which the owner has reached an agreement with the applicant in relation to the development and management of impacts.
ASX	Australian Securities Exchange
Australian DCCEEW	Australian Department of Climate Change, Energy, the Environment and Water
BAM	Biodiversity assessment methodology
BESS	Battery energy storage system
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BDAR	Biodiversity development assessment report
BMS	Battery management system
CASA	Civil Aviation Safety Authority
CEEC	Critically endangered ecological community
CSEP	Community and stakeholder engagement plan
DA	Development application
DECC	Former NSW Department of Environment and Climate Change
DPE	Former NSW Department of Planning and Environment
DPHI	NSW Department of Planning, Housing and Infrastructure
DPIE	Former NSW Department of Planning, Infrastructure and Environment
EDC	Estimated development cost
EEC	Endangered ecological community
EIS	Environmental impact statement
ELF	Extremely low frequency
EMF	Electromagnetic field
EMI	Electromagnetic interference
EMS	Energy management system
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021* (NSW)
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
EPL	Environment protection licence
FTE	Full time equivalent
GHG	Greenhouse gas
GWh	Gigawatt hour
Heritage Act	*Heritage Act 1977* (NSW)
IBRA	Interim Biogeographic Regionalisation for Australia

Term / Acronym	Description
ISP	Integrated System Plan
km	Kilometre
LEP	Local environmental plan
LGA	Local government area
LoO	Likelihood of occurrence
LRET	Large-scale renewable energy target
LSC	Land soil capability
m	Metre
MNES	Matters of National Environmental Significance
MW	Megawatt
MWh	Megawatt hours
NEM	National Electricity Market
New England REZ	New England Renewable Energy Zone, formally declared by the Minister for Energy under section 19(1) of *the Electricity Infrastructure Investment Act 2020* and published in the New South Wales Gazette in November 2022
NP&W Act	*National Parks and Wildlife Act 1974* (NSW)
Non-associated residence	A residence on privately-owned land in respect of which the owner has not reached an agreement with the applicant in relation to the management of impacts associated with the development
Non-associated residence (other project)	A residence on privately-owned land which does not have an agreement for the project, however, does have an agreement with another project
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
NTWFP	Northern Tablelands Wind Farm Project
OEL	Origin Energy Limited
OEPL	Origin Energy Power Limited
OSOM	Oversize and/or over mass vehicle
PCT	Plant community type
PHA	Preliminary hazard assessment
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Project	Construction, operation and decommissioning of the proposed Northern Tablelands Wind Farm located approximately 18 kilometres north west of Armidale
Project area	The indicative development area for the project located on land owned by Origin Energy Limited, as shown in Figure 3-1
Project disturbance footprint	Area of project-related disturbance determined for the assessment of environmental impacts, which will be refined in the EIS
Receiver	Assessment location – defined for specific assessments e.g. noise
REZ	Renewable energy zone
RFS	Rural Fire Service
SAII	Serious and irreversible impacts
SEARs	Secretary's environmental assessment requirements
SEPP	State environmental planning policy
SIA	Social impact assessment
SPV	Special purpose vehicle
Survey boundary	The survey boundary nominated for the project includes a 200 m corridor around access tracks and turbines for the purpose of field-based assessments, which covers a total area of 1,508 ha (see also Section 3.1.2)
SSAL	State significant agricultural land
SSD	State significant development

Term / Acronym	Description
TfNSW	Transport for New South Wales
TTIA	Traffic and transport impact assessment
TWh	Terawatt hour

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EXECUTIVE SUMMARY

Overview

Northern Tablelands WF Project Pty Ltd (NTWFP) as the trustee for Northern Tablelands WF Project Trust (the special purpose vehicle, SPV), proposes to construct, operate, and decommission the Northern Tablelands Wind Farm (the project). NTWFP is a wholly owned subsidiary of Origin Energy Power Limited (OEPL, Origin), held by the ultimate parent company of Origin Energy Limited (OEL) an Australian Securities Exchange (ASX) listed entity.

The proposed wind farm would have an indicative generating capacity of about 608 megawatts (MW) supported by a battery energy storage system (BESS) with an approximate capacity of up to 800 MW and up to 1,000 megawatt-hours (MWh).

The project is approximately 18 kilometres (km) northwest of Armidale, New South Wales, within the local government areas (LGAs) of Armidale Regional Council and Uralla Shire Council and would occupy an area of about 7,671 hectares (ha) entirely within the New England Renewable Energy Zone (REZ). It would comprise up to 76 wind turbines, BESS, and supporting infrastructure including a high-voltage connection to the New England REZ Network Infrastructure Project.

The project would have a preliminary estimated development cost of more than $30 million and would be State significant development (SSD) as defined under the New South Wales *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). It is also being referred to the Australian Department of Climate Change, Energy, the Environment and Water (Australian DCCEEW) for potential impacts to matters of national environmental significance (MNES) under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Project justification

Wind energy will play a critical part in Australia's transition to renewable energy in preparation for the closure of 4 of the 5 remaining coal-fired generators in New South Wales by 2035. Australian renewable energy supplied 39.4% of Australia's total electricity in 2023, with wind power contributing 13.4% (Clean Energy Council 2024).

The project would provide renewable energy to the National Electricity Market (NEM) and would contribute to the Australian and New South Wales Governments' emission reduction targets while allowing current agricultural practices to continue. The inclusion of a BESS also improves the stability of the NEM by providing a steady supply of energy. Other expected benefits include:

- provision of cleaner electricity generation
- contributing to meeting the current load demand while reducing greenhouse gas (GHG) emissions and the impacts of climate change
- regional investment in the New South Wales renewable energy sector
- making a positive contribution towards achieving the target of 8 gigawatts (GW) of renewable energy generation from the New England REZ.

Community and stakeholder engagement

Consultation undertaken during the scoping report phase has included a combination of phone calls, face-to-face meetings, drop-in information sessions, letterbox drops and information stalls at local events with a range of community and stakeholders to provide information about the project and identify key issues and themes.

Origin will inform stakeholders of the lodgement of this scoping report and continue to engage and consult with the community and stakeholders during the preparation of the environmental impact statement (EIS). This ongoing consultation would be guided by the project's community and stakeholder engagement plan and engagement strategy.

Preliminary environmental assessment

This scoping report has been prepared in accordance with the *State Significant Development Guidelines – preparing a scoping report* (DPIE 2022a), and identifies potential impacts during the construction, operation and decommissioning of the project. Preliminary assessment considers the existing environment, scale and nature of the project, ability to avoid, minimise or mitigate impacts (for the scoping stage), cumulative impacts and the technical assessment of the project.

The key environmental aspects identified in Section 6 will undergo a more detailed technical assessment during preparation of the EIS. These include the following:

- landscape character and visual
- noise and vibration
- biodiversity
- transport and access
- Aboriginal heritage
- historic heritage
- socio-economic
- land resources
- water resources
- hazards and risk.

The following other environmental aspects would not require detailed technical assessment (based on either a lower likelihood of impact or absence of affected receivers) but would still require consideration in the EIS, including potential cumulative impacts associated with each aspect:

- air quality
- climate change
- property and land use
- waste and resource use
- decommissioning and rehabilitation.

Further project refinement

Further refinement of the project layout would be undertaken as part of the EIS in response to emerging findings of the assessments. The focus of the further layout refinement will be to avoid potential environmental and social impacts where possible, considering engineering and functional constraints and cost implications.

Residual impacts would be minimised through recommended mitigation and management measures developed based on the findings of the technical assessments and community and stakeholder engagement. The proposed measures will be summarised as commitments in the EIS.

1 INTRODUCTION

1.1 Overview

Northern Tablelands WF Project Pty Ltd (NTWFP) as the trustee for Northern Tablelands WF Project Trust (the special purpose vehicle, SPV), proposes to construct, operate, and decommission the Northern Tablelands Wind Farm (the project). NTWFP is a wholly owned subsidiary of Origin Energy Power Limited (OEPL, Origin), held by the ultimate parent company of Origin Energy Limited (OEL) an Australian Securities Exchange (ASX) listed entity.

The project is approximately 18 kilometres (km) northwest of Armidale, New South Wales, within the local government areas (LGAs) of Armidale Regional Council and Uralla Shire Council. It would occupy an area of about 7,671 hectares (ha) entirely within the New England Renewable Energy Zone (REZ) and is shown in its regional context in Figure 1-1.

The project would have a preliminary estimated development cost of more than $30 million and would be State significant development (SSD) as defined under the New South Wales *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Approval will be required from the Minister for Planning and Public Spaces under Part 4 the New South Wales *Environmental Planning and Assessment Act 1979* (EP&A Act).

This scoping report supports an application to the Secretary of the New South Wales Department of Planning, Housing and Infrastructure (DPHI) for Secretary's Environmental Assessment Requirements (SEARs), which will guide the preparation of an environmental impact statement (EIS) to support the development application (DA) under Part 4 Division 4.7 of the EP&A Act. The scoping report has been prepared in accordance with the *State Significant Development Guidelines – preparing a scoping report* (DPIE 2022a) and the Renewable Energy Planning Framework guidelines and technical supplements.

The DA and supporting EIS will be prepared in accordance with the *State Significant Development Guidelines – preparing an environmental impact statement* (DPIE 2022b), the Renewable Energy Planning Framework guidelines and technical supplements and other relevant technical guidelines. It will be accompanied by the consent of the owners/s of the land as required in Section 23(1) of the Environmental Planning and Assessment Regulation 2021 and include a declaration from a Registered Environmental Assessment Practitioner under the Rapid Assessment Framework.

The project is also being referred to the Australian Department of Climate Change, Energy, the Environment and Water (Australian DCCEEW) for potential impacts to matters of national environmental significance (MNES) under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Should the Australian DCCEEW determine the project is a controlled action under Section 75 of the EPBC Act, an assessment and approval under the EPBC Act will be required. This is expected to be under the bilateral agreement between the Australian Government and the NSW Government.

1.2 The Applicant

The project would be owned and operated on freehold land owned by OEPL.

Origin has invested and structured its energy generation strategy to adapt to the National Electricity Market (NEM) requirements and support its own transition to renewables, reduce emissions and contribute to long term sustainability within the energy sector. To demonstrate continued leadership, Origin has identified large scale renewable energy as a significant technology required for supporting this transition while achieving their decarbonisation commitments, halving their emissions by 2032 and by becoming a net zero emitter by 2050.

With over 10 years of experience in renewable technologies, Origin is becoming one of Australia's leading renewable and low-carbon energy providers, through the procurement of electricity from renewable sources such as wind and solar. Applicant details are provided in Table 1-1.

Table 1-1 Applicant details

Item	Detail
Proponent	Northern Tablelands WF Project Pty Ltd as trustee for the Northern Tablelands WF Project Trust
ABN	75 674 580 717
ACN	674 580 717
Address	GPO Box 148, Brisbane, QLD 4001
Contact	NewEngland@originenergy.com.au

1.3 Objectives

The key objectives of the project include the following:

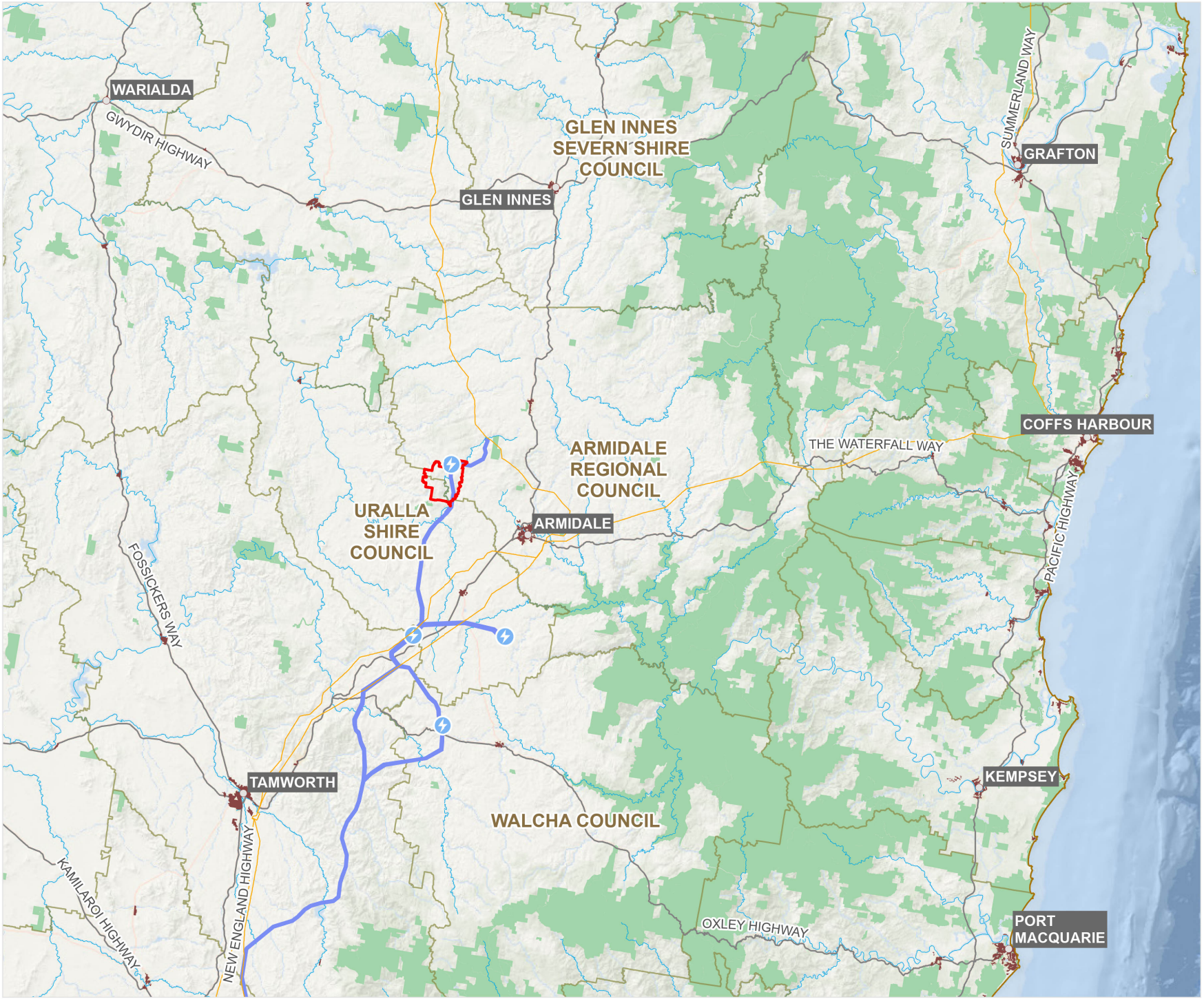
- develop an economically viable wind farm that contributes to improving the security and resilience of the NEM through affordable and sustainable energy generation, and provides network stability through battery storage in preparation for the retirement of large coal-fired power stations
- produce clean and renewable energy that supports Australia's commitment to reduce greenhouse gas (GHG) emissions from energy generation and contributes to New South Wales achieving its energy emissions reduction targets
- provide local and regional employment opportunities, and contribute to community and economic gain in the Uralla Shire Council and Armidale Regional Council LGAs and regional investment in New South Wales during all phases of the project
- provide financial benefits to affected neighbouring landholders and the broader community through appropriate benefit sharing arrangements
- provide for compatible land use within the project area to continue current agricultural land use practices alongside renewable energy development
- avoid or minimise environmental and social impacts wherever practicable, through careful design and implementation of best practice environmental management and mitigation
- engage with First Nations Australians to enhance social and economic outcomes and make project information readily available and accessible to stakeholders and the community.

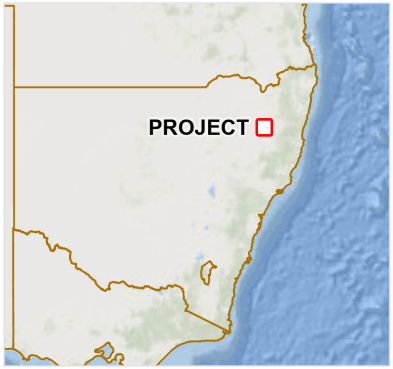
1.4 Site information

Table 1-2 contains a list of lots within the project area for which this application applies.

Table 1-2 Lot / DP within the project area

Lot	DP
1, 2	509352
51	665514
57, 60	753672
51, 52, 61, 67, 79, 83, 86, 87, 91, 92, 94, 95, 98, 113, 233	753683
1, 11, 18, 19, 20, 28, 29, 30, 31, 32, 33, 35, 37, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 53, 102	755806
2, 3, 6, 12, 30, 31	755842
9, 11, 12, 15, 23, 30, 32, 34, 35, 36, 37, 38, 39, 43, 46, 48	755851
11	27781
1	1233191





- Project area
- New England REZ
- EnergyCo New England transmission corridor
- Urban area
- NPWS reserve/state forest
- Local Government Area
- Existing 330kV transmission line
- EnergyCo hub

0 15 30 45 60 Km

SCALE 1:1,500,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
MAP: SCOPING_RegionalContext
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 16/09/2025
VERSION: C

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 1-1: REGIONAL CONTEXT

1.5 Project background

Origin has been investigating potential renewable energy projects in the New England REZ since December 2021 when the REZ was declared by the NSW Government, and after completing initial feasibility assessments which identified the property 'Warrane' as providing a high-quality wind resource suitable to support a wind farm development.

The property is also close to the proposed transmission infrastructure of the New England REZ Network Infrastructure Project (see also Section 1.6).

Origin purchased the property in its entirety in July 2023 with the intent to develop a potential wind farm. In October 2023, Origin entered into a lease agreement with a pastoral operator to continue agricultural operations on the property during development and operational phases, subject to the terms and duration of the lease agreement.

During 2024, Origin began on-site investigations including the installation of meteorological masts and biodiversity surveys to help inform the design and environmental impact assessment process, as well as undertaking consultation with landowners and the community, which is discussed in Section 5.

1.5.1 Strategies to avoid or minimise impacts

Avoiding and minimising potential environmental and social impacts has been considered through the project's development from site selection to preliminary wind farm layout, which is discussed in Section 2.5.3.

The preliminary wind farm layout is based on maximising the potential wind resource across the site, and an initial biodiversity risk assessment of the proposed turbine locations was undertaken based on the rankings summarised in Table 1-3.

Table 1-3 Preliminary biodiversity constraints mapping ranking

Constraint ranking	Description
Low	Vegetation is predominantly cleared and/or dominated by exotic grassland.
Moderate	Non-threatened native vegetation with evidence of partial clearing/in poor-moderate condition.
High	Threatened ecological community in partially cleared/poor condition.
Very High	Threatened ecological community in good condition and/or high habitat values for threatened species.

The initial risk assessment identified 8 wind turbines located in areas with very high ecological constraints, 18 wind turbines with high constraints, 30 wind turbines with moderate constraints, and 20 wind turbines with low ecological constraints.

Noting that the initial risk review was based predominantly on existing State vegetation mapping (NSW DCCEEW, 2025) and some preliminary biodiversity field survey, one wind turbine initially located in a patch of intact and high condition threatened ecological community was moved east to an area that has previously been cleared and disturbed. This turbine location has been surveyed and the State vegetation mapping at that turbine location has been validated by field survey.

The other highly constrained turbine locations, where the State vegetation mapping is yet to be validated by detailed field survey will continue to be refined through the EIS as the biodiversity assessment progresses, and existing data is ground-truthed and targeted surveys progress.

Additional strategies to avoid and minimise other potential environmental and social impacts include:

- selecting a site close to the proposed transmission infrastructure associated with the New England REZ to minimise the development footprint associated with transmission and other ancillary infrastructure
- developing a wind farm layout and entering into a lease agreement that allows for the continuation of existing agricultural activities
- refining a layout that avoids the locally heritage-listed Warrane Homestead.

The principles of avoiding and minimising environmental and social impacts will continue to be the key consideration as the project develops through the EIS, and in consultation with relevant regulatory

stakeholders, Armidale Regional Council and Uralla Shire Council, and the local community and neighbouring properties.

Further refinement of the project layout would be undertaken as part of the EIS in response to emerging findings of the assessments. The focus of further layout refinement will be to avoid potential environmental and social impacts where possible, considering engineering and functional constraints and cost implications.

Residual impacts would be minimised through recommended mitigation and management measures developed based on the findings of the technical assessments and community and stakeholder engagement. The proposed measures would be summarised as commitments in the EIS.

1.6 Related development

Related development includes any:

- existing or approved development that would be:
  - incorporated into the project
  - operated in conjunction with the project under a separate development consent or approval.
- development that is required for the project but would be subject to a separate assessment.

At this stage, one related development has been identified and is described in Section 1.6.1.

1.6.1 New England Renewable Energy Zone – North Hub

The New England REZ North Hub is part of the New England REZ Network Infrastructure Project proposed by EnergyCo and developed by the New England Network Operator. It will provide a shared connection point for renewable energy projects in the New England REZ to connect into the new and existing transmission network. The North Hub would collect electricity from solar, wind and storage projects for dispatch to the NEM.

At the end of 2024, EnergyCo announced the North Hub would be located within the project's boundary in the northern part of the project area. The North Hub would connect a new 330-kilovolt (kV) overhead transmission line running east to existing infrastructure and a new 500-kV overhead transmission line running south connecting to the New England REZ Central Hub.

It is expected that infrastructure associated with the North Hub would include:

- electrical equipment including switchgear and transformers
- buildings for protection and control equipment
- amenities for maintenance staff
- fencing for security and safety reasons.

The North Hub does not form part of NTWF project and is subject to its own assessment and approval process.

2 STRATEGIC CONTEXT

2.1 Policy and strategic goals alignment

The project would align with National, State, regional, and local strategies, policies and plans as outlined in Table 2-1.

Table 2-1 Alignment with key strategic planning framework and policy context

Plan, policy or strategy	Description	Project alignment
International context		
United Nations Framework Convention on Climate Change Conference or Parties (COP26) – Glasgow 2021	COP26 was the 26th climate change COP held in Glasgow in late 2021. A key outcome of COP26 was the agreement to "revisit and strengthen… 2030 targets in nationally determined contributions…by the end of 2022" (UNFCC, 2021). Nations were also called upon to "phase down unabated coal power and inefficient subsidies for fossil fuels". As a result, the Australian Government committed to achieve net zero GHG emissions by 2050.	The project will contribute to meeting Australia's commitments through the generation of renewable wind energy and subsequent annual reduction in GHG emissions.
United Nations Framework Convention on Climate Change Conference or Parties (COP21) – The Paris Agreement	The Paris Agreement was an important stepping-stone for international relations on climate change as it brought signatory nations together in a common cause to combat climate change. The aim of the Paris Agreement is to limit emissions globally to net zero in the second half of this century. Australia is one of 195 countries that signed up to the Paris Agreement and has set a target to reduce emissions by 26 to 28% below 2005 levels by 2030.	The project will contribute to meeting Australia's commitments under the Paris Agreement through reducing annual GHG emissions. Origin believes that the electricity sector should be responsible for more than its proportional share of emissions reductions, and the proposed project is part of Origin's decarbonisation strategy to help achieve its goal of exiting coal fired generation by 2032, while continuing to ensure energy supply for its customers, and the New South Wales community.
National context		
Large-scale Renewable Energy Target (Clean Energy Regulator 2021)	The Australian Government Clean Energy Regulator administers the large-scale renewable energy target (LRET) which incentivises the development of renewable energy power stations in Australia. The LRET target of 33,000 GWh of additional renewable electricity generation was met at the end of January 2021 (Clean Energy Regulator 2021). The annual target will remain at 33,000 GWh until the scheme ends in 2030.	The project will generate up to approximately 1.8 TWh of electricity annually, which will make significant contributions beyond the LRET target in future years.
Climate Change Act 2022	The *Climate Change Act 2022* provides a policy framework for the implementation of Australia's net-zero commitments and outlines Australia's net 2030 and 2050 GHG emission reduction targets under the Paris Agreement. The Climate Change Act also introduces the requirement for the Minister for Climate Change and Energy to prepare an annual climate change statement to be presented in the House of Parliament, as informed by the Climate Change Authority.	The project aligns with the Climate Change Act's objectives for GHG emission reduction by utilising renewable energy as a source for clean energy for Australia's electricity supply.
National Electricity Market	The NEM is a wholesale market through which electricity is traded in Australia. The NEM incorporates approximately 40,000	The project will directly feed into the NEM and contribute to the large-scale goal of renewable energy generation being

Plan, policy or strategy	Description	Project alignment
	km of transmission lines and cables in Australia and spans the eastern and southeastern coasts (including Queensland, New South Wales, Australian Capital Territory, South Australia, Victoria and Tasmania). It delivers around 80% of all electricity consumption in Australia (DCCEEW, 2023). The Australian Energy Market Operator (AEMO) controls the NEM and is responsible for monitoring electricity consumption and the flow of energy across the power system. AEMO recognise the NEM needs to be modernised to accommodate and respond to changes in electricity generation, emerging technologies, such as solar batteries, and shifting consumer preferences.	prominent in the market and reduce the reliance on fossil fuels.
Integrated System Plan 2024	The Integrated System Plan 2024 (ISP) is published every 2 years and shows where new transmission, generation and storage is needed across the NEM. The 2024 ISP is a roadmap for the transition of the NEM, with a clear plan for essential infrastructure that will meet future energy needs. The ISP sets out the needed generation, storage and network investments required to transition to net zero by 2050. Australian Government policy sets a 43% reduction in 2005-level emissions by 2030, with 82% of electricity supplied from renewable sources. Renewables accounted for almost 40% of the total electricity delivered through the NEM in 2023, momentarily reaching up to a 72.1% share on 24 October 2023 (AEMO, 2024).	The ISP highlights the urgent need for investment in new renewable energy generation, transmission, and storage projects to meet the NEM renewable electricity generation targets and deliver secure, reliable, and affordable energy. The project is in the New England REZ and would connect to existing electricity supply networks to contribute to the makeup of the NEM's renewable energy sources.
State context		
Net Zero Plan Stage 1: 2020-2030 (DPIE 2020a)	The *Net Zero Plan Stage 1: 2020-2030* (DPIE 2020a) (Net Zero Plan) outlines the New South Wales Government's approach to growing the economy and employment and reducing emissions over the next decade. The Net Zero Plan targets net zero emissions by 2050 in New South Wales. The New South Wales Government has announced in 2021 that the updated objective is to deliver a 50% emissions reduction by 2030, compared to 2005 emissions levels.	The project would contribute to the Net Zero Plan through the generation of renewable energy and the subsequent reduction in GHG emissions.
NSW Electricity Strategy 2019 (DPIE 2019)	The NSW Electricity Strategy is the New South Wales Government's plan for a reliable, affordable and sustainable electricity future that supports a growing economy. Four of the 5 remaining coal-fired generators in New South Wales are scheduled to close by 2035, starting with Liddell Power Station in 2023 (DPIE 2019). The strategy outlines a reliable energy system which meets the New South Wales energy requirements and emission reduction targets.	The project would contribute to the development of the New England REZ and will assist in meeting the New South Wales energy generation and storage requirements, and the GHG emissions reduction targets set by the New South Wales Government.

Plan, policy or strategy	Description	Project alignment
	The strategy and its enabling legislation, the *Electricity Infrastructure Investment Act 2020*, supports the development of renewable energy zones and the establishment of the Energy Corporation of New South Wales (EnergyCo) with the objectives of bringing together investors, conducting early planning, and maximising benefits to local communities.	
NSW Transmission Infrastructure Strategy (DPIE 2018)	The *NSW Transmission Infrastructure Strategy* (DPIE 2018) is the New South Wales Government's plan to unlock private sector investment in priority energy infrastructure projects, which can deliver renewable energy to customers to 2040 and beyond. The strategy forms part of the government's broader plan to make energy more affordable, secure investment in new power stations and network infrastructure, and ensure new technologies deliver benefits to consumers. The strategy seeks to help meet future energy needs by facilitating new transmission that could support up to 17,700 MW of new electricity generation. Other benefits include improved energy reliability and security, timely project delivery, and increased affordability and access to cheaper electricity.	The project would also contribute to the development of the New England REZ, and an overall increase to the energy capacity of New South Wales.
NSW Electricity Infrastructure Roadmap	The *NSW Electricity Infrastructure Roadmap* is the state's 20-year plan to transform the electricity system into an affordable, clean and reliable source for all consumers. The roadmap will support the private sector to deliver at least 12 GW of new renewable electricity generation and 2 GW of long-duration storage.	The project would be consistent with the objectives of the Electricity Infrastructure Roadmap and would supply wind renewable energy to the NEM and support the growth and co-location of low-emission generation capacity in the New England REZ.
Renewable energy zones	Renewable energy zones are designed to co-locate new wind and solar energy generation into areas where it can be efficiently stored and transmitted across New South Wales. The renewable energy zones and Electricity Roadmap are expected to: • deliver up to $32 billion in private sector investment and support around 6,300 construction and 2,800 ongoing jobs in 2030 through the roadmap • reduce wholesale electricity costs • provide significant amounts of new renewable energy supply, storage and firming • encourage local community benefits through strategic planning, best-practice engagement and formalised benefit sharing arrangements • improve competitiveness of regional energy-intensive industries • provide a cleaner energy sector and emissions reduction.	In line with the objectives identified in Section 1.3, the project will support the development of the New England REZ and reduce carbon emissions by delivering a greater mix of renewable energy to the NEM.

Plan, policy or strategy	Description	Project alignment
	Five REZs have been identified so far in New South Wales including Central-West Orana, New England, South West, Hunter-Central Coast, and Illawarra. The New England REZ was formally declared by the Minister for Energy under section 19(1) of *the Electricity Infrastructure Investment Act 2020* and published in the New South Wales Gazette in November 2022.	
Renewable Energy Planning Framework (DPHI 2024a)	The Renewable Energy Planning Framework (the Framework) has been developed to help NSW transition to renewable energy. It includes guidelines for wind and solar energy generation and transmission infrastructure. It will support the industry by providing more investment certainty and will also make sure that communities benefit from the renewable energy projects they are hosting.	The project has been and will continue to be developed, with potential impacts assessed in accordance with the requirements of the Framework and all associated guidelines.
Wind Energy Guideline - Guidance for State significant wind energy development (DPHI 2024b)	The Wind Energy Guideline provides the community, industry and regulators with guidance on the planning framework for the assessment of large-scale SSD wind energy development proposals and identifies the key planning considerations relevant to wind energy development in New South Wales.	Site selection and impact assessment considerations detailed in the guideline have been, and will continue to be, used to inform the project and will be considered in the EIS.
Draft State Significant Agricultural Land map	The New South Wales Department of Primary Industries (DPI) is currently developing the Draft State Significant Agricultural Land (SSAL) map, which would inform future agricultural land use planning policies (DPI, 2021a). The SSAL map is at an early draft stage and would support the development of a State Significant Agricultural Land Use Planning Policy in the future.	While the Draft SSAL map has not been finalised and no applicable planning policies are in force, it is noted that there are no mapped areas of SSAL within the project area. Should the SSAL map come into force and any statutory State Significant Agricultural Land Use Planning Policy be developed during the preparation of the EIS, any strategically important agricultural land uses would be considered as part of the project planning and design.
Local and regional context		
New England North West Regional Plan 2036 (DPE 2017)	The intent of the *New England North West Regional Plan 2036* (DPE 2017) is to guide the New South Wales Government's land use planning priorities and decisions in the New England North West region to 2036. One of the primary goals of the plan is to diversify the region's economy. To achieve this goal, the plan identifies 9 directions, one of which is to grow New England North West as the renewable energy hub of New South Wales. The plan also establishes priorities for local councils within the New England North West Region to help achieve its overarching goals. One of the priorities identified for Armidale Regional Council and Uralla Shire Council is to investigate the potential for wind and solar production and encourage renewable energy opportunities.	In line with the objectives of the New England Northwest Regional Plan, the project would contribute to the diversification of the energy sector while strengthening the region's economy. This will prolong the project's direct and indirect economic benefits within local and regional economies.

Plan, policy or strategy	Description	Project alignment
Advancing Our Region: Toward 50,000 – Local Strategic Planning Statement (Armidale Local Strategic Planning Statement 2024)	The Armidale Local Strategic Planning Statement (Armidale Regional Council 2024) plans for the community's economic, social and environmental land use needs to 2040. Section 2.1, 7, 8 and 9 of the planning statement recognise that the New England region needs to mitigate the impacts of climate change and embrace new ideas, technologies and renewable energy to form a more resilient regional community and economy. The council have a key role in encouraging renewable energy and innovation businesses in the LGA and promoting renewable energy generation opportunities and encourage renewable energy use and storage.	The project will align with Armidale Regional Council's commitments for renewable energy, innovation, and storage opportunities within the LGA.
Uralla Shire Local Strategic Planning Statement 2020	The *Uralla Shire Local Strategic Planning Statemen*t (Uralla Shire Council 2020) plans for the community's economic, social and environmental land use needs to 2040. As identified within the statement, the Uralla Shire Council LGA is the prime location for the future generation of renewable energy and has been identified as one of the key renewable energy precincts in New South Wales under the New England Northwest Regional Plan 2036. The continued growth of the renewable energy sector over the next 20 years presents opportunities for Uralla Shire Council LGA; however, this development needs to be managed to minimise adverse impacts on the local environment and agricultural productivity.	The project will contribute to Planning Priority 5.1 of the *Uralla Shire Local Strategic Planning Statement* (to support and manage rural landscapes) and will support the growth of the renewable energy sector within the Uralla Shire Council LGA. Where possible, project infrastructure will be sited to minimise impacts on biodiversity and neighbouring residents (including consideration of traffic, construction and operational noise and visual amenity impacts).

2.2 Site setting and features

2.2.1 Regional context

The project is approximately 18 km northwest of Armidale and 25 km north of Uralla between the townships of Dumaresq and Yarrowyck, within Armidale Regional Council LGA and Uralla Shire Council LGA (see Figure 1-1).

The Armidale Regional Council and Uralla Shire Council LGAs cover an area of approximately 11,000 square kilometres (km^2) within the New England Region of New South Wales.

The New England Region has 2 major cities, Tamworth and Armidale, with populations of 63,070 and 23,967 (ABS 2021) respectively. Major industries across the region include beef-cattle farming, sheep farming, hospitals, teaching, administration and mining. Agriculture accounts for up to 50% of economic activity in some parts of Uralla Shire Council LGA, while Armidale Regional Council LGA has a more diverse economy.

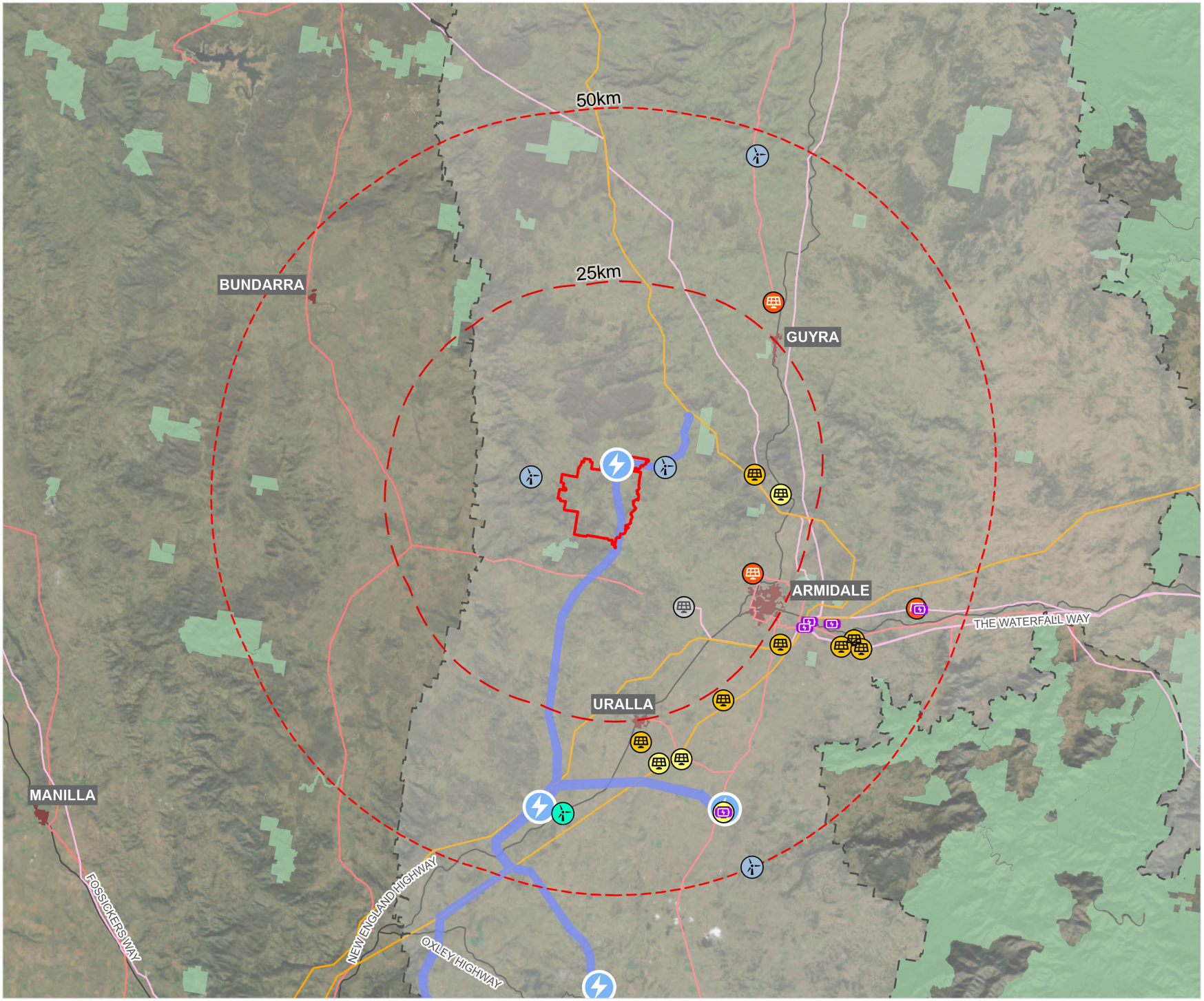
The project is located within the New England REZ, which has been identified as a key location in New South Wales for the delivery of renewable energy and energy storage infrastructure, and close to the proposed New England REZ Network Infrastructure Project, which will include the construction and operation of new transmission network infrastructure.

There are several other renewable energy developments within 50 km of the project, which are proposed or in development, as well as other infrastructure and mining projects. These are summarised in Table 2-2 and shown in Figure 2-1. The scoping cumulative impact assessment is contained in Appendix G.

Table 2-2 Nearby renewable developments and major projects

Project	Development type	Status[1]
Boorolong Wind Farm (SSD-90045958)	Wind farm	Proposed
Yarrowyck Wind Farm	Wind farm	Project feasibility
Tilbuster Solar Farm (SSD-9619)	Solar farm	Approved
Tilbuster 2 Solar Farm (SSD-69799460)	Solar farm	Proposed
University of New England Solar Farm	Solar farm	Approved – operational
New England Solar Farm (SSD-9255)	Solar farm	Approved – under construction
Armidale Solar Farm (DA-164-2019)	Solar farm	Approved
Kooyong BESS (SSD-88375208)	Energy storage	Proposed
Armidale BESS (SSD-23515853)	Energy storage	Proposed
Deeargee Solar Farm (SSD-70753725)	Energy storage	Proposed
Stringy Bark Solar Farm (DA-112-2019)	Energy storage	Approved
Oxley Solar Farm (SSD-10346)	Energy storage	Approved
Armidale East BESS (SSD-65058714)	Energy storage	Proposed
Gara BESS (SSD-71680710)	Energy storage	Proposed
Thunderbolt Wind Farm (SSD-10807896)	Wind farm	Approved
Metz Solar Farm (SSD-7931)	Solar farm	Approved – operational
Eastern Hub Firming Battery (SSD-71860708)	Energy storage	Proposed
Hillview Wind Farm (SSD-78329994)	Wind farm	Proposed
Hillview Solar Farm (SSD-72447960)	Solar farm	Proposed
Hillgrove Mine (DA98/35)	Mining	Approved - operational
Winterbourne Wind Farm (SSD-10471)	Wind farm	Proposed
Wongalea BESS (SSD-85522708)	Energy storage	Proposed

[1] a 'proposed' status incudes developments that are awaiting SEARs, SEARs issued, prepare EIS, or are in the response to submission phase.
Source: https://www.planningportal.nsw.gov.au/major-projects (searched 12/09/25)



Project area
25km project buffer
50km project buffer
NPWS reserve/state forest
New England REZ
EnergyCo New England transmission corridor
EnergyCo hub

Existing transmission lines
330kV transmission line
132kV transmission line
66kV transmission line

Renewable projects
Wind farm - Approved
Wind farm - In planning
Solar farm - Operational
Solar farm - Approved
Solar farm - In planning
Solar farm - Withdrawn
Battery Storage - In planning

0 10 20 30 Km

SCALE 1:750,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 16/09/2025
VERSION: C

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 2-1: SURROUNDING RENEWABLE ENERGY DEVELOPMENT

2.2.2 Local context

The project area covers approximately 7,671 ha and is located on land owned by Origin and contains 6 associated residential dwellings, 2 shearing sheds (1 former, 1 currently in use), sheep and cattle yards. It is bounded by the Bulagaranda (Mount Yarrowyck) Aboriginal Area in the south and the locality of Boorolong to the north. There are 121 non-associated residences that have been identified within 8.6 km of the project area (see Figure 2-1).

The project area is predominantly used for beef production and is zoned RU1 – Primary Production under the *Armidale Regional Local Environment Plan 2012* (Armidale LEP), and RU2 – Rural Landscape under the *Uralla Local Environmental Plan 2012* (Uralla LEP), as shown in Figure 2-3. The project area also contains some Crown land 'paper roads' which are shown in Figure 2-2.

Significant ecological, cultural and historic associations have been identified for the Bulagaranda (Mount Yarrowyck) Aboriginal Area which is further discussed in Section 6.6. Booroolong Nature Reserve is located approximately 6 km northeast of the project area.

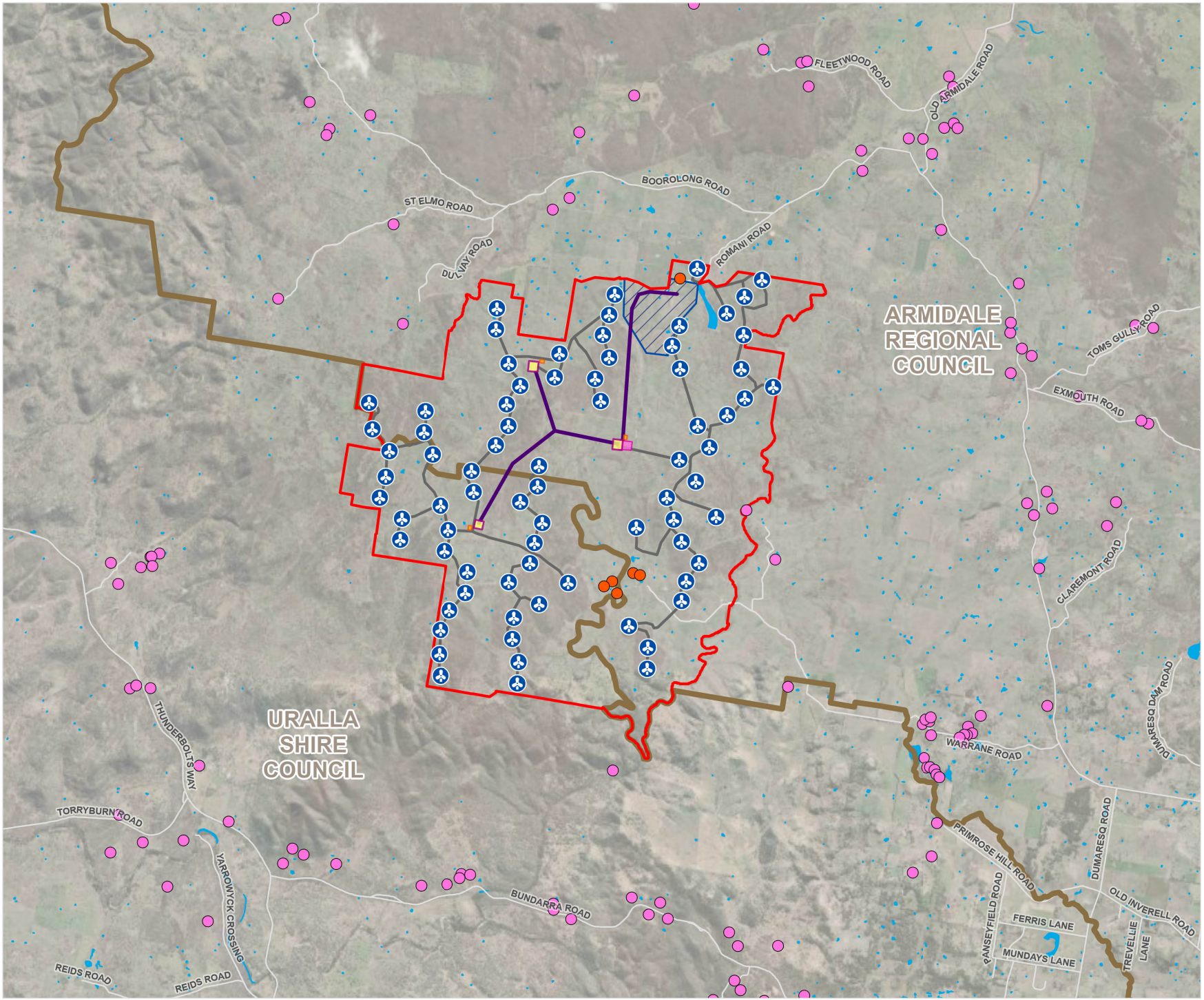
The proposed Boorolong Wind Farm is directly east of the project, and the Yarrowyck Wind Farm is directly to the west.

The topography of the project area is shown in Figure 2-5 and is dominated by moderate slopes (between 5 to 18 degrees), with some areas of more gentle slopes (less than 5 degrees), and some steep slopes (greater than 18 degrees) and crests/spurs. Elevation ranges between 960 m to 1,250 m Australian Height Datum (AHD), with the highest point in the southwestern parts of the project area.

There are several named watercourses in the project area, including 3 perennial watercourses (Abington Creek, Boorolong Creek and Toms Creek) and 6 non-perennial watercourses (Cachs Creek, Dread Gully, Haylocks Creek, Rileys Creek, Teatree Creek, and Tigers Gully). There are several farm dams across the project area, and 2 existing unregistered bores. Water resources are discussed further in Section 6.10.

Access to the project area is via Warrane Road from the east, and Romani Road via Boorolong Road from the north. Warrane Road and Romani Road are sealed roads, from which internal access tracks would be established to connect key infrastructure elements. Proposed site access is discussed in more detail in Section 3.

A summary of the key features of the project area and surrounds is provided in Table 2-3.



- Project area
- Wind turbine
- Operations and maintenance facility
- Substation option
- BESS
- Project 330kV transmission line
- Reticulation and access road
- EnergyCo North Hub indicative footprint
- Water body
- Local Government Area
- Roads
- Associated residences (ARs)
- Non-associated residences (NAR)

0 1 2 3 4 5 6 Km

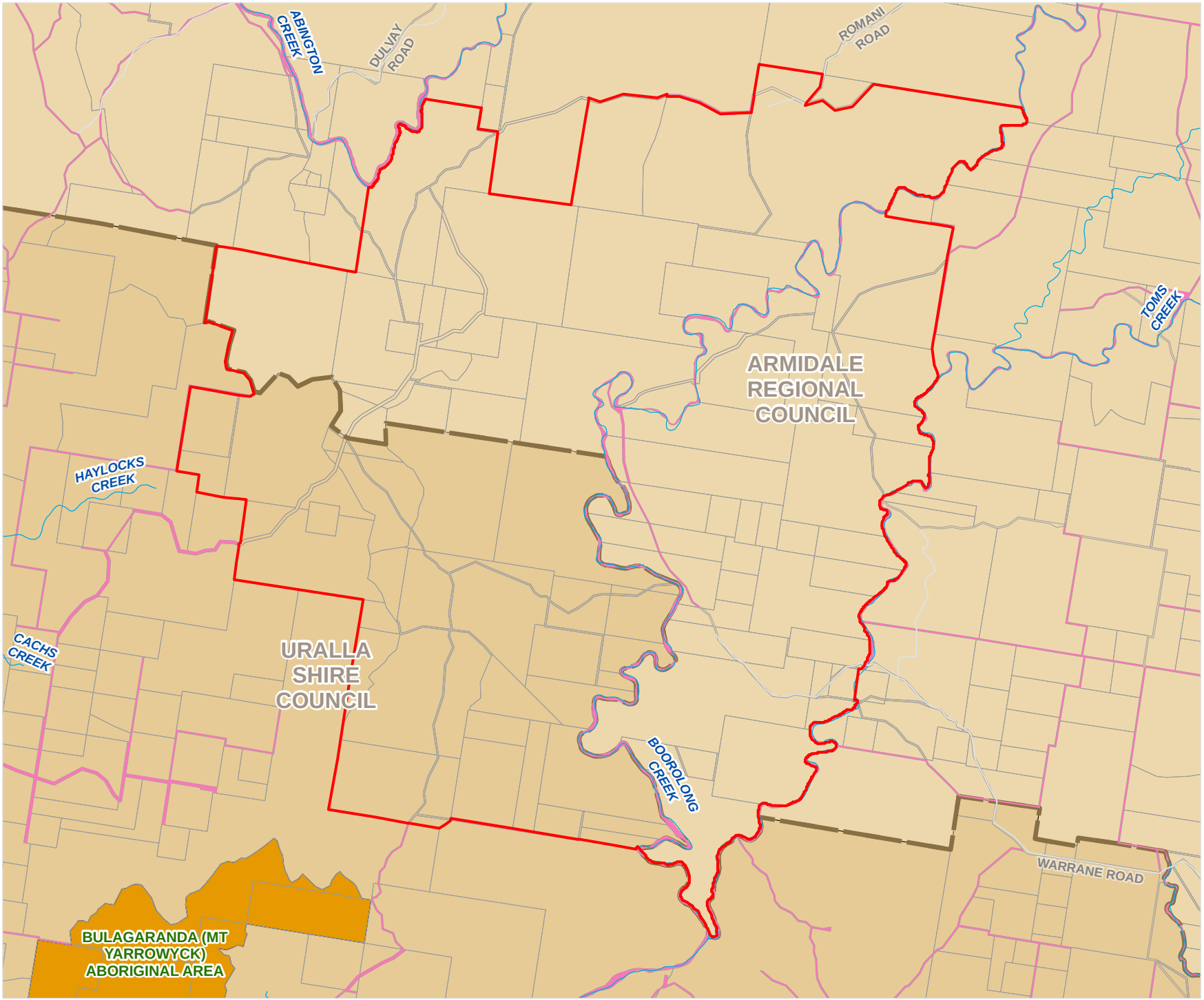
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PROJ: AU2130156661.004
CLIENT: Origin Energy Pty Ltd
MAP: SCOPING_Local Context
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: B

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

rps
A TETRA TECH COMPANY

FIGURE 2-2: LOCAL CONTEXT



Project area
Roads
Watercourses
Cadastre
Local Government Area

Land Zoning

C1 - National Parks and Nature Reserves
RU1 - Primary Production
RU2 - Rural Landscape
Crown Land

0 1 2 3 Km

SCALE 1:80,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: AU213015661.004
CLIENT: Origin Energy Pty Ltd
MAP: SCOPING_Land Zoning
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 7/05/2025
VERSION: B

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 2-3: LAND ZONING

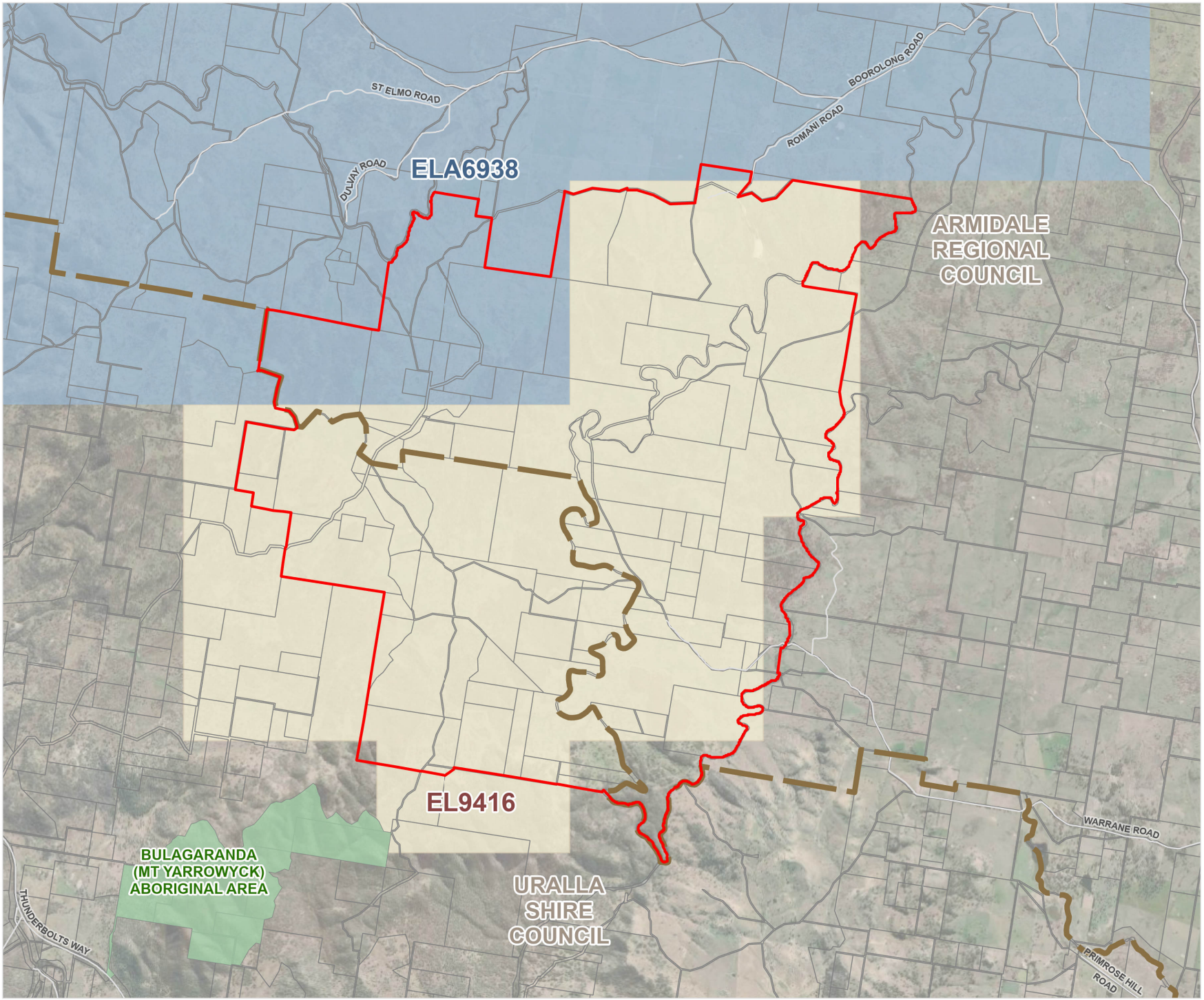
2.2.3 Key features of the site setting

A summary of the key features of the project area setting and surrounds is provided in Table 2-3.

Table 2-3 Key features of the project area and surrounds

Aspect	Detail
LGA	The project area is within the Armidale Regional Council and Uralla Shire Council LGAs (see Figure 1-1).
Land zoning	• RU1 – Primary Production under the Armidale LEP • RU2 – Rural Landscape under the Uralla LEP
Nearby townships	The project is approximately 18 km northwest of Armidale, and 25 km north of Uralla.
Landscape	The landscape within and surrounding the project area is a mix of low rolling hills and flatter areas that are frequently dissected by drainage lines and associated floodplains, terraces and foot slopes.
Land use	The project area is primarily used for primary production purposes and agistment (beef).
Site history	The project area has been subject to clearing for agricultural land use, with some areas of remnant vegetation.
Land ownership	Origin Energy Power Limited
Residences / facilities	There are 6 residential dwellings, 2 shearing sheds (1 former, 1 currently in use), sheep and cattle yards in the project area.
Site access	Warrane Road from the east, and Romani Road via Boorolong Road from the north.
Mineral / mining titles	An exploration licence covering most of the project area (EL9416) has been granted to LM2 METALS Pty Ltd under the *Mining Act 1992*. The licence was last renewed on 31 May 2022 and is valid until 31 May 2028. An exploration licence application has been submitted covering the northwestern corner of the project area (ELA6938) by MAGNET EXPLORATION Pty Ltd under the *Mining Act 1992*. The licence application is dated 29 July 2025. The areas subject to exploration licences or applications are shown in Figure 2-4 .
Topography and geology	Elevation across the project area ranges from approximately 960 m to 1,250 m AHD. Three main ridgelines run north-south through the middle of the project area with some higher peaks in the south-west parts of the project area. Terrain is predominantly undulating with some flat land occurring to the east. Geology includes Permian sedimentary rocks, intrusive granites and extensive Tertiary basalts (see Figure 2-5).
Climate	The Northern Tablelands region has a cool temperate climate, with a mean annual rainfall of approximately 790 millimetres (mm), and the mean annual days of rain greater than 1 mm being 79.2 (Bureau of Meteorology 2024).
Vegetation	There are substantial portions of the project area that have been cleared for agriculture, with the remnant vegetation predominantly native woodland and derived native grassland.
National Parks and Conservation Areas	Bulagaranda (Mount Yarrowyck) Aboriginal Area (approximately 500 m southwest of the project area).
Recreational areas	• Northern Tablelands Archery Club (approximately 4 km southwest of the project area) • Northern Tablelands Orienteering Club permanent routes: – Dumaresq Dam (approximately 10 km east of the project area) – Armidale Pine Forest (approximately 20 km east of the project area) – Imbota Nature Reserve (approximately 30 km southeast of the project area) • School orienteering route (approximately 6 km southwest of the project area).
Nearby infrastructure	• Transgrid Armidale Substation (approximately 25 km southeast) • Existing 330 kV overhead transmission line at Booroolong Nature Reserve near Boorolong Road / Old Armidale Road • Proposed EnergyCo North Hub.

Aspect	Detail
Surrounding development	The project area is within the New England REZ. Proposed renewable energy developments neighbouring the project area include (also see Table 2-2): • Boorolong Wind Farm to the east of the project area • Yarrowyck Wind Farm to the west of the project area. Cumulative impacts from the project and surrounding developments will be assessed in accordance with *the Cumulative Impact Assessment Guidelines for Significant Projects* (DPIE 2022b) as part of the EIS. Cumulative impacts are discussed in Section 6.13.
Planning context	The project area is not situated: • within any land identified as biophysical strategic agricultural land (BSAL) • on any travelling stock reserves. The project area is identified as containing or being constrained by: • bushfire prone land • Crown roads.



Project area
Mining lease application ELA6938
Mine licence EL9416
Cadastre
Local Government Area
Roads

0 1 2 3 4 Km

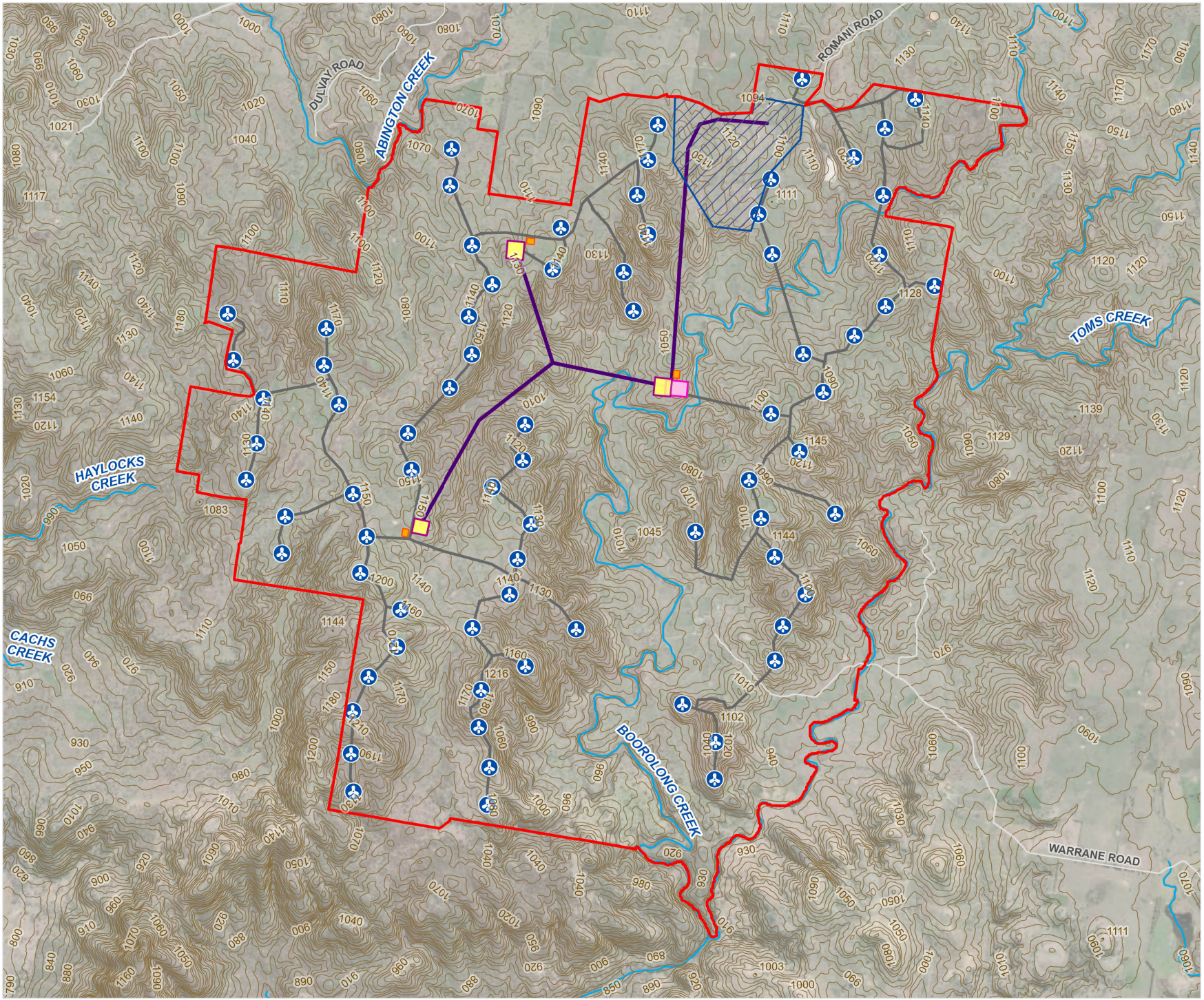
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PROJ: AU213015661.004
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_Mining
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: A

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia.

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FIGURE 2-4: EXISTING EXPLORATION LICENCES AND APPLICATIONS



- Project area
- Wind turbine
- Project 330kV transmission line
- Reticulation and access road
- Substation option
- BESS
- Operations and maintenance facility
- EnergyCo North Hub indicative footprint
- 10m Contour
- Roads
- Watercourses

0 1 2 3 Km

SCALE 1:80,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: AU2130156661.004
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_Topography
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: C

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

rps
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FIGURE 2-5: TOPOGRAPHY

2.2.4 Key risks and hazards

With respect to the existing environment, the project area is situated predominantly within a high-risk bushfire area but is not located on land mapped as being flood prone. Dangerous goods and hazardous material related to farming and agricultural practices may currently be stored and used within the project area, which would need to be investigated further as part of the EIS.

Because the proposed wind farm is located in a rural area, it will likely result in changes to landscape character and may generate impacts during construction and/or operation. Those that require more detailed assessment, due to an increased risk of significant impacts include biodiversity, noise and vibration, landscape and visual, and social factors.

Other hazards and risks that may be generated by the project could include the following:

- the use of lithium-ion batteries within the BESS which are classifies as dangerous goods
- operation of wind turbines that have the potential to break (i.e. blade throw)
- potential increased bushfire risk during construction (e.g. hot works) and operation of infrastructure components such as the BESS and other electrical infrastructure
- generation of extremely low frequency (ELF) electromagnetic fields (EMFs) during operation of transmission lines and substations
- potential to interfere with the electromagnetic signals associated with nearby telecommunication services during operation
- potential for impacts to aircraft services in the region who may have to alter existing aircraft routes or procedures to avoid the project area and wind turbines
- biosecurity risks during construction, operation and/or decommissioning.

Hazards and risk are discussed in more detail in Section 6.11.

2.3 Cumulative impacts

The project will be assessed in accordance with the requirements of the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022b). The EIS and its associated technical studies will consider relevant construction, industrial and employment generating projects nearby and assess potential cumulative impacts.

Nearby renewable energy developments and other major projects are summarised in Table 2-2 and shown in Figure 2-1. Further discussion of these nearby projects in the context of potential cumulative impacts is provided in Section 6.13.

2.4 Agreements with other parties

There are 2 categories of private property and dwelling affected by the project, with their classification dependant on whether or not they have entered into an agreement with Origin based on potential impacts:

- associated residences – a residence on privately-owned land where the owner has reached an agreement with Origin in relation to the development and management of impacts
- non-associated residence– a residence on privately-owned land where no agreement with Origin has been reached in relation to the management of impacts associated with the development.

The land within the project area is owned by Origin, and the dwellings within the wind farm boundary are all associated residences. There are 121 non-associated residences within 8.6 km of the project area.

Associated and non-associated landholders surrounding the project area are shown in Figure 2-2 and summarised in Table 2-4.

Origin is undertaking ongoing engagement with surrounding non-associated residences that would potentially be affected by the project and will seek to enter into benefit sharing agreements based on the findings of the EIS assessments where relevant impact criteria cannot be met. These properties will become associated once agreements are in place.

Table 2-4 Residences in proximity to project area*

ID	Distance to closest wind turbine (km)	ID	Distance to closest wind turbine (km)	ID	Distance to closest wind turbine (km)	ID	Distance to closest wind turbine (km)	ID	Distance to closest wind turbine (km)
AR_001	1.05	NAR_023	5.72	NAR_051	5.29	NAR_079	6.39	NAR_108	8.38
AR_002	1.08	NAR_024	5.53	NAR_052	5.10	NAR_080	6.28	NAR_109	7.74
AR_003	1.02	NAR_025	1.69	NAR_053	5.16	NAR_081	6.38	NAR_110	7.90
AR_004	0.83	NAR_026	3.16	NAR_054	4.60	NAR_082	6.69	NAR_111	7.61
AR_005	0.80	NAR_027	2.48	NAR_055	6.41	NAR_083	6.87	NAR_112	8.39
AR_006	0.46	NAR_028	5.96	NAR_056	6.30	NAR_084	6.93	NAR_113	8.40
NAR_001	6.38	NAR_029	5.67	NAR_057	6.01	NAR_085	7.05	NAR_114	8.58
NAR_002	5.77	NAR_030	5.27	NAR_058	5.51	NAR_086	7.15	NAR_115	8.53
NAR_003	5.49	NAR_031	5.21	NAR_059	5.75	NAR_087	7.23	NAR_116	8.33
NAR_004	5.27	NAR_032	4.98	NAR_060	5.75	NAR_088	5.98	NAR_117	8.39
NAR_005	5.47	NAR_033	4.87	NAR_061	4.92	NAR_089	7.15	NAR_118	8.13
NAR_006	5.51	NAR_034	4.81	NAR_062	5.85	NAR_090	6.99	NAR_119	7.92
NAR_007	6.42	NAR_035	4.58	NAR_063	6.05	NAR_091	6.73	NAR_120	7.08
NAR_008	3.20	NAR_036	4.69	NAR_064	7.10	NAR_092	6.47	NAR_121	8.00
NAR_009	1.99	NAR_037	4.55	NAR_065	6.80	NAR_093	7.08	NAR_122	7.83
NAR_010	5.70	NAR_038	5.15	NAR_066	6.48	NAR_094	7.48		
NAR_011	5.64	NAR_039	5.29	NAR_067	7.07	NAR_095	7.80		
NAR_012	5.35	NAR_040	5.29	NAR_068	6.74	NAR_096	7.73		
NAR_013	3.10	NAR_041	5.40	NAR_069	7.47	NAR_097	8.13		
NAR_014	2.43	NAR_042	5.67	NAR_070	7.43	NAR_098	8.23		
NAR_015	2.47	NAR_043	5.79	NAR_071	7.26	NAR_099	8.29		
NAR_016	3.43	NAR_044	5.58	NAR_072	7.41	NAR_100	8.40		
NAR_017	3.77	NAR_045	6.37	NAR_073	7.31	NAR_101	8.39		
NAR_018	4.72	NAR_046	6.73	NAR_074	7.25	NAR_102	8.46		
NAR_019	4.96	NAR_047	0.72	NAR_075	7.33	NAR_104	8.51		
NAR_020	4.32	NAR_048	3.84	NAR_076	7.19	NAR_105	8.52		
NAR_021	5.97	NAR_049	4.26	NAR_077	6.57	NAR_106	8.51	* NAR_103 skipped as this receiver is outside the study area	
NAR_022	5.65	NAR_050	6.12	NAR_078	6.27	NAR_107	8.59		

2.5 Alternatives

2.5.1 No project

The do-nothing scenario would involve not constructing the project and decommissioning meteorological masts installed in the project area. It would involve no activity within the project area and therefore would have the least local environmental and amenity impact.

The do-nothing scenario would not deliver additional renewable energy to the NEM and would not support the New South Wales and Australian Government renewable energy and emissions reduction targets outlined in Section 2.1. It would also not facilitate local economic growth or provide employment opportunities in the region.

The do-nothing scenario would not contribute to the project objectives and has not been considered further.

2.5.2 Alternative sources of energy

An alternative to using wind or other sources of renewable energy is the continued use of fossil fuel such as coal. Section 2.1 outlines the commitment by Australia and New South Wales to reducing GHG emissions and the targets set for increasing the generation of renewable energy.

In July 2025, CSIRO released the latest GenCost report for 2024-2025, which reaffirmed that renewable energy supported by storage and transmission remains the lowest cost pathway to replace Australia's aging coal generators.

The GenCost report also found that building nuclear reactors in Australia would cost between 2 to 6 times more than renewables backed storage technologies, and that the first plant would not be operational until at least 2040.

The project lies within the New England REZ, which is expected to provide up to 8 GW of renewable energy capacity in New South Wales (EnergyCo 2025). The project would have a wind farm generating capacity of up to 608 MW and is expected to contribute approximately 1.8 TWh of electricity annually, and BESS contributing approximately 0.365 TWh of electricity, both adding significant amounts of renewable and storage energy supply.

Developing solar energy at the site as an alternative to wind is not considered feasible due to the extensive vegetation clearing required to establish a solar footprint capable of matching wind energy's generation capacity at this particular location.

In consideration of the abundance and reliability of wind energy combined with the sparse population in the area, proximity to the existing road network and planned and existing energy transmission resources, it is considered the use of wind energy is justified.

2.5.3 Alternative sites and layout refinement

2.5.3.1 Alternative sites

Origin has been investigating potential renewable energy projects in the New England REZ since December 2021 when the REZ was declared by the NSW Government. Origin has undertaken preliminary investigations and discussions with landholders and key stakeholders as part of the feasibility assessment and site due diligence.

Consideration of site options and layouts has considered various factors including technical feasibility, and potential or perceived impacts on the local community and the environment. Supported by the findings of the feasibility assessment and due diligence, Origin purchased the proposed site in July 2023 based on the following:

- quality of the wind resource in the area
- suitability of the land for project infrastructure
- strong connection point into the NEM
- alignment with strategic plans for the wider region.

Since the purchase of the site, no other site locations have been considered.

2.5.3.2 Layout refinement

A preliminary wind farm layout was developed following the purchase of the project site by Origin and was focused on maximising the potential wind resource across the site. The project area has since been subject to initial investigations at the scoping phase, and preliminary biodiversity and cultural heritage assessments have identified various sensitive and high-value biodiversity areas.

The preliminary layout has been reviewed and refined in response to the findings of the initial investigations to avoid and minimise potential impacts at an early stage. One initial turbine location has been refined to avoid an area of vegetation, and access tracks and associated electrical reticulation have been relocated to utilise existing farm access tracks and cleared areas as much as possible.

The refinements undertaken to date have been limited by the amount and quality of site information available, such as publicly available topographic information and state vegetation mapping. The existing vegetation mapping is progressively being ground-truthed as part of the scoping report biodiversity assessment, and Origin has since undertaken a detailed aerial LiDAR survey of the site to better inform the layout refinement process moving forward.

The design revisions are, by nature, an iterative process based on information from wind monitoring, environmental assessment, landholder feedback and broader community consultation among other considerations. The design refinement process will be ongoing as further information becomes available through the EIS and its supporting technical studies. Ongoing refinement will focus on the following key principles:

- avoiding potential environmental and social impacts as a priority
- minimising potential impacts that cannot be ‘designed out’ whilst maximising wind energy production and the viability of the project
- incorporating feasible and reasonable management measures into construction, operations and decommissioning to appropriately manage potential residual impacts.

2.6 Project justification

2.6.1 Wind farm benefits

The key environmental benefit of wind energy generation is a contribution to GHG emission reduction targets and addressing the increasing impacts of climate change; and generally, they can be constructed and operated whilst maintaining existing agricultural land uses.

Wind energy will play a critical part in Australia’s transition to renewable energy in preparation for the closure of 4 of the 5 remaining coal-fired generators in New South Wales by 2035. Australian renewable energy supplied 39.4% of Australia’s total electricity in 2023, with wind power contributing 13.4% (Clean Energy Council 2024).

The potential to recycle wind farm infrastructure is also improving. If wind farms are decommissioned at the end of their design life, 85 to 94% of a wind turbine (by mass) can be recycled and repurposed in Australia (Queensland Treasury 2025).

The inclusion of a BESS as part of this project also helps to improve the stability of the NEM. By storing energy produced during periods of high generation, the BESS is able to buffer those periods when energy supply is less reliable such as during unfavourable weather conditions and provide a more stable supply of energy.

2.6.2 Project specific benefits

The project would provide renewable, energy to the NEM, and would contribute to the Australian and New South Wales Government’s emission reduction targets while allowing current agricultural practices of sheep and cattle farming to continue.

By rotating livestock across the property, construction can commence while maintaining a safe distance to minimise the impact on farming practices. Once operational, the project and agricultural practices will be able to continue to operate as they do currently.

The project is within the New England REZ, and the expected benefits include:

- renewable energy supply to assist with fulfilling the current obligations under Australian and state government renewable energy targets
- providing cleaner electricity generation, assisting with meeting the current load demand while reducing GHG emissions and the impacts of climate change
- regional investment in the New South Wales renewable energy sector
- making a positive contribution towards achieving the target of 8 GW of renewable energy generation from the New England REZ.

In addition, the project would provide benefits to the region and local communities including:

- 400 full time equivalent (FTE) roles during construction and 15 FTE roles during operation
- direct investment in the New England region
- opportunities for local contractors and businesses
- diversified income stream for rural landholders
- development of new skilled labour in the region within the growing renewable energy industry.

Construction and operation of the project would require a range of skills including engineering, trades (electrical, mechanical, construction) transport, building material providers, equipment operators, consultants and administrative staff.

2.6.3 Site suitability

The proposed site is suitable for the development of a wind farm for the following reasons:

- the property is entirely owned by Origin
- it is in the declared New England REZ, where the project would contribute to the future development of the REZ
- the North Hub would be co-located within the project area, and it is close to the proposed New England REZ Network Infrastructure Project corridor. This would allow for the renewable energy generated from the project to be dispatched to the NEM without significant additional transmission infrastructure and the associated development footprint
- it is in a moderate wind resource area consistent with Global Wind Atlas (2024) as shown in Figure 2-6
- it is easily accessible via the New England Highway
- it is consistent with the RU1 – Primary Production / RU2 – Rural Landscape zoning and would meet the objective of the zones to encourage sustainable primary industry production.

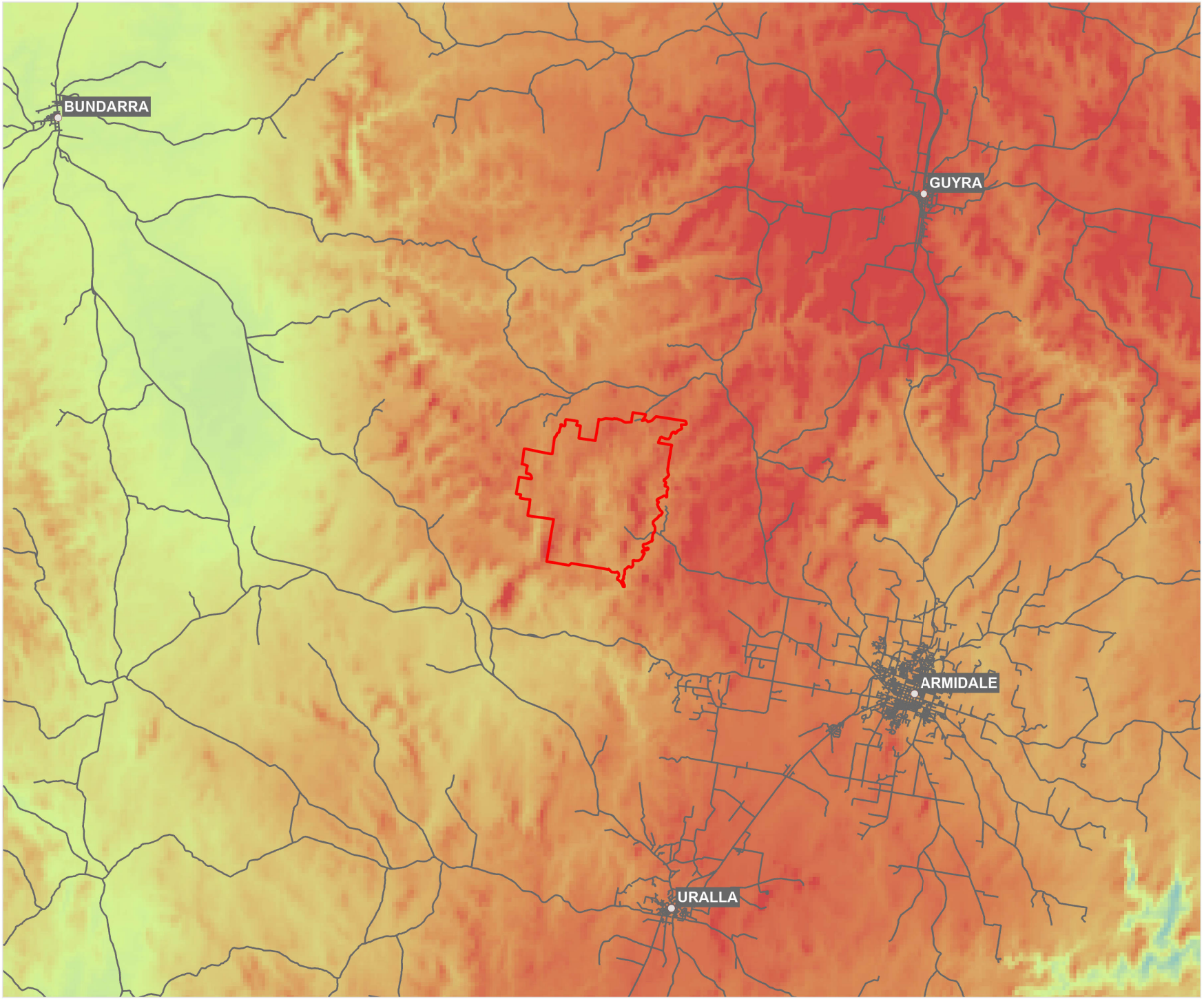


FIGURE 2-6: WIND RESOURCE MAPPING

3 THE PROJECT

3.1 Project overview

The project would involve the construction, operation, and decommissioning of a wind farm and BESS. The wind farm would consist of up to 76 wind turbines, which would supply about 608 MW, and a BESS with a capacity of up to 800 MW/1,000 MWh storage of electricity into the NEM.

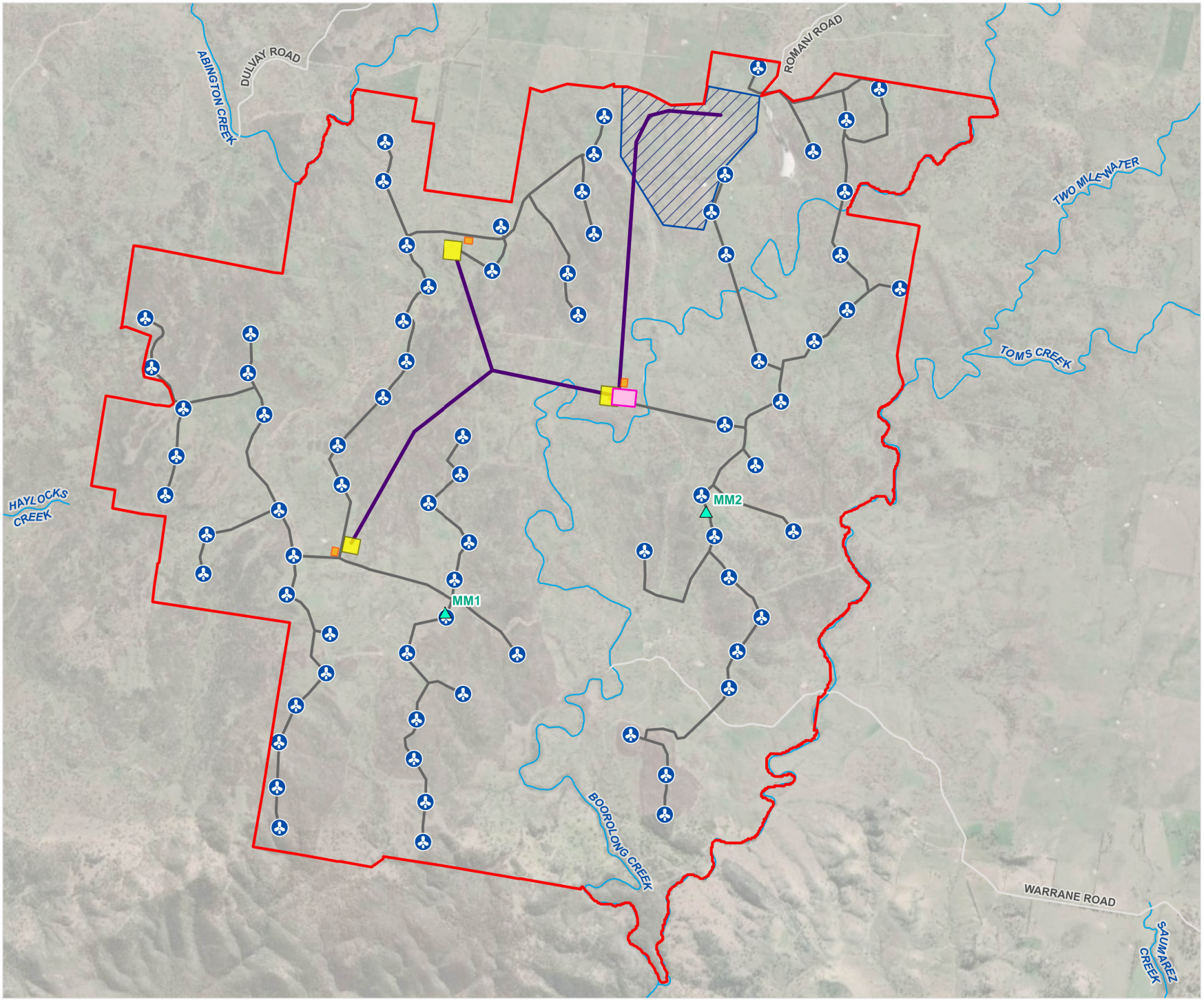
The wind farm would be inter-connected via a series of underground and/or above ground cables connecting the wind turbines to a central substation, which would be located within the footprint for the proposed North Hub, to be constructed by EnergyCo as part of the New England REZ Network Infrastructure Project.

The project is intended to be constructed in a single stage, and would include the following key components:

- up to 76 wind turbines, with a maximum tip height of up to 300 m and a hardstand at the base of each turbine
- a BESS with a discharge rate of up to 800 MW, and a duration depth of up to 1,000 MWh
- electrical infrastructure including:
  - up to 3 substations with a step-up facility and/or a switching station dependent on final connection requirements
  - underground and overhead electrical reticulation connecting the wind turbines to the substations
  - a high-voltage connection (330 kV and 500 kV) to the New England REZ Network Infrastructure Project
- permanent on-site ancillary infrastructure:
  - operations and maintenance facility
  - internal access road network, with access and egress points from and to public roads
  - meteorological masts
  - utility and amenity services
- potential upgrades to the surrounding local road network for the expected traffic volumes and oversize and/or over mass vehicles (OSOM) during construction, and maintenance during operation
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas
  - quarry sites for construction material (rock for access tracks and hardstands)
  - rock crushing facilities and concrete batching plants
  - temporary meteorological devices (including meteorological masts and remote sensing devices such as LiDAR)
  - potential construction workforce accommodation on-site
- site access:
  - via Boorolong Road and Romani Road to the north, and Warrane Road to the east
  - transport route from Port of Newcastle to Boorolong Road and Romani Road would be via New England Highway to the east
- land tenure
  - the project area is freehold land, comprising 77 lots and owned by Origin.

At the end of its practical life, the project would be decommissioned, and the site returned to its pre-existing land use in consultation with the landholder at that time.

Preliminary project components and specifications are outlined in Table 3-1 and further details provided in Section 3.1, and the current indicative layout for the project is provided in Figure 3-1.



- Project area
- Wind turbine
- Met mast
- Operations and maintenance facility
- BESS
- Substation option
- Project 330kV transmission line
- Reticulation and access road
- EnergyCo North Hub indicative footprint
- Roads
- Watercourse

0 1 2 3 Km

SCALE 1:75,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: E

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

rps
A TETRA TECH COMPANY

FIGURE 3-1: PROJECT OVERVIEW AND INDICATIVE LAYOUT

Table 3-1 Indicative project components and dimensions

Project component	Details	Approximate dimensions	Quantity
Overview			
Project area	The outer boundary of the property on which the project would be located.	7,671 ha	-
Disturbance area	Proposed conservative disturbance area (inclusive of 200 m wide survey corridor) associated with the project footprint based on current indicative layout, subject to further design work as the project progresses. Final disturbance footprint will be significantly smaller.	1,508 ha	-
Generating capacity	Up to 608 MW	-	-
Wind turbine generators			
Number of turbines	-	-	Up to 76
Tip height	From ground to tip of blade tip	Up to 300 m	-
Hub height	-	Up to 200 m	-
Turbine hardstand	Engineered hardstand (with additional blade laydown area and assist crane pads)	80 m x 40 m	Up to 76
	Construction hardstand	0.8 ha	
	Operational hardstand after partial rehabilitation following construction	0.4 ha	
Electrical infrastructure			
Substations	Substations with a step-up facility and switching yard to transform energy for dispatch to the NEM consisting of up to 4 transformers, harmonic filters and static var compensators or synchronous condenser	Up to 400 m x 300 m	Up to 3
Battery energy storage system	BESS with capacity of 800 MW / 1,000 MWh storage, harmonic filter and grid forming capability	Up to 500 m x 500 m	1
Electrical reticulation network	Underground (wherever possible) and some overhead 33 kV or 66 kV electrical reticulation network connecting the turbines to the substations	-	Up to 80 km
NEM connection	The wind farm would connect to the NEM via the proposed North Hub to be located within the wind farm boundary	-	-
Permanent on-site ancillary infrastructure			
Operation and maintenance facility	A control room and up to 3 locations providing maintenance and storage facilities which incorporate staff amenities, car parking and security fencing which would operate 24-hours per day, 7-days per week. Includes provisions for water supply and management of waste, first aid, telecommunications, security and surveillance.	1 ha	Up to 4
Internal road network	Internal engineered gravel road network with roadside drainage. Full road corridor width will be subject to design to quantify earthworks batter widths.	Up to 14 m wide (7 m pavement width)	Approximately 100 km
Meteorological masts	Permanent meteorological masts	Up to 200 m high	3
Potential public road upgrades			

Project component	Details	Approximate dimensions	Quantity
Road and intersection upgrades	Potential public road and intersection upgrades may be required to accommodate the expected traffic volumes and OSOM vehicles during construction. Generally, potential road and intersection upgrades undertaken would be permanent to allow for ongoing maintenance activities during operation.	-	TBC*
Temporary construction ancillary infrastructure			
Site compounds	Includes construction laydown and storage areas (equipment, stockpiles, and materials storage)	1.5 ha	6
Quarry sites	Depending on the quality of material available on-site, the project may also utilise on-site quarrying to source material that would typically be used for road base for access tracks and hardstand areas Locating of quarries would prioritise areas of the road/hardstand network with significant earthworks, such that high cut quantities can be reused across site, minimising the need for further disturbance.	TBC*	TBC*
Rock crushing facilities	Mobile or constructed. To be established at locations of high earthworks for material re-use, rather than an additional disturbance allowance for operations.	Up to 100 m x 100m	TBC*
Concrete batching plants	Mobile or constructed	Up to 100 m x 100 m	TBC*
Temporary meteorological masts	Temporary meteorological monitoring masts	Up to 110 m	3
Construction workforce accommodation	The need for a temporary construction workforce accommodation would be confirmed during the EIS	TBC*	1
Temporary utility services	Infrastructure to support the need for potable water for workforce and concrete production. Bore water access for earthworks and dust suppression. Electricity demand at site compound and ancillary locations anticipated to be supplied by diesel generators.	-	-
Personnel			
Construction on-site workforce	Approximately up to 400 FTE	-	-
Operations on-site workforce	Approximately 15 FTE	-	-

* Items noted as TBC as part of this scoping phase will be confirmed and considered (if required) in the EIS.

3.1.1 Project area definition

The project area corresponds with the outer boundary of the property on which the project would be located, which covers an area of approximately 7,671 ha. Lot and Plan details for the project area are provided in Table 1-2.

3.1.2 Survey boundary

A conservative survey boundary has been developed in relation to the project area and will be adopted for the specialist environmental assessments in the EIS that consider the impacts of vegetation and ground disturbance. These assessments will include:

- biodiversity assessment – quantified vegetation and ground disturbance impacts
- Aboriginal and non-Aboriginal heritage assessment – ground disturbance and impacts to heritage items and cultural significance
- land use and agricultural impacts assessment – ground disturbance and loss of agriculturally productive land.

A survey boundary that provides a 200 m corridor around the centreline of access tracks and turbines would be applied to these assessments. This corridor ensures the EIS will adequately identify potential disturbance impacts but would also provide flexibility for the proposed layout to be refined within the surveyed area during detailed design.

Specialist environmental assessments that consider potential impacts relating to a broader catchment area such as noise and visual amenity, would adopt issue-specific study areas in accordance with relevant guidelines. These issue-specific study areas are discussed in more detail in the proposed assessment methodologies in Section 6.

3.1.3 Project disturbance footprint

Within the survey boundary discussed above, there would be an expected disturbance footprint, which would represent the expected maximum extent of ground disturbance and vegetation clearing associated with construction and operation of the project. All permanent and temporary project components would be located within the disturbance footprint.

For the purpose of the scoping report, the expected disturbance footprint has been conservatively calculated based on the 200m-wide survey boundary, and the expected final disturbance footprint would be significantly reduced.

By capturing a wider area for surveys, the project can appropriately apply the ‘avoid, minimise, offset’ hierarchy to inform the detailed design and micrositing of infrastructure to avoid and minimise environmental impacts to the greatest extent possible.

Based on the indicative layout presented in Figure 3-1 and the conservative application of the 200 m survey boundary, the project would require a disturbance footprint of approximately 1,508 ha.

However as noted above, while the conservative approach provides a comprehensive context for survey coverage, it does not represent the extent of actual impacts associated with the project, and the final disturbance footprint would be significantly reduced from this estimate as the project layout is refined during the EIS.

The **refined disturbance footprint** will comprise the following:

- an estimated corridor of 20 m on either side of the centreline of the proposed internal access tracks and the access tracks from public roads to the clusters (as opposed to the conservative calculation of 200 m around the centreline, which has been applied for the scoping report)
- a radius of approximately 100 m around each wind turbine to allow for micro siting during detailed design
- a buffer of approximately 20 m around all permanent (operational) and temporary (construction) ancillary infrastructure.

3.2 Project phases and timing

Construction works would commence as soon as practicable following project approval and secondary construction environmental approvals, which is currently estimated to be in around 2030.

The project is intended to be constructed in one stage, with turbines being commissioned sequentially throughout the construction phase, in line with AEMO requirements. An overview of the overarching project phases, and indicative timing is provided in Table 3-2.

Layout confirmation and detailed design will be undertaken during the planning and approvals phase and will include the design of electrical reticulation, micro-siting of turbines and other ancillary infrastructure, and any required site investigations required to inform the design e.g. detailed survey and hydrology.

Table 3-2 Project phase

Project phase	Status and timing estimate
Site selection	Completed in 2023.
Project feasibility	In progress, estimated completion 2026.
Planning and approvals	In progress, estimated completion in 2028.
Construction and commissioning	Commencing in 2030, for a period of up to 48 months.
Operation and maintenance	Planned to commence commercial operations in 2033 with an estimated operational life of up to 35 years.
Decommissioning	At the end of the operational life, all above ground infrastructure would be removed and land rehabilitated in consultation with the landholder/s at that time.

3.3 Project components

3.3.1 Wind turbines

Turbine layout

The project would include up to 76 turbines connected electrically and arranged across the project to maximise the energy production. Collectively, the turbines would have a total energy generation capacity of up to 608 MW. The indicative layout of the turbines is shown in Figure 3-1.

Micro-siting of the wind turbines would be undertaken to optimise the wind farm layout during detailed design and would consider:

- environmental and social constraints
- topography
- wind conditions
- building requirements (e.g. distances to residences)
- accessibility (existing roads and access tracks)
- influence of the wind turbine on the environment (e.g. shadow flicker, noise)
- distances between the individual turbines
- constructability of earthworks for enabling access tracks and hardstands.

A micro-siting allowance around each turbine has been accounted for in setting the survey boundary, to accommodate minor adjustments in turbine locations without increasing the environmental impacts of the project or requiring further survey at detailed design stage. This is discussed in Section 3.1.2.

Description of components

The key components of a wind turbine generator are described in Table 3-3.

Table 3-3 Wind turbine generator components

Wind turbine generator component	Description
Design height	The proposed wind turbines would have a hub height of up to 200 m and a maximum tip height of up to 300 m. Final numbers and power output would be dependent on the final geographic footprint as well as outcomes of the various engineering, environmental and social studies and is subject to change. Any changes to the design height would be assessed as part of the EIS.
Tower	The supporting tower structure of a wind turbine is typically comprised of steel, concrete, or a concrete steel hybrid, fitted with an internal ladder and lift.
Nacelle	The nacelle is the housing constructed of steel and fibreglass that is mounted on top of the tower and is typically around 15 to 18 m long, 4.5 m high and 4.5 m wide (depending on the turbine model). The nacelle houses the gearbox, generator, transformers, motors, brakes, electronic components, wiring and hydraulic and lubricating oil systems. Weather monitoring equipment located on top of the nacelle would provide data on wind speed and direction for the automatic operation of the turbine.
Hub	The hub connects the blades to the tower.
Rotor	The rotor drives the generator within the nacelle producing electrical output. Generally, a larger rotor enables greater generation capacity, however site-specific wind conditions influence the rotor selected for installation at any given wind farm.
Blades	Turbine blades would be up to 100 m long and are typically made from glass fibre reinforced with epoxy or other resin.
Foundations	Foundations are expected to be either concrete gravity pad foundations or rock anchor foundations.
Step-up transformer	The wind turbines would produce electricity at low voltage which is then stepped up to medium voltage (33 kV or greater) by a transformer located in either the nacelle, or at the base of the tower within the area of hardstand.

3.3.2 Electrical infrastructure

The project will connect to the North Hub of the New England REZ that is to be located within the project area. The North Hub would contain the substation, step-up facility and BESS that the project will connect to.

Electrical infrastructure required for the project would include the following:

- up to 3 substations and step-up facilities – to transform electricity generated by the turbines into a higher voltage
- static var compensators or synchronous condenser to maintain voltage stability and system strength
- harmonic filters to maintain power quality and limit harmonic emissions within TNSP guidelines
- a BESS – with a capacity of 800 MW/1,000 MWh storage, harmonic filter to maintain power quality and grid forming capability to maintain voltage stability and system strength
- underground and overhead electrical reticulation – up to 66 kV to connect the turbines to the substation
- control cables and earthing to monitor wind conditions and energy output.

The North Hub does not form part of the NTWF project and will be the subject of a separate approvals process.

3.3.3 Battery energy storage system

The project would include a BESS located close to the project's central substation, alternative integrated into the turbine locations, providing system strength and reactive power support services to the network. The proposed BESS sizing of 800 MW/1,000 MWh storage has been selected for this project. An indicative location for the BESS is shown in Figure 3-1, and will be sited with consideration of:

- North Hub and wind turbine locations
- environmental (including noise) constraints
- building requirements (e.g. distances to residences)
- accessibility (existing roads and access tracks)
- constructability of earthworks for the BESS.

Component description

The key components of a BESS are described in Table 3-4.

Table 3-4 BESS components

BESS component	Description
Battery modules	Individual units that store electrical energy within a BESS. They consist of cells arranged in a specific configuration to determine discharge and duration.
Battery management system (BMS)	The BMS monitors and manages the performance, state of charge, and health of the battery to ensure safety and longevity.
Inverters	The inverters convert direct current (DC) from the batteries to alternating current (AC) for dispatch to the NEM.
Power plant controller	Manages the flow of electricity between the batteries, inverters and the grid to optimise performance based on demand and supply.
Energy management system (EMS)	Software that controls and optimises the operation of the BESS, including charging and discharging based on grid conditions.
Harmonic filters	To mitigate or eliminate harmonic distortion caused by inverters beyond acceptable limits given by the TNSP at the point of connection
Cooling system	System that regulates and optimises the operating temperatures of the BESS to ensure efficiency and safety.
Foundations	Foundations are expected to be reinforced concrete.

3.3.4 Other permanent ancillary infrastructure

Other ancillary infrastructure necessary for the operation of the project is described in Table 3-5.

Table 3-5 Permanent ancillary infrastructure

Permanent ancillary infrastructure	Description
Internal roads and drainage	Internal access roads would be established across the wind farm to facilitate construction and would be maintained for the operation, repowering and/or decommissioning of the project. The proposed access track arrangement is shown in Figure 3-1. The internal access tracks would follow existing farm tracks where practicable and are likely to comprise an engineered gravel road up to 7 m wide (pavement width) to allow transport of OSOM vehicles.
Operation and maintenance facility	A permanent operation and maintenance facility would be required for the day-to-day operation of the project. The facility would include laydown areas, site operations facilities and services buildings, workshop, storage, parking, and other facilities for operations staff. The indicative location of the operation and maintenance facility is shown in Figure 3-1 and is expected to be approximately 1 ha in area.
Permanent meteorological masts	Up to 3 permanent meteorological masts would be required across the wind farm allowing for continuous monitoring of meteorological conditions and the performance of the wind turbine generators. The permanent masts would be built to hub height of the wind turbines and are expected to be a guyed, narrow lattice or tubular steel design.
Telecommunication facilities	Telecommunications facilities would be co-located on infrastructure such as permanent meteorological masts wherever possible.
Local road and intersection upgrades	Access to the site during construction and operation will be via the existing road network (i.e. via Boorolong Road and Romani Road to the north and Warrane Road to the east). Subject to detailed transport route and swept path analysis to be undertaken during the EIS, some upgrades to local roads and intersections are expected to be required to facilitate construction and the transport of large turbine components such as blades and nacelles on OSOM vehicles. The number and location of road and intersection upgrades would be confirmed during the EIS and in consultation with the relevant road authorities (Council and/or Transport for NSW).
Utility services	The project would be connected to the existing transmission network and when not generating would draw a small amount of electricity from the NEM for the operation and maintenance facility. Backup and emergency power at the substation may be supplied by a local 11 kV distribution line, on-site batteries and/or a standalone diesel generator. Operational water requirements would be sourced from on-site rainwater tanks, with potable water delivered to site through local suppliers. It is likely that an approved septic system would be installed for the operational amenities, and other waste will be classified and disposed to an approved facility (landfill or recycling).

3.4 Transport and access

It is expected that many of the wind turbine components and other large components such as the electrical plant would be manufactured off-site and transported to site in sections.

Transporting large components such as turbine blades by road can be a complex undertaking. The final transport routes will be confirmed by the preferred construction contractor based on the final procurement and origin of the wind farm components. It is expected that some components will be delivered by ship to the Port of Newcastle prior to transportation to site by road.

The expected delivery route from the Port of Newcastle to the project would be approximately 460 km, and would likely comprise the following roads (shown in Figure 3-2):

- Bourke Street/Cowper Street from Newcastle Port
- Hannel Street/Industrial Drive A43/Pacific Highway/Maitland Road A43/New England Highway A1/A43
- Or Hannel Steet/Hunter Street/Pacific Highway/Donald Street A15/ Newcastle Road A15/Newcastle Link Road M15

- Hunter Expressway M15
- New England Highway M15/A15
- Whitehouse Lane/O'Briens Lane A15
- Oxley Highway/New England Highway B56/A15

Following the exit of Uralla township, the 2 route variations for component delivery include:

Route 1:

- Kleindienst Road
- Rocky River Road
- Hawthorn Drive
- Arding Road
- Mount Butler Road
- Pinegrove Road/Dumaresq Road
- Boorolong Road
- Warrane Road/Romani Road.

Route 2:

- New England Highway B56/A15 (continuation out or Uralla township)
- Handel Street
- Boorolong Road
- Warrane Road/Romani Road.

There are 2 proposed site access points to the project area via Warrane Road to the east and via Romani Road to the north.

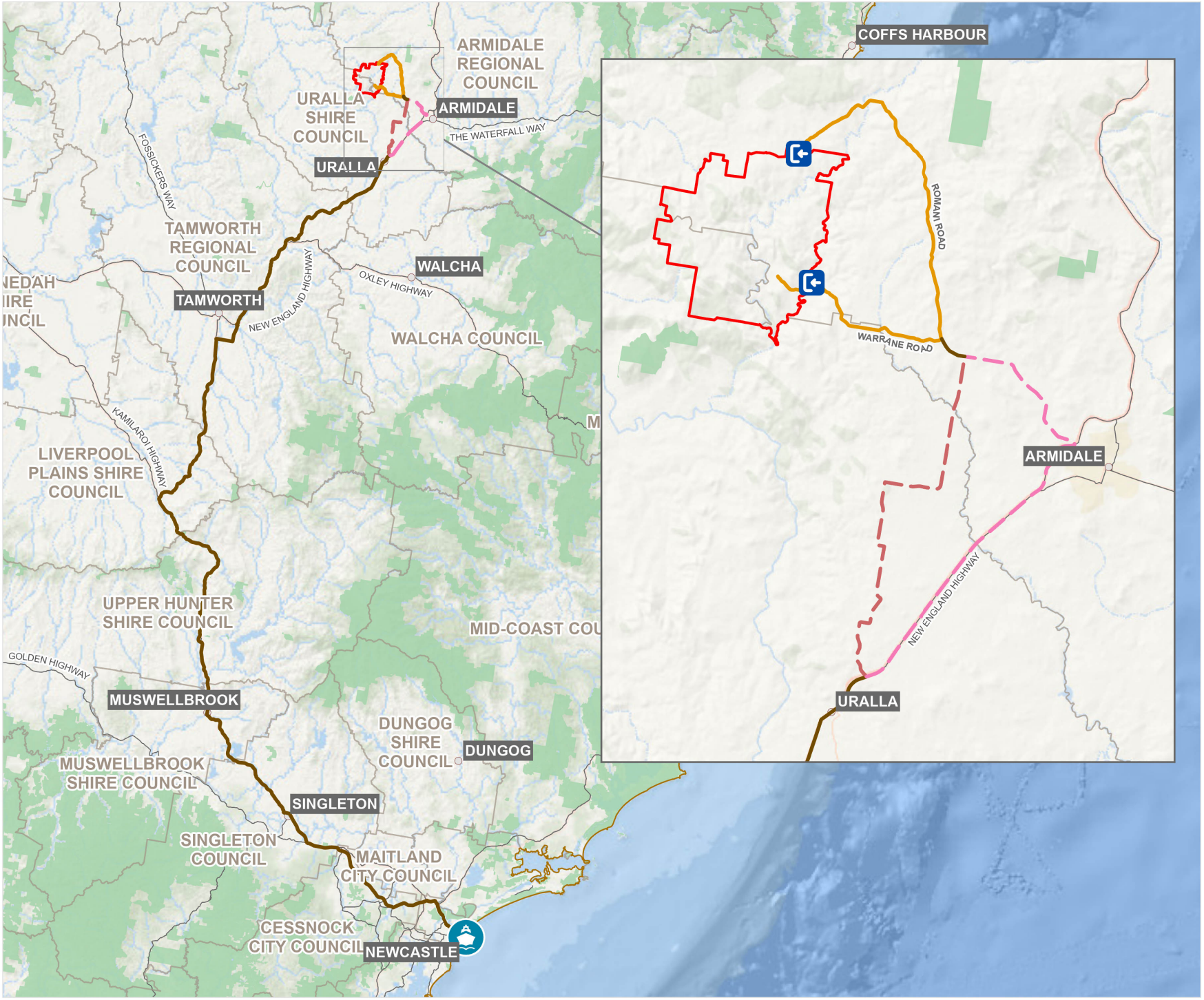
3.4.1 Upgrades to local roads and intersections

A preliminary assessment of the proposed site access routes via adjacent local roads suggests upgrade works, including widening and intersection upgrades, may be required to allow transport of wind turbine blades and tower sections. A structural assessment for some existing bridges may also be required to determine whether these structures have the capacity to carry the required loads.

It is expected that EnergyCo, through its memorandum of understanding with Transport for New South Wales (TfNSW) would be coordinating and facilitating necessary upgrades to state road infrastructure from the Port of Newcastle to the New England REZ, where they are common to several renewable generation projects and the New England REZ Network Infrastructure Project.

The responsibility for delivering the identified road upgrade works is expected to be as follows:

- upgrades to main OSOM route between Port of Newcastle and the New England REZ will be delivered by TfNSW
- upgrades to local roads for the provision of access to generator development sites will be delivered by each applicant (i.e. NTWFP who would be responsible for any local road and/or intersection upgrades required specifically to facilitate construction and operation of the project.



Project area
Haulage route - both options
Haulage route - option 1
Haulage route - option 2
Site access route - both options
Site access point
Major road
Port
NPWS reserve/state forest
Local Government Area

0 25 50 75 Km

SCALE 1:2,000,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-12564
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_Transport Route
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: C

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

rps
A TETRA TECH COMPANY

FIGURE 3-2: PROJECT TRANSPORT ROUTE OPTIONS

3.5 Construction

The project is intended to be constructed in a single stage, delivered in the indicative construction phases outlined in Table 3-6 that would be typical for construction of a large-scale wind farm and BESS. The order of activities is indicative, and subject to change dependent on the final construction staging and methodology.

Table 3-6 Indicative construction works

Construction activity	Details
Phase 1 – site preparation and temporary construction facilities	• Pre-construction activities such as site preparation, utility adjustments, erection of site and workers compounds and accommodation as required. • Upgrades to public roads required to facilitate construction.
Phase 2 – main construction works	• On-site civil works including internal access tracks and hardstands. • Wind turbine construction. • Electrical reticulation and ancillary infrastructure. • BESS construction
Phase 3 – commissioning	• Activities to be undertaken prior to operation such as testing of turbines and energising substations.

3.5.1 Site offices and compounds

Site offices and compounds will include the following:

- offices and meeting facilities
- amenities
- car parking
- construction compound including delivery and laydown areas
- bunded equipment maintenance and refuelling areas.

Temporary construction offices and compounds would be expected to require an area of up to around 1.5 ha and would be fenced for security and to allow safe movement of vehicles and storage of equipment. Indicative locations for the temporary construction facilities are provided in Figure 3-1.

An area of approximately 1 ha would be retained for permanent use as an operation and maintenance facility as described in Section 3.3.4. This would include a site office, workshop, storage, parking and facilities for operational staff.

Other temporary facilities would also be required in other locations throughout the project area to facilitate construction. These would include amenities, laydown and storage areas. The locations of these smaller satellite facilities would be confirmed by the preferred construction contractor to suit the construction schedule.

3.5.2 Construction workforce accommodation

An accommodation strategy will be presented in the EIS to address workforce accommodation. The strategy will be prepared in consultation with council and will consider the use of available rental, motel and other accommodation in surrounding townships, regional centres, and the consideration of temporary facilities on-site and offsite. The strategy will also consider options to develop workforce accommodation solutions in consultation with EnergyCo.

Potential cumulative impacts on accommodation, public infrastructure, and essential town services will be considered in the EIS as part of the social and economic impact assessment.

Should a purpose-built temporary construction workforce accommodation facility be required, it would include rooms and amenities for the expected peak workforce, and supporting facilities such as car parking, a dining hall, gym and other recreational facilities. The location of the potential construction workforce accommodation would be determined and assessed in the EIS.

3.5.3 Upgrades to public roads

As discussed in Section 3.4, a preliminary assessment of the proposed site access routes via adjacent local roads, suggests upgrade works including widening may be required to allow transport of wind turbine blades and OSOM vehicles during construction, operation, and decommissioning.

Confirmation of the proposed road upgrades required as well as the assessment of potential environmental impacts will be provided in the EIS.

3.5.4 On-site quarrying activities

Depending on the quality of material available on-site, the project may require some on-site quarrying to source material that would typically be used for road base or fill for access tracks and hardstand areas. On-site quarrying is the preferred way to source materials required for construction as it would significantly reduce the potential traffic impacts to the surrounding road network that would otherwise be associated with the haulage of materials.

Indicative locations of potential on-site quarries would be provided in the EIS, and the size and location would be confirmed by the preferred construction contractor prior to construction. Locating of quarries would prioritise areas of the road/hardstand network with significant earthworks, such that high cut quantities can be reused across site, minimising the need for further disturbance.

3.5.5 Rock crushing and concrete batching plants

Temporary rock crushing facilities and concrete batching plants would be required to process rock, aggregate and concrete for the wind turbine foundations, electrical infrastructure (footings for towers and poles, substations etc) and other minor works such as site office and compound foundations.

Concrete batching facilities would be located accordingly to minimise delivery times to foundation pours, whilst targeting topographically benign areas to minimise disturbance footprint of bench construction. Temporary rock crushing may occur using mobile plant if required following excavation of rock material, to reuse in the immediate area and minimise haulage of materials around site.

3.5.6 Civil works for access tracks

Construction of the access track network would be the first major civil works package to be delivered as part of the Phase 3 main construction works and would provide durable and reliable all-weather access to the turbine locations for the delivery of major components.

The access tracks would be appropriately designed and established during this stage of construction and maintained for use as all-weather operational access tracks.

The access tracks would comprise an engineered gravel road surface up to 7 m wide, with drainage structures, cut and fill batters, and sediment and erosion controls as required, extending beyond the engineered road surface. Fencing, gates, and cattle grids would also be included where required.

3.5.7 Wind turbines

Preparation for construction of each turbine would include the development of a suitable foundation and laydown/hardstand area. This area would be large enough to provide a level working space for the required construction machinery, a permanent foundation pad, and to lay down the individual turbine and tower components during construction.

Hardstands would be surfaced to required load-bearing specifications and would be maintained throughout construction and to facilitate ongoing maintenance and access to the turbines during operation.

The total area required for each turbine site would be dependent on the turbine size, but it is expected that a main hardstand area of approximately 80 m by 40 m, in addition to blade laydown and assist crane pad areas, which would also be required for each wind turbine location, with several configurations of this area possible.

3.5.8 Electrical reticulation

Generally, electrical reticulation infrastructure would be located adjacent to the proposed access track network to minimise the need for additional ground disturbance during construction. Where possible the cabling would be laid during the earthworks for the access tracks.

The electrical network design and installation would adhere to relevant Australian and international standards.

3.5.9 Overhead transmission lines

The design and installation of overhead transmission lines as required, will adhere to relevant Australian and international standards, and generally, the following indicative activities will be required:

- site establishment and clearing for access provisions
- survey and mark out
- establishment of required easements, including vegetation clearing and trimming where impacts are unavoidable
- excavation for footings and installation of towers/poles
- stringing of the lines and earthing.

It is expected that overhead transmission lines would be accessible from the ground and construction could be undertaken using ground-based equipment. The exception to this may be where accessibility is challenging, and in those instances the higher voltage transmission lines (330 kV and above) may be strung using a helicopter as the safest construction method.

Some temporary laydown areas would be required along the alignment of transmission lines for the storage of equipment, transmission tower components/poles and conductors.

3.5.10 Other electrical infrastructure

Other electrical infrastructure including the substation and BESS are expected to be designed and installed in accordance with relevant Australian and international standards.

The substations would be designed and constructed in accordance with network operator requirements and other relevant technical, electrical and planning standards. Construction would require clearing and excavations for the reinforced concrete foundations and the compound areas around the switch room, control building and other components would be surfaced with course gravel and stone material.

3.5.11 Other temporary construction ancillary activities

The project may also include but not be limited to the following activities:

- sourcing of gravel rock and other materials from commercial sources outside the project area
- sourcing of water for construction (this may include offsite or on-site water sourcing including the construction of bores and/or dams)
- subdivision and boundary adjustments relating to lease agreements, where required for project infrastructure such as the substation and BESS
- visual screening.

3.5.12 Construction hours, program and workforce

Construction hours

Standard daytime construction hours consistent with the *Interim Construction Noise Guideline* (Department of Environment and Climate Change 2009) are as follows:

- 7am to 6pm Monday to Friday
- 8am to 1pm on Saturdays
- no works on Sunday or public holidays.

The project may seek approval for extended construction hours to maximise construction efficiency, maintain flexibility for large concrete pours and curing cycles and reduce the overall construction program.

Where possible, activities conducted within the extended hours period will be inaudible at noise sensitive receivers. High noise level activities, such as those involving noisy machinery, would be deferred to standard working hours where possible.

Out of hours work would also be required on limited occasions, such as when transporting large components including turbine blades, nacelles, BESS and transformer components to site, using OSOM vehicles under police escort, for the installation of wind farm and BESS equipment, or to facilitate large concrete pours and curing cycles that cannot be undertaken during the extended working hours.

Some out of hours staff arrival/departure movements and emergency response may also be required from time to time.

The timing of construction would be dependent on a project approval; however, it is expected to commence in 2030 and would extend for a period of approximately 24 to 48 months subject to final design and construction methodology.

Expected workforce

The project would likely require up to 400 workers during peak construction, subject to detailed design, construction methods and scheduling.

Origin will engage with relevant local councils and the preferred construction contractor through the EIS and detailed design to investigate options for prioritising local workers where feasible, noting there would likely be a requirement for non-local construction staff due to specialist skill requirements.

3.6 Operation

Once complete, the project would operate 24-hours per day, 7 days per week with the operations and maintenance team typically attending site 5-days per week during standard working hours, unless responding to an alarm, fault, or undertaking non-scheduled maintenance works.

Ongoing monitoring and maintenance would be required, including maintenance of the wind turbines, associated infrastructure, vegetation, and internal access tracks.

Approximately 15 FTEs would be required to operate and maintain the wind farm, and regular light vehicle access will be required throughout operations. Heavy vehicles would be required occasionally for replacing larger components of project infrastructure.

Current agricultural activities would continue throughout operations.

It is expected that the project would operate for around 35 years. At a point in time prior to this, it would be considered whether to either re-permit and repower, or decommission the infrastructure based on equipment performance, equipment condition and commercial viability.

3.7 Decommissioning

Near the end of the project's operational life, a decommissioning and rehabilitation plan will be prepared that outlines the rehabilitation objectives and strategies in consultation with landholders and where relevant, local council.

Decommissioning would involve dismantling and removal of all above ground infrastructure for recycling where possible. Structures that cannot be recycled would be disposed of at an approved waste management facility.

It would be expected that any underground cabling below 1,000 mm would remain in-situ following project decommissioning as this would not interfere with safe farming practices and would reduce the impact on soils during decommissioning.

Workforce numbers for decommissioning are expected to be similar to those estimated for construction.

3.8 Environmental management

A description of the proposed environmental management framework that will be implemented for the project will be provided in the EIS, based on the findings of the environmental assessments and feedback from community and stakeholder engagement during the EIS process.

4 STATUTORY CONTEXT

Key relevant statutory requirements for the project, having regard to the EP&A Act, other New South Wales and Commonwealth legislation, and environmental planning instruments are outlined in Table 4-1. This table has been set out in accordance with the Scoping Report Guidelines and *State Significant Development - Preparing an Environmental Impact Statement Appendix B to the State Significant Development Guidelines* (DPIE 2022) (EIS Guidelines), to cover the following:

- power to grant approval (i.e. approval pathway)
- permissibility
- consistent approvals
- Commonwealth approvals
- approvals not required (pursuant to Section 4.41 of the EP&A Act)
- mandatory matters for consideration.

Detailed consideration of relevant statutory requirements will be provided in the EIS.

Table 4-1 Statutory context

Approval	Requirement
Power to grant approval	
Environmental Planning and Assessment Act 1979 (EP&A Act) and SEPP (Planning Systems) 2021	Approval for the project will be sought under Part 4, Division 4.7 of the EP&A Act, which outlines the approval pathway for development deemed to be State significant development (SSD). Section 4.36(2) of the EP&A Act states: *(2) A State environmental planning policy may declare any development, or any class or description of development, to be State significant development.* Relevant State environmental planning policies (SEPPs) include *State Environmental Planning Policy (Planning Systems) 2021* (the Planning Systems SEPP), and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (the Transport and Infrastructure SEPP). Under the provisions of Section 2.6(1) of the Planning Systems SEPP, a development is classified as SSD if: *(a) the development on the land concerned is, 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, Section 20 of the Planning Systems SEPP determines 'electricity generating works' to be SSD if it meets the following criteria: *Development for the purpose of electricity generating works or heat or their cogeneration (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that:* *(a) has a capital investment value of more than $30 million* The project involves development for the purpose of 'electricity generating works' using wind power which would have an estimated development cost of more than $30 million. Therefore, the project is classified as SSD under Part 4 of the EP&A Act. Under Section 4.5(a) of the EP&A Act, the consent authority for the project is the Independent Planning Commission or the Minister for Planning and Public Spaces. The consent authority would evaluate the SSD application in accordance with Section 4.15 of the EP&A Act.
Permissibility	
State Environmental Planning Policy (Transport and Infrastructure) 2021	Under Section 2.36 (1) of *State Environmental Planning Policy (Transport and Infrastructure) 2021*, development for the purpose of electricity generating works, such as the project, may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone.

Approval	Requirement
	The project is within a rural land use zone, RU1 - Primary Production under the Armidale LEP and RU2 - Rural Landscape under the Uralla LEP. Development for the purpose of electricity generating works is therefore permissible with consent.
Electricity Infrastructure Investment Act 2020	The project is within a declared renewable energy zone under Section 23 of the *Electricity Infrastructure Investment Act 2020.*
Consistent approvals	
Overview	Section 4.42 of the EP&A Act outlines that the approvals listed below cannot be refused if necessary for carrying out an approved SSD and are to be consistent with the terms of the development consent for the SSD.
An EPL under Part 3 of the New South Wales *Protection of the Environment Operations Act 1997* (POEO Act)	Section 48 of the POEO Act requires an environment protection licence (EPL) to undertake scheduled activities at any premises. Scheduled activities in Schedule 1 Clause 17 of the POEO Act include 'electricity works (wind farms)'. Accordingly, the project would require an EPL.
An approval under Section 138 of the New South Wales *Roads Act 1993*	Under Section 138 or Part 9, Division 3 of the *Roads Act 1993*, a person must not undertake any works that impact on a road, including connecting a road (whether public or private) to a classified road, without approval of the relevant authority, being either TfNSW or local council, depending upon the classification of the road. Road and/or intersection upgrades would be required as part of the project and approval(s) will be sought from the relevant authority.
Mining Act 1992	The *Mining Act 1992* aims to encourage and facilitate the discovery and development of mineral resources in New South Wales. A review of MinView (2023) indicates there is an exploration licence which covers most of the project area (Licence Number EL9416). The licence was granted to LM2 METALS Pty Ltd and was last renewed on 31 May 2022 and is valid until 31 May 2028. An exploration licence application has been submitted covering the northwestern corner of the project area (ELA6938) by MAGNET EXPLORATION Pty Ltd under the Mining Act 1992. The licence application is dated 29 July 2025. A mining lease would not be required.
Commonwealth approvals	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act aims to protect matters of national environmental significance (MNES). If an action will, or is likely to, have a significant impact on any MNES, it is deemed to be a 'controlled action' and requires approval from the Commonwealth Environment Minister or the Minister's delegate. If the project is determined to be a controlled action, it is proposed that the project would be assessed under the bilateral agreement between the New South Wales and Commonwealth Government. The project may have a significant impact on the MNES listed below, and would be referred to the Australian Department of Climate Change, Energy, the Environment and Water (Australian DCCEEW): • nationally threatened species and ecological communities • migratory species.
Native Title Act 1993	The *Native Title Act 1993* recognises and protects native title rights in Australia. There are no current native title claims relevant to the project area. However, a Native Title Determination Application has been submitted by the Gomeroi People (NC2011/006) to the west of the project area.
Civil Aviation Safety Regulation 1988 (CASR)	Part 139, subpart 139E 'obstacles and hazards' of the CASR require that the Civil Aviation Safety Authority (CASA) be informed of proposals to build a structure greater than 110 metres above ground level. A detailed aviation assessment will be prepared as part of the EIS. This will include engagement with CASA, Airservices Australia, Aerial Agricultural Association of Australia, the Royal Flying Doctors Service, and New South Wales Rural Fire Service.
Heavy Vehicle National Law	Approvals will be required for the transport of wind turbines and associated infrastructure by OSOM vehicles. The requirements for such OSOM transport will be assessed via a route analysis study as part of the EIS.

Approval	Requirement
Approvals not required	
Overview	Section 4.41 of the EP&A Act outlines the following approvals, permits etc are not required for an approved SSD if these are adequately assessed in the EIS and consent granted as part of the SSD approval pathway.
Fisheries Management Act 1994 (sections 201, 205 or 215)	A permit under the *Fisheries Management Act 1994* to block fish passage or dredge or carry out reclamation work on 'water land' (as defined in the Act) will not be required pursuant to Section 4.41 of the EP&A Act. The project would require work in water land to facilitate the construction of watercourse crossings for access tracks. These works would be undertaken in accordance with New South Wales DPI Policies and *Guidelines on Fish-Friendly Waterway Crossings* (undated), *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013).
Heritage Act 1977	An approval under Part 4, or an excavation permit under Section 139, of the *Heritage Act 1977* would not be required pursuant to Section 4.41 of the EP&A Act. Notwithstanding, there is one listed heritage item (Item I246 Homestead, "Warrane") within the project area.
National Parks and Wildlife Act 1979	An Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974* would not be required pursuant to Section 4.41 of the EP&A Act. There are known Aboriginal sites within the project area as well as landscape features with the potential for Aboriginal objects. Aboriginal investigations will be progressed as part of the EIS, and identified heritage objects/sites will be avoided where possible through the design process.
Rural Fires Act 1997	A bushfire safety authority under Section 100B of the *Rural Fires Act 1997* would not be required pursuant to Section 4.41 of the EP&A Act. A bushfire assessment would be prepared in accordance with New South Wales Rural Fire Service (2019) *Planning for Bushfire Protection* as part of the EIS.
Water Management Act 2000	A water use approval under Section 89, a water management work approval under Section 90 or a controlled activity approval (other than an aquifer interference approval) under Section 91 of the *Water Management Act 2000* pursuant to Section 4.41 of the EP&A Act would not be required. Construction work near or within watercourses within the project area would be required. These works would be carried out in accordance with the New South Wales *Guidelines for Controlled Activities.*
Mandatory consideration – Considerations under EP&A Act and EPA&A Regulation	
Section 1.3 of the EP&A Act	Relevant objects of the EP&A Act are: *a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,* *b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,* *c) to promote the orderly and economic use and development of land, d) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,* *e) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),* *f) to promote good design and amenity of the built environment, g) to provide increased opportunity for community participation in environmental planning and assessment.* The above will be considered in the EIS.
Section 4.15 of the EP&A Act	Pursuant to Section 4.15 of the EP&A Act, in determining a development application, a consent authority is to take into consideration the following matters as relevant to the application: • relevant environmental planning instruments for the project including: – *State Environmental Planning Policy (Biodiversity and Conservation) 2021*

Approval	Requirement
	– *State Environmental Planning Policy (Resilience and Hazards) 2021* – *State Environmental Planning Policy (Transport and Infrastructure) 2021* – other local environmental planning instruments. • relevant development control plans • the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality • the suitability of the site for the development • any submissions made in accordance with this Act or the regulations • the public interest. The above will be considered in the EIS.
Mandatory consideration – Considerations under other legislation	
Biodiversity Conservation Act 2016 (BC Act)	Under the BC Act, biodiversity assessment in accordance with the Biodiversity Assessment Method (BAM) is required for any SSD project. The project (as SSD) triggers the need to prepare a biodiversity development assessment report (BDAR) in accordance with the BAM. A BDAR will be prepared as part of the EIS.
Roads Act 1993 (Roads Act)	Relevant to the project, consent under Section 138 of the Roads Act may be required for any site access intersection improvements (i.e. to connect the development corridor to the local road network), as well as any works within designated road corridors (e.g. proposed transmission line or road upgrades). Should the project obtain development consent, approval under the Roads Act cannot be refused and would be consistent with conditions of approval.
Local Land Services Act 2013 (LLS Act) *The Land Management (Native Vegetation) Code 2018* (the Code)	Under Division 5 clause 60(s), clearing of native vegetation in a regulated rural area is authorised without any approval or other authority under this Part if it is clearing carried out by or on behalf of the landholder in accordance with a land management (native vegetation) code under this Division. The Code supports landholders undertaking productive and sustainable farming practices, while managing environmental risk. Biodiversity and land categories are further discussed in Section 6.4.
Water Management Act 2000 (WM Act)	Any person or organisation, including a local water utility, taking water from a water source must be authorised to take water by a water access licence and a water supply work approval under section 60A of the WM Act unless an exemption applies. The requirement for any WM Act approvals would be determined as part of the EIS.
Mandatory considerations – Environmental planning instruments	
State Environmental Planning Policy (Resilience and Hazards) 2021 – Section 3.7	The EIS will consider the following relevant departmental guidelines: • *Applying State Environmental Planning Policy No. 33 Hazardous and Offensive Development* • *Hazardous Industry Planning Advisory Papers (HIPAP) No. 3 – Risk Assessment* • *HIPAP No. 12 – Hazards*.
State Environmental Planning Policy (Resilience and Hazards) 2021 – Section 4.6	The EIS will consider the potential for the project to impact on contaminated land.
Armidale Regional LEP 2012	The project area is within land zoned RU1 – Primary Production under the Armidale LEP. The EIS will consider the relevant objectives and land uses for RU1 zone under the Armidale LEP.
Uralla LEP 2012	The project area is within land zoned RU2 – Rural Landscape under the Uralla LEP. The EIS will consider the relevant objectives and land uses for RU2 zone under the Uralla LEP.

Approval	Requirement
Mandatory considerations – Development control plans	
Overview	In accordance with Section 2.10 of the Planning Systems SEPP, development control plans do not apply to SSD and are not a relevant consideration for the project.

5 COMMUNITY AND STAKEHOLDER ENGAGEMENT

5.1 Overview

While wind farms can provide clean renewable energy, valuable community investment, economic diversity and local jobs, they can sometimes receive a mixed response from the community. An effective and well executed stakeholder engagement and consultation strategy is essential to building and maintaining positive community sentiment towards the project and gathering local support, acceptance and approval.

The DPHI has released engagement guidelines for State significant developments specifically, *Undertaking Engagement Guidelines for State Significant Projects* (DPHI 2024e). These guidelines have informed Origin's approach to engagement to ensure DPHI expectations are addressed from the earliest possible stages in the project life cycle.

The following sections provide a summary of the community and stakeholder engagement plan (CSEP) developed for the project, including an overview of the consultation undertaken to date and key issues raised.

5.2 Community and stakeholder engagement plan

Origin is committed to undertaking genuine and meaningful community and stakeholder engagement and consultation for the project. The CSEP outlines the objectives and approach to community and stakeholder engagement throughout the life of the project from development, construction, operation and decommissioning. Through the implementation of the CSEP, Origin aims to undertake the following:

- proactive early engagement with the community and stakeholders to seek feedback regarding the project and integrate this feedback into the project planning and design throughout all stages of the project life cycle as far as possible
- keep the community informed about the project, its objectives, likely impacts and benefits, through the provision of early, accurate, timely and factual information that is tailored to local content, priorities and needs
- identify key stakeholders for further engagement and provide multiple opportunities and mechanisms for meaningful 2-way engagement with the community and stakeholders
- meaningful engagement to understand the potential social impact of the project to inform and implement targeted, adaptive and effective mitigation measures
- ensure that the team developing the project fully understands the local context, including any local impacts that it may have or opportunities that it could provide
- build and maintain Origin's social licence within the community.

Community and stakeholder engagement would be carried out by Origin. Origin considers it important that trusting relationships are developed between the people on the ground who are involved in the project on a day-to-day basis, and the stakeholders that are part of, and connected to, their local community and region.

Origin begins with robust stakeholder mapping and analysis to understand the needs of the community and begins building relationships from project inception. Origin builds on these relationships to maintain open and transparent communications with stakeholders throughout the project lifecycle.

5.3 Community and stakeholder engagement

Engagement with stakeholders and local landholders commenced in 2023 and has predominantly been undertaken by the project team. The project team has engaged in a range of activities, including hosting community information sessions and meeting with neighbouring landholders and local stakeholders in-person and online to build and maintain genuine, trusting relationships.

Community and stakeholder engagement has been undertaken early in the scoping phase to:

- establish relationships with neighbouring landowners and key stakeholders for the project
- identify perceived issues and impacts to be addressed in the assessment process

- proactively inform project design and development.

5.3.1 Stakeholder identification

Key stakeholders identified for the project are outlined in Table 5-1.

Table 5-1 Identified stakeholders

Stakeholder group	Stakeholder	Geographical extent of interest
Farm Manager / Property Lessee	Pastoral operator	Local
Neighbouring landholders	Neighbouring dwellings within 10 km of the project area	Local
First Nations	New South Wales Aboriginal Land Council	Regional
	Armidale Local Aboriginal Land Council Guyra Local Aboriginal Land Council	Local
	Nēwara Aboriginal Corporation	Local
	Sunrise Group Aboriginal Corporation	Regional
Communities within the social locality	Boorolong	Regional
	Dumaresq	
	Yarrowyck	
Local council	Armidale Regional Council	Regional
	Uralla Shire Council	
Community interest groups and community services	Battling for Boorolong	Local
	Vision for New England	Local
	Rotary Club of Armidale	Local
	Red4NE	Regional
Schools / education institutions	University of New England	Local
Airports	Armidale Regional Airport	Regional
Emergency Services	Armidale Rural Referral Hospital Armidale Private Hospital Armidale Police Station Fire and Rescue NSW Armidale Diggings (Bilga Road) Fire Station	Local
Recreation and tourism	Northern Tablelands Archery Club Northern Tablelands Orienteering Club	Local
Media	New England Website/Newsletter (Quarterly) Local Media Outlets (Armidale and Uralla)	Regional
Environmental groups	New England Climate Action Group New England Landcare Sustainable Living Armidale	Regional
Industry and local business	Zero Net Energy Town Uralla Regional Development Australia - Northern Inland NSW Farmers Association	Regional
Government – State	New South Wales Member for Armidale	Regional
	Department of Crown Lands	
	Department of Customer Service	
	DPHI	
	NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) including the Biodiversity, Conservation and Science Directorate and Heritage Directorate	

Stakeholder group	Stakeholder	Geographical extent of interest
	Department of Primary Industries and Regional Development – Agriculture and Fisheries	
	EnergyCo	
	Environment Protection Authority (EPA)	
	Fire and Rescue NSW	
	NSW Rural Fire Service	
	Department of Primary Industries and Regional Development – Mining, Exploration and Geoscience	
	TfNSW	
	Transgrid	
Government – Commonwealth	Member for New England	National
	Airservices Australia	
	Bureau of Meteorology	
	Civil Aviation Safety Authority	
	Department of Defence	
	Australian DCCEEW	
	AEMO	

5.3.2 Engagement tools and activities

The following communication materials and engagement tools have been used to build knowledge about the project. Early engagement has focused on understanding the needs and opinions of the community. Table 5-2 outlines the range of communication tools and activities that have been established to be implemented across all stages of the project.

Table 5-2 Communications and engagement tools

Tool / Activity	Description and purpose
Project website	https://www.originnewengland.com.au/northern-tablelands-wind-farm
Project email address	newengland@originenergy.com.au
Project phone number	1800 677 315
Origin social performance project team	The Origin social performance project team are contactable via details communicated in formal correspondence
Email updates	Email updates have been and will continue to be sent to registered subscribers
Media and paid advertising and editorials	Armidale Express, Uralla Wordsworth and Apsley Advocate
Meetings with individuals and/or groups	Meetings with identified potentially impacted stakeholders i.e. landowners and neighbours to provide an overview of the project, potential impacts and how these will be mitigated
Community information sessions	Drop-in sessions at dedicated times in Origin's Armidale office which is permanently staffed (advertised in local media) Free coffee information sessions
Notification letterbox drops	To advise near neighbours and community groups of upcoming works
Project briefings	Councils, community and interest groups
Stakeholder database	Community and stakeholder interactions are registered in Borealis to capture and track community feedback and sentiment
Community survey	Survey responses collected from throughout the New England area (Armidale, Guyra, Uralla, Walcha and Glen Innes) to establish community sentiment towards the project and the wider REZ
Phone calls	Immediate and near neighbours, business and communities

5.4 Engagement conducted

A summary of the feedback received from the engagement undertaken to date is provided in Table 5-3.

Table 5-3 Summary and outcomes of engagement

Stakeholder group / type	Engagement tool	Key theme / issue raised during consultation	Stakeholder View Category (grouped per SSD guidelines)
Neighbours and community	Continuous engagement since project was publicly announced in late 2023 including face to face meetings, phone calls community information sessions and notification letterbox drops	• Cumulative impacts with other projects • Visual amenity • Access and transport routes	Surroundings Access
Armidale Regional Council	Face to face information sessions with Mayor/Deputy Mayor and key council staff from September 2023 to March 2025	• Housing and temporary worker accommodation • Construction cumulative impact	Access Surroundings Health and wellbeing
Uralla Shire Council	• Face to face information sessions with Mayor/Deputy Mayor and key council staff in November 2023 and February, April, and November 2025 • Full council briefing in February 2025	• Biodiversity • Construction resourcing and timing	Surroundings Health and wellbeing
First Nations stakeholders	• Phone calls and face to face meetings with Armidale Local Aboriginal Land Council (LALC) in June/July 2024 and June 2025 • Face to face meetings and site visit with Newara Aboriginal Corporation in January and June 2024 • Face to face meeting with Iwatta Aboriginal Corporation November 2024 • Face to face meeting with Gumbaingarr Traditional Owner Corporation in June 2024 and May 2025	• Consultation expectations, shared decision-making, shared access to data • Ongoing relationships • Biodiversity	Way of life Surroundings Health and wellbeing Decision-making systems
State and Federal MPs	• Face to face briefings with Hon Tim Ayres and Brendan Moylan State MP July 2024	• Project design and scope • Scope and timing • Community sentiment	Way of life Community Culture
Community groups	• Face to face meetings with Battling for Boorolong and New England Visions Think Tank in May 2024 • Face to face briefing with Armidale Rotary Group in September 2025	• Increased traffic • Inability of firefighting aircraft to access bushfires on property due to turbines • Property devaluation • Cumulative impacts with other projects	Access Way of life Surroundings Health and wellbeing

Stakeholder group / type	Engagement tool	Key theme / issue raised during consultation	Stakeholder View Category (grouped per SSD guidelines)
Wider community	Information stalls at local events held between March and June 2025 including: • Armidale Market Information Stall • Uralla Market Information Stall • Walcha Show Information Stall Community one-on-one information sessions held 20- 21 August 2025	• Job opportunities • Construction timing	Way of life Access Health and wellbeing
Schools / education institutions	Face to face meeting with University of New England in May 2024	• UNE Renewable Energy Strategy	Other issues

5.4.1 Community views

The following themes were identified as a result of early engagement during the scoping phase for the project:

- potential property and transport access impacts during construction
- local road and bridge upgrades that may be undertaken as part of the project
- visual changes due to the presence of wind turbine infrastructure
- potential biodiversity impacts including native vegetation removal, carbon offsets and fauna management (particularly for bats, frogs and koalas)
- potential cumulative impacts, including construction fatigue and resource use (such as water, gravel etc)
- job and community benefit opportunities as part of the project.

5.5 Ongoing community and stakeholder engagement

Origin is committed to genuine ongoing community and stakeholder engagement that helps drive project development in a way that minimises potential environmental and social impacts. Continued engagement with the community and stakeholders will be carried out using the tools identified in Table 5-2 during the preparation of the EIS. This ongoing consultation will be guided by the CSEP and include the following activities:

- continued direct engagement with involved landholders and property owners
- advertising in local media regarding the project and how additional information can be obtained via the project website
- postal area mail-out to advise of project contact details as well as community information session details
- collaboration with EnergyCo in local, joint community sessions for efficient consultation related to Origin's project and the New England Renewable Energy Zone – North Hub.

5.5.1 Engagement proposed during the preparation of the EIS

General project information and feedback mechanisms would continue to be available during design development and preparation of the EIS. These mechanisms would be complemented with direct community and stakeholder engagement activities focused on:

- providing information and project updates at key stages during design development

- engagement with affected landowners and community groups about the project and key design decisions that may impact them
- engagement and coordination with EnergyCo and other renewable energy developers particularly around project interfaces and in relation to cumulative impacts
- engagement with regulatory agencies to ensure a complete and robust EIS.

5.5.2 Public exhibition of the EIS

The minimum statutory period for public exhibition of the EIS is 28 calendar days. Advertisements would be placed in newspapers to advise of the public exhibition and where the EIS can be viewed, as well as details on proposed community consultation activities and information sessions.

Consultation activities during the public exhibition of the EIS would include:

- community information sessions (both in person and online)
- newsletter letterbox-drop and digital availability of the EIS
- electronic newsletter
- project website and online forums
- stakeholder meetings (either in person or virtually).

The community and stakeholders will have an opportunity to provide submissions on the project during the exhibition period.

5.6 Aboriginal engagement

This project underscores the importance of place-based, culturally appropriate practices that aim to understand, acknowledge, and represent Aboriginal knowledge within the renewables sector. To ensure authentic representation, Origin will engage with First Nations stakeholders in alignment with the following guidelines:

- *Leading Practice Principles: First Nations and Renewable Energy Projects* (Clean Energy Council 2024)
- *Aboriginal and Torres Strait Island Best Practice Principles for Clean Energy Projects* (First Nations Clean Energy Networ*,* 2022)
- Origin's *First Nations Engagement Strategy* (2023).

A tailored First Nations Engagement Approach will be developed for the project, guided by key principles designed to ensure meaningful and culturally respectful collaboration. Origin will work closely with the New England Local Aboriginal Land Councils, as well as First Nations groups Awaiwan, Dunghutti and Gumbaingarr. This approach will focus on demonstrating place-based, culturally appropriate practices while seeking to understand, incorporate, acknowledge, and authentically represent Aboriginal perspectives and knowledge.

The EIS will also be accompanied by an Aboriginal Cultural Heritage Assessment Report undertaken in consultation with registered Aboriginal parties. Origin has completed the first consultation step under Stage 1 of the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010) with the notification and registration period taking place between 29 April 2025 and 28 May 2025, and a total of 24 parties registering for the project.

6 ASSESSMENT OF IMPACTS

6.1 Aspect categorisation

Appendix A provides a list of all potential environmental and social issues which have been identified in relation with the *State Significant Development Guidelines – preparing a scoping report* (DPIE 2022a).

Each aspect has been considered in relation to the project description in Section 3 and allocated a relevant level of assessment.

The key matters requiring more detailed assessment have been identified on a preliminary assessment of the project area and by taking into consideration key issues identified and assessed for other wind farm developments in New South Wales.

6.2 Landscape and visual

A preliminary visual impact assessment is included in Appendix C. A summary of the assessment is detailed below.

6.2.1 Existing environment

The project area is predominantly used for beef production and is bounded by Bulagaranda (Mount Yarrowyck) Aboriginal Area in the south and the locality of Boorolong to the north.

Significant ecological, cultural and historic associations have been identified for Bulagaranda (Mount Yarrowyck) Aboriginal Area. Booroolong Nature Reserve is located approximately 6 km northeast of the project area.

The topography of the project area is dominated by moderate slopes (between 5 to 18 degrees), with some areas of more gentle slopes (less than 5 degrees), and some steep slopes (greater than 18 degrees) and crests/spurs. Elevation ranges between 960 m to 1,250 m Australian Height Datum (AHD), with the highest point in the southwestern parts of the area.

There are several named watercourses in the project area, including 3 perennial watercourses (Abington Creek, Boorolong Creek and Toms Creek) and 6 ephemeral watercourses (Cachs Creek, Dread Gully, Haylocks Creek, Rileys Creek, Teatree Creek, and Tigers Gully). There are several farm dams across the project area, and 2 unregistered bores.

Other visual elements in this rural landscape include native and exotic vegetation and agricultural facilities (including single-storey housing, sheds, fencing). The project in its local context is shown in Figure 2-2.

6.2.2 Preliminary assessment

The preliminary visual impact assessment was prepared in accordance with the *Wind Energy Guideline – Technical Supplement for Landscape Character and Visual Impact Assessment* (DPHI, 2024a) (Visual Guidelines) to identify potential visual impacts at a high level based on preliminary information.

The report summarises the anticipated visual impacts of the project on a range of identified public viewpoints and private receivers and outlines the level of assessment that will be undertaken as part of the detailed landscape character and visual impact assessment for the EIS, following receipt of the SEARs.

The first step of the assessment is to identify the turbine setback distance and the visual impact study area to identify potentially affected private receivers and public viewpoints.

The second step of the assessment is to create a viewshed map to determine the visibility of the project at each of the receivers. This is used to identify which of the private receivers and public viewpoints within the study area have line of sight to the project and informs the requirement for further assessment in the EIS.

The assessment also provides further clarity at the scoping report stage and has been used to help inform ongoing consultation with affected landholders.

The findings of this preliminary visual impact assessment will be verified as part of the detailed visual impact assessment for the EIS and will be further informed by the landscape character assessment and community consultation.

Turbine setback

The prescribed setback distance is calculated based on the proposed maximum turbine height and the distance to receivers required to maintain a 9-degree vertical field of view to the blade tip.

Based on a proposed maximum turbine height of 300 m for the project, a conservative setback distance of 1,900 m has been applied and is shown in Figure 6-1.

Two non-associated residences have been identified within the prescribed turbine setback, as presented in Figure 6-1.

Study area

The visual impact study area of 8,600 m has been determined based on a wind turbine tip height of 300 m, using the height of the turbines and distances set out in Figure 7 of the Visual Guidelines.

There are 121 non-associated residences within the study area (including the 2 identified in the setback distance).

Viewshed mapping

Viewshed mapping has been undertaken to identify areas within the study area that are likely to experience views to the project and is based on topography only without considering potential landscape interventions or visual screening provided by existing vegetation or built structures.

The mapping has been developed using the following inputs:

- proposed height of the wind turbines (tip height of 300 m)
- location of the wind turbines
- digital elevation model within the extent of the study area.

The viewshed is presented as a ‘heat map’ where areas that are likely to experience views to more wind turbines are mapped with warmer colours, and those areas where fewer wind turbines are visible are mapped in cooler colours.

Areas within the study area that have no views to the project due to intervening topography are mapped in white. The results of the viewshed mapping are shown in Figure 6-1.

Receivers

Potentially impacted receivers with the study area were identified based on aerial mapping and the viewshed mapping. The receivers identified include:

- 6 associated residences, located within the project boundary
- 121 non-associated residences within the study area, including 2 in the setback distance of 1,900 m. Of these 121 residences:
  - 14 non-associated residences are not expected to experience views of the project, and are unlikely to required detailed assessment
  - 107 non-associated residences are expected to experience visual impacts and require detailed assessment as part of the detailed visual impact assessment for the EIS
- 8 public viewpoints also require detailed assessment as part of the detailed visual impact assessment for the EIS.

Scoping map

The scoping map has been prepared in accordance with the Visual Guidelines and summarises the findings of this preliminary visual impact assessment. The scoping map is provided in Figure 6-1 and shows:

- wind turbine locations
- wind turbine setback
- extent of the study area
- results of the viewshed mapping
- identified private receivers and public viewpoints, noting whether or not they are subject to any host or other negotiated agreement and are therefore associated, or non-associated.

6.2.3 EIS assessment approach

All private receivers and public viewpoints identified in the preliminary visual impact assessment as requiring further assessment will be subject to a detailed landscape character and visual impact assessment as part of the EIS. This assessment will be further informed by baseline analysis of landscape character and visual sensitivity (including consultation with the community to confirm landscape values and scenic quality), identification of landscape character zones, and assessment of landscape character impacts.

Those receivers that are expected to have obstructed views of the project due to intervening topography or structures may not be subject to a full visual impact assessment, and this will be confirmed through the steps in the detailed visual impact assessment methodology to ensure that the level of assessment is proportionate to the expected impacts from the project.

In accordance with the Visual Guidelines, a 'simple assessment' will be performed initially to demonstrate if impacts are likely to be moderate or higher. The simple assessment will consider worst-case assumptions for visual sensitivity and expected magnitude of impacts.

Where the simple assessment indicates potentially moderate or higher impacts, an intermediate assessment will be conducted.

The intermediate assessment will use 3D modelling of topography and the locations/heights of individual turbines to generate wireframes to determine the magnitude of impacts and evaluate whether moderate or higher visual impacts are likely from each of the public viewpoints and private receivers.

Should the intermediate assessment indicate that a potentially moderate or high impact is likely, a detailed site assessment for each private receiver and public viewpoint will then be performed to evaluate:

- the extent to which vegetation and structures mitigate the visual impacts of the project
- whether views from rural properties are classified as primary or secondary views
- the scenic quality of these views
- any additional mitigating factors that may increase or decrease the visual impact.

In addition, the landscape character and visual impact assessment for the EIS will comprise the following:

- landscape character assessment and a detailed visual baseline study
- identification of any additional key features, key viewpoints valued by the community through ongoing consultation
- identification and refinement of the landscape character units considering community feedback on the relative scenic quality ratings of these units
- cumulative landscape character assessment
- graphic representations to assess and communicate the magnitude of visual impacts using field visits and GIS technology, wire frame diagrams, and photomontages
- assessment of the project against the performance objectives in Table 8 of the Visual Guidelines

- recommended mitigation methods to reduce residual visual impacts that cannot be avoided through relocation or reorientation of high impact turbines to inform design development.

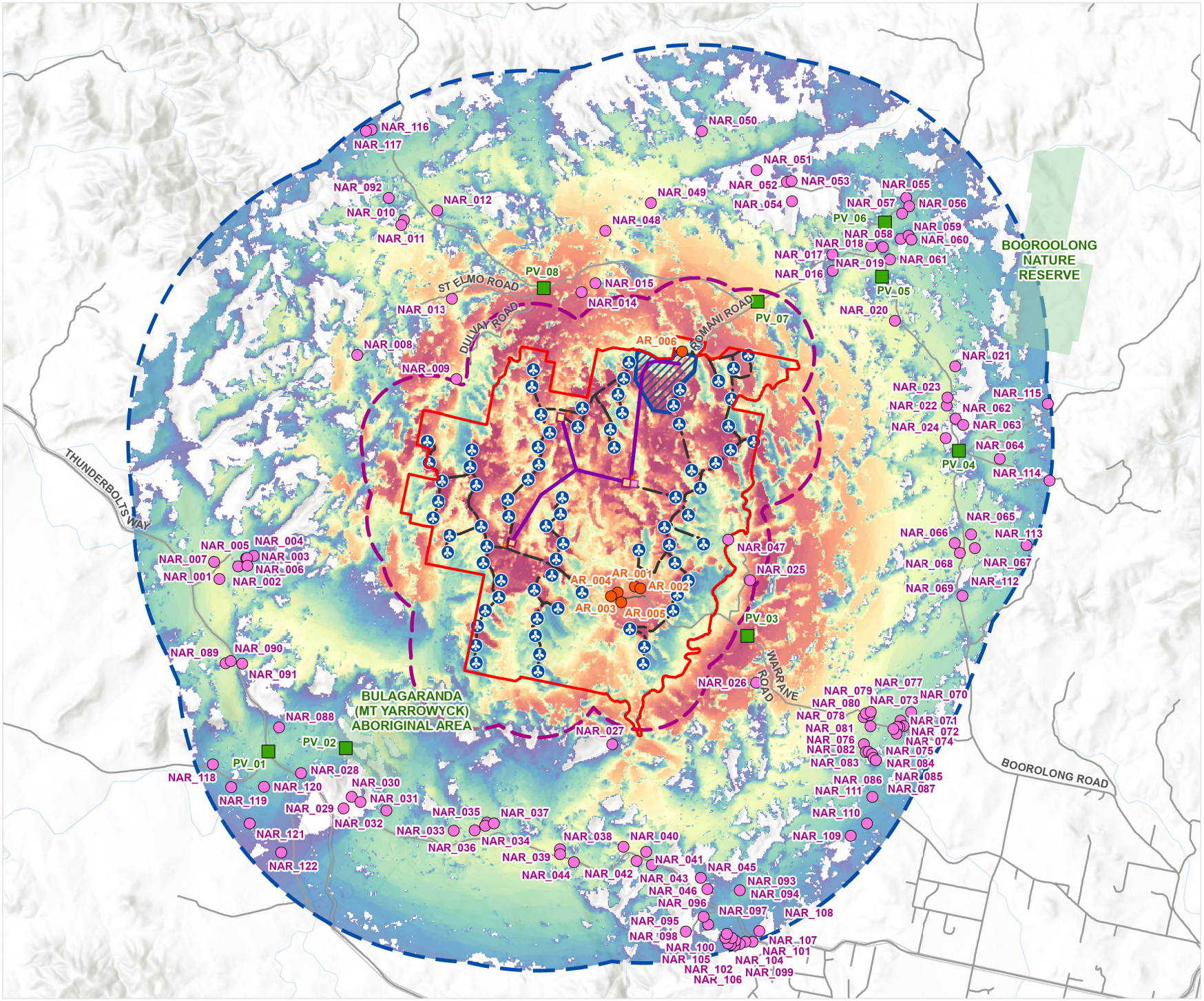


FIGURE 6-1: VISUAL SCOPING MAP

6.3 Noise and vibration

A preliminary noise impact assessment is included in Appendix E. A summary of the assessment is detailed below.

6.3.1 Existing environment

The existing noise and vibration environment is characteristic of the rural, agricultural character of the New England Tablelands. There are a variety of low background noise sources including natural wildlife sounds, typical agricultural practices (stock grazing and cropping), and occasional vehicle movements along local roads. There is minimal vibration experienced across the project area.

Residential receivers identified within around 7 km from the closest wind turbine are provided in Table 6-1, and are generally scattered around the lower hills and flatter areas along the local roads. The Bulagaranda (Mount Yarrowyck) Aboriginal Area is in the vicinity of the project area, provides for recreation, and so has also undergone an assessment of the predicted noise levels.

6.3.2 Preliminary assessment

Wind turbines

A preliminary noise assessment was undertaken to predict noise from the project's wind turbines at the residences listed in Table 6-1.

The assessment included predictions of the noise from wind turbines in accordance with the *Wind Energy Guideline* (DPHI 2024b) and the *Wind Energy Guideline Technical Supplement for Noise Assessment* (DPHI 2024d). The noise was modelled using the International Standard *ISO: 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors* (ISO 9613-2) and SoundPLAN noise modelling software. This utilises a downwind model, based on the conservative assumption of being downwind (resulting in the highest noise level) of all turbines operating simultaneously, representing a 'worst-case scenario' model.

Ancillary infrastructure

An additional noise model was developed to predict noise levels from the BESS at sensitive receivers.

Environmental noise predictions were made using the CONCAWE noise propagation model as implemented in the SoundPLAN noise modelling software.

Noise criteria

Wind turbines

The *Wind Energy Guideline* (DPHI 2024b) and *Wind Energy Guideline – Technical Supplement for Noise Assessment* (DPHI 2024d) provide criteria based on a baseline limit, when adjusted for tonality and low-frequency noise, of 35 dB(A), or 5 dB(A) above the background noise level at each integer wind speed (whichever is the greater) for non-associated residences. This criterion does not apply at associated residences as per the guidelines. The noise levels were then predicted at 30 dB(A), 35 dB(A), 40 dB(A), 45 dB(A), and 50 dB(A) noise contours.

The *Wind Energy Guideline – Technical Supplement for Noise Assessment* (DPHI 2024d) requires noise from wind turbines to not exceed 50 dB(A) when adjusted for tonality and low frequency noise, in designated passive recreation areas within national parks (when in use) (i.e. the Bulagaranda (Mount Yarrowyck) Aboriginal Area) for a wind speed of 4 m/s or cut in speed, whichever is the greater. The Technical Supplement also states that projects will typically meet this criterion at setback distances of 500 m (or greater).

Ancillary infrastructure

The *Noise Policy for Industry* (NSW EPA 2017) establishes noise trigger levels based on the existing background noise environment (intrusiveness noise levels) and the amenity for particular land uses (amenity noise levels).

The amenity level for a noise source which operates during the night in a rural area is 40 dB(A). The minimum project intrusiveness noise level for a noise source which operates during the night in a quiet rural area is 35 dB(A), although this may be increased based on the results of background noise monitoring.

Based on the above, the preliminary assessment has assumed a Policy noise trigger level of 35 dB(A) for the BESS and ancillary infrastructure at all locations.

Results

Based on the preliminary modelling undertaken for wind turbines, there were 9 non-associated residences (NAR) with predicted noise levels above the criteria of 35 dB(A) (see Table 6-1).

The preliminary modelling undertaken for the BESS identified that the highest noise level predicted at any receiver was 61 dB(A) at associated residence AR 006. While the highest noise level predicted at any non-associated residence was 28 dB(A) at NAR 014, which does not exceed the 35 dB(A) noise trigger level. The exceedance at the associated residence will be addressed during the EIS stage to ensure that amenity is maintained.

The entirety of the Bulagaranda (Mount Yarrowyck) Aboriginal Area lies outside the 45 dB(A) contour line, therefore the 50 dB(A) criterion will inherently also be achieved.

Table 6-1 Identified residences and wind turbine noise impact predictions

Residence ID	Residence coordinates		Category	Nearest turbine (ID)	Distance to nearest turbine (m)	Predicted noise level (dB(A))
	Easting	Northing				
AR_001	352381	6634479	Associated	22	1,054	49
AR_002	352540	6634433	Associated	65	1,078	49
AR_003	351896	6634281	Associated	40	1,019	48
AR_004	351709	6634163	Associated	40	833	49
AR_005	352012	6634006	Associated	67	804	49
AR_006	353376	6641294	Associated	70	458	51
NAR_001	340434	6634059	Non-associated	76	6,385	32
NAR_002	340953	6634451	Non-associated	76	5,771	33
NAR_003	341171	6634694	Non-associated	76	5,494	33
NAR_004	341380	6634775	Non-associated	76	5,270	34
NAR_005	341196	6634702	Non-associated	76	5,467	33
NAR_006	341218	6634484	Non-associated	76	5,507	33
NAR_007	340256	6634543	Non-associated	76	6,416	32
NAR_008	344048	6640698	Non-associated	75	3,199	37*
NAR_009	346950	6640159	Non-associated	75	1,986	43*
NAR_010	345183	6644639	Non-associated	73	5,695	33
NAR_011	345115	6644494	Non-associated	73	5,640	33
NAR_012	346125	6644967	Non-associated	73	5,352	33
NAR_013	346700	6642455	Non-associated	73	3,099	38*
NAR_014	350403	6642846	Non-associated	8	2,434	41*
NAR_015	350788	6643120	Non-associated	8	2,467	40*
NAR_016	357568	6643837	Non-associated	46	3,429	35

Residence ID	Residence coordinates		Category	Nearest turbine (ID)	Distance to nearest turbine (m)	Predicted noise level (dB(A))
NAR_017	357534	6644304	Non-associated	46	3,769	34
NAR_018	358632	6644600	Non-associated	46	4,717	33
NAR_019	358969	6644594	Non-associated	46	4,958	32
NAR_020	359426	6642498	Non-associated	46	4,324	35
NAR_021	361243	6641282	Non-associated	46	5,969	33
NAR_022	361058	6640143	Non-associated	53	5,650	34
NAR_023	361067	6640376	Non-associated	53	5,718	33
NAR_024	361080	6639210	Non-associated	53	5,529	34
NAR_025	355668	6634834	Non-associated	62	1,687	45*
NAR_026	356001	6631902	Non-associated	66	3,162	41*
NAR_027	351973	6629916	Non-associated	69	2,477	39*
NAR_028	343073	6628612	Non-associated	32	5,963	31
NAR_029	344346	6627664	Non-associated	32	5,673	32
NAR_030	344561	6628010	Non-associated	32	5,269	32
NAR_031	344822	6627874	Non-associated	32	5,214	32
NAR_032	345581	6627670	Non-associated	32	4,976	33
NAR_033	347563	6627196	Non-associated	32	4,866	33
NAR_034	348163	6627238	Non-associated	32	4,814	33
NAR_035	348499	6627480	Non-associated	45	4,583	34
NAR_036	348457	6627385	Non-associated	45	4,687	34
NAR_037	348703	6627466	Non-associated	45	4,546	34
NAR_038	350636	6626826	Non-associated	45	5,148	34
NAR_039	350646	6626684	Non-associated	45	5,290	34
NAR_040	352450	6626992	Non-associated	69	5,289	35
NAR_041	353109	6626883	Non-associated	69	5,404	35
NAR_042	352848	6626605	Non-associated	69	5,670	35
NAR_043	353291	6626514	Non-associated	69	5,787	34
NAR_044	351053	6626474	Non-associated	45	5,579	34
NAR_045	354714	6626218	Non-associated	69	6,371	33
NAR_046	354920	6625905	Non-associated	69	6,734	31
NAR_047	354984	6635964	Non-associated	62	720	48*

Notes:

* indicates predicted noise levels above 35 dB(A)

AR = Associated residence

NAR = Non-associated residence

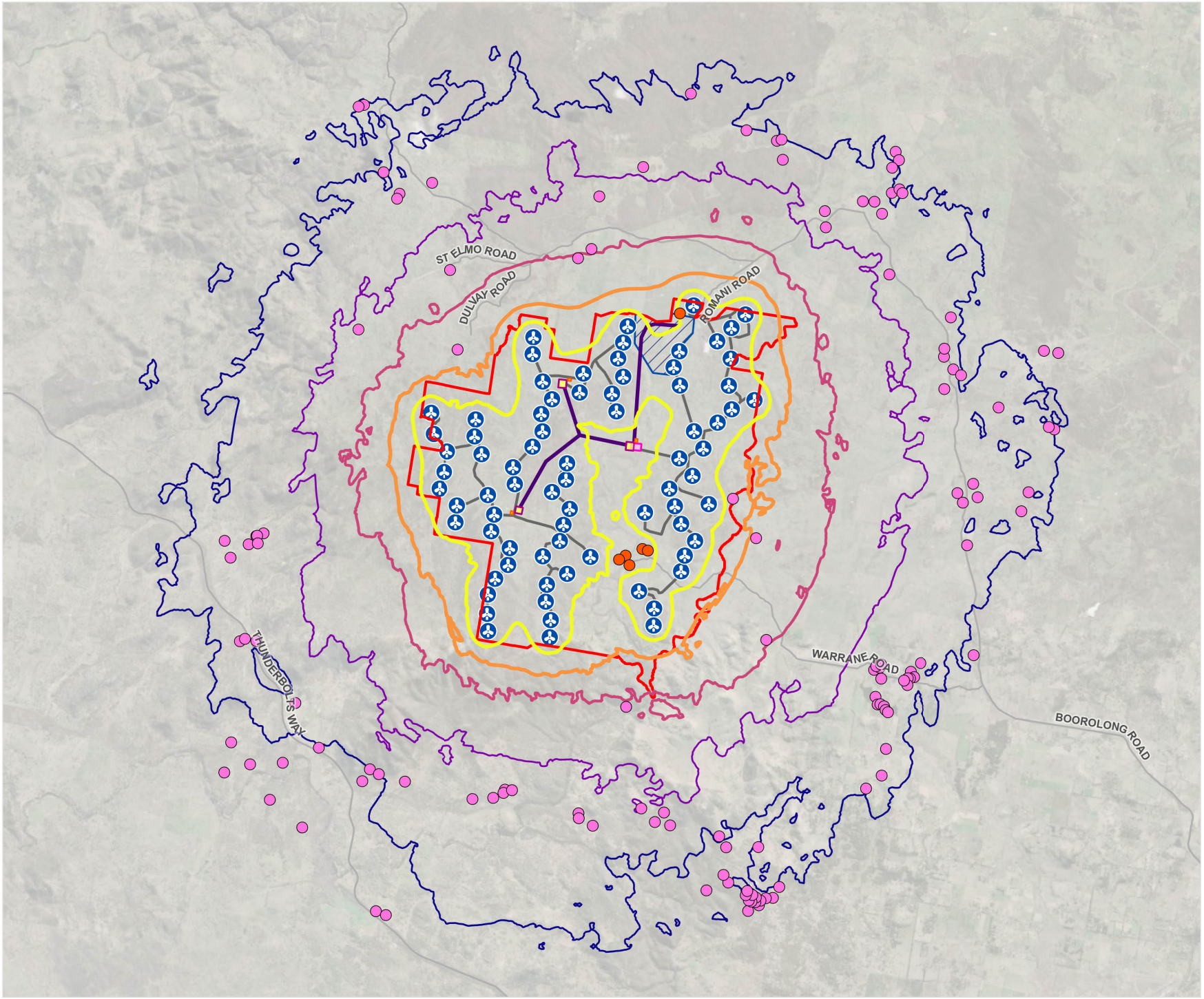


FIGURE 6.2: NOISE CONTOURS

Construction impacts

There is potential for the following noise and vibration impacts during the construction phase of the project:

- loud plant and machinery such as excavators, dozers, truck and rigid trucks during construction activities such as, vegetation clearing, earthworks and road upgrades
- increase in vibration which may be felt by nearby receivers
- increased road traffic noise from light and heavy vehicle movements transporting personnel and materials to and from the project area
- increase in noise from personnel at potential accommodation camps.

Construction work hours are discussed in Section 3.5.12.

Operation impacts

During operation, there would be reduced noise impacts following the construction period which are expected to include:

- wind turbine noise
- noise from associated infrastructure (e.g. substation, BESS, transformers)
- vehicle road noise associated with maintenance activities.

6.3.3 EIS assessment approach

A detailed noise assessment will be prepared for inclusion in the EIS in accordance with the following guidelines:

- wind turbine noise in accordance with the *Wind Energy Guideline and Wind Energy Guideline – Technical Supplement for Noise Assessment* (DPHI 2024d)
- noise from ancillary infrastructure sources in accordance with the *NSW Noise Policy for Industry* (EPA 2017)
- construction noise in accordance with the *Interim Construction Noise Guideline* (DECC 2009)
- traffic noise in accordance with the *NSW Road Noise Policy* (DECCW 2011)
- vibration in accordance with *Assessing vibration: A Technical Guideline* (DEC 2006)
- cumulative noise impacts, considering other developments in the area.

The EIS will incorporate the following information to inform the detailed assessment:

- background noise monitoring results
- establishment of criteria in accordance with the background noise monitoring results
- predictions which account for the sound power levels and locations of wind turbines and ancillary infrastructure
- construction noise assessment and framework for a management plan
- traffic noise assessment
- commentary on vibration impacts
- noise reduction measures where the relevant operational or construction assessment criteria are not achieved.

The project will be refined as part of the ongoing design process to seek to minimise noise impacts at all non-associated residences.

Potential modifications to the wind turbine layout or agreements with landowners are options that will be further considered in the EIS phase to ensure compliance with relevant criteria at all residences.

6.4 Biodiversity

A preliminary biodiversity assessment report is included in Appendix D based on desktop research, and a preliminary investigation of the survey boundary (which includes a 200 m corridor around access tracks and turbines for the purpose of field-based assessments).

As discussed in Section 3.1.3, the survey boundary adopted for this assessment represents a precautionary assessment extent and is not indicative of the expected final disturbance footprint. The boundary has intentionally been defined to encompass a much broader area than is anticipated to be impacted, incorporating all potential locations for turbines, reticulation lines, access tracks, etc. within a 200 m corridor.

This approach ensures that ecological surveys are conducted over a sufficiently large landscape to identify biodiversity constraints and values early in the design process, and by capturing a wider area for ecological surveys, the project can appropriately apply the 'avoid, minimise, offset' hierarchy required by the Biodiversity Offset Scheme.

The information obtained with this broad survey boundary will inform the detailed design and micrositing of infrastructure to avoid and minimise ecological impacts to the greatest extent possible. The final disturbance footprint is expected to be significantly smaller than the survey boundary. As such, while the mapped boundary provides a comprehensive context for survey coverage, it does not represent the extent of actual impacts associated with the project. A summary of the preliminary biodiversity assessment is detailed below.

6.4.1 Existing environment

Landscape context

An overview of the landscape context of the project area is outlined in Table 6-2.

Table 6-2 Landscape context summary

Feature	Description
Interim Biogeographic Regionalisation for Australia (IBRA)	Armidale Plateau subregion of the New England Tablelands Bioregion. The bioregional boundary extends from north of Tenterfield to south of Walcha and includes towns such as Armidale and Guyra.
New South Wales (Mitchell) Landscapes	The project area intersects with 3 landscapes: • Dingo Spur Meta-sediments • Uralla Basalts and Sands • Moonbi – Walcha Granites.
Connectivity	Main areas of biodiversity connectivity include: • Two ridgelines connecting the northern boundary to the Bulagaranda (Mount Yarrowyck) Aboriginal Area, allowing mobile fauna species to traverse • Riparian vegetation along Boorolong Creek, important for less mobile amphibious species to disperse • Scattered paddock trees, enabling mobile species (e.g. birds, bats, mammals) to disperse throughout the landscape.
Land category	Land categories identified from the draft native vegetation regulatory map include: • Category 1 exempt land – located within previously cleared areas in the valleys that exhibit existing disturbance for grazing. This is the second most dominant category in the survey boundary • Category 2 regulated land – occurs across the majority of the project area on slopes and ridgetops. This is representative of partially cleared to relatively intact woodland areas across the project area. This is the most dominant category in the survey boundary • Category 2 vulnerable regulated lands – occurs along riparian habitats and intact woodland on steep slopes. This occurs where the survey boundary crosses riparian areas and within intact woodland in the southwest and southeast of the project area • Category 2 sensitive regulated land – occurs in 2 small patches in the centre west of the project area, and a larger patch in the centre east of the project area • Category 2 sensitive and vulnerable regulated land – occurs where the above 2 categories overlap.

Plant community types

The vegetation within the project area and survey boundary is comprised of 17 native plant community types (PCTs) and cleared/exotic vegetation as outlined in Table 6-3 and shown in Figure 6-3.

At this preliminary stage, approximately 892 ha of native woodland vegetation and a further 598 ha of derived native grassland (grassy woodland from which the trees have been removed) has been mapped within the survey boundary, comprised of the 17 native PCTs listed in Table 6-3.

Table 6-3 Preliminary Plant Community Types within the survey boundary and project area

PCT	Description	Condition	Area (ha)	
			Survey boundary	Project area
0	Cleared/exotic	Poor	17.91	50.55
3344	New England Ribbon Gum Grassy Forest	Moderate	5.69	30.48
3351	Armidale Creekflat Snow Gum Woodland-Scrub	Moderate	19.68	156.30
3353	Guyra Silvertop Stringybark Moist Forest	Moderate	12.61	61.90
3359	New England Hills Stringybark-Box Woodland	Derived	597.89	2,682.92
		Moderate to Good	100.35	523.91
3363	Western New England Blakely's Red Gum-Box Grassy Forest	Poor and Good	117.40	660.89
3702	Northwest New England Ranges Caley's Ironbark Woodland	Moderate	1.87	29.66
3705	Western New England Hills Apple-Stringybark Forest	Moderate	19.49	113.82
3710	Western New England Hills Orange Gum-Ironbark Forest	Moderate	28.58	116.14
3722	Western New England Box-Tumbledown Gum Grassy Forest	Moderate	83.94	591.32
3724	Western New England Caley's Ironbark-Tumbledown Gum Forest	Moderate	35.53	327.05
3725	Western New England Ranges Orange Gum-Blackbutt Forest	Moderate	93.66	612.70
3727	Western New England Silvertop Stringybark Forest	Moderate	3.99	57.60
3728	Western New England Hills Blackbutt-Stringybark Forest	Moderate	204.09	709.28
3729	Western New England Youmans Stringybark Shrub Forest	Moderate	43.71	282.68
3854	New England Rockplate Shrubland	Moderate	21.88	35.79
4080	Northwest River Oak-Apple Forest	Moderate	17.44	92.87
4125	New England Youmans Stringybark-Box Forest	Moderate	37.96	233.45
4142	New England Hills Red Gum-Stringybark Shrub Forest	Moderate	61.99	301.97
		Total	**1,508.22**	**7,671.28**

Threatened fauna and flora (likelihood of occurrence) (terrestrial ecology)

Database searches identified 58 threatened fauna species and 20 threatened flora species as having a moderate to high potential to occur within a 10 km radius of the project area. The fauna and flora likelihood of occurrence (LoO) and status under Commonwealth and State legislation is detailed in Table 6-4 and Table 6-5. Known threatened species within the project area are shown on Figure 6-5.

Fauna

Table 6-4 Fauna species with a moderate or greater likelihood of occurrence

Scientific Name	Common Name	BC Act	EPBC Act	LoO
Amphibia				
Adelotus brevis - endangered population	Tusked Frog population in the Nandewar and New England Tableland Bioregions	E	-	Moderate
Litoria booroolongensis	Booroolong Frog	E	E	Moderate
Litoria castanea	Yellow-spotted Tree Frog	CE	CE	Moderate
Litoria subglandulosa	Glandular Frog	V	V	Moderate
Mixophyes balbus	Stuttering Frog	E	V	Moderate
Aves				
Anthochaera phrygia	Regent Honeyeater	CE	CE	Moderate
Aphelocephala leucopsis	Southern Whiteface	V	V	Moderate
Apus pacificus	Fork-tailed Swift	-	M,MAR	Moderate
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	High
Botaurus poiciloptilus	Australasian Bittern	E	E	Moderate
Burhinus grallarius	Bush Stone-curlew	E	-	Moderate
Calidris acuminata	Sharp-tailed Sandpiper	-	V,M,MAR	Moderate
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	Moderate
Circus assimilis	Spotted Harrier	V	-	Moderate
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	High
Daphoenositta chrysoptera	Varied Sittella	V	-	High
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	Moderate
Falco subniger	Black Falcon	V	-	Moderate
Gallinago hardwickii	Latham's Snipe	V	V,M,MAR	Moderate
Grantiella picta	Painted Honeyeater	V	V	Moderate
Hieraaetus morphnoides	Little Eagle	V	-	Moderate
Hirundapus caudacutus	White-throated Needletail	-	V,M,MAR	High
Lathamus discolor	Swift Parrot	E	CE,MAR	High
Lophoictinia isura	Square-tailed Kite	V	-	High
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E	E	Moderate
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	-	Moderate
Neophema chrysostoma	Blue-winged parrot	-	MAR	Moderate
Neophema pulchella	Turquoise Parrot	V	-	Moderate
Ninox connivens	Barking Owl	V	-	High
Ninox strenua	Powerful Owl	V	-	High
Oxyura australis	Blue-billed Duck	V	-	High
Parvipsitta pusilla	Little Lorikeet	V	-	High
Petroica boodang	Scarlet Robin	V	-	Known
Petroica phoenicea	Flame Robin	V	-	Moderate
Pyrrholaemus sagittatus	Speckled Warbler	V	-	High
Rostratula australis	Australian Painted Snipe	E	E, MAR	Moderate
Stagonopleura guttata	Diamond Firetail	V	V	Known

Scientific Name	Common Name	BC Act	EPBC Act	LoO
Tringa nebularia	Common Greenshank	-	E,M,MAR	Moderate
Tyto novaehollandiae	Masked Owl	V	-	Moderate
Mammalia				
Cercartetus nanus	Eastern Pygmy-possum	V	-	Moderate
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	Moderate
Chalinolobus picatus	Little Pied Bat	V	-	Moderate
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Moderate
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Moderate
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	High
Myotis macropus	Southern Myotis	V	-	Moderate
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	Moderate
Petauroides volans	Greater Glider	E	E	High
Petaurus australis	Yellow-bellied Glider	V	V	Moderate
Petaurus norfolcensis	Squirrel Glider	V	-	High
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	Moderate
Phascolarctos cinereus	Koala	E	E	High
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	High
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Moderate
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Moderate
Reptilia				
Myuchelys belli	Western Sawshelled Turtle, Bell's Turtle	E	E	Moderate
Uvidicolus sphyrurus	Border Thick-tailed Gecko	V	V	Moderate
Fish				
Maccullochella peelii	Murray Cod	-	V	Moderate

V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, M = Migratory, - = Not listed

Two threatened fauna species were opportunistically identified within the survey boundary during field investigations:

- Diamond Firetail (*Stagonopleura guttata;* BC Act: Vulnerable; EPBC Act: Vulnerable)
- Scarlet Robin (*Petroica boodang*; BC Act: Vulnerable).

Flora

Table 6-5 Flora species with a moderate or greater likelihood of occurrence

Scientific name	Common name	BC Act	EPBC Act	LoO
Acacia pubifolia	Velvet Wattle	E	V	Moderate
Asterolasia rupestris subsp. recurva		CE	-	Moderate
Boronia granitica	Granite Boronia	V	E	Moderate
Caladenia amnicola	Bundarra Spider Orchid	E	E	Moderate
Callistemon pungens		-	V	Moderate
Dichanthium setosum	Bluegrass	V	V	High
Diuris pedunculata	Small Snake Orchid	E	E	Moderate
Eucalyptus caleyi subsp. ovendenii	Ovenden's Ironbark	V	V	Moderate
Eucalyptus magnificata	Northern Blue Box	E	-	Moderate
Eucalyptus mckieana	McKie's Stringybark	V	V	High
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	Moderate

Scientific name	Common name	BC Act	EPBC Act	LoO
Eucalyptus rubida subsp. barbigerorum	Blackbutt Candlebark	V	V	Moderate
Euphrasia arguta	Eyebright	CE	CE	Moderate
Grevillea scortechinii subsp. sarmentosa	Backwater Grevillea	V	-	Moderate
Haloragis exalata subsp. velutina	Tall Velvet Sea-berry	V	V	Moderate
Picris evae	Hawkweed	V	V	Moderate
Pimelea venosa	Bolivia Hill Rice-flower	E	E	High
Swainsona sericea	Silky Swainson-pea	V	-	Moderate
Thesium australe	Austral Toadflax	V	V	High
Vincetoxicum forsteri	Tylophora linearis	V	E	Moderate

V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, M = Migratory, - = Not listed

Extensive *Eucalyptus mckieana* have been recorded in the locality and the open forest woodland, soil landscape and associated canopy species within the project area are consistent with the description for this species.

Threatened ecological communities

Four mapped PCTs are associated with 4 BC Act listed threatened ecological communities and 2 EPBC Act listed threatened ecological communities. An additional EPBC Act threatened ecological community was identified from the EPBC protected matters search tool results.

The vegetation within the survey boundary may conform to 3 BC Act listed and 2 EPBC Act listed threatened ecological communities (see grey shading in Table 6-6 and Figure 6-4).

Table 6-6 Threatened ecological communities with the potential to occur within the survey boundary

PCT	BC Act Listing	EPBC Act Listing
N/A	Not listed	Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion).
3854	Howell Shrublands in the New England Tableland and Nandewar Bioregions EEC.	Not listed
3363 and 3359	White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the New South Wales North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, New South Wales South Western Slopes, South East Corner and Riverina Bioregions CEEC.	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC.
3344	New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC.	New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands CEEC.
	Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC.	Not listed

Serious and irreversible impacts

A 'serious and irreversible impact' (SAII) is one likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct in accordance with the principles set out in clause 6.7(2) of the *Biodiversity Conservation Regulation 2017* (BC Regulation).

Two threatened ecological communities are regarded as SAII candidate communities under the BC Act:

- White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the New South Wales North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin,

South Eastern Highlands, New South Wales South Western Slopes, South East Corner and Riverina Bioregions

- New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion.

A total of 22 threatened fauna species and 12 threatened flora species have been identified as candidate species for the biodiversity assessment, and of these the following 9 are listed entities at risk of SAII:

- Fauna
  - Tusked Frog (*Adelotus brevis*)
  - Regent Honeyeater (*Anthochaera phrygia*) (Breeding and foraging)
  - Large-eared Pied Bat (*Chalinolobus dwyeri*)
  - Peppered Tree Frog (*Litoria piperata*)
  - Glandular Frog (Litoria subglandulosa)
  - Large Bent-winged Bat (*Miniopterus orianae oceanensis*) (Breeding)
  - Stuttering Frog (*Mixophyes balbus*)
  - Brush-tailed Rock-wallaby (*Petrogale penicillata*).
- Flora
  - Narrow-leaved Bertya (*Bertya ingramii*).

Important area habitat mapping for the Regent Honeyeater is located about 800 m west of the project area. Due to the collision risks associated with the project, this species is important for consideration of prescribed impacts.

Matters of National Environmental Significance

Relevant MNES within 10 km of the project area are addressed in Table 6-7.

Table 6-7 Matters of National Environmental Significance

MNES	Impact
World Heritage property	The project area is not within or in proximity to a World Heritage Area.
National Heritage places	The project area is not within or in proximity to a National Heritage place.
Wetlands of international importance (Ramsar wetlands)	The project area is not within or in proximity to a declared Ramsar Wetland. The closest Ramsar wetland is the Little Llangothlin Nature Reserve, located 40 km northeast of the project area with its significance due to the wetland being one of the few high-altitude freshwater lagoons in New South Wales in near-natural condition. The Gwydir Ramsar wetlands are located 230 km northwest from the project area.
Nationally listed threatened species, ecological communities or migratory species	One EPBC Act listed threatened fauna species was identified during field investigations within the survey boundary: • Diamond Firetail (*Stagonopleura guttata*) (Vulnerable) Previous records of the White-throated Needletail (*Hirundapus caudacutus*) have been recorded at Rileys Creek dam in the northeast of the project area and multiple occurrences of the Koala (*Phascolarctos cinereus*) have been recorded outside of the project area on neighbouring properties and public roads. A total of 30 threatened and migratory fauna species and 14 threatened flora species listed under the EPBC Act have habitats which may occur within the locality. Two EPBC Act listed threatened ecological communities are associated with PCTs mapped within the project area being: • White Box-Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critical endangered ecological community) • New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands (critical endangered ecological community).
Nuclear action	The project does not involve a nuclear action.
Commonwealth marine environment/area	The project area is not within or in proximity to a Commonwealth marine environment/area.
Great Barrier Reef Marine Park	The project area is not within or in proximity to the Great Barrier Reef Marine Park.
Water resource in relation to an unconventional gas development and large coal mining development	The project does not involve development of coal seam gas or large coal mine.
Additionally, any impact (direct or indirect) on the environment of Commonwealth land	The project would not impact Commonwealth land.

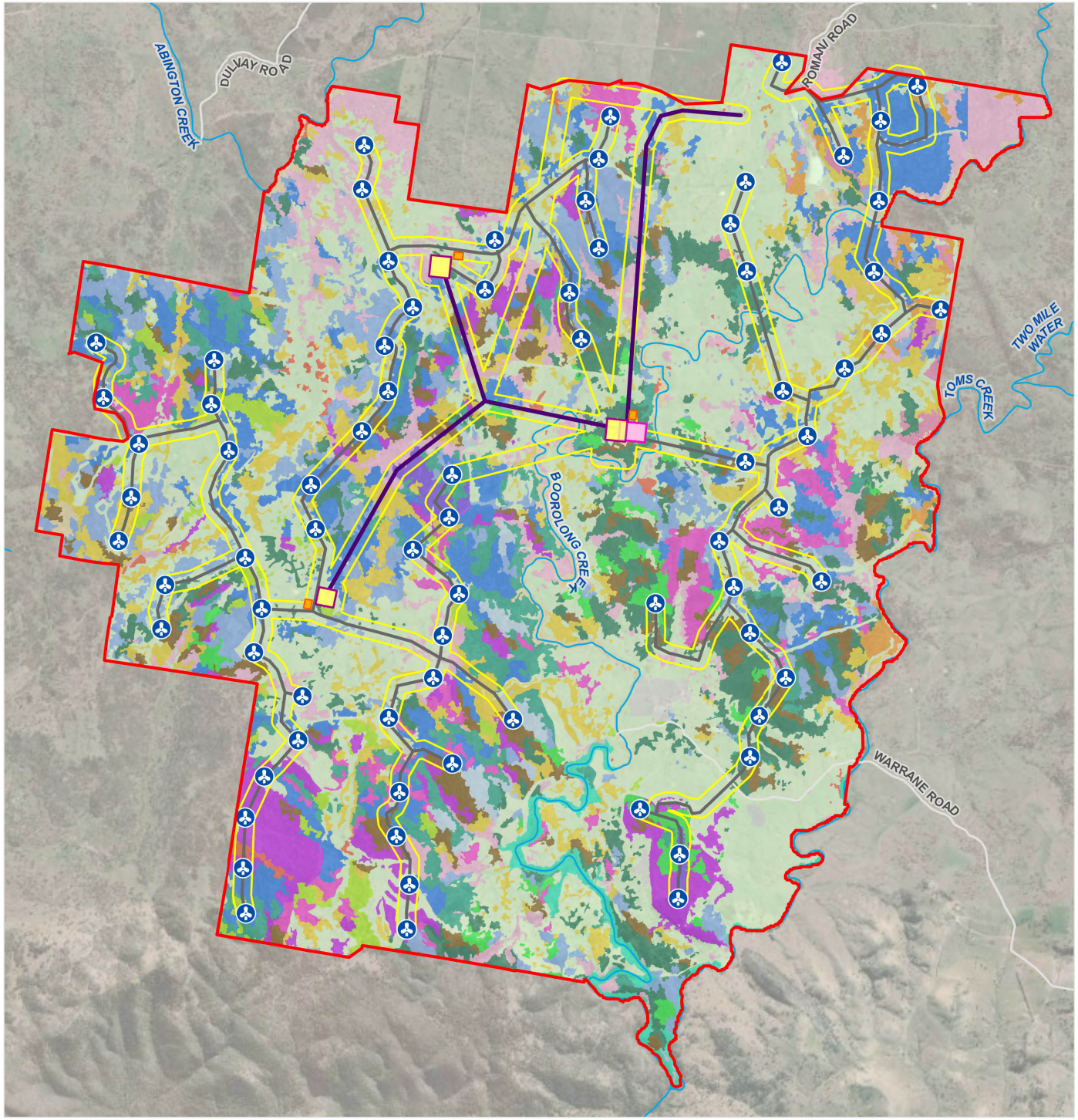
Aquatic ecology

Tributaries of Boorolong Creek, Toms Creek, Tigers Gully, Teatree Creek, Dread Gully, Abington Creek, Haylock's Creek and Rileys Creek are mapped as key fish habitat within the Murray Darling Basin North.

No wetlands are mapped within the project area, although there are several farm dams which supply a water resource to stock grazing over the land. The largest farm dam is located along a section of Rileys Creek in the northeastern corner of the project area. Farm dams may also provide habitat for a range of aquatic bird species which were observed utilising the dams during preliminary fieldwork investigations.

The Murray Cod, which is listed as Vulnerable under Commonwealth legislation has a moderate potential to occur within the project area (see Table 6-4).

All watercourses within the project area are a part of the Gwydir River catchment area. Medium potential Groundwater Dependent Ecosystems occur along Boorolong Creek and Toms Creek consisting of PCT 84 River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South and Nandewar Bioregions.



Plant Community Types

- 3344 - New England Ribbon Gum Grassy Forest
- 3351 - Armidale Creekflat Snow Gum Woodland-Scrub
- 3353 - Guyra Silvertop Stringybark Moist Forest
- 3359 - New England Hills Stringybark-Box Woodland
- 3359 - Derived grassland
- 3363 - Western New England Blakelys Red Gum-Box Grassy Forest
- 3702 - Northwest New England Ranges Caleys Ironbark Woodland
- 3705 - Western New England Hills Apple-Stringybark Forest
- 3710 - Western New England Hills Orange Gum-Ironbark Forest
- 3722 - Western New England Box-Tumbledown Gum Grassy Forest
- 3724 - Western New England Caleys Ironbark-Tumbledown Gum Forest
- 3725 - Western New England Ranges Orange Gum-Blackbutt Forest
- 3727 - Western New England Silvertop Stringybark Forest
- 3728 - Western New England Hills Blackbutt-Stringybark Forest
- 3729 - Western New England Youmans Stringybark Shrub Forest
- 3854 - New England Rockplate Shrubland
- 3855 - Western New England Rocky Granite Low Woodland
- 4080 - Northwest River Oak-Apple Forest
- 4125 - New England Youmans Stringybark-Box Forest
- 4132 - Western New England Rocky Granite Shrubland
- 4142 - New England Hills Red Gum-Stringybark Shrub Forest
- 0 - Cleared/Exotic
- 0 - Cleared native dominant grassland

- Project area
- Wind turbine
- Project 330kV transmission line
- Reticulation and access road
- Substation option
- BESS
- Operations and maintenance facility
- Survey boundary
- Roads
- Watercourse

0 1 2 3 Km

SCALE 1:75,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_PCT
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: C

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

rps
A TETRA TECH COMPANY

FIGURE 6-3: PLANT COMMUNITY TYPES WITHIN THE PROJECT AREA

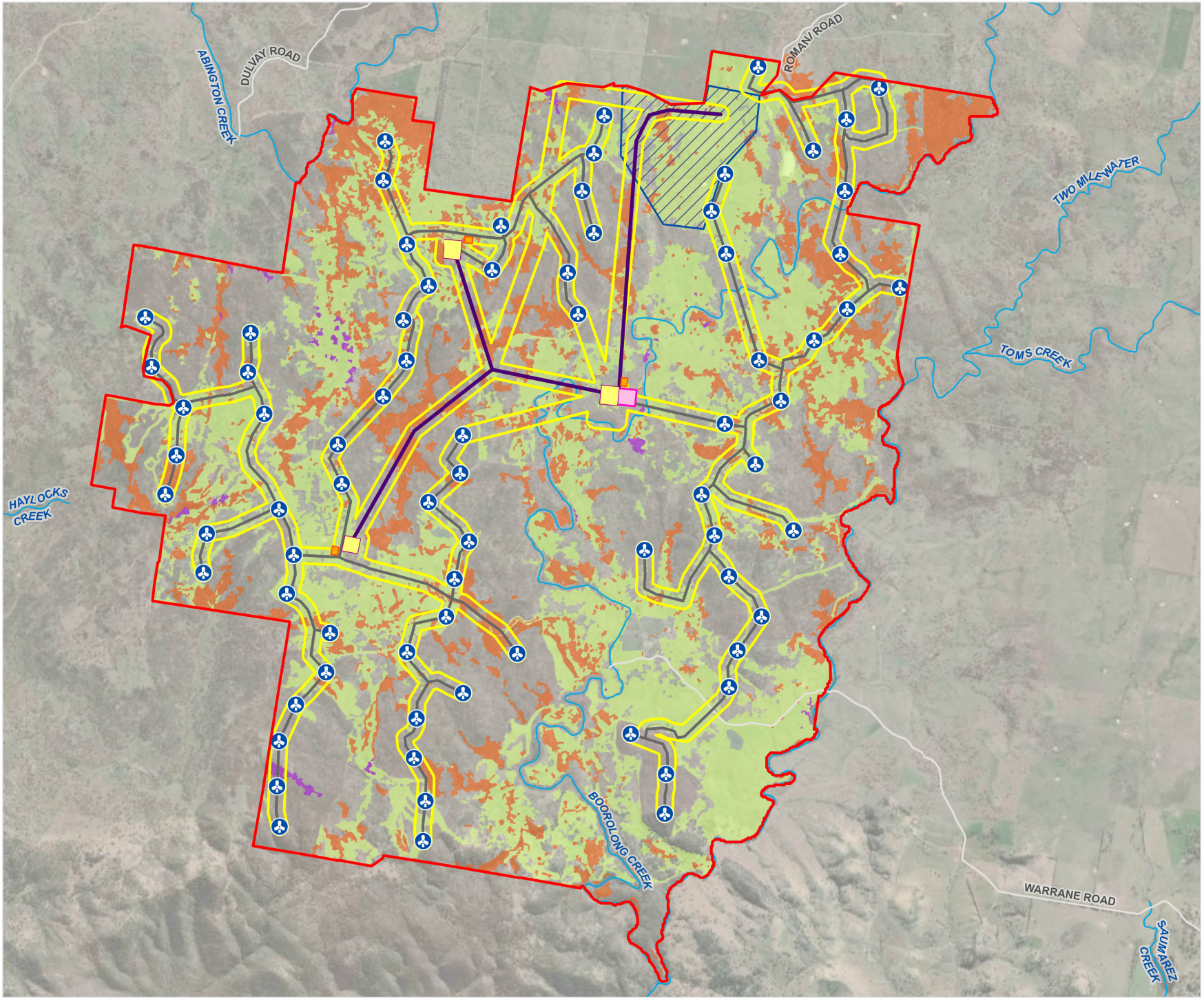
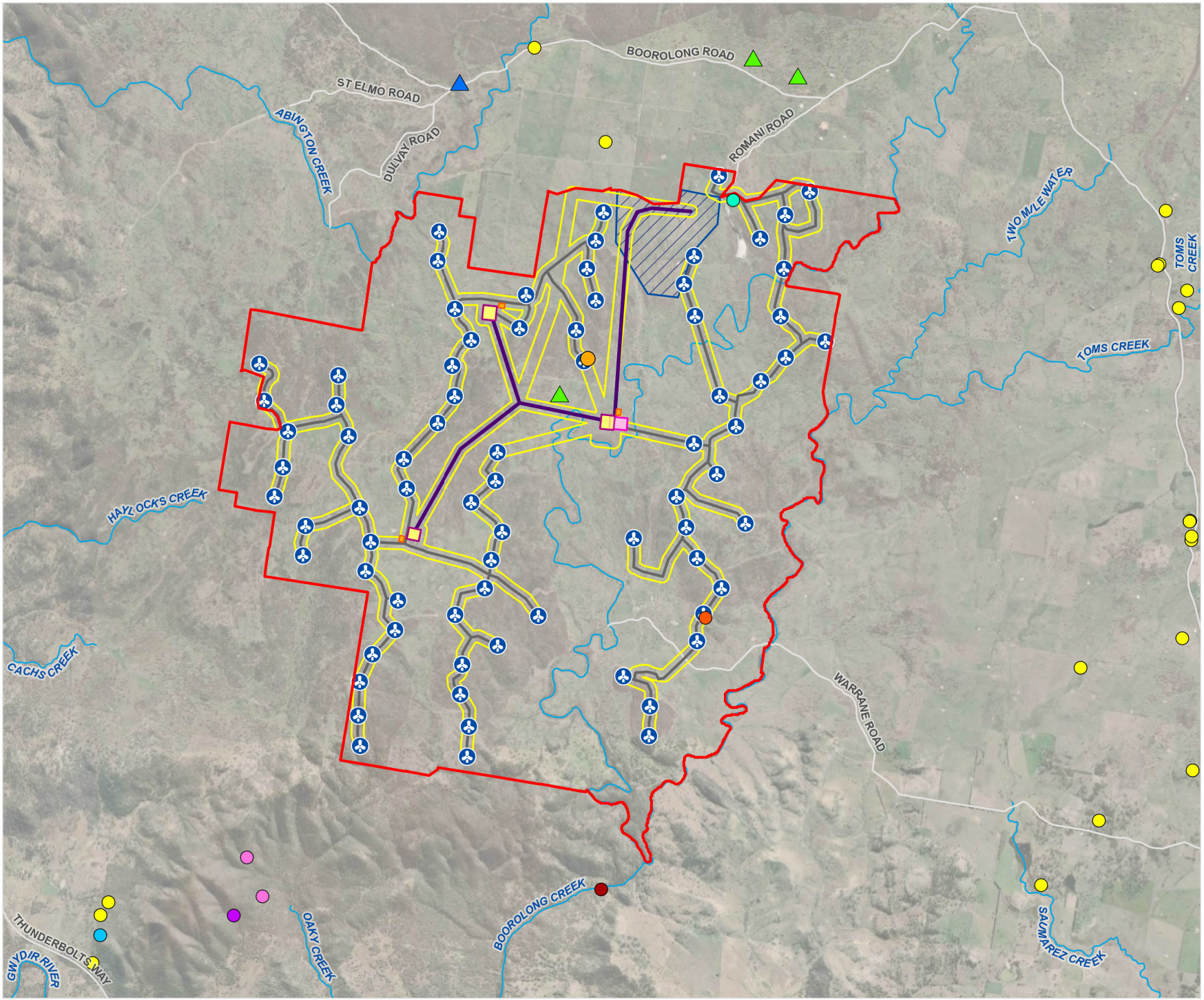


FIGURE 6-4: KNOWN THREATENED ECOLOGICAL COMMUNITIES WITHIN THE PROJECT AREA



- Project area
- Wind turbine
- Project 330kV transmission line
- Reticulation and access road
- Substation option
- BESS
- Operations and maintenance facility
- Survey boundary
- EnergyCo North Hub indicative footprint
- Watercourse
- Roads

Threatened Flora

- *Eucalyptus mckieana*
- *Eucalyptus nicholii*

Threatened fauna

- Diamond Firetail
- Dusky Woodswallow
- Koala
- Large Bent-winged Bat
- Little Lorikeet
- Speckled Warbler
- Varied Sittella
- White-throated Needletail

0 1 2 3 4 Km

SCALE 1:100,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_ThrtSpp
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 16/09/2025
VERSION: B

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 6-5: KNOWN THREATENED SPECIES WITHIN AND ADJACENT TO THE PROJECT AREA

6.4.2 Preliminary assessment

The biodiversity values of the project area were characterised by desktop and field-based investigation methods. Desktop investigations were undertaken across the broader project area, while field-based investigations were carried out within the survey boundary.

During the project's lifecycle, there is the potential for direct, indirect and prescribed impacts to occur. Prescribed biodiversity impacts are impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/or loss of habitat.

Some of the identified impacts identified in Table 6-8 would be more prevalent during the construction phase of the project, and some during operation.

Table 6-8 Potential impacts resulting from the project

Impact type	Potential impact	Details
Direct	Removal of native vegetation, potentially threatened ecological communities	• Clearing of vegetation, flora species and habitat within the survey boundary would be required for the project which may lead to the decline of local biodiversity and loss of threatened species
	Removal of threatened species habitat	• Clearing of threatened species habitat may occur during the construction phase of the project, potentially reducing the availability of habitat
	Fauna mortality from collisions with vehicles, structures (including blade strike) and during clearing of areas for development	• Collisions with vehicles and machinery may occur during construction and operation of the project. Blade strike of bird and bat species may also occur.
Indirect	Reduction in surface water quality and changes to surface water flows	• Disruption to natural flows and processes due to increased hard surface area • Increase of hard surfaces leading to an increased volume of water entering downstream waterways • Introduction of contaminants into surface water, such as nutrients, chemicals, and sediment from urban and other land uses, including the disturbance of soils during construction
	Changes to groundwater	• Clearing for construction • Construction works involving large excavations • Diversion of surface water, including installation of buildings and hard surfaces
	Soil disturbance	• Vegetation clearing • Construction works involving large excavations • The management of spoil during construction
	Spread of disease	• Soil transportation on contaminated footwear, vehicles and machinery, and in residential garden establishment • Increased site visitation rates • Earthworks and activities conducted during construction • Increased surface water runoff
	Spread of weeds	• New environmental conditions at the edges of developments such as altered light levels, windspeed, and temperature, that may facilitate the spread of weeds • Use of inappropriate species in landscaping and revegetation • Accidental dispersal of weed seeds and plant material • Altered fire regimes
	Predation/competition/land degradation by pest/domestic fauna	• Clearing that creates new movement pathways that can be used by pest fauna to expand their range

Impact type	Potential impact	Details
		• Clearing that changes conditions at the edges of habitat that favour pest fauna • Direct predation of native fauna by pest/domestic fauna • Pest fauna destroying habitat and spreading disease
	Altered fire regimes and increased fire risk	• Arson or the accidental lighting of fires • Increased burns for hazard reduction to protect assets, particularly within Asset Protect Zones • Reduced burns in some areas due to risk to urban areas
	Fauna mortality and injury, fauna displacement and the introduction of barriers to fauna movement	• Direct mortality as a result of collisions with vehicles or new structures, shooting, poaching, or secondary poisoning during pest control • Displacement due to clearing for the development • Introduction of linear barriers such as fences, roads and railways, which can affect fauna movement and predation
	Fauna disturbance due to noise, dust or light	• Clearing for the development • Construction activities, including use of heavy vehicles and machinery • Increased noise levels from traffic due to new roads or increased traffic on existing roads • Artificial light from commercial areas, and along transport routes
	Inadvertent impacts on adjacent habitat or vegetation including hollow bearing trees	• Impacts adjacent to construction sites • Road, trail and powerline maintenance • High frequency land management such as mowing and slashing or weed control
Prescribed	Removal of habitat (e.g. rocks, structures, non-native vegetation, water bodies)	• Removal of rock outcrop habitat and reduction in sheltering and basking rock habitat for reptiles • Change in water flows/quantity/run-off (water quality) • Human disturbance and noise or light disturbance • Weed invasion • Spread of plant / animal disease • Pest animals/predation/competition • Soil erosion/sedimentation • Urban run-off (water quality)
	Reduction in connectivity through the loss of stepping stone habitat	• Reduction in habitat connectivity and edge effects
	Wind turbine strikes on protected animals (e.g. birds and bats)	• Bird and bat mortality due to rotor strike is likely • Extensive baseline monitoring and post-construction monitoring is required to determine the extent of impacts to inform a bird and bat adaptive management plan
	Death of species individuals from vehicle strike	• Increased vehicle movement during construction and operation may increase risk of vehicle strike.

6.4.3 EIS assessment approach

A detailed biodiversity assessment would be undertaken for the EIS. As the project is SSD, this automatically triggers entry into the Biodiversity Offset Scheme. Field surveys and a BDAR will be prepared to address the BC Act, including the BAM, and EPBC Act requirements.

The BDAR will be prepared by an accredited person under the BC Act in accordance with the BAM and would provide details of the project and its associated biodiversity values, confirm how the project has avoided and minimised impacts to biodiversity and include an impact assessment for residual impacts that cannot be avoided, including impact assessment in accordance with the EPBC Act and *Fisheries Management Act 1994* (NSW).

Detailed field assessment, data analysis, and reporting as part of the scope of the BDAR and preparation of the EIS would also include:

- detailed consultation with the Conservation Programs, Heritage and Regulation Division of the NSW DCCEEW to inform proposed surveys and fieldwork
- field investigation in accordance with the BAM, including floristic plot surveys and targeted searches for threatened flora and fauna species
- review and update of the BAM Calculator to accurately determine credits for threatened ecosystems and species
- consideration of potential impacts to SAII candidate species, allowing the Minister of Planning and Public Spaces to conclude whether the project is likely to result in an SAII
- identification of any impact avoidance, mitigation, and offset measures necessary for the project
- undertake analysis of field data to determine impacts to threatened species and native vegetation and calculate any offset requirement in accordance with the BAM.

Preliminary field assessments commenced in winter 2024 and involved bird and bat utilisation surveys at varying heights to gather representative, quantitative data on the activity of bird and bat species of concern across the project area and broader locality. Further targeted surveys will be undertaken in accordance with the BAM during the preparation of the BDAR to determine the presence of threatened species.

To support the ecological assessments required under the BC Act, a Collision Risk Model and operational risk assessments will be employed following the collection of 12 months of bird and bat utilisation survey data.

A further 12 months of data (i.e., 24 months in total) will be obtained to guide the requirements of the bird and bat adaptive management plan to be prepared and which will provide an overall strategy for managing and mitigating any significant bird and bat strikes arising from the operation of the project.

Due to limitations in effectively modelling bat collision risk with the collision risk model, a qualitative risk assessment using a risk matrix would be completed as part of the BDAR.

A referral under the EPBC Act to the Australian DCCEEW will be required. Should the Australian DCCEEW determine that the project is a controlled action under Section 75 of the EPBC Act, an assessment and approval under the EPBC Act will be required. This is expected to be under the bilateral agreement between the Australian DCCEEW and DPHI.

6.5 Transport and access

6.5.1 Existing environment

The project area is located 350 km north of Newcastle and 500 km north of Sydney (by road). The major turbine components for the project are anticipated to be delivered to a port and transported by road to the project area. While a port and transport route assessment is yet to be completed, the likely transport route would be from the Port of Newcastle to the project area (refer Figure 3-2).

The route from the Port of Newcastle to the project area would be approximately 350 km via major highways such as the New England Highway and Pacific Highway. These serve as important inland commuting corridors as they provide connection to the towns of Newcastle, Singleton, Muswellbrook, Tamworth, Uralla, Armidale and others.

The New England Highway is mostly single carriageway, with a 100 km per hour speed limit. There are some sections that are dual carriageway. The New England Highway is an approved B-Double route.

Primary access to the site during construction would be via Boorolong Road and Romani Road to the north and Warrane Road to the east.

6.5.2 Preliminary assessment

Construction

Construction of the project would result in increased volumes of traffic, both of light-duty vehicles used to transport workers and materials, as well as heavy vehicle movements to transport components and other equipment. The project would require the use of OSOM vehicles for transport of large project-components such as turbine blades.

The project may require upgrades to roads along the transport route. The details and specifications of these upgrades would be dependent on the size of the vehicles and infrastructure required to be delivered to the project area.

In addition, the new access tracks would be required to support construction activities, to support any required maintenance work throughout operation and for the decommissioning phase of the project.

Operation

The traffic associated with ongoing operations of the project would be minimal, and likely to involve only light vehicle movements for operational personnel. Isolated instances of turbine component maintenance/replacement may be required during the operational phase which may require delivery via OSOM vehicle to site. Access to existing properties is unlikely to be impacted.

Decommissioning

Decommissioning of the project would result in increased volumes light vehicle traffic used to transport workers and materials, as well as heavy vehicle and the use of OSOM vehicles to transport components and other equipment. Traffic volumes for decommissioning are expected to be similar to those estimated for construction.

6.5.3 EIS assessment approach

As part of the EIS, a traffic and transport impact assessment (TTIA) (including a transport route assessment) would be prepared, which would consider potential transportation routes for construction traffic and potential impacts of the size, loads, and volumes of vehicles on the road network. The TTIA will generally be prepared in accordance with the guidelines outlined in Appendix A and will likely include:

- assessment of haulage routes, access points, and swept paths through intersections to determine potential risks and impacts from the largest vehicles (OSOM)
- review of any previous traffic impact assessments undertaken for the surrounding area and traffic counts in selected areas
- assessment of likely project-alone and cumulative traffic impacts during the construction and operational phases of the project (including intersection performance, capacity, safety and site access)
- 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)
- road dilapidation surveys to inform road repairs during the construction and operational phases of the project
- identification of mitigation and management measures if required, including traffic volumes and sight lines
- identification of any road upgrades required and associated clearing, and disturbance works
- assessment of the potential impacts of the proposed works on residences and access ways.

6.6 Aboriginal heritage

6.6.1 Existing environment

The project area is located on the traditional lands of the Nganyaywana; also known as the Anaiwan people, who have lived in the region for more than 6000 years (Horton 1994).

Norman Tindale (1974) recorded the location of the Anaiwan as being within the *"New England tableland from Guyra and Ben Lomond south to Uralla and Moombie Range; northwest to Tingha; at Bendemeer and Armidale"*. Clayton-Dixon (2019) notes that the Anēwan (Anaiwan) language group was located near Armidale. Yaniwan and Anēwan are part of the same group of languages.

The project is located within the Armidale LALC and the Guyra LALC areas. There are no native title claims or determinations within the project area.

Topography and watercourses across the project area have been identified in Section 2.2.2. These watercourses would have been suitable to support either long-or short-term occupation. Numerous unnamed ephemeral drainage lines are also present although many of these are V-shaped gullies which would not have held water except immediately following rainfall.

Previous studies within the New England Tablelands region (Belshaw 1978, Davidson 1978, EMM 2018, Flood 2010) indicate the following landscape features and associated observations:

- gently inclined slopes are generally hospitable landforms; however, their archaeological potential often relies on proximity to reliable watercourses
- moderate to steep slopes are a degrading landform, especially in the project area where vegetation removal has accelerated soil loss. These landforms are unsuitable for occupation and Aboriginal objects recorded in such landforms are likely to be in a secondary context
- steeper slopes are often distant to water and are unsuitable for occupation
- ridgelines and spurs were commonly used as pathways and for ceremonial purposes. Any sites associated with such landforms are likely to have a low artefact density and a low complexity of tool types as the sites are either one-off events or only infrequently used
- ridge and crest landforms in proximity to more major creeks, such as those within the project area, were favoured occupation locations. Should Aboriginal objects be recorded in these landforms, they are likely to be surface manifestations and likely displaced from their primary depositional context
- the New England Tablelands have a high number of ceremonial sites and the distribution of ceremonial sites and Bora grounds across the landscape is somewhat unpredictable as the choice of their location appears to be based on spiritual reasons rather than simply landscape features and resources
- there is a general lower frequency of culturally modified trees recorded within the New England Tablelands, however these can be recorded anywhere with a greater likelihood near to reliable watercourses.

6.6.2 Preliminary assessment

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was completed for the project on 9 August 2024. The search identified one rock shelter with art (Aboriginal site 20-3-0025 [Merrifield Strathroy]) located in the project area however the site card details indicated it is located 12 km west of the project area (refer Figure 6-6).

The project area is situated northeast of the Bulagaranda Aboriginal Area, known formerly as the Mount Yarrowyck Nature Reserve (NPWS 2024) (see Figure 2-2). Bulagaranda translates to 'turkey dreaming' and encompasses approximately 600 ha of land (Ingall and Reading 2022). The area is a significant place to the Anaiwan community and is part of their song lines with a several significant Aboriginal sites present including one Aboriginal rock art site (Ingall and Reading 2022).

6.6.3 EIS assessment approach

An Aboriginal cultural heritage assessment report (ACHAR) will be prepared for the project as part of the EIS.

Investigations to be undertaken as part of the ACHAR will include a survey to be completed by archaeologists and members of the Aboriginal community. The results of the survey will indicate whether test excavation at any specific landforms is warranted.

Investigations to be undertaken as part of the ACHAR will be in accordance with the guidelines and policies in Appendix A.

The investigation for the ACHAR will include following steps:

- desktop review to develop a predictive model for the location of Aboriginal objects
- site survey with the assistance of the Aboriginal community to identify any Aboriginal objects that may be present, as well as identifying any landforms where subsurface archaeological deposits may be present
- identify any areas/landforms of cultural significance in consultation with the Aboriginal community
- undertake test excavation if warranted
- determination of the significance of the Aboriginal objects and/or landforms identified during the site survey in consultation with the Aboriginal community
- assessment of the impact of the project (i.e., disturbance footprint and transport route) to identified Aboriginal heritage values, including both tangible and intangible values
- development of mitigation measures to minimise impacts to Aboriginal cultural values.

6.7 Historic heritage

6.7.1 Existing environment

John Oxley first surveyed the New England Tablelands in 1818 and recommended the area surrounding Armidale for grazing and livestock rearing (NPWS, 2003). Rapid colonisation of the district began in the late 1830s (Clayton-Dixon 2019) and in September 1839, government records show that there were 37 stations across the tablelands holding 422 colonists.

By 1841 the colonial population had tripled to 1,052. Considered by Governor Gipps to be "*one of the best grazing districts in the colony*", the Tablelands saw exponential growth in the number of stations it held. By 1848 there were 132 stations, and the New England district quickly became the epicentre of colonial expansion. In 1846 a Sydney newspaper, *The Spectator*, reported that "*there is perhaps not another district in New South Wales that can equal New England in its rapid rise in importance, in population, in wealth*".

Despite colonial settlement starting later than other neighbouring districts, the New England district colonial population soon outnumbered those of its neighbours. By 1860 there were over 7,000 colonists in the district with a population density of over 100 colonists for every 1,000 km^2.

Armidale Regional Council (2021) states that the township of Armidale was settled in 1839 as the Pastoral District of New England and then gazetted in 1849 as the 'Armidale Borough' as an administration and market centre for the surrounding area.

In the 1950s the town rapidly expanded with the discovery of gold during the gold rush at Rocky River near to Uralla, located approximately 18 km south of the project area (Kay 1987).

6.7.2 Preliminary assessment

A desktop search was conducted on 13 August 2024 of the databases listed in Table 6-9 to identify whether any previously recorded heritage is situated within the project area.

Table 6-9 Historic heritage desktop-database search results

Name of database searched	Commentary
National and Commonwealth Heritage Lists	No items located within the project area
State Heritage Register	No items located within the project area
Section 170 Heritage Register	No items located within the project area
Heritage schedule of the Armidale LEP	Armidale LEP listed item 'Homestead, "Warrane"' (I246) is located within the project area
Heritage schedule of the Uralla LEP	No items located within the project area

The heritage schedule of the Armidale LEP lists the 'Homestead, "Warrane"' (I246) as an item of local significance with historical, aesthetic and representative value. The statement of significance for the listing describes the homestead complex as a good example from the settlement period of the Armidale district. The design of the house has elements of both the Victorian and Federation periods with key design features including bay windows and timber fretwork.

The listed curtilage for the homestead complex is located within the project area (see Figure 6-6), but is approximately 270 m west of the survey boundary (and future disturbance footprint)

6.7.3 EIS assessment approach

The EIS will be supported by a historic heritage assessment which will be prepared with regard to the New South Wales Heritage Manual, relevant Heritage Council of New South Wales guidelines and with consideration of the principles contained in the *Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance* (Australia ICOMOS 2013) and the guidelines outlined in Appendix A.

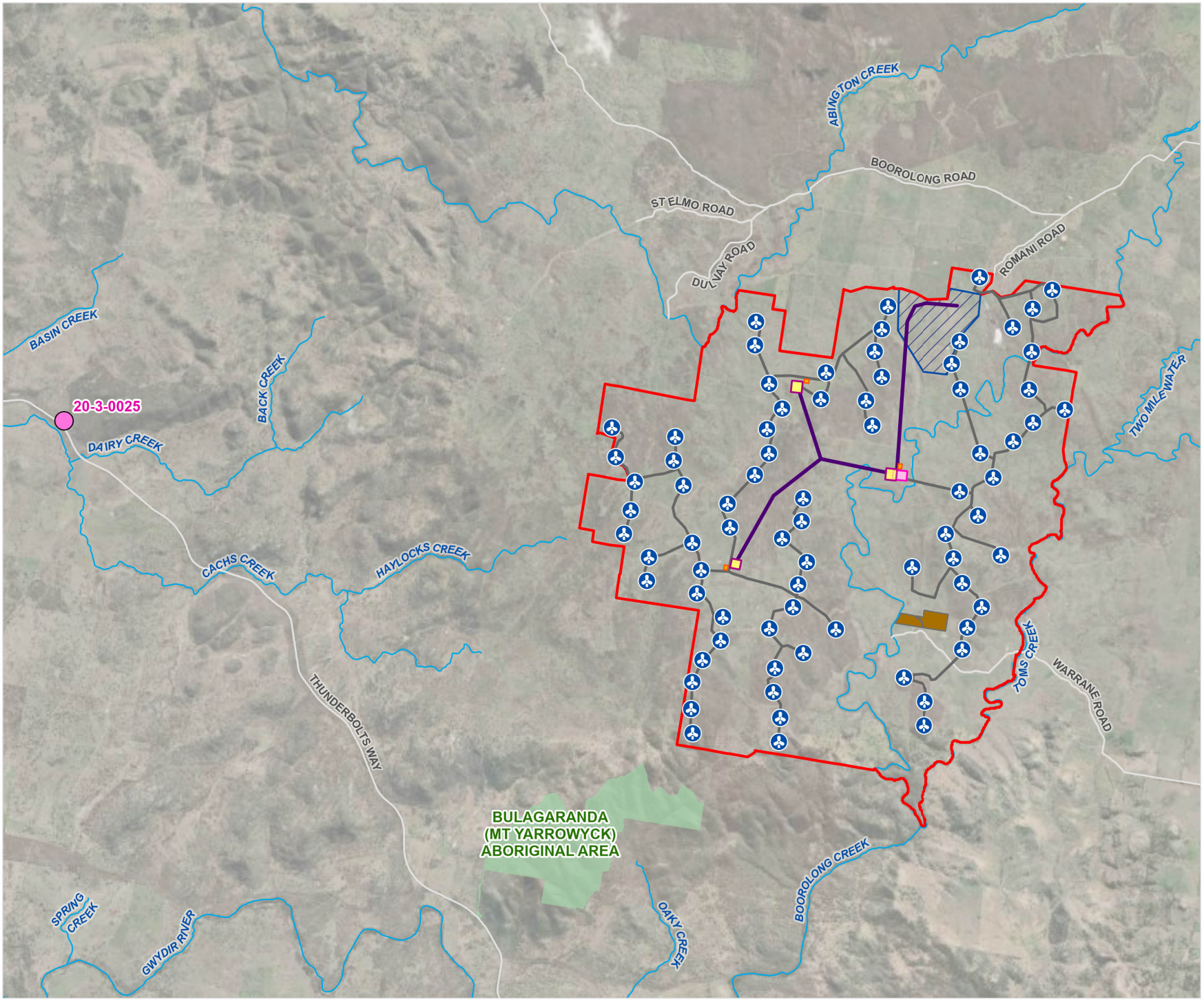


FIGURE 6-6: ABORIGINAL AND HISTORIC HERITAGE WITHIN AND SURROUNDING THE PROJECT AREA

6.8 Socio-economic

6.8.1 Existing environment

Project information, along with Australian Bureau of Statistic (ABS) demographic and economic data was used to inform the preliminary social impact assessment (SIA) study area, and to identify potentially affected communities and key stakeholders.

The SIA study area identifies surrounding stakeholders who could potentially be directly or indirectly affected by the project. This includes landholders, businesses, residents and social services who may have an interest in the project and who could be impacted.

The project area is located between the townships of Dumaresq and Yarrowyck. Armidale is 18 km northwest of the project area and is anticipated to be the main hub for community gathering, access to services, and business activity closest to the project area and would therefore be included in the SIA study area as an impacted community.

Both the Armidale Regional Council and Uralla Shire Council LGAs may experience some direct and indirect impacts, mostly related to temporary workforce accommodation, local procurement opportunities and employment. The SIA study area is summarised in Table 6-10.

Table 6-10 Locations within the SIA study area mapped to ABS categories

Area	Location	ABS category
Study area	Dumaresq	Dumaresq Suburb Code
	Yarrowyck	Yarrowyck, Suburb Code
Region	Uralla Shire Council	Uralla LGA
	Armidale Regional Council	Armidale LGA
State	New South Wales	New South Wales

The social characteristics of the project's social locality as of 2021 are analysed in Table 6-11. These are benchmarked against New South Wales.

Table 6-11 Demographic profile

Aspect (2021)	Dumaresq	Yarrowyck	Uralla LGA	Armidale LGA	New South Wales
Population	80	175	5,992	29,332	8,097,062
Median age	42	39	46.9	36.9	38.6
Age profile					
0-14	17.5%	23.2%	18.1%	18.3%	18.5%
15-24	17.5%	8.3%	10%	16.2%	12%
25-44	22.5%	24.3%	19.4%	23.9%	28%
45-64	27.5%	25.9%	29.4%	23.1%	24.3%
65+	12.5%	18.3%	22.9%	18.2%	17.1%
Speaks a language other than English at home	0%	0%	2.4%	10.3%	26.6%
Top 3 languages spoken at home	English (100%)	English (100%)	English (91.2%) German (0.3%) Thai (0.3%)	English (79.7%) Kurdish (0.9%) Nepali (0.9%)	English (67.6%) Mandarin (3.4%) Arabic (2.8%)
Proportion of population with a long-term health condition	26.3%	28%	38.4%	33.5%	30.9%
Proportion of population who need assistance with core activities	0%	2.3%	6.7%	5.2%	5.8%
Household type					
	69.2%	76.8%	71.3%	63.9%	71.2%

Aspect (2021)	Dumaresq	Yarrowyck	Uralla LGA	Armidale LGA	New South Wales
Family	25.6%	17.9%	26.4%	32%	25%
Lone person	10.3%	5.4%	2.3%	4.2%	3.8%
Group					
Average number of people per household	2.5	2.8	2.4	2.3	2.6
Tenure type					
Own outright	25.6%	42.6%	42.5%	34.6%	31.5%
Own with a mortgage	12.8%	35.2%	34.4%	26.6%	32.5%
Rent	15.4%	13.0%	17.6%	34.7%	32.6%
Other	30.8%	7.4%	5.3%	4.1%	3.4%
Median rent (weekly)	$290	$400	$250	$285	$420
Median mortgage repayments (monthly)	$1,500	$1,733	$1,333	$1,436	$2,167
Median household income (weekly)	$1,687	$1,625	$868	$924	$1,096
Top industry of employment	Agriculture, forestry and fishing	Agriculture, forestry and fishing	Agriculture, forestry and fishing	Education and training	Health care and social assistance
Unemployment rate	0%	0%	4.1%	5.3%	4.9%

References:

Australian Bureau of Statistics, 2021 Census All persons QuickStats, Dumaresq and Yarrowyck

Australian Bureau of Statistics, Data by region, Uralla LGA, Armidale Regional LGA, New South Wales

Australian Bureau of Statistics, 2021 Census – counting persons, place of usual residence

6.8.2 Preliminary assessment

A preliminary assessment of the social impacts (positive and negative) has been undertaken to consider: the following:

- the likely social impacts for different groups in the social locality and the level to which these impacts need to be assessed
- potential refinements or approaches in response to likely social impacts during the design and construction phases
- engagement activities to be undertaken that would inform the SIA.

A summary of the impacts has been identified and is detailed in Table 6-12. More detailed information is provided in the SIA Scoping Worksheet in Appendix F.

Table 6-12 Scoped social impacts during construction and operation

	Outline of impact	Social impact matter
Positive		
1	The construction of the project and other developments in the REZ could require upgrades to local roads, including the widening of Boorolong and Romani Road to accommodate the transport of turbine components. This would benefit local drivers in the long term.	Access
2	The project could increase sense of place by supporting/contributing to values held by the community, i.e. renewable energy and reducing greenhouse gas emissions.	Community
3	Opportunities for community investment would likely target social infrastructure and community facilities in nearby towns.	Community
4	Long-term improvements to and investment in utilities infrastructure and associated services could lead to improved access and quality of services.	Community

	Outline of impact	Social impact matter
5	Influx of non-local construction workers (who may be required in addition to local labour force) may increase use of local businesses such as cafes, restaurants, shops, and accommodation providers.	Livelihoods
6	The project could increase employment opportunities for local construction workers and those in related fields in the construction stage.	Livelihoods
7	The project could create local employment opportunities in the ongoing operation and maintenance stage.	Livelihoods
8	There is potential for the project to procure materials from local businesses.	Livelihoods
9	A transition to renewable energy could put pressure on wholesale electricity prices, reducing electricity bills statewide.	Livelihoods
10	A transition to renewable energy would decrease reliance on finite fossil fuels, meaning a more reliable and secure electricity grid long term.	Livelihoods
11	Landholder income could be increased and diversified through lease arrangements.	Livelihoods
12	Vocational training schemes may build the capacity of local tertiary training institutions through partnerships.	Livelihoods
14	Vegetation offsets could result in plantings and rehabilitation undertaken on landholder property.	Surroundings
Negative		
1	Construction could increase traffic due to road closures, blocking of thoroughfares, and increased vehicles in the area.	Access
2	Access could be blocked during minor roadworks to ensure roads can accommodate the transport of turbine components. This includes Boorolong and Romani Road being widened.	Access
3	The project could decrease social cohesion if locals disagree on whether to support it, or if some feel the benefits are unequally distributed amongst the community.	Community
4	The project itself and the general cumulative energy development in the REZ could impact the community's sense of place.	Community
5	The presence of wind turbines may block access to Country for First Nations people of the area.	Culture
6	Potential impacts to Aboriginal cultural and/or historic heritage sites.	Culture
7	Potential loss of rural heritage values due to re-purposing of land.	Culture
8	Failure to meet community expectations could erode community trust in decision makers.	Decision-making systems
9	The community's real or perceived lack of knowledge and inclusion in the planning and operation of the project could mean they are (or perceive they are) unable to influence project decisions.	Decision-making systems
10	Potential increased traffic could increase the road safety risk for local drivers and pedestrians.	Health and wellbeing
11	Noise from the construction site could affect the physical and mental health of nearby residents.	Health and wellbeing
12	The wind turbines could negatively impact locals' physical and mental health due to exposure to noise and vibration.	Health and wellbeing
13	Potential increased demand on health services due to presence of construction workers could impact local access to health services.	Health and wellbeing
14	Potential air quality impacts for landholders, residents near the project area, and residents along proposed haulage routes due to dust from construction activities and traffic on unsealed roads.	Health and wellbeing
15	Influx of non-local construction workers (that may be required in addition to local labour force) may result in temporary changes to population and demography of towns within commuting distance of the project.	Livelihoods
16	The construction and operation of the project could disrupt the local agricultural industry and could reduce the available agricultural land.	Livelihoods
17	Potential for visual disturbance to the landscape due to construction activities and infrastructure.	Surroundings

	Outline of impact	Social impact matter
18	Potential for visual disturbance to the landscape due to the presence of wind turbines.	Surroundings
19	Reduced ability to practice fire management due to aerial access restrictions.	Surroundings
20	Potential increased demand on community infrastructure and services due to presence of construction workers could impact local access.	Way of life
21	Construction noise, dust and other amenity impacts could diminish the ability of people to experience quiet enjoyment at their dwellings.	Way of life
22	Potential impacts to housing availability, rental prices or accommodation capacity.	Way of life
23	A broad regional shift towards prioritising land use for renewable energy projects may impact the agricultural way of life in these areas.	Way of life

6.8.3 EIS assessment approach

A SIA will be prepared to align with the *Social Impact Assessment Guideline for State Significant Development Applications* (DPIE 2023). The SIA will scope, examine and assess potential impacts and develop mitigation measures to enhance potential positive impacts and minimise negative impacts that may arise from the project. The SIA will involve 3 broad stages:

1. Establishing a socio-economic baseline

Develop a comprehensive social baselines by expanding on the scoping report research via desktop review of a range of documents and data sources to inform the context and understanding of the social locality place characteristics – including local amenity and character, community values and concerns.

- define the study area
- desktop assessment of ABS Census data and other relevant demographic and economic information
- review of relevant strategic planning policies and documents
- survey and mapping of existing community and social infrastructure and facilities.

2. Impact analysis: Predicting, analysing and evaluating social impacts

- consult with stakeholders and local communities to identify community values, aspirations and opportunities
- consider outcomes and key findings of other technical investigations such as visual, noise, traffic, economic, environmental and cultural heritage impact studies
- predict and analyse the extent and nature of likely social impacts (positive and negative) from the project on local and regional communities against the baseline conditions
- evaluate and prioritise social impacts that are important to people
- develop appropriate responses, including avoidance, mitigation and enhancement measures to social impacts, and identify residual social impacts
- propose measures to monitor and manage residual social impacts.

3. Cumulative assessment

- consider combined incremental and cumulative impacts and address identified likely combined impacts.

6.9 Land resources

6.9.1 Existing environment

A preliminary review of the Soil and Land Capability Mapping data for New South Wales (DPIE 2021a) suggests that there are 4 land and soil capability (LSC) classes within the project area (see Figure 6-7):

- LSC Class 8 – extremely low capability: limitations so severe that the land is incapable of sustaining any land use apart from nature conservation. Small patch located in the southwest corner of the project area, currently outside of the disturbance footprint

- LSC Class 6 – low capability: land has very high limitations for high-impact land uses, restricted to low-impact land uses (e.g. grazing, forestry, horticulture). Located throughout the majority of the project area
- LSC Class 5 – moderate-low capability: land has high limitations for high-impact land uses. Land not capable of sustaining high impact land uses except where resources allow for high specialised land management practises to overcome limitations (e.g. high value crops). Located in patches through the western portion of the project area
- LSC Class 4 – moderate capability: land has moderate to high limitations for high-impact land uses. Land generally not capable of sustaining high impact land uses unless using specialised management practises with high level of knowledge, expertise, inputs and investment. Located in patches through the northern and easter portion of the project area.

There is no mapped biophysical strategic agricultural land (BSAL) land or LSC Classes 1-3 present in the project area.

A search of the *Australian Soil Classification Soil Type Map of New South Wales* (DPIE 2021b) shows that the project area has the following soil orders:

- Kandosols (KA) – located throughout the majority of the project area. Associated with the LSC Class 6 soils
- Kurosols (KU) – located in patches through the project area. Associated with the LSC Class 4 and 5 soils
- Rudosols (RU) – located in the southwestern corner of the project area. Associated with the LSC Class 8 soils
- Kurosols – natric (KUn) – small patch located in the southwestern corner of the project area. Associated with an ephemeral drainage line.

6.9.2 Preliminary assessment

Construction

During construction there is potential for soil disturbance which may result in:

- degradation and loss of topsoil
- topsoil compaction from vehicle movements
- erosion and sedimentation from vegetation clearing and earthworks, potentially leading to off-site impacts (e.g. eutrophication of downstream waters).

Operation

Once operational, it is unlikely there would be further impacts to soils or agricultural productivity, and drainage infrastructure and permanent erosion control features would be regularly maintained.

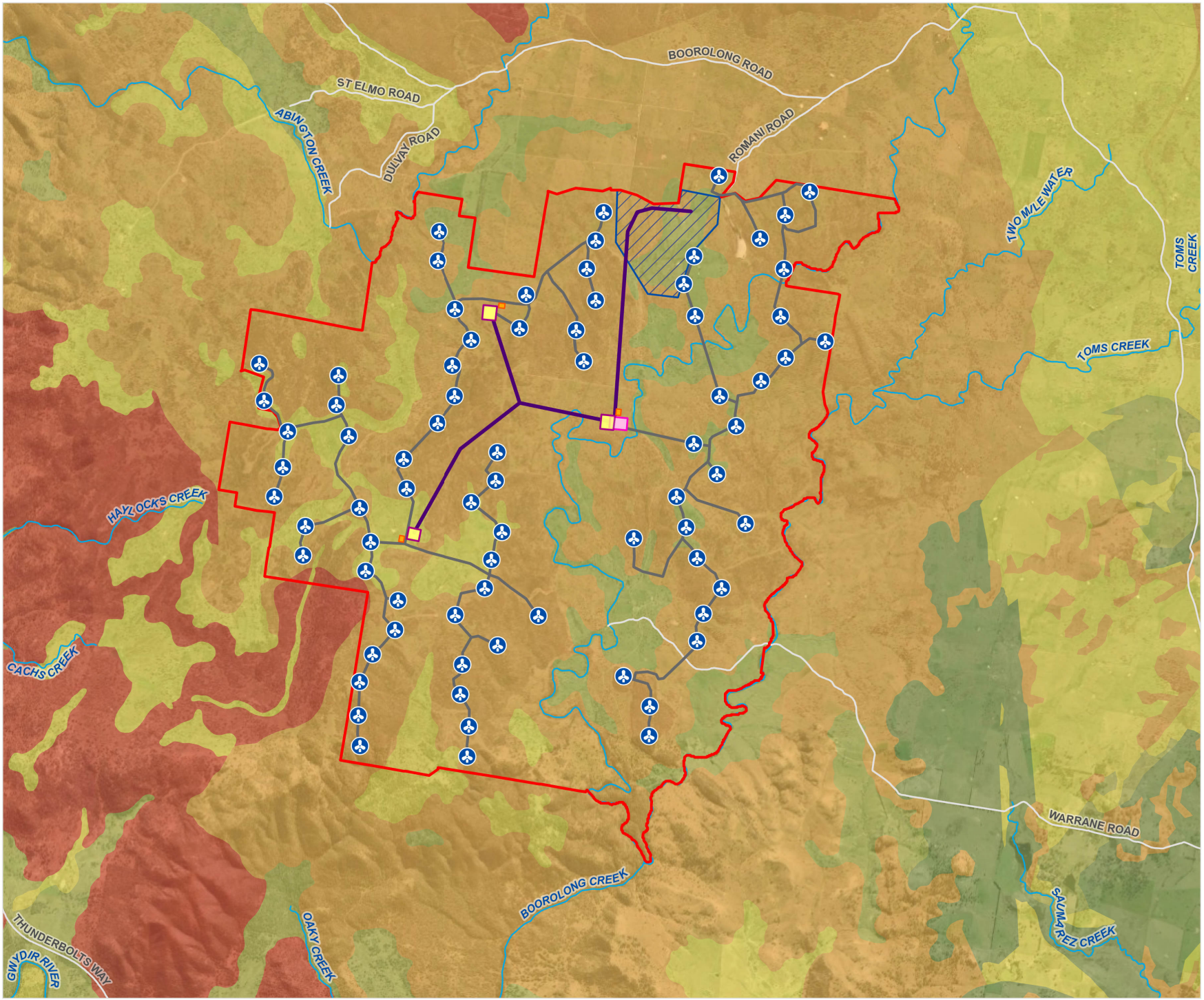


FIGURE 6-7: LSC CLASSES WITHIN THE PROJECT AREA

6.9.3 EIS assessment approach

An agricultural and soil assessment will be undertaken for the EIS, which will primarily focus on assessing the project impacts on the soil and LSC of the project area (including a minor soil survey to confirm desktop work), as well as the likely impacts on agricultural resources, enterprises and industries. The agricultural and soil assessment will consider the requirements of the following guidelines listed in Appendix A.

A land use conflict risk assessment will be prepared, which will also propose appropriate mitigation measures during construction and operation of the project.

6.10 Water resources

6.10.1 Existing environment

All watercourses within the project area are a part of the Gwydir River catchment area, which has an area of approximately 20,000 km^2 and comprises 2% of the total Murray Darling Basin (MDBA 2023).

Due to the existing topography of the locality, (which is described in Section 2.2.3), watercourses and drainage lines cross most of the project area. Within the project area, there are several named and unnamed watercourses which drain into Gwydir / Rocky River in the south, and Abington Creek in the north of the project area (see Figure 6-8). There are also numerous ephemeral drainage lines present, and some farm dams scattered across the project area. The largest farm dam is located along a section of Rileys Creek in the northeastern corner of the project area.

'Stream order' is used to describe the hierarchy of streams from the top to the bottom of a catchment. The Strahler system is based on the confluence (joining) of streams of the same order. A 1st order stream has no other streams flowing into it. When 2 streams with different orders join, the resulting stream has the same order as the highest order of the 2 joining streams (DPE 2022).

Watercourses identified within the project area and their Strahler stream order are listed below:

- Abington Creek (perennial) – 5
- Boorolong Creek (perennial) – 6
- Toms Creek (perennial) – 5
- Cachs Creek (intermittent) – 2
- Dread Gully (intermittent) – 3
- Haylocks Creek (intermittent) – 2
- Rileys Creek (intermittent) – 4
- Teatree Creek (intermittent) – 3
- Tigers Gully (ephemeral) – 1.

There are 2 unlicensed groundwater bores located within the project area that are used for stock/domestic use.

A search of the New South Wales Planning Portal Spatial Viewer did not identify the project area to be situated upon flood prone land.

6.10.2 Preliminary assessment

Construction

During construction there is the potential for the following impacts upon water resources:

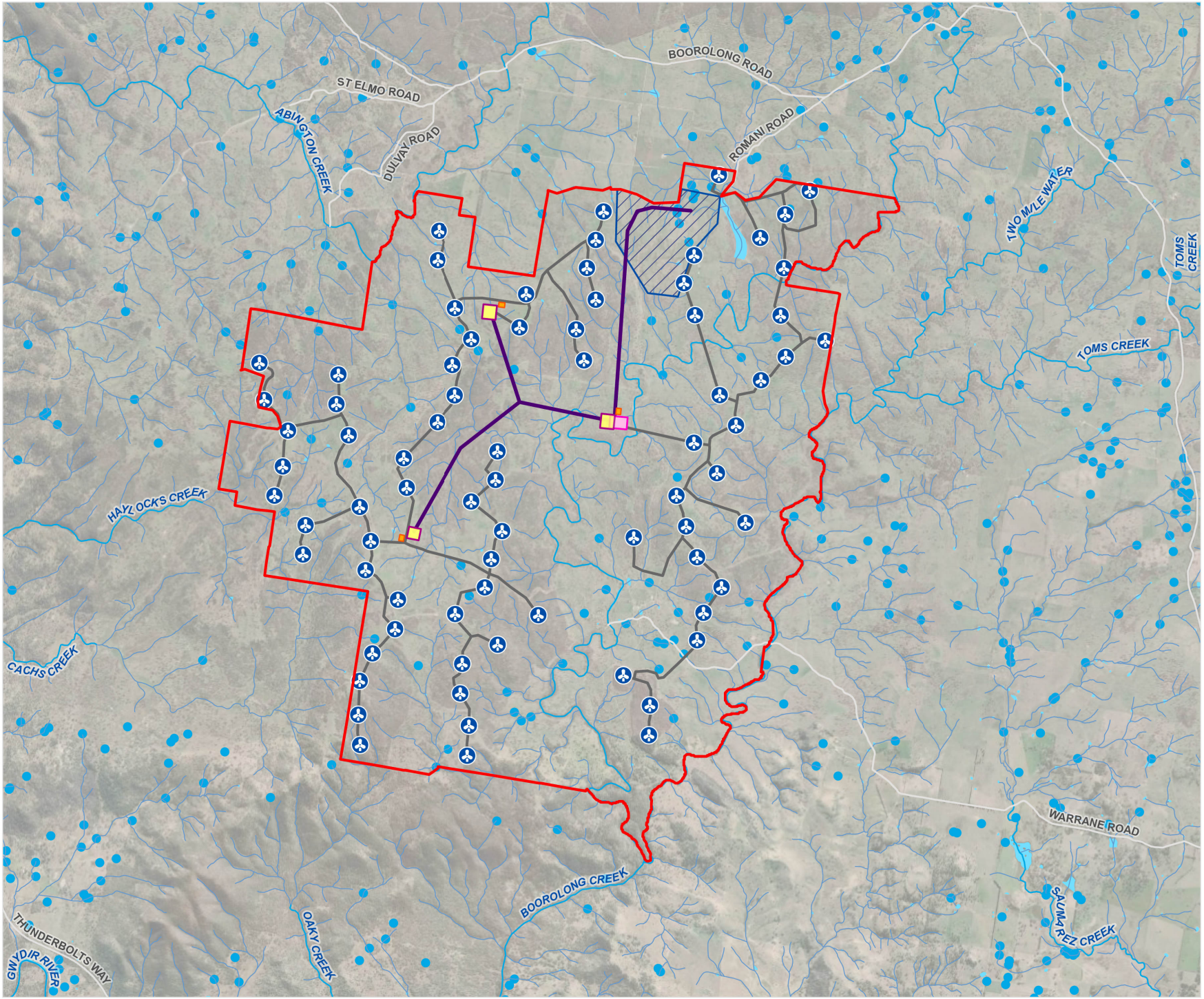
- sourcing of water for construction which may include offsite or on-site water sourcing (including the construction of bores and/or dams)
- increased surface water runoff and erosion from earthworks changing local landforms

- increased sedimentation from ground disturbance activities, with subsequent sediment loads entering watercourses
- water quality changes including pH, turbidity, electrical conductivity, dissolved oxygen, and temperature
- increased contaminant loads entering watercourses from leaks and spills of fuels, chemicals or wastewater.

Operation

During operation there is the potential for the following impacts to water resources:

- increased surface runoff and changes to local hydrology from the increase in impervious surfaces (e.g. hardstands, roads/ access tracks, concrete areas)
- transport and deposition of sediment from ground disturbance as well as vehicle and equipment movements during maintenance activities
- potential fuel or chemical spills during maintenance activities.



- Project area
- Wind turbine
- Project 330kV transmission line
- Reticulation and access road
- Substation option
- BESS
- Operations and maintenance facility
- EnergyCo North Hub indicative footprint
- Roads
- Primary watercourse
- Secondary watercourse
- Waterbody
- Small waterbody/farm dam

0 1 2 3 4 Km

SCALE 1:100,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_Watercourses
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: B

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

rps
A TETRA TECH COMPANY

FIGURE 6-8: WATERCOURSES WITHIN THE PROJECT AREA

6.10.3 EIS assessment approach

A relevant assessment of water resources will be undertaken for inclusion in the EIS which will include:

- flooding and hydrology assessment:
  - existing flood behaviour: through review of existing available data, developing computer models and defining flood levels, depths, velocities and flood hazard category for the project area for existing topographic conditions
  - flood behaviour once the project is operational: including quantifying flood levels, depths, velocities and flood hazard category with the project in place, and measures proposed to monitor, reduce and mitigate impacts
- water resources assessment:
  - identify the existing water resources and environment
  - assess the potential impacts of the project on hydrology
  - identify and indicatively quantify sources of water required during construction and operation of the project and determine whether any water access licences under the WM Act are required
  - identify any options to use the existing groundwater bores for construction water use
- an assessment of the likely impacts on groundwater dependent ecosystems
- identification of any works within 40 m of the high bank of any waterfront land, impacts and required mitigation
- a discussion of construction erosion and sediment control measures to ensure impacts during excavation, road works, transport of machinery, etc. are adequately mitigated through avoidance, minimisation and management
- measures to monitor, reduce and mitigate the impacts of the project.

The water impact assessment will be undertaken in accordance with the guidelines outlined in Appendix A.

6.11 Hazards and risk

6.11.1 Preliminary Hazard Analysis

Preliminary assessment

A preliminary hazard assessment (PHA) is required where potentially hazardous or offensive development under the Resilience and Hazards SEPP. Clause 3.2 of the Resilience and Hazards SEPP defines a potentially hazardous industry as:

> *"development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality—*
>
> *(a) to human health, life or property, or*
>
> *(b) to the biophysical environment, …"*

Appendix 3 of the *Applying SEPP 33 Guidelines* (DoP 2011a) lists the industries that may fall within the Resilience and Hazards SEPP (former SEPP 33), which do not include wind farms or energy storage facilities. However, the BESS facility proposed for the project is likely to utilise lithium-ion batteries, which are listed as Class 9 – Miscellaneous dangerous goods.

While Class 9 materials are excluded from the SEPP 33 screening test, the hazards related to these materials should be considered in accordance with the Resilience and Hazards SEPP guidelines.

Batteries can be a serious safety risk for occupants and installers, potentially leading to electric shock, fire, flash burns, explosion or exposure to hazardous chemicals or gases.

EIS assessment approach

A PHA will be undertaken for the project, which evaluates the likely risks to public safety, focusing on the transport, handling and use of hazardous materials. The assessment will also consider whether the project should be considered a hazardous or potentially hazardous industry under the Resilience and Hazards SEPP.

The installation of the BESS will be assessed as per the guidelines stated in Appendix A.

6.11.2 Bushfire

Existing environment

The Bushfire Prone Land map (NSW RFS 2015) contains 3 categories to classify the risk of developing on the land:

- Vegetation Category 1 is the highest risk for bushfire. It is represented as red on the bush fire prone land map and would be given a 100 m buffer. This vegetation category has the highest combustibility and likelihood of forming fully developed fires including heavy ember production
- Vegetation Category 2 is a lower bushfire risk than Category 1 and Category 3 but higher than the excluded areas. It is represented as light orange on a Bushfire Prone Land map. This vegetation category has lower combustibility and/or limited potential fire size due to the vegetation area shape and size, land geography and management practices
- Vegetation Category 3 is medium bushfire risk vegetation. It is higher in bushfire risk than Category 2 (and the excluded areas) but lower than Category 1. It is represented as dark orange on a bushfire prone land map.

A review of the RFS Bushfire Prone Land map shows the project area is located upon mainly Category 1 land, shown in Figure 6-9. There are large areas across the project area that have not been mapped.

Preliminary assessment

Bushfire presents a threat to human life and assets and can adversely impact ecological values. Bushfire risk can be considered in terms of environmental factors that increase the risk of fire (fuel quantity and type, topography and weather patterns).

There would be some specific activities during construction (such as hot works) and infrastructure components such as the BESS and other electrical infrastructure that would exacerbate combustion or ignition risks once operational.

Encroaching vegetation would be managed to reduce potential bushfire fuel load and ignition source as part of maintenance works during operation.

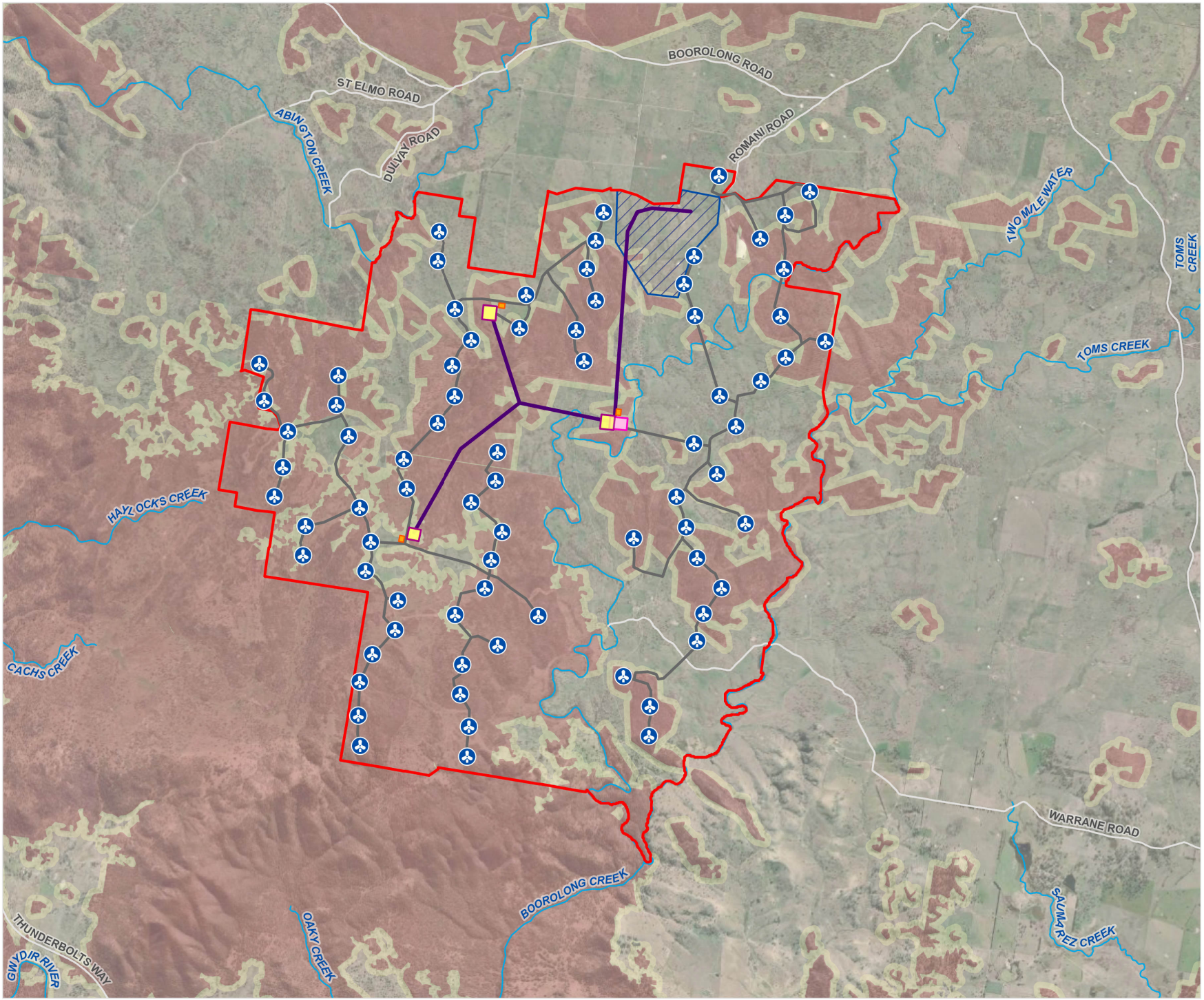
EIS assessment approach

The EIS will include a bushfire risk assessment that will identify potential hazards and risks associated with bushfires / use of bushfire prone land. The assessment will include mitigation measures to reduce the potential for bushfire impacts upon the project and the surrounding environment.

The assessment will demonstrate how the project can be constructed and operated in compliance with *Planning for Bushfire Protection* (NSW RFS 2019) and other guidelines outlined in Appendix A.

The bushfire risk assessment and mitigation strategies will be guided by the following factors that contribute to bushfire risk:

- fuels, weather, topography, predicted fire behaviour and local bushfire history
- suppression resources, access (roads, tracks) and water supply
- values and assets.



Project area
Wind turbine
Project 330kV transmission line
Reticulation and access road
Substation option
BESS
Operations and maintenance facility
EnergyCo North Hub indicative footprint
Watercourse
Roads

NSW Bush Fire Prone Lands
Category 1
Vegetation buffer

0 1 2 3 4 Km

SCALE 1:100,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: 604-OEENVSYD-15661
CLIENT: Origin Energy Pty Ltd
MAP:SCOPING_BushfireProneLands
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: B

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

RPS A TETRA TECH COMPANY

FIGURE 6-9: BUSHFIRE PRONE LAND CATEGORIES WITHIN THE PROJECT AREA

6.11.3 Blade throw

Preliminary assessment

Blade throw refers to the risk of wind turbine blades breaking during operation, which may result in human injury or potential damage to infrastructure. Blade throw is generally considered to be a low risk during the operation phase of the project, which would utilise wind turbine technology that has been proven to be both safe and reliable.

The nearest associated residence (AR_006) is located approximately 458 m from wind turbine 70, and the nearest non-associated dwelling (NAR_047) is located approximately 720 m from wind turbine 62.

EIS assessment approach

A blade throw risk assessment will be prepared to describe the potential impacts associated with blade throw to nearby receivers during operation of the project. The assessment will be undertaken having consideration of applicable international standards concerning the design of turbine components.

The blade throw risk assessment will include the following scope of works:

- assessment of the likelihood of occurrence for a blade throw event
- assessment of theoretical distance radii for a blade throw event
- review of distances between turbines and nearby dwelling
- review of historical blade throw occurrences in Australian wind farms
- provision of relevant mitigation measures for project implementation.

The assessment will be prepared in accordance with any relevant international studies and standards for design of wind turbine components and blade throw as listed in Appendix A.

6.11.4 Electromagnetic fields

Existing environment

Electromagnetic fields (EMFs) are present in the natural environment and are also associated with all electrical wiring and equipment. Electrical fields are caused by the voltage of the equipment, while magnetic fields are caused by the current flowing (amperage).

Existing transmission lines are limited to domestic connections, and there are no high voltage lines within the project area.

Preliminary assessment

The project would involve the generation of extremely low frequency (ELF) EMFs during operation from the proposed transmission lines and substations. Over the past 50 years, concerns have been expressed that the EMFs associated with electrical equipment might have adverse health effects.

There are well-known health effects where there are very high levels of EMFs and health standards have been established to protect against these effects.

However, the World Health Organisation (WHO) recognises that no adverse health effects from long-term exposure to ELF EMF have been confirmed (WHO 2016).

EIS assessment approach

A relevant EMF assessment will be prepared to assess the potential impacts and risks to human health associated with the EMF generated by the turbines and associated electrical infrastructure.

It will consider the latest advice of the National Health and Medical Research Council, and identify potential hazards and risks associated with EMF and demonstrate the application of the principles of avoidance in accordance with the guidelines listed in Appendix A.

6.11.5 Telecommunications

Existing environment

A search of the Australian Communication and Media Authority database in February 2025 identified 13 registered sites associated with licences and point to point links within 20 km of the project area.

Existing telecommunication services in the vicinity of the project area that may be affected include mobile phone services, radio communication services, television and radio broadcast services, and aircraft navigation services, which local residents and towns are reliant upon.

Preliminary assessment

The operation of the project has the potential to interfere with the electromagnetic signals associated with nearby telecommunication services. Large structures such as turbines that are located within or close to the telecommunication signal path may interfere with broadcast and point to point communications and any services that rely on these signals.

EIS assessment approach

A telecommunications (electromagnetic interference (EMI)) assessment will be undertaken to consider the potential impacts of the project on telecommunications services. It will identify any required suitable options to avoid potential disruptions to radio communication services from the project.

Consultation with operating services (e.g. NSWTA, TransGrid or the Department of Customer Service – Telco Authority) that may be impacted by the project will be undertaken where necessary to understand potential EMI-related impacts to operations and services.

The assessment will be prepared in accordance with the guidelines outlined in Appendix A.

6.11.6 Aviation

Existing environment

A review of known aircraft landing areas (ALAs) and aerodromes within the region of the project area was undertaken (see Figure 6-10) and identified the following ALAs:

- Armidale Airport – a regional airport located 20 km southeast of the project area which is operated by Armidale Regional Council
- Tamworth Airport – a regional airport located 90 km southwest of the project area which is operated by Tamworth Regional Council
- 8 unnamed ALAs within 10 km of the project area.

There is also potential for other aviation activities such as unlicensed private air strips to be in proximity to the project area. Agricultural aerial spraying, pest management, pasture top dressing and emergency helicopter landing facilities may be present in proximity to the project area.

Preliminary assessment

The introduction of tall structures associated with the project including meteorological masts and wind turbines up to 300 m, has the potential to impact existing flight paths and aircraft services in the region if not appropriately identified and registered with Airservices Australia.

It is also noted that aerial firefighting operations (firebombing in particular) are conducted sometimes lower than 500 feet (152.4 metres) above ground level, which is lower than the turbine tip height. Appropriate management procedures will need to be developed in consultation with Airservices Australia and emergency response stakeholders.

EIS assessment approach

An aviation impact assessment will be undertaken for the EIS, which will assess any potential impacts to aviation safety associated with the project. The assessment will include consideration of:

- potential impacts to aviation safety including wake / turbulence issues
- confirmation of any additional air strips or other ALAs
- the need for any aviation safety lighting
- air traffic routes, heights procedures, obstacle limitation surfaces, air space classification, radar and communications systems and navigation aids
- impacts on aerial emergency services, aerial firefighting, and aerial agricultural operations
- mitigation and management measures for relevant impacts identified.

Turbine maximum heights and indicative coordinates will be presented in the EIS.

Consultation with the Civil Aviation Safety Authority (CASA) and Airservices Australia will also be undertaken to determine relevant aviation safety lighting requirements, notification and reporting requirements, and the potential marking of turbines wind monitoring towers, and overhead transmission lines and towers.

The assessment will be prepared in accordance with the requirements of the following guidelines:

- *National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft* (NASAG 2012).

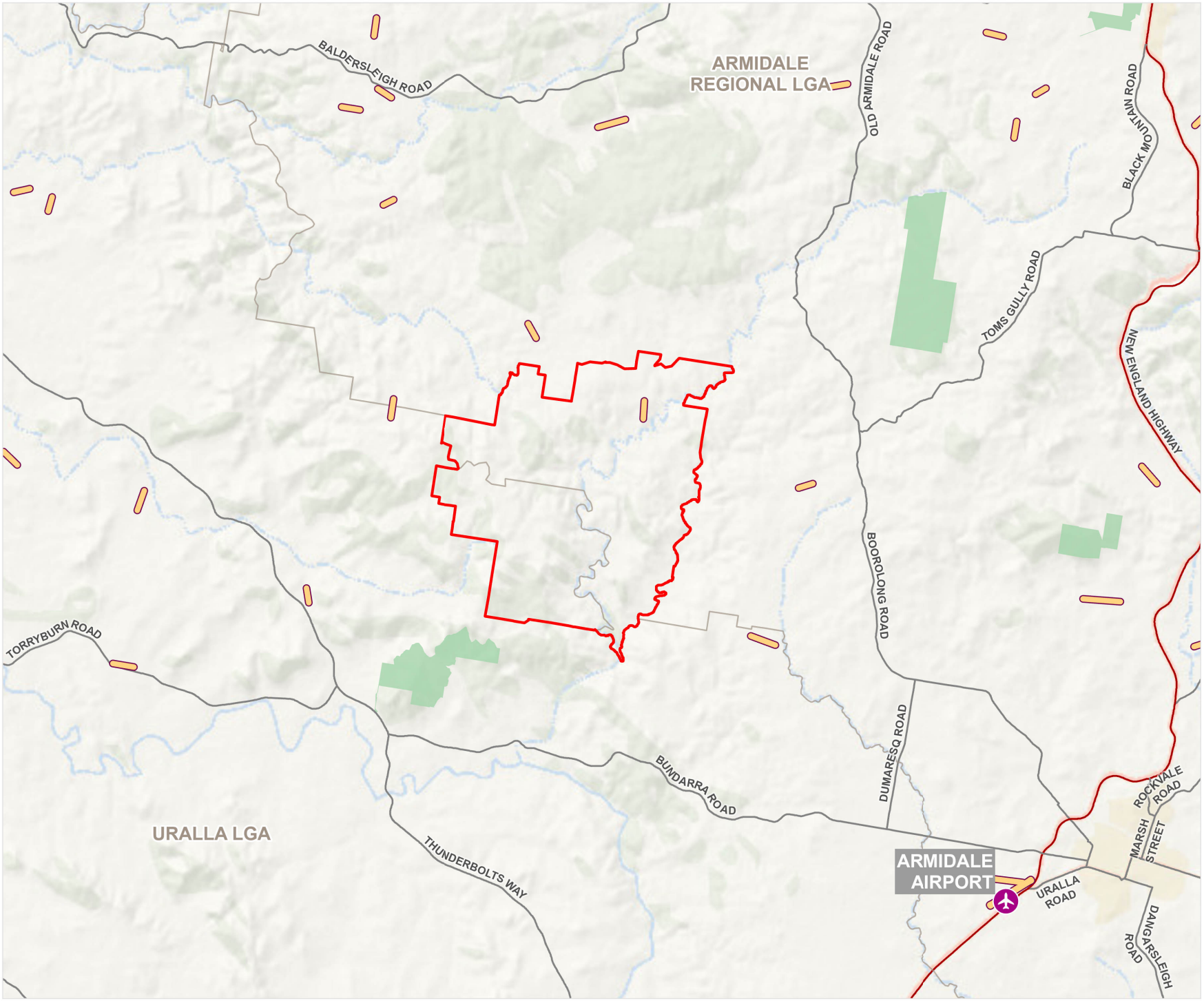


FIGURE 6.10: AIRCRAFT LANDING AREAS WITHIN AND SURROUNDING THE PROJECT AREA

6.11.7 Biosecurity

Existing environment

There are several primary production land uses such as livestock grazing and some areas of cropping in the vicinity of the project. The majority of agricultural land in the vicinity of the project is used for livestock grazing.

As discussed in Section 6.9.1, land within and surrounding the project area does not contain land mapped as BSAL. The land within the project area has limitations on land capability.

In New South Wales, there are several pathogens which have the potential to impact agricultural activities and biodiversity. The project is located within the potato and grapevine phylloxera biosecurity zone and is within a seed potato protected area.

There are a number of pests which are currently not found in the New England region which would threaten the potato, and grape industries should they be introduced. For example, the grapevine phylloxera, pale potato cyst nematode and the golden potato cyst nematode and diseases including potato spindle tuber viroid, bacterial wilt, powdery scab.

Preliminary assessment

Biodiversity risks involving the introduction or spread of pathogens and diseases, may result in impacts to native vegetation, threatened fauna, agricultural activities and aquatic ecosystems during construction.

Pathogens and disease may be transported by machinery or vehicles if materials utilised during construction. Where possible, surplus soil (if required) would be sourced on-site to reduce the biosecurity risk.

EIS assessment approach

An assessment of the potential risk to biosecurity associated with the project will form part of the agricultural impact assessment which will be prepared for the EIS. The assessment will include:

- biosecurity risk for agricultural operations during construction, operation and decommissioning activities
- research the potential impact of the project on biosecurity risks
- biosecurity risks in the project area
- management and mitigation measures to minimise potential biosecurity risks.

6.11.8 Dangerous goods and hazardous materials

Existing environment

Dangerous goods and hazardous material related to farming and agricultural practices may currently be stored and used within the project area.

Preliminary assessment

During construction there would be an increase in the storage and use of dangerous goods and hazardous materials, in particular fuels, chemicals, oils and wastewater. There is potential for accidental leaks and spills of fuels, chemicals and wastewater that may enter watercourses through runoff or potentially come into contact with workforce personnel.

During operation it is unlikely there would be further impacts as dangerous goods and hazardous materials will be bunded in compounds and stored appropriately.

EIS assessment approach

The EIS will identify sources of dangerous goods and hazardous material and provide relevant mitigation measures and controls to ensure safety to the environment and construction personnel.

6.12 Other environmental issues

The EIS will also address other issues summarised in Table 6-13. Detailed assessments are not proposed as these issues can be readily defined, assessed and mitigated using well recognised approaches. These matters will be appropriately assessed in the EIS and in accordance with the relevant guidelines in Appendix A.

Table 6-13 Other issues to be assessed

Issue	Comment
Air quality	Air quality in the region is generally expected to be of good quality and typical of what is expected in a rural setting, due to factors including low population density and low traffic volumes. A qualitative assessment will be undertaken for construction and decommissioning activities and will include relevant construction phase air quality controls. The assessment will be undertaken accordance with relevant New South Wales guidelines. Air quality issues relating to operation will be minimal and likely only relate to the operation of maintenance vehicles, staff light vehicles and the occasional heavy vehicles required for deliveries. This would also be considered in the qualitative assessment.
Climate change	Climate change projections for the operational phase of the project show the potential for an increase in operational risks, associated mostly with flooding and extreme weather events. These issues will be considered as part of the design development for the project. Direct climate risks may include increased frequency and severity of extreme rainfall events, increased average temperatures and frequency of heatwaves and increased severity and frequency of bushfires.
Property and land use	The EIS will assess the potential interactions of the project with other land uses, including agricultural land uses. This assessment will draw on the findings of other related assessments including impacts on visual amenity, water, soil, noise, air quality, traffic, hazards and safety.
Waste and resource use	The EIS will identify, quantify and classify the likely waste streams to be generated and disposed of during construction, operation and decommission phases of the project. Existing waste facilities will be reviewed to identify waste disposal options for the project. The EIS will consider strategies to ensure resources are used effectively, waste generation is reduced and follow the general principals of 'manage, reuse, recycle and safe disposal'.
Decommissioning and rehabilitation	The EIS will assess potential impacts of the project arising from decommissioning and rehabilitation activities, particularly on the final landform and compatibility with existing land uses.

6.13 Cumulative impacts

6.13.1 Existing environment

As discussed in Section 2.3, the project is located within the New England REZ, which is an area of focus for large scale renewable energy projects. As a result, several approved and proposed renewable energy projects are located in close proximity to the project area.

Table 2-2 identifies 20 renewable energy projects, categorised as either being in operation, approved or in the feasibility and/or planning stage of development and may have relevance to this assessment. It is anticipated there would be additional potential future renewable energy projects that are not publicly known at the time of preparing this report. The Boorolong and Yarrowyck Wind Farms are located next to the project area to the east, and west respectively.

6.13.2 Preliminary assessment

Due to the multiple renewable energy generation and transmission projects proposed in the vicinity of the project area, there is the potential for cumulative impacts across key environmental matters, including landscape and visual, biodiversity, noise, transport and access, social and economic.

It is anticipated there would be additional renewable energy generation, storage and transmission projects proposed in the vicinity of the project that are not publicly known at the time of preparing this scoping report. These projects have the potential to generate cumulative impacts in conjunction with surrounding projects during both construction and operation.

Cumulative impacts across the key environmental matters would be considered for both construction and operational phases due to the different levels of impacts. For example, potential impacts associated with transport and access would largely apply to the construction phase of the project, while potential impacts associated with biodiversity, noise and visual are impacts are anticipated to be ongoing during the operational phase.

There may also be cumulative benefits to local community from these projects, through the creation of new employment opportunities and through their contribution to the local and regional economies.

6.13.3 EIS assessment approach

Key environmental matters will be subject to a detailed cumulative impact assessment during the preparation of the EIS for the project. Cumulative impacts associated with the project would be assessed in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022b). The guidelines provide a framework for assessing and managing project-level cumulative impacts using 6 key steps which are shown in Figure 6-11.

The assessment of cumulative impacts focuses on the project's interactions with other projects in the vicinity and where construction and /or operational timeframes are likely to be concurrent, or where operational impacts of 2 or more projects affect the same receptor. In this case, the combined impact of these projects may become greater than each project's individual impact.

To evaluate the potential cumulative impacts in the EIS, 2 broad types of assessment would be undertaken:

- incremental assessment – standard practice for all project-level environmental impact assessments
- cumulative assessment – effective where there is potential for material cumulative impacts with other projects.

A summary of the cumulative impact considerations in line with the key questions posed in the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022b) is provided in Table 6-14.

A cumulative impacts worksheet is provided in Appendix G to provide further clarification of the cumulative impacts to be assessed against each relevant project during the EIS, in line with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022b).

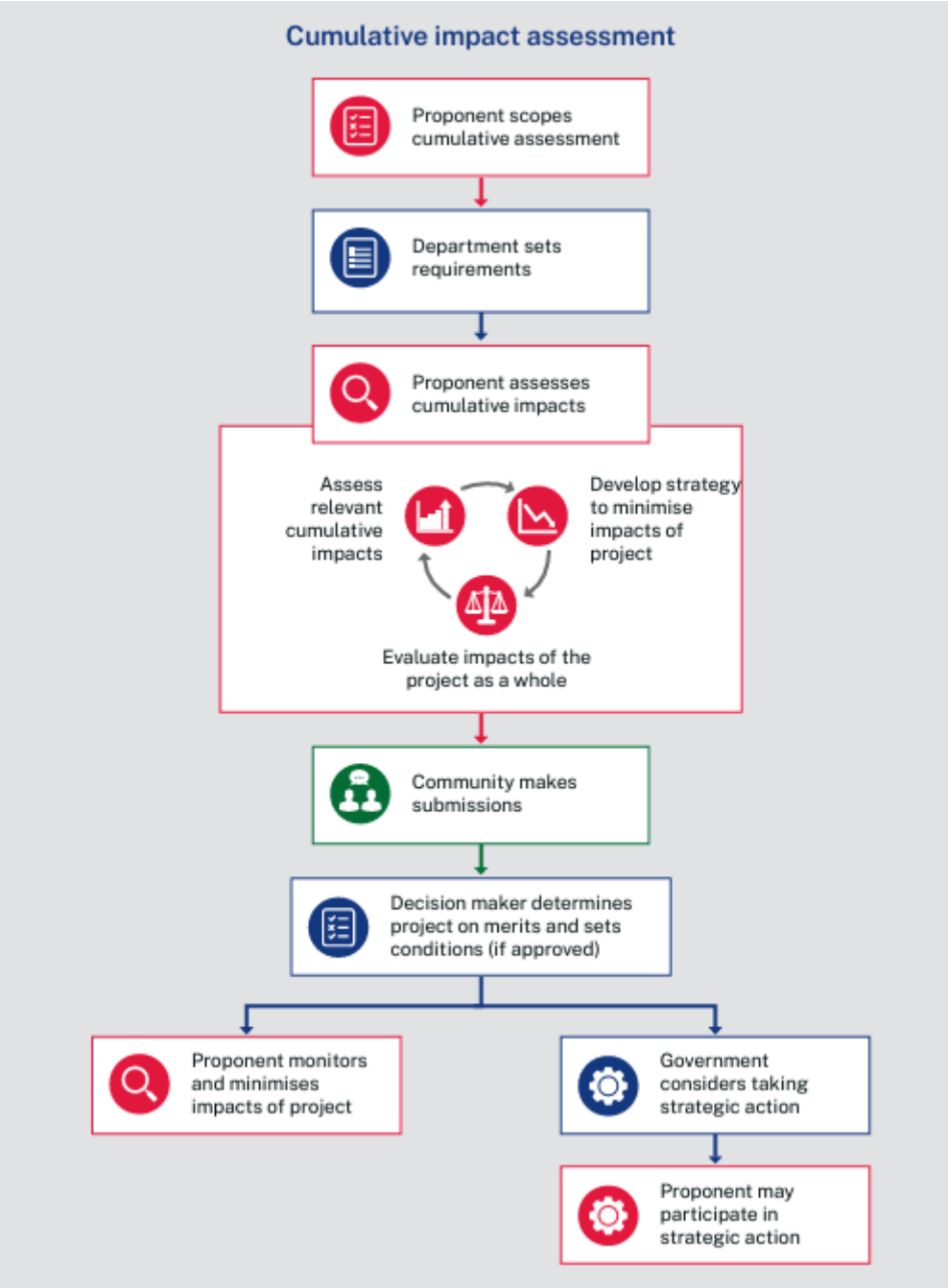


Figure 6-11 Key steps in cumulative impact assessment (DPIE 2022)

Table 6-14 Cumulative Impact Assessment Key Questions

Scoping questions	Commentary
What to assess	The following environmental matters require cumulative impact assessment consideration: • biodiversity • landscape and visual • noise • transport and access • social and economic.
What study area	For the scoping phase, a 50 km buffer was selected and is considered conservative to account for noise and visual cumulative impacts, as well as wider impacts on cumulative biodiversity, transport and access, social and economic impacts in the region. For the detail cumulative impact assessment completed for the EIS, the 50 km buffer may vary depending on the characteristics of the relevant projects confirmed at that time. Each cumulative impact assessment would be undertaken in accordance the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022b) and the relevant guidelines for each key environmental matter
Over what time period	The full life cycle of the project, including construction, operation and decommissioning, would be considered.
What projects to include	There are a number of proposed, approved or operational renewable energy projects located in proximity to the project Area and within the broader New England REZ as shown in Table 2-2. Changes to existing projects, approved projects, projects under assessment and/or any related development to the project would be considered prior to the confirmation of the final and relevant project cumulative assessment list.
What is the assessment approach	The cumulative impact assessment for each project would be undertaken in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022b) and any relevant guidelines to each key environmental matter.
What are the key uncertainties	The key uncertainties relate to the availability of data from surrounding projects, the certainty, timing and sequencing of other projects and the implications for over or underestimating potential impacts where project information is not publicly available. The EIS would use a series of informed assumptions to develop an approach to manage the key uncertainties.

6.14 Estimated development cost

The EIS will be supported by an estimated development cost (EDC) report prepared by an AIQS certified quantity surveyor or RICS chartered quantity surveyor in accordance with *Planning Circular PS-24-002 Changes to how development costs are calculated for planning purposes* (DPHI 2024).

The EDC will be accurate at the date of project application and include methodological assumptions and details of all components and assumptions from which it is derived, as well as an estimate of the jobs that would be created during the construction and operational phases of the project.

The EDC will include:

- an executive summary
- a description of the basis of preparation
- a description of the scope of the EDC
- a detailed calculation schedule that supports the EDC.

6.15 Matters requiring no further assessment

Matters requiring no further assessment and the associated justification are identified in Table 6-15. These matters have been identified in accordance with the SSD Guidelines. Justification has been provided to detail why no further assessment is required.

Table 6-15 Matters requiring no further assessment in the EIS

Matter	Justification
Access – port, airport and rail facilities	The project would not involve the development of, or affect access to port, airport or rail facilities. The project does not propose to utilise any rail facilities.
Greenhouse gas	As the project would generate renewable energy, the emissions resulting from the construction, operation or decommissioning would be offset by the reduction in energy generation emissions. GHG emissions would be addressed in the justification for the project as part of the EIS.
Amenity – odour	The project is not anticipated to produce odorous emissions.
Hazards and risk – coastal hazards, land movement, dam safety	The project is not located within a coastal setting Relatively minor excavation works would be required, but the project is not anticipated to result in any land movement The project would not affect a declared dam, or a proposed declared dam as defined by the *Dams Safety Regulation 2019*.

7 CONCLUSION

NTWFP is proposing to construct, operate, and decommission the Northern Tablelands Wind Farm (the project). The proposed wind farm would have an indicative generating capacity of about 608 MW supported by a battery energy storage system (BESS) with an approximate capacity of up to 800MW and up to 1,000 MWh.

The project is approximately 18 km northwest of Armidale, New South Wales, within the LGAs of the Armidale Regional Council and Uralla Shire Council and would occupy an area of about 7,671 ha entirely within the New England REZ.

The proposed wind farm would contribute directly to New South Wales Government's target to reduce GHG emissions and provide secure and reliable energy into the NEM. The project would play a key role in facilitating the delivery of new, clean and affordable energy generation into the future.

The project is subject to assessment under Division 4.7 of the EP&A Act and as such, this scoping report supports an application seeking the SEARs for the EIS. The preliminary environmental assessment considered potential impacts during the construction, operation and decommissioning of the project and considered the existing environment, scale and nature of the project, ability to avoid, minimise or mitigate impacts (for the scoping stage), cumulative impacts and the technical assessment of the project.

The key environmental aspects have been identified in Section 6 that will undergo a more detailed technical assessment during preparation of the EIS include:

- landscape and visual
- noise and vibration
- biodiversity
- transport and access
- Aboriginal heritage
- historic heritage
- socio-economic
- land resources
- water resources
- hazards and risk.

Other environmental aspects that would not require detailed technical assessment (including cumulative impacts), either based on a lower likelihood of occurrence or absence of likely receptors, are as follows:

- air quality
- climate change
- property and land use
- waste and resource use
- decommissioning and rehabilitation.

As part of preparation of the EIS, further assessment would be carried out in conjunction with the refinement of the project layout.

In assessing the potential environmental impacts of the project, the key focus would be avoidance and minimisation of impacts on the environment and local communities, where reasonable and feasible, when taking into consideration engineering constraints and cost implications.

The assessment would identify mitigation and management measures to minimise the impacts on the environment.

Consultation with stakeholders and the local community would continue throughout the EIS assessment, design, construction, decommissioning and operational phases.

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Appendix A
Scoping summary table

Level of assessment	Aspect	Scale of impact[1]	Nature of impact[2]	Sensitivity of receiving environment[3]	Mitigation measures required	Cumulative impact assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
Detailed	Landscape and visual	High	Direct Cumulative Perceived	Sensitive (receptors, communities)	Likely	Yes	Specific	• *NSW Wind Energy: Visual Assessment Bulletin* (DPE 2016c) • *Wind Energy Guideline – Technical Supplement for Landscape Character and Visual Impact Assessment* (DPHI 2024c)	Section 6.2
Detailed	Noise and vibration	Moderate	Direct Cumulative Perceived	Sensitive (receptors)	Likely	Yes	General	• *Wind Energy Guideline – Technical Supplement for Noise Assessment* (DPHI 2024d) • *NSW Wind Energy: Noise Assessment Bulletin* (DPE 2016) • *NSW Noise Policy for Industry* (EPA 2017) • *Draft Construction Noise Guideline* (NSW EPA 2020) • *NSW Road Noise Policy* (DECCW 2011) • *Assessing Vibration: A Technical Guideline* (DEC 2006)	Section 6.3
Detailed	Biodiversity	High	Direct Indirect Cumulative	Sensitive (flora, fauna and ecological values)	Likely	Yes	General	• *Biodiversity Assessment Method (BAM)* (DPIE 2020c) • *Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance* (Commonwealth of Australia 2013) • *Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species* (DCCEEW various) • *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013) • *Draft Onshore Wind Farm Guidance - best practice approaches when seeking*	Section 6.4

Level of assessment	Aspect	Scale of impact[1]	Nature of impact[2]	Sensitivity of receiving environment[3]	Mitigation measures required	Cumulative impact assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
								approval under Australia's national environment law (DECCEW 2024)	
Detailed	Transport and access	Moderate	Direct Indirect Cumulative	Sensitive (disturbance to other road users)	Likely	Yes	General	• *Guide to Traffic Generating Developments* (RTA 2002) • *Austroads Guides to Road Design* (various publications) • *Austroads Guides to Traffic Management* (various publications) • *Australian Standard AS 2890 Parts 1 and 2* • *Australian Code for Dangerous Goods Transport*	Section 6.5
Detailed	Aboriginal heritage	Moderate	Direct Indirect Cumulative Perceived	Sensitive (cultural values)	Likely	Yes	Specific	• *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011) • *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010a) • *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010b)	Section 6.6
Detailed	Historic heritage	Low	Direct Indirect	Sensitive	Likely	No	General	• *The principal articles of The Burra Charter – The Australia ICOMOS Charter for Places of Cultural Significance* (ICOMOS 2013) • *Statements of Heritage Impact* (Heritage Office 1996) • *Investigating Heritage Significance Draft Guideline* (Heritage Office 2004) • *Assessing Heritage Significance* (Heritage Office 2001) • *Assessing Significance for Historical Archaeological Sites and 'Relics'* (Heritage Branch Department of Planning 2009)	Section 6.7

Level of assessment	Aspect	Scale of impact[1]	Nature of impact[2]	Sensitivity of receiving environment[3]	Mitigation measures required	Cumulative impact assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
Detailed	Socio-economic	Moderate	Direct Indirect Cumulative Perceived	Sensitive	Likely	Yes	Specific	• *Social Impact Assessment Guideline for State Significant Projects* (DPE 2023) • *Technical Supplement* (DPIE 2023b) • *Undertaking Engagement Guidelines for State Significant Projects* (DPHI, 2024d)	Section 6.8
Detailed	Land resources	Low	Direct Indirect	Sensitive	Likely	No	General	• *Land Use Conflict Risk Assessment Guide* (DPI 2011) • *Land and Soil Capability Assessment Scheme* (OEH 2012) • *Acid Sulfate Soils Assessment Guidelines* (Department of Planning 2008) • *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land* (DUAP and NSW EPA, 1998) • *National Environment Protection (Assessment of Site Contamination) Measure* (NEPC, 2013) • *Guidelines for Consultants Reporting on Contaminated Land: Contaminated Land Guidelines* (NSW EPA, 2020) • *Guidelines on the Duty to Report Contamination Under the Contaminated Land Management Act* 1997 (NSW EPA, 2015)	Section 6.9
Detailed	Water resources	Low	Direct Indirect	Sensitive	Likely	No	General	• *Managing Urban Stormwater: Soils and Construction Volume 1* (Landcom, 2004) *and Volume 2* (DECC 2008) • *Controlled Activities on Waterfront Land - Guidelines for riparian corridors on waterfront land* (DPI 2018a) • *Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (DPI 2003)	Section 6.10

Level of assessment	Aspect	Scale of impact[1]	Nature of impact[2]	Sensitivity of receiving environment[3]	Mitigation measures required	Cumulative impact assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
								• *Policy & Guidelines for Fish Habitat Conservation & Management* (DPI 2013) • *Relevant Water Sharing Plans* (DPI, various) • Guidelines for Watercourse Crossings on Waterfront Land (DPI Water 2012) • Floodplain Risk Management Guidelines (DECC 2016) • *Floodplain Development Manual: The management of flood liable land* (NSW Government 2005)	
Standard	Hazards and risk - PHA	Moderate	Direct Indirect Perceived	Sensitive	Likely	No	General	• *Hazardous and Offensive Development Application Guidelines: Applying SEPP 33* (DoP 2011a) • *Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis* (DoP, 2011b) • *Assessment Guideline – Multi-level Risk Assessment* (DoP, 2011c) • *Hazardous Industry Planning Advisory Paper No. 4 Land Use Safety Planning* (DoP 2011d)	Section 6.11.1
Standard	Hazards and risk - Bushfire	Moderate	Direct Indirect	Sensitive	Likely	No	General	• *Planning for Bushfire Protection* (RFS 2019) • *NSW Rural Fire Service Guideline for Bushfire Prone Land Mapping* (NSW RFS 2015) • *AS 3959-2018 Construction of Buildings in Bushfire Prone Areas*	Section 6.11.2
Standard	Hazards and risk - Blade throw	Low	Direct Indirect	Sensitive	Likely	No	General	• Relevant international studies and standards for design of wind turbine components and blade throw	Section 6.11.3
Standard	Hazards and risk - EMF/ EMI	Low	Direct Perceived	Sensitive	Likely	No	General	• *Electromagnetic Fields Management Handbook* (Energy Networks Australia, 2016)	Section 6.11.4,

Level of assessment	Aspect	Scale of impact[1]	Nature of impact[2]	Sensitivity of receiving environment[3]	Mitigation measures required	Cumulative impact assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report reference
								• *Guidelines for limiting exposure to Time-varying Electric, magnetic and Electromagnetic Fields* (ICNIRP, 2010)	Section 6.11.5
Detailed	Telecommunications	Moderate	Direct	Sensitive (safety)	Likely	No	Specific	• *NSW Wind Energy Guideline for State Significant Wind Development (DPIE 2016)* • *Best Practice Charter for Renewable Energy Projects (Clean Energy Council 2021)*	Section 6.11.5
Detailed	Aviation	Moderate	Direct	Sensitive (impacts aviation)	Likely	No	Specific	• *National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft* (NASAG 2012)	Section 6.11.6
Standard	Air quality	Low	Direct Indirect	Sensitive	Likely	No	General	• *Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC 2005)	Section 6.12
Standard	GHG energy efficiency	Low	Direct Indirect	Sensitive (lifestyle disturbance)	Likely	No	General	• *National Greenhouse Accounts Factors (Australian Government 2022)* • *NSW Climate Change Policy Framework* (OEH 2016)	Section 6.12
Standard	Property and land use	Low	Direct Indirect	Sensitive (lifestyle disturbance)	Likely	No	Specific	• *Social Impact Assessment Guideline – For State Significant Developments* (DPE 2023)	Section 6.12
Standard	Waste and resource use	Low	Direct Indirect	Sensitive (environmental values, safety)	Likely	No	General	• *Waste Classification Guidelines – Part 1: classifying waste* (NSW EPA 2014) *and Addendum* (NSW EPA 2016) • *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities* (NSW EPA 2012)	Section 6.12

1 Scale of impacts – based on the severity of impact, the geographical location and the duration of impact as detailed in Appendix C of State Significant Development Guidelines – Preparing a Scoping Report (DPIE 2022a).
2 Nature of impact – type of impact (i.e. direct, indirect, cumulative, as detailed in Appendix C of State Significant Development Guidelines – Preparing a Scoping Report (DPIE 2022a).
3. Sensitivity of the receiving environment – expressed in legislation, societal views, or vulnerability to change, as detailed in Appendix C of State Significant Development Guidelines – Preparing a Scoping Report (DPIE 2022a).

Appendix B
Scoping report guidelines where addressed

Requirement	Where addressed in the Scoping Report
Structure and length	
• Main report: Introduction, Strategic context, Project, Statutory context, Engagement, Proposed assessment of impacts, References • Appendices: A: Scoping summary table, and B: Supporting information, including any detailed engagement or technical reports	Whole report
General map and GIS data specifications	
Maintain appropriate geo-referenced file formats	All figures and maps
The applicant must supply the relevant GIS data to the Department as polygon datasets in one of the following file formats: shapefile, file geodatabase or MapInfo TAB	To be provided separately
Use the following coordinate system details: Datum: GDA 1994, Projection: GCS GDA 1994	All figures and maps
Maps must build on a standard base-map for the project and include: north arrow, a scale (or where a cross section is not to scale, an indication of the elevation of key features and vertical exaggeration), a legend, the source data.	All figures and maps
Accessibility and navigation	
Use plain English to explain complex information and avoid using jargon.	Whole report
Conform with the Web Content Accessibility Guidelines (WCAG) 2.0 Level AA and material relevant to creating accessible documents: • be provided as accessible PDF files (commonly referred to as “tagged” PDF files) • have a navigable table of contents • present information in a linear and easy to follow format • use headings (in Microsoft Word this means using heading styles, e.g. Heading 1, Heading 2, Normal) • use captions for tables, pictures and figures • include a header row in any tables • provide alternate text descriptions for all images preferably under 100 characters, except for images that are decorative • use text to convey information rather than, or in addition to, images where possible • use a contrast ratio of 3:1 for large text (18+ points or 14+ points bold) and at least 4.5:1 for text and images of text • not rely on colour to convey information and instead use text labels, patterns and symbols to supplement colour • use hyperlinks to assist with navigation through the document.	Whole report
1. Introduction	
Include the applicant’s details, including ABN and address.	1.2
Include: a statement of the project objectives, site information including address and lot details, how the site was selected, and a map of the site in its regional setting.	1.3 1.4 2.5 Figure 1.1

Requirement	Where addressed in the Scoping Report
Include the background to the project, including: any relevant history, key strategies that would be adopted to avoid, minimise or offset the impacts of the project to the extent known at the scoping stage.	1.5
Include a description of any related development, including any: • existing or approved development (including any existing use rights or continuing use rights) • development that is required for the project but would be subject to a separate assessment (e.g. upgrades to ancillary infrastructure, approvals for subsequent stages of the project).	1.6
2. Strategic context	
Identify at a high level the key strategic issues that are likely to be relevant to the project and would be investigated in more detail in the EIS.	2
Level of detail should be proportionate to the importance of the strategic context to the project and tailored towards informing the setting of the SEARs.	2
Key strategic issues may include: the justification of the project, relevant plans that establish a regional or local land use planning context for the project, key features of the site or surrounds that could affect or be affected, whether the project is likely to generate cumulative impacts with other relevant future projects in the area, and identifying whether the applicant has entered into any agreements with other parties to mitigate or offset the impacts of the project	2.1 2.2 2.3 2.4 2.6
3. Project	
Overview of the project including: • the project area, including the area likely to be physically disturbed by the project • the conceptual physical layout and design of the project • the main uses and activities that would be carried out on-site as well as the materials and products that would be transported to and from the site • the likely timing of the delivery of the project, including staging, phases (e.g. construction, operations, decommissioning) or sequencing of staging	3
Identify aspects of the projects where some flexibility may need to be incorporated into the design to allow the final design to be refined or changed over time without further approval.	3
Identify any restrictions or covenants that apply to the land.	2.4
Include a high-level analysis of feasible alternatives considered and rejected, including the consequences of not carrying out the development.	2.5
4. Statutory context	
This section should provide an overview of the key statutory requirements for the project, having regard to: • the EP&A Act and EP&A Regulation. • other relevant legislation • relevant environmental planning instruments • relevant approvals (e.g. concept plan approvals, staged DA consents).	4

Requirement	Where addressed in the Scoping Report
The statutory requirements should be summarised in a table under the following headings: Power to grant consent, Permissibility, Other approvals, Preconditions to exercising the power to grant consent, and Mandatory matters for consideration.	Table 4-1
5. Community engagement	
Identify what engagement has already been carried out that is relevant to setting the SEARs, this may include: • community engagement that has been carried out by other parties that is relevant to the project • any actions taken by the applicant to identify and engage with key groups or individuals within the community that may have an interest in the project • any actions taken by the applicant to inform, consult or engage with the community during the development of the project or preparation of the scoping report Engagement should also be undertaken having regard to the community participation objectives in the Department's *Undertaking Engagement Guidelines for State Significant Projects.*	5.4
Identify the likely level of community interest in the project and the geographic extent of this interest (e.g. local: < 5 km from the site; regional: 5-100 km from the site or state: > 100 km from the site).	5.4
Group the community views on the project into one of the following categories: • strategic context (e.g. key natural/built features that could be impacted, and the potential cumulative impacts) • alternatives that may be considered • statutory issues • community engagement during the preparation of the EIS • key matters to be assessed during the EIS • issues beyond the scope of the project or not relevant	Table 5-3
Summarise the community engagement that would be carried out during the preparation of the EIS, having regard to the findings of any community engagement carried out during scoping and the community participation objectives in the Department's *Undertaking Engagement Guidelines for State Significant Projects* including: • identify the key stakeholders (councils, government agencies, special interest groups, people living close to the site) for further engagement, to the extent that this would be known at the scoping stage • describe what actions would be taken to identify and engage with other interested stakeholders during the preparation of the EIS • describe the key actions that would be carried out to: – keep the community informed about the project – obtain feedback from the community on the project – engage with certain stakeholders on the detailed assessment of key matters • demonstrate that these actions are consistent with the community participation objectives in the *Undertaking Engagement Guidelines for State Significant Projects* • describe how the effectiveness of this engagement would be monitored, reviewed and adapted over time to encourage community participation in the project.	5.4.1

Requirement	Where addressed in the Scoping Report
6. Proposed assessment of impacts	
Matters that should be considered by the project: access (e.g. traffic and transport), air quality, amenity (e.g. noise, visual), biodiversity, built environment, economic, hazards and risk (e.g. bushfire, flooding, waste), heritage (Aboriginal and non-Aboriginal), land, social, water. These specific matters can be divided further into different components of the specific matter, where relevant.	6
Key factors that should be considered for each matter: • the scale and nature of the likely impacts of the project and the sensitivity of the receiving environment • whether the project is likely to generate cumulative impacts with other relevant future projects in the area • the ability to avoid, minimise and/or offset the impacts of the project, to the extent known at the scoping stage • the complexity of the technical assessment of the project It is important to note that the applicant is not required to carry out a detailed assessment of each factor and document this assessment in the scoping report. This should be done in the detailed assessment of the project in the EIS.	6
Appendix A	
Include a scoping summary table which groups the matters requiring further assessment in the EIS by the level of assessment required, and identify: • whether any cumulative impact assessment is required, and the likely level of this assessment (e.g. standard or detailed) • whether any specific community engagement would be carried out on the matter during the preparation of the EIS • the relevant government plans, policies and guidelines that would be considered during the assessment of the impacts of the project on the matter • the relevant section of the scoping report where the assessment of the impacts on the matter are discussed in more detail.	Appendix A
Document the matters requiring no further assessment in the EIS in a table in the scoping report. This table should identify each matter and explain why no further assessment is necessary.	Appendix A

Appendix C
Preliminary visual impact assessment

NORTHERN TABLELANDS WIND FARM

Preliminary visual impact assessment



15661
15 September 2025
Final

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
0.1	First draft to client	T Connor	N Green, J Williamson	T Connor	19/03/2025
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Approval for issue

Natalie Green  15 September 2025

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GLOSSARY AND ABBREVIATIONS

Acronym	Description
Applicant	Northern Tablelands WF Project Pty Ltd
Associated residence (AR)	A residence on privately-owned land in respect of which the owner has reached an agreement with the applicant in relation to the development and management of impacts.
ASX	Australian Securities Exchange
BESS	Battery energy storage system
DCP	Development control plan
DPHI	NSW Department of Planning, Housing and Infrastructure
EIS	Environmental impact statement
km	Kilometre
kV	Kilovolt
LEP	Local environment plan
LGA	Local government area
m	Metre
MW	Megawatt
MWh	Megawatt hours
NEM	National Energy Market
New England REZ	New England Renewable Energy Zone, formally declared by the Minister for Energy under section 19(1) of the *Electricity Infrastructure Investment Act 2020* and published in the New South Wales Gazette in November 2022
Non-associated residence (NAR)	A residence on privately-owned land in respect of which the owner has not reached an agreement with the applicant in relation to the management of impacts associated with the development
Non-associated residence (NAR) (other project)	A residence on privately-owned land which does not have an agreement for the project, however, does have an agreement with another project
NTWFP	Northern Tablelands WF Project
OEL	Origin Energy Limited
OEPL	Origin Energy Power Limited
Project	Construction, operation and decommissioning of the proposed Northern Tablelands Wind Farm located approximately 18 kilometres north west of Armidale
Project area	The indicative development area for the project located on land owned by Origin Energy Limited, as shown in Figure 1-2
PV	Public viewpoint
REZ	Renewable energy zone
SPV	Special vehicle purpose

1 INTRODUCTION

1.1 Overview

Northern Tablelands WF Project Pty Ltd (NTWFP) as the trustee for Northern Tablelands WF Project Trust (the special purpose vehicle, SPV), proposes to construct, operate, and decommission Northern Tablelands Wind Farm (the project). NTWFP is a wholly owned subsidiary of Origin Energy Power Limited (OEPL, Origin), held by the ultimate parent company of Origin Energy Limited (OEL) an Australian Securities Exchange (ASX) listed entity.

The project is approximately 18 kilometres (km) northwest of Armidale, New South Wales, within the local government areas (LGAs) of Armidale Regional Council and Uralla Shire Council. It would occupy an area of about 7,671 hectares (ha) entirely within the New England Renewable Energy Zone (REZ).

The project would involve the construction, operation, and decommissioning of a wind farm and BESS. The wind farm would consist of up to 76 wind turbines, which would supply up to 608 MW; and a BESS with a capacity of up to 800 MW/1000 MWh of electricity into the National Electricity Market (NEM).

The wind farm would be inter-connected via a series of underground and/or above ground cables connecting the wind turbines to a central substation, which would be located within the footprint for the proposed North Hub, to be constructed by EnergyCo as part of the New England REZ Network Infrastructure Project.

1.2 Local context and landscape character

The project area is predominantly used for beef production and is bounded by Bulagaranda (Mount Yarrowyck) Aboriginal Area in the south and the locality of Boorolong to the north.

Significant ecological, cultural and historic associations have been identified for Bulagaranda (Mount Yarrowyck) Aboriginal Area. Boorolong Nature Reserve is located approximately six km northeast of the project area.

The topography of the project area is dominated by moderate slopes (between 5 to 18 degrees), with some areas of more gentle slopes (less than 5 degrees), and some steep slopes (greater than 18 degrees) and crests/spurs. Elevation ranges between 960 m to 1,250 m Australian Height Datum (AHD), with the highest point in the southwestern parts of the area.

There are several named watercourses in the project area, including three perennial watercourses (Abington Creek, Boorolong Creek and Toms Creek) and six ephemeral watercourses (Cachs Creek, Dread Gully, Haylocks Creek, Rileys Creek, Teatree Creek, and Tigers Gully). There are several farm dams across the project area, and two unregistered bores.

Other visual elements in this rural landscape include native and exotic vegetation and agricultural facilities (including single-storey housing, sheds, fencing). The project in its local context is shown in Figure 1-1.

1.3 Local land use and planning provisions

1.3.1 Armidale Regional LGA

The land is zoned RU1 – Primary Production under the Armidale Regional Local Environment Plan (LEP) 2012. No specific controls related to visual amenity were identified in the Armidale LEP however, the Armidale Regional Council Development Control Plan (DCP) 2024 (effective 13 June 2024) includes provisions relevant to visual amenity:

- Chapter 2.6 Part 2 – includes objectives to limit the extent and visual amenity impacts of earthworks and retaining walls on both the site, and adjoining properties
- Chapter 4.3 Part 1 and Part 1.2 – include objectives to achieve visual integration and balance between natural and man-made elements; and to preserve and enhance the rural character, visual and landscape values, and biodiversity values of the hills and ridges around Armidale whilst allowing managed development to occur
- Chapter 4.3 Part 1.2 identifies hills and ridges, and the rural landscape as valued landscapes that will be considered in the detailed visual impact assessment for the environmental impact statement (EIS).

1.3.2 Uralla Shire LGA

The land is zoned RU2 – Rural Landscape under the Uralla Shire LEP 2012. No specific controls related to visual amenity were identified in the Uralla Shire LEP however, the Uralla Shire Council DCP 2011 (amended March 2021) includes provisions relevant to visual amenity:

- Part 18.3 – includes objectives to minimise potential land use conflicts; and ensure there are no unreasonable impacts on the amenity of landholders adjoining large-scale renewable energy developments, the broader community, and the travelling public
- Part 18.4 – identifies acceptable solutions to minimise visual amenity and landscape character impacts related to large-scale renewable energy developments, including 500 m set-backs from non-associated dwellings and businesses and 200 m set-backs from their accesses, no infrastructure forward of the average building line set-back, and no infrastructure within 50 m of the project boundary for land zoned RU2. The section also requires project infrastructure and cabling to be dismantled and removed within 24 months of decommissioning
- Part 18.4 also outlines requirements for the assessment of visual impacts including how the project will maintain the unique character of the area, scenic value, and significant vistas; and the siting and assessment of infrastructure to be informed by community consultation to establish key landscape features, areas of scenic quality and key public viewpoints. It is noted that siting of infrastructure should not occupy more than 120 degrees of the 360-degree viewshed from non-associated dwellings, key public viewpoints, or state or regional roads.

The requirements related to visual amenity and landscape character impacts outlined in the Armidale Regional Council DCP and the Uralla Shire Council DCP, as well as the broad land use objectives contained in the two LEPs, will be considered as part of the detailed visual impact assessment for the EIS.

1.4 Associated and non-associated residences

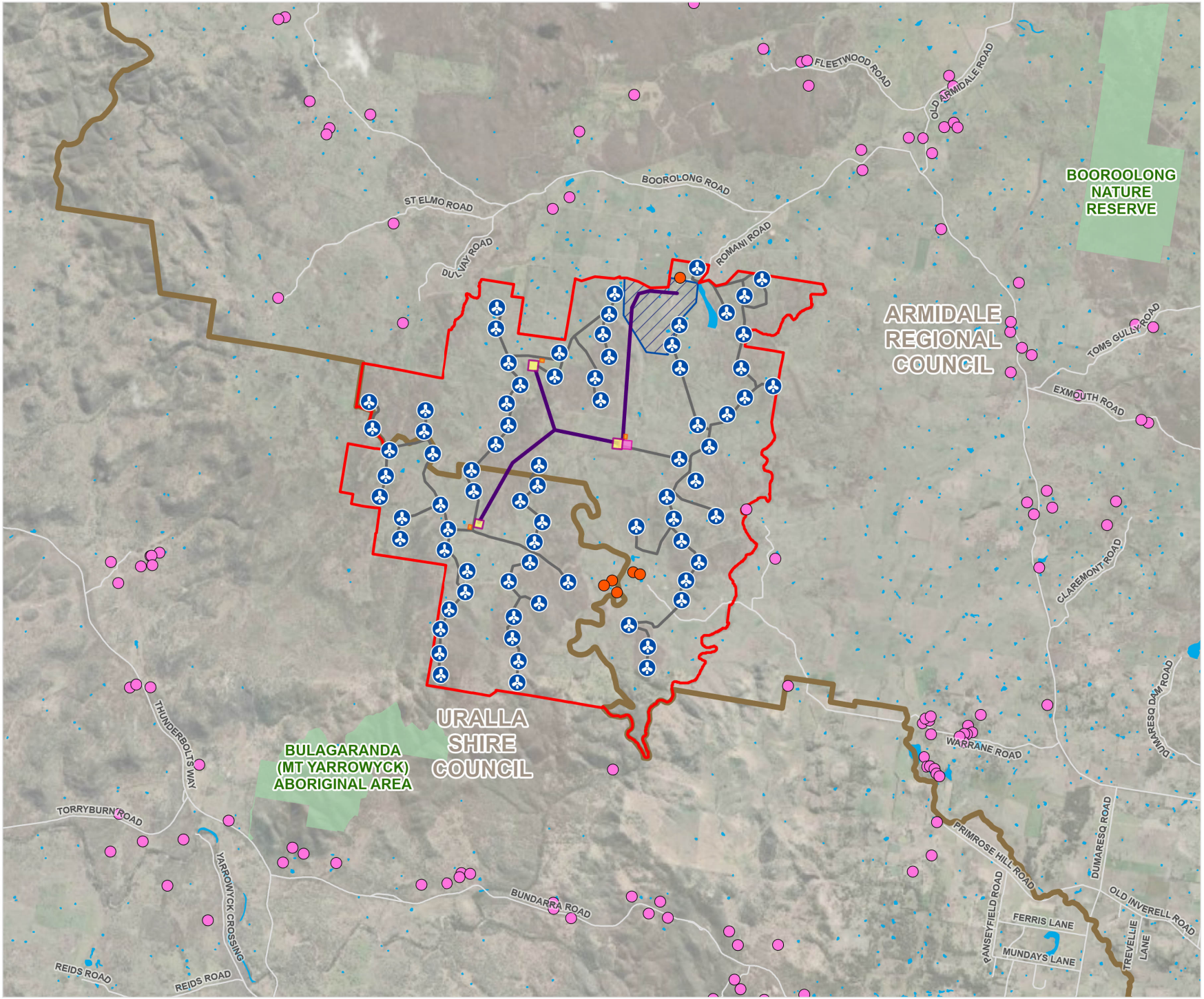
There are two categories of private property and dwelling affected by the project, with their classification dependant on whether they have entered into an agreement with Origin based on potential impacts:

- associated residences – a residence on privately-owned land where the owner has reached an agreement with Origin in relation to the development and management of impacts
- non-associated residence – a residence on privately-owned land where no agreement with Origin has been reached in relation to the management of impacts associated with the development.

The land within the project area is owned by Origin, and the dwellings within the wind farm boundary are all classified as associated residences.

Origin is undertaking ongoing engagement with surrounding non-associated residences that would potentially be affected by the project and will seek to enter into benefit sharing agreements based on the findings of the EIS assessments where relevant impact criteria cannot be met. These properties will become associated once agreements are in place.

All associated and non-associated residences are shown in Figure 1-1 and discussed further in Section 3.1.



- Project area
- Wind turbine
- Operations and maintenance facility
- Substation option
- BESS
- Project 330kV transmission line
- Reticulation and access road
- EnergyCo North Hub indicative footprint
- NPWS reserve/state forest
- Water body
- Local Government Area
- Roads
- Associated residences (ARs)
- Non-associated residences (NAR)

0 1 2 3 4 5 6 Km

SCALE 1:140,000
A4 SIZE / WGS 1984 (EPSG:3857)

PROJ: AU2130156661.004
CLIENT: Origin Energy Pty Ltd
MAP: SCOPING_Local Context
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 15/09/2025
VERSION: B

DATA SOURCES:
Origin Energy Pty Ltd, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

RPS A TETRA TECH COMPANY

FIGURE 1-1: LOCAL CONTEXT

1.5 Project description

The project is intended to be constructed in a single stage, and would include the following key components:

- up to 76 wind turbines, with a maximum tip height of up to 300 m and a hardstand at the base of each turbine
- a BESS with a discharge rate of up to 800 MW, and a duration depth of up to 1000 MWh
- electrical infrastructure including:
  - up to three substations with a step-up facility and/or a switching station dependent on final connection requirements
  - underground and overhead electrical reticulation connecting the wind turbines to the substations
  - a high-voltage connection (330 kV and 500 kV) to the New England REZ Network Infrastructure Project
- permanent on-site ancillary infrastructure:
  - operations and maintenance facility
  - internal access road network, with access and egress points from and to public roads
  - meteorological masts
  - utility and amenity services
- potential upgrades to the surrounding local road network for the expected traffic volumes and oversize and/or over mass vehicles during construction, and maintenance during operation
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas
  - quarry sites for construction material (rock for access tracks and hardstands)
  - rock crushing facilities and concrete batching plants
  - temporary meteorological devices (such as meteorological masts)
  - potential construction workforce accommodation on site
- site access:
  - via Boorolong Road and Romani Road to the north, and Warrane Road to the east
  - transport route from Port of Newcastle to Boorolong Road and Romani Road would be via New England Highway to the east
- land tenure
  - the site is freehold land, comprising 77 lots and owned by Origin.

At the end of its practical life, the project would be decommissioned, and the site returned to its pre-existing land use in consultation with the landholder at that time.

Preliminary project components and specifications are outlined in in Table 1-1, and the current indicative layout for the project is provided in Figure 1-2. Some items are noted as TBC as part of this scoping phase but will be confirmed and considered (if required) in the EIS.

Table 1-1 Indicative permanent project components and dimensions

Project component	Details	Approximate dimensions	Quantity
Overview			
Project area	The outer boundary of the property on which the project would be located.	7,671 ha	-
Disturbance area	Proposed conservative disturbance area (inclusive of 200 m wide survey corridor) associated with the project footprint based on current indicative layout, subject to	1,508 ha	-

Project component	Details	Approximate dimensions	Quantity
	further design work as the project progresses. Final disturbance footprint will be significantly smaller.		
Generating capacity	Up to 608 MW	-	-
Wind turbine generators			
Number of turbines	-	-	Up to 76
Tip height	From ground to top of blade tip	Up to 300 m	-
Hub height	-	Up to 200 m	-
Turbine hardstand	Engineered hardstand (with additional blade laydown area and assist crane pads) Construction hardstand Operational hardstand after partial rehabilitation following construction	80 m x 40 m 0.8 ha 0.4 ha	Up to 76
Electrical infrastructure			
Substation	Substations with a step-up facility and switching yard to transform energy for dispatch to the NEM consisting of up to 4 transformers, harmonic filters and static var compensators or synchronous condenser	Up to 400 m x 300 m	Up to 3
Battery energy storage system	BESS with capacity of 800 MW / 1,000 MWh storage, harmonic filter and grid forming capability	Up to 500 m x 500 m	1
Electrical reticulation network	Underground (wherever possible) and some overhead 33 kV or 66 kV electrical reticulation network connecting the turbines to the substations	-	Up to 80 km
NEM connection	The wind farm would connect to the NEM via the proposed North Hub to be located within the wind farm boundary	-	-
Permanent on-site ancillary infrastructure			
Operation and maintenance facility	A control room and up to 3 locations providing maintenance and storage facilities which incorporate staff amenities, car parking and security fencing which would operate 24-hours per day, 7-days per week. Includes provisions for water supply and management of waste, first aid, telecommunications, security and surveillance.	1 ha	4
Internal road network	Internal engineered gravel road network with roadside drainage. Full road corridor width will be subject to design to quantify earthworks batter widths.	Up to 14 m wide (7 m pavement width)	Approximately 100 km
Meteorological masts	Permanent meteorological masts	Up to 200 m high	3

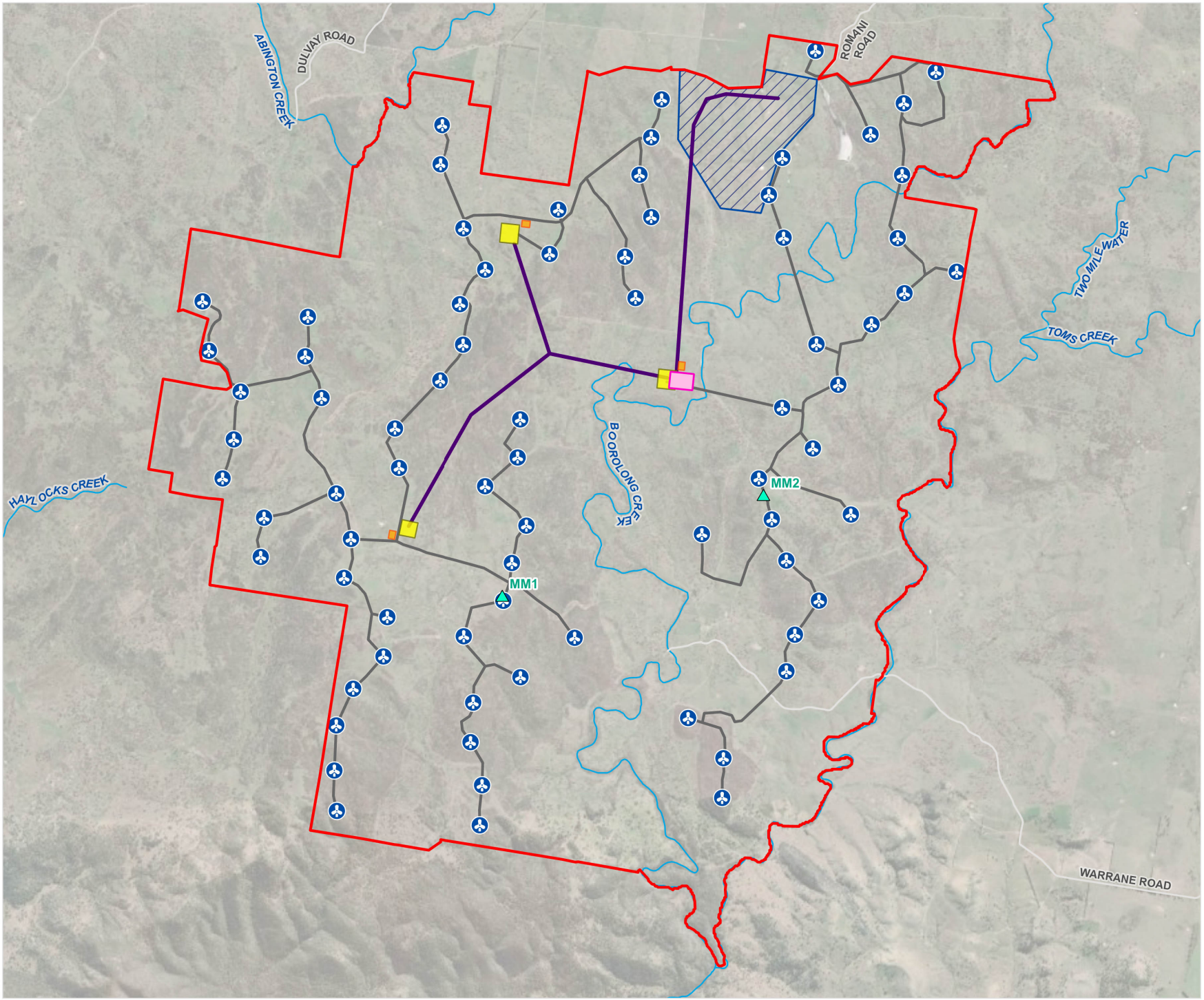


FIGURE 1-2: PROJECT OVERVIEW AND INDICATIVE LAYOUT

2 METHODOLOGY

2.1 Overview

This assessment has been prepared in accordance with the *Wind Energy Guideline – Technical Supplement for Landscape Character and Visual Impact Assessment* (DPHI, 2024a) (Visual Guidelines) to identify potential visual impacts at a high level based on preliminary information.

The report summarises the anticipated visual impacts of the project on a range of identified public viewpoints and private receivers and outlines the level of assessment that will be undertaken as part of the detailed landscape character and visual impact assessment for the EIS, following receipt of the Secretary's environmental assessment requirements.

An overview of the steps in the visual impact assessment methodology is provided in Figure 2-1.

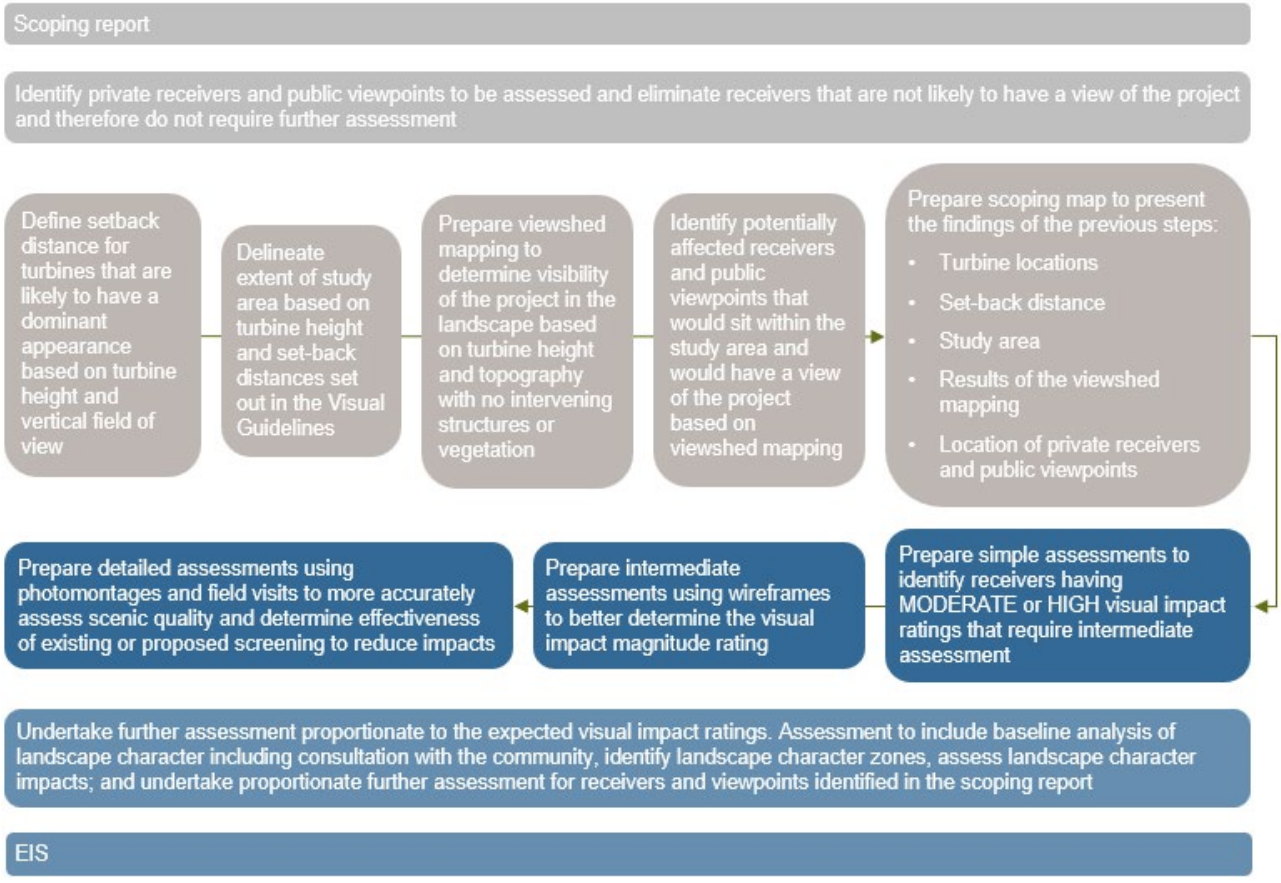


Figure 2-1 Methodology overview

The first step of the assessment is to identify the turbine setback distance and the visual impact study area to identify potentially affected private receivers and public viewpoints.

The second step of the assessment is to create a viewshed map to determine the visibility of the project at each of the receivers. This is used to identify which of the private receivers and public viewpoints within the study area have line of sight to the project and informs the requirement for further assessment in the EIS.

The assessment also provides further clarity at the scoping report stage and has been used to help inform ongoing consultation with affected landholders. A summary of the identified receivers and findings of the assessment is provided in Section 3.1 and Section 3.2.

The requirement for further assessment during the EIS for each of the identified receivers is summarised in Table 3-1.

The findings of this preliminary visual impact assessment will be verified as part of the detailed visual impact assessment for the EIS, and will be further informed by the landscape character assessment and community consultation.

2.2 Turbine setback

The turbine setback distance is established to prevent turbines being located close to sensitive receivers. If a receiver is within the prescribed setback distance, it will trigger a visual impact magnitude rating of high unless the intermediate and detailed visual impact assessments find that topography or existing vegetation provide a significant landscape intervention, largely screening the view to the project.

The prescribed setback distance is calculated based on the proposed maximum turbine height and the distance to receivers required to maintain a nine-degree vertical field of view to the blade tip.

Based on a proposed maximum turbine height of 300 m for the project, the turbine setback distance has been calculated as follows:

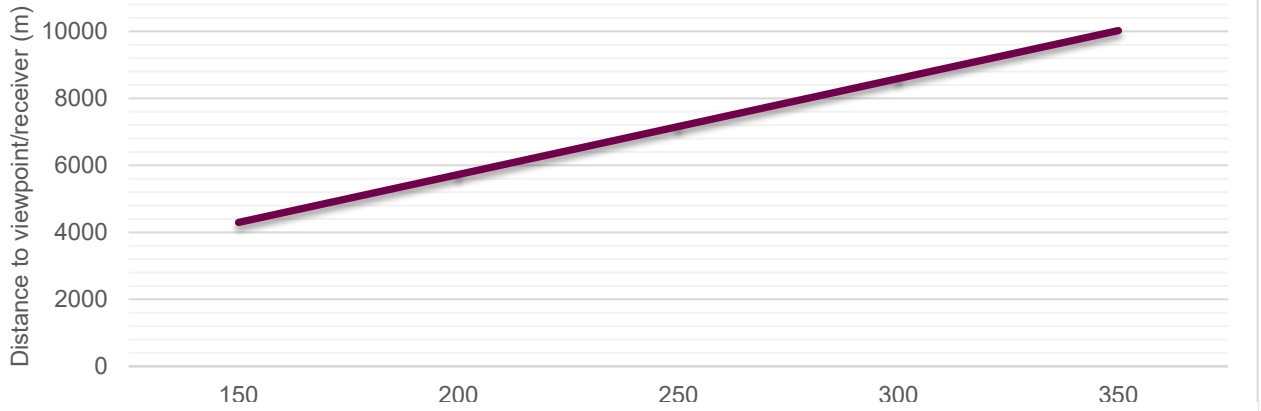
$$300 \text{ m} \times \frac{\sin(81^{o})}{\sin(9^{o})} = 1{,}893.9 \text{ m}$$

A conservative setback distance of 1,900 m has been applied and is shown in Figure 2-2.

Two non-associated residences have been identified within the prescribed turbine setback.

2.3 Study area

The visual impact study area has been determined using the height of the turbines and distances set out in Figure 7 of the Visual Guidelines as follows:



Source: *Wind Energy Guideline – Technical Supplement for Landscape Character and Visual Impact Assessment* (DPHI, 2024a)

The study area applied to the visual impact assessment is 8,600 m and is shown in Figure 2-3.

There are 121 non-associated residences within the study area.

2.4 Viewshed mapping

Viewshed mapping has been undertaken to identify areas within the study area that are likely to experience views to the project, and is based on topography only without considering potential landscape interventions or visual screening provided by existing vegetation or built structures.

The mapping has been developed using the following inputs:

- proposed height of the wind turbines (tip height of 300 m)
- location of the wind turbines
- digital elevation model within the extent of the study area.

The viewshed is presented as a 'heat map' where areas that are likely to experience views to more wind turbines are mapped with warmer colours, and those areas where fewer wind turbines are visible are mapped in cooler colours.

Areas within the study area that have no views to the project due to intervening topography are mapped in white. The results of the viewshed mapping are shown in Figure 2-4.

2.5 Scoping map

The scoping map has been prepared in accordance with the Visual Guidelines and summarises the findings of this preliminary visual impact assessment. The scoping map is provided in Figure 3-1 and shows the following:

- wind turbine locations
- wind turbine setback
- extent of the study area
- results of the viewshed mapping
- identified private receivers and public viewpoints, noting whether or not they are subject to any host or other negotiated agreement and are therefore associated, or non-associated.

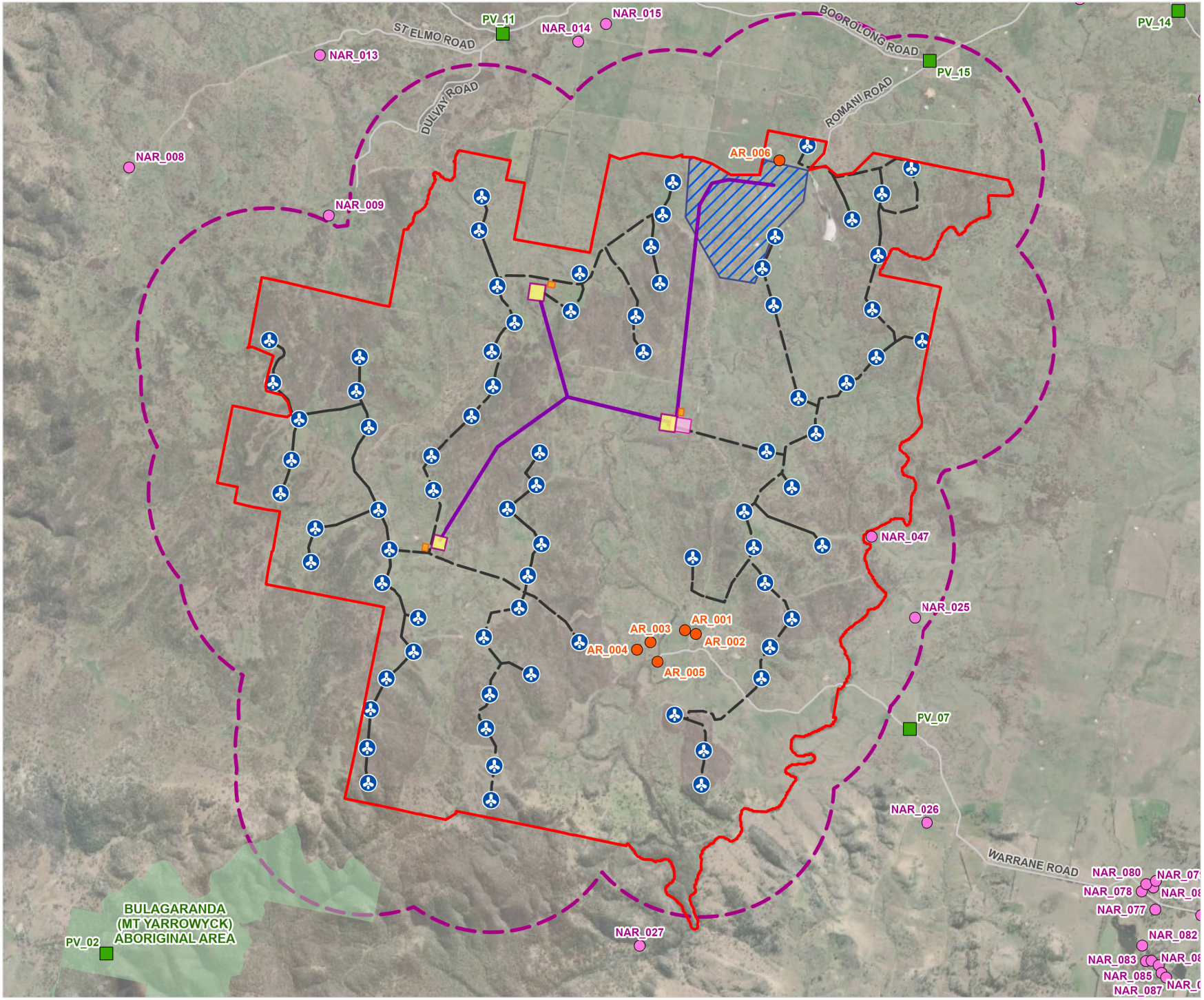


FIGURE 2-2: TURBINE SETBACK

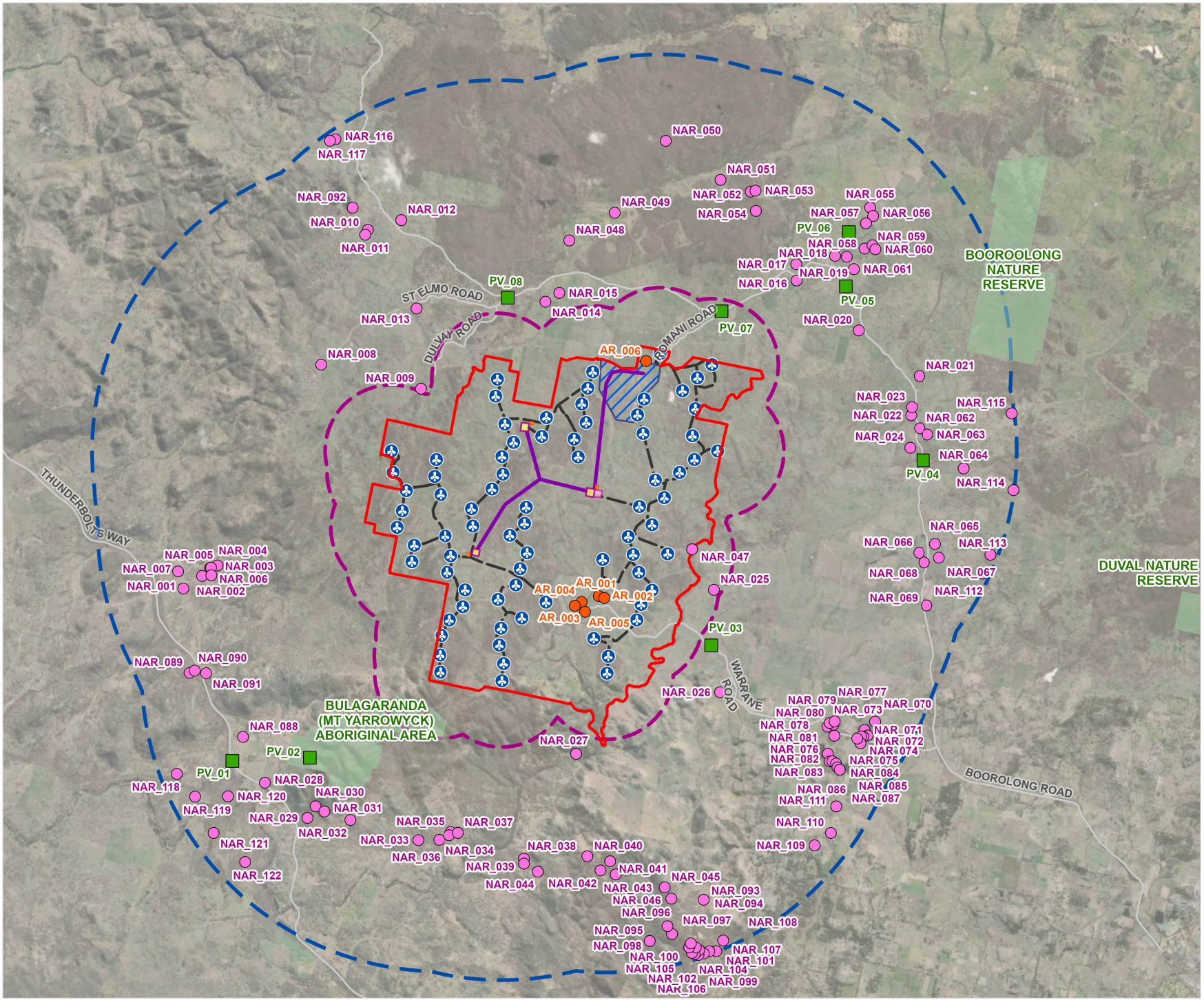


FIGURE 2-3: STUDY AREA

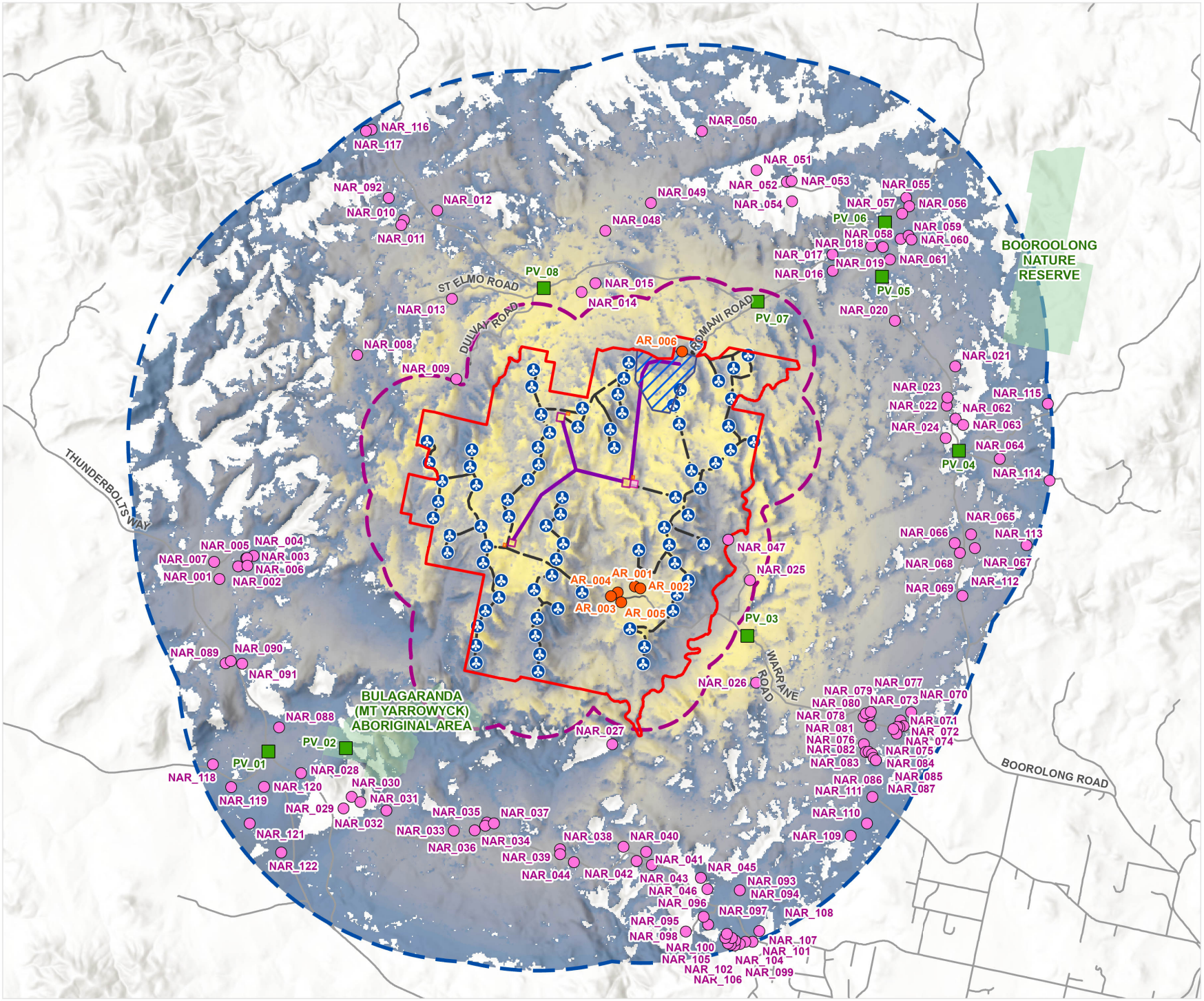


FIGURE 2-4: VIEWSHED MAPPING

3 SUMMARY OF RECEIVERS AND SCOPING MAP

3.1 Private receivers

The preliminary visual impact assessment has identified:

- six associated residences, located within the project boundary
- two non-associated residences the turbine setback distance of 1,900 m
- 121 non-associated residences within the study area. Of these 121 receivers:
  - 14 non-associated residences are not expected to experience views of the project, and do not require further assessment
  - 107 non-associated residences are expected to experience visual impacts and require further assessment as part of the detailed visual impact assessment for the EIS.

A summary of the non-associated residences identified, their respective distances from the closest turbines, and their requirement for further assessment is provided in Table 3-1.

3.2 Public viewpoints

Public viewpoints were assigned to locations along public roads and spaces that could have views of the project. The cultural walk within Bulagaranda (Mount Yarrowyck) Aboriginal Area has also been identified as a public viewpoint within the study area.

Public viewpoints that have been identified through the preliminary visual impact assessment include:

- PV_01 – Thunderbolts Way / Torryburn Road intersection
- PV_02 – Bulagaranda (Mount Yarrowyck) Aboriginal Area cultural walk
- PV_03 – Warrane Road
- PV_04 – Boorolong Road / Toms Gully Road intersection
- PV_05 – Boorolong Road / Old Armidale Road intersection
- PV_06 – Old Armidale Road / Fleetwood Road intersection
- PV_07 – Boorolong Road / Romani Road intersection
- PV_08 – Boorolong Road / Dulvay Road intersection.

A summary of the public viewpoints identified, their respective distances from the closest turbines, and their requirement for further assessment is provided in Table 3-1.

The scoping map is provided in Figure 3-1 and shows the following:

- wind turbine locations
- wind turbine setback
- extent of the study area
- results of the viewshed mapping
- identified private receivers and public viewpoints, noting whether or not they are subject to any host or other negotiated agreement and are therefore associated, or non-associated.

Table 3-1 Identified private receivers and public viewpoints

Receiver ID	Longitude	Latitude	Distance to closest turbine (km)	Closest turbine #	Assessment requirement
NAR_001	151.338728	-30.414977	6.38	76	Further assessment required
NAR_002	151.344189	-30.41151	5.77	76	Further assessment required
NAR_003	151.346495	-30.409347	5.49	76	Further assessment required
NAR_004	151.348682	-30.408644	5.27	76	Further assessment required
NAR_005	151.346756	-30.409278	5.47	76	Further assessment required
NAR_006	151.346952	-30.411247	5.51	76	Further assessment required
NAR_007	151.336949	-30.410588	6.42	76	Further assessment required
NAR_008	151.377331	-30.355564	3.20	75	Further assessment required
NAR_009	151.407438	-30.360797	1.99	75	Further assessment required
NAR_010	151.389719	-30.32016	5.70	73	Further assessment required
NAR_011	151.388991	-30.321459	5.64	73	Further assessment required
NAR_012	151.399562	-30.317321	5.35	73	Further assessment required
NAR_013	151.405173	-30.340054	3.10	73	Further assessment required
NAR_014	151.44374	-30.336991	2.43	8	Further assessment required
NAR_015	151.447783	-30.334567	2.47	8	Further assessment required
NAR_016	151.518391	-30.328917	3.43	46	Further assessment required
NAR_017	151.518101	-30.3247	3.77	46	Further assessment required
NAR_018	151.529559	-30.322159	4.72	46	Further assessment required
NAR_019	151.533062	-30.322252	4.96	46	Further assessment required
NAR_020	151.537534	-30.341214	4.32	46	Further assessment required
NAR_021	151.556271	-30.352394	5.97	46	Further assessment required
NAR_022	151.554195	-30.362648	5.65	53	Further assessment required
NAR_023	151.55432	-30.360547	5.72	53	Further assessment required
NAR_024	151.5543	-30.371067	5.53	53	Outside of viewshed – no view of turbines. No further assessment required

Receiver ID	Longitude	Latitude	Distance to closest turbine (km)	Closest turbine #	Assessment requirement
NAR_025	151.497391	-30.409908	1.69	62	Further assessment required
NAR_026	151.500452	-30.436397	3.16	66	Further assessment required
NAR_027	151.458237	-30.453823	2.48	69	Outside of viewshed – no view of turbines. No further assessment required
NAR_028	151.365374	-30.464458	5.96	32	Further assessment required
NAR_029	151.378488	-30.473175	5.67	32	Outside of viewshed – no view of turbines. No further assessment required
NAR_030	151.380779	-30.470081	5.27	32	Outside of viewshed – no view of turbines. No further assessment required
NAR_031	151.383476	-30.471342	5.21	32	Outside of viewshed – no view of turbines. No further assessment required
NAR_032	151.39135	-30.47328	4.98	32	Further assessment required
NAR_033	151.411921	-30.477808	4.87	32	Further assessment required
NAR_034	151.418176	-30.477506	4.81	32	Further assessment required
NAR_035	151.421711	-30.475365	4.58	45	Further assessment required
NAR_036	151.421259	-30.476217	4.69	45	Further assessment required
NAR_037	151.423833	-30.475517	4.55	45	Further assessment required
NAR_038	151.443872	-30.481532	5.15	45	Further assessment required
NAR_039	151.443956	-30.482814	5.29	45	Further assessment required
NAR_040	151.462789	-30.480259	5.29	69	Further assessment required
NAR_041	151.469637	-30.481323	5.40	69	Further assessment required
NAR_042	151.46688	-30.483798	5.67	69	Further assessment required
NAR_043	151.471481	-30.484673	5.79	69	Further assessment required
NAR_044	151.448165	-30.484759	5.58	45	Further assessment required
NAR_045	151.486261	-30.487517	6.37	69	Further assessment required
NAR_046	151.488363	-30.490365	6.73	69	Outside of viewshed – no view of turbines No further assessment required
NAR_047	151.490429	-30.399632	0.72	62	Further assessment required
NAR_048	151.450142	-30.320872	3.84	8	Further assessment required
NAR_049	151.463376	-30.313215	4.26	70	Further assessment required

Receiver ID	Longitude	Latitude	Distance to closest turbine (km)	Closest turbine #	Assessment requirement
NAR_050	151.477742	-30.294083	6.12	70	Further assessment required
NAR_051	151.494502	-30.303633	5.29	70	Outside of viewshed – no view of turbines. No further assessment required
NAR_052	151.503663	-30.306373	5.10	46	Outside of viewshed – no view of turbines. No further assessment required
NAR_053	151.505061	-30.306064	5.16	46	Outside of viewshed – no view of turbines. No further assessment required
NAR_054	151.505428	-30.31132	4.60	46	Outside of viewshed – no view of turbines. No further assessment required
NAR_055	151.539433	-30.309241	6.41	46	Further assessment required
NAR_056	151.540431	-30.311408	6.30	46	Further assessment required
NAR_057	151.538394	-30.313389	6.01	46	Further assessment required
NAR_058	151.538276	-30.319956	5.51	46	Further assessment required
NAR_059	151.540588	-30.319025	5.75	46	Further assessment required
NAR_060	151.541489	-30.320019	5.75	46	Further assessment required
NAR_061	151.535335	-30.325382	4.92	46	Further assessment required
NAR_062	151.556998	-30.365945	5.85	53	Further assessment required
NAR_063	151.559358	-30.367469	6.05	53	Further assessment required
NAR_064	151.57065	-30.375876	7.10	53	Further assessment required
NAR_065	151.563002	-30.39575	6.80	53	Further assessment required
NAR_066	151.558252	-30.398179	6.48	53	Further assessment required
NAR_067	151.564325	-30.399256	7.07	53	Further assessment required
NAR_068	151.559891	-30.400651	6.74	53	Further assessment required
NAR_069	151.561175	-30.411754	7.47	53	Further assessment required
NAR_070	151.547073	-30.442437	7.43	64	Further assessment required
NAR_071	151.54402	-30.444695	7.26	66	Further assessment required
NAR_072	151.544999	-30.446077	7.41	66	Further assessment required
NAR_073	151.543754	-30.446424	7.31	66	Further assessment required
NAR_074	151.543078	-30.446381	7.25	66	Further assessment required

Receiver ID	Longitude	Latitude	Distance to closest turbine (km)	Closest turbine #	Assessment requirement
NAR_075	151.542979	-30.448148	7.33	66	Further assessment required
NAR_076	151.541966	-30.446973	7.19	66	Further assessment required
NAR_077	151.535089	-30.446481	6.57	66	Further assessment required
NAR_078	151.532947	-30.444192	6.27	66	Further assessment required
NAR_079	151.534664	-30.443616	6.39	66	Further assessment required
NAR_080	151.533576	-30.443224	6.28	66	Further assessment required
NAR_081	151.53501	-30.442762	6.38	66	Further assessment required
NAR_082	151.533353	-30.451207	6.69	66	Further assessment required
NAR_083	151.534	-30.453199	6.87	66	Further assessment required
NAR_084	151.534834	-30.453127	6.93	66	Further assessment required
NAR_085	151.53593	-30.453672	7.05	66	Further assessment required
NAR_086	151.536394	-30.454652	7.15	69	Further assessment required
NAR_087	151.537114	-30.455228	7.23	69	Outside of viewshed – no view of turbines No further assessment required
NAR_088	151.358279	-30.45282	5.98	32	Further assessment required
NAR_089	151.341545	-30.436739	7.15	23	Further assessment required
NAR_090	151.343076	-30.436118	6.99	23	Further assessment required
NAR_091	151.346513	-30.436684	6.73	23	Further assessment required
NAR_092	151.384923	-30.31457	6.47	73	Further assessment required
NAR_093	151.498046	-30.490319	7.08	69	Further assessment required
NAR_094	151.487547	-30.497556	7.48	69	Further assessment required
NAR_095	151.482417	-30.501579	7.80	69	Outside of viewshed – no view of turbines No further assessment required
NAR_096	151.489002	-30.499542	7.73	69	Further assessment required
NAR_097	151.494721	-30.501748	8.13	69	Further assessment required
NAR_098	151.494279	-30.502821	8.23	69	Further assessment required
NAR_099	151.496247	-30.50277	8.29	69	Further assessment required

Receiver ID	Longitude	Latitude	Distance to closest turbine (km)	Closest turbine #	Assessment requirement
NAR_100	151.495179	-30.504193	8.40	69	Further assessment required
NAR_101	151.497301	-30.503424	8.39	69	Further assessment required
NAR_102*	151.49599	-30.504493	8.46	69	Further assessment required
NAR_104	151.497148	-30.504663	8.51	69	Further assessment required
NAR_105	151.498711	-30.504245	8.52	69	Further assessment required
NAR_106	151.500309	-30.503622	8.51	69	Further assessment required
NAR_107	151.502444	-30.503536	8.59	69	Outside of viewshed – no view of turbines. No further assessment required
NAR_108	151.504368	-30.500691	8.38	69	Outside of viewshed – no view of turbines. No further assessment required
NAR_109	151.530516	-30.475074	7.74	69	Further assessment required
NAR_110	151.535226	-30.471706	7.90	69	Further assessment required
NAR_111	151.53652	-30.464771	7.61	69	Further assessment required
NAR_112	151.577521	-30.4029	8.39	53	Further assessment required
NAR_113	151.579697	-30.397949	8.40	53	Further assessment required
NAR_114	151.585783	-30.380969	8.58	53	Further assessment required
NAR_115	151.584344	-30.361109	8.53	53	Further assessment required
NAR_116	151.378995	-30.297027	8.33	73	Further assessment required
NAR_117	151.37738	-30.297462	8.39	73	Further assessment required
NAR_118	151.338921	-30.463063	8.13	32	Further assessment required
NAR_119	151.344635	-30.468779	7.92	32	Further assessment required
NAR_120	151.35447	-30.468375	7.08	32	Further assessment required
NAR_121	151.350595	-30.478003	8.00	32	Further assessment required
NAR_122	151.360363	-30.485211	7.83	32	Further assessment required
PV01	151.355361	-30.459168	6.51	32	Further assessment required
PV02	151.37849	-30.457532	4.50	32	Further assessment required
PV03	151.497274	-30.424356	2.26	66	Further assessment required

Receiver ID	Longitude	Latitude	Distance to closest turbine (km)	Closest turbine #	Assessment requirement
PV04	151.558379	-30.374206	5.92	53	Further assessment required
PV05	151.53315	-30.329934	4.46	46	Further assessment required
PV06	151.533407	-30.315857	5.48	46	Further assessment required
PV07	151.496357	-30.337688	1.57	46	Further assessment required
PV08	151.432442	-30.336354	2.37	73	Further assessment required

Note: NAR = non-associated residence, PV = public viewpoint.

* NAR_103 skipped as this receiver is outside the study area

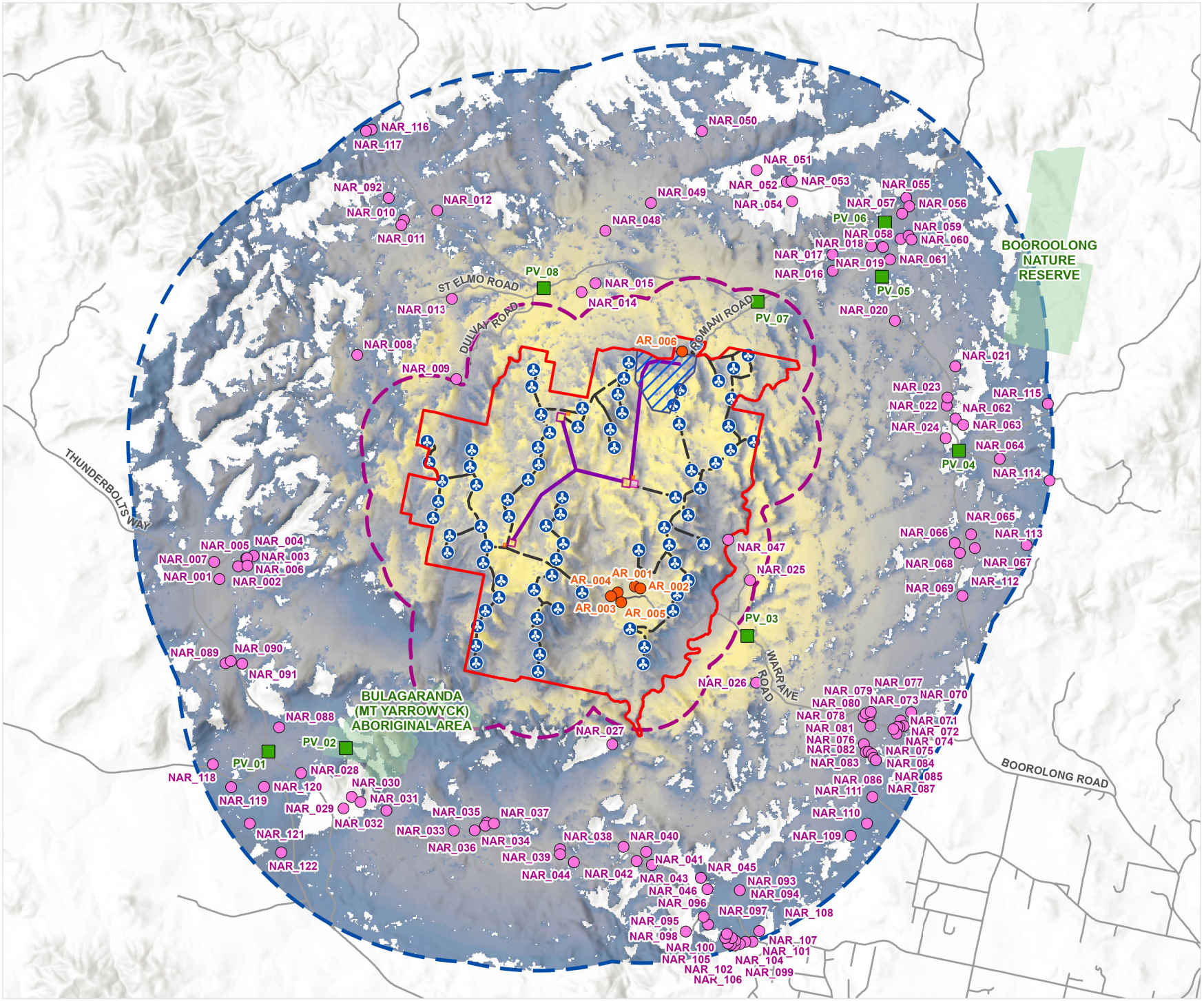


FIGURE 3-1: SCOPING MAP

4 FURTHER ASSESSMENT FOR EIS

All private receivers and public viewpoints identified in Table 3-1 as requiring further assessment will be subject to a detailed landscape character and visual impact assessment as part of the EIS. This will be further informed by baseline analysis of landscape character and visual sensitivity (including consultation with the community to confirm landscape values and scenic quality), identification of landscape character zones, and assessment of landscape character impacts.

Those receivers that are expected to have obstructed views of the project due to intervening topography or structures may not be subject to a full visual impact assessment, and this will be confirmed through the steps in the detailed visual impact assessment methodology to ensure that the level of assessment is proportionate to the expected impacts from the project.

In accordance with the Visual Guidelines, a 'simple assessment' will be performed initially to demonstrate if impacts are likely to be moderate or higher. The simple assessment will consider worst-case assumptions about visual sensitivity and expected magnitude of impacts.

Where the simple assessment indicates potentially moderate or higher impacts, an intermediate assessment will be conducted.

The intermediate assessment will use 3D modelling of topography and the locations/heights of individual turbines to generate wireframes to determine the magnitude of impacts and evaluate whether moderate or higher visual impacts are likely from each of the public viewpoints and private receivers.

Should the intermediate assessment indicate that a potentially moderate or high impact is likely, a detailed site assessment for each private receiver and public viewpoint will then be performed to evaluate the following:

- the extent to which vegetation and structures mitigate the visual impacts of the project
- whether views from rural properties are classified as primary or secondary views
- the scenic quality of these views
- any additional mitigating factors that may increase or decrease the visual impact.

In addition, the landscape character and visual impact assessment for the EIS will comprise the following:

- landscape character assessment and a detailed visual baseline study
- identification of any additional key features, key viewpoints valued by the community through ongoing consultation
- identification and refinement of the landscape character units considering community feedback on the relative scenic quality ratings of these units
- cumulative landscape character assessment
- graphic representations to assess and communicate the magnitude of visual impacts using field visits and GIS technology, wire frame diagrams, and photomontages
- assessment of the project against the performance objectives outlined in Table 8 of the Visual Guidelines.

The detailed assessment will include assessment and justification for the placement of wind turbines, including consideration of avoidance through relocating moderate and high impact turbines as a first priority.

Where avoidance of moderate and high impacts is not possible through relocation and resizing of turbines, management measures to be employed to reduce impacts to an acceptable level will be justified.

Management measures to be considered will include reorienting turbines, vegetation screening and project landscaping to reduce impacts, and negotiated agreements where other measure prove ineffective or unsuitable.

5 REFERENCES

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Appendix D
Preliminary biodiversity impact assessment

NORTHERN TABLELANDS WIND FARM

Preliminary Biodiversity Assessment Report



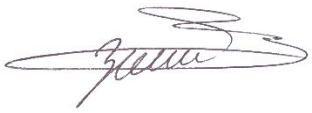
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Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
D1	Draft Preliminary Biodiversity Assessment Report for internal review	Brooke Sanders James Madden Tara Boreham	Polina Zadorojnaya	Polina Zadorojnaya	27/08/2024
D2	Draft report following design footprint changes	Tara Boreham	Polina Zadorojnaya and Lisa Montesin	Polina Zadorojnaya	5/03/2025
D3	Draft report following client review	Tara Boreham	Polina Zadorojnaya	Polina Zadorojnaya	23/04/2025
D4	Amendments following survey boundary change	Polina Zadorojnaya	Natalie Green	Polina Zadorojnaya	25/08/2025
F1	Final	Natalie Green	Polina Zadorojnaya	Polina Zadorojnaya	15/09/2025

Approval for issue

Polina Zadorojnaya (BAAS23014)  15 September 2025

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EXECUTIVE SUMMARY

Background

This preliminary Biodiversity Assessment Report (BAR) has been prepared to support the scoping report for the proposed Northern Tablelands Wind Farm Project (the project). The project is located within the New England Renewable Energy Zone (REZ), approximately 18 kilometres (km) northwest of Armidale in New South Wales. It would involve the construction, operation, and decommissioning of a wind farm and battery energy storage system (BESS). The wind farm would consist of up to 76 wind turbines, which would supply up to 608 megawatts (MW), supported by a battery energy storage system (BESS) with an approximate capacity of 800 MW or 1,000 megawatt hours (MWh).

The project is intended to be constructed in a single stage, and would include the following key components:

- up to 76 wind turbines, with a maximum tip height of up to 300 metres (m) and a hardstand at the base of each turbine
- a BESS with a discharge rate of up to 800 MW, and a duration depth of up to 1,000 MWh
- electrical infrastructure including
  - up to three substations with a step-up facility and/or a switching station dependent on final connection requirements
  - underground and overhead electrical reticulation connecting the wind turbines to the substations
  - a high-voltage connection (330 kilovolt (kV) and 500 kV) to the New England REZ Network Infrastructure Project
- permanent on-site ancillary infrastructure:
  - operations and maintenance facility
  - internal access road network, with access and egress points from and to public roads
  - meteorological masts
  - utility and amenity services
- potential upgrades to the surrounding local road network for the expected traffic volumes and oversize and/or over mass vehicles during construction, and maintenance during operation
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas
  - quarry sites for construction material (rock for access tracks and hardstands)
  - rock crushing facilities and concrete batching plants
  - temporary meteorological devices (such as meteorological masts)
  - potential construction workforce accommodation on-site
- site access:
  - via Boorolong Road and Romani Road to the north, and Warrane Road to the east
  - transport route from Port of Newcastle to Boorolong Road and Romani Road would be via New England Highway to the east
- land tenure
  - the project area is freehold land, comprising 77 lots and owned by OEPL.

The project would have a preliminary estimated development cost of more than $30 million and would be State significant development (SSD) as defined under the New South Wales *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Approval will be required from the Minister for Planning and Public Spaces under Part 4 the New South Wales *Environmental Planning and Assessment Act 1979* (EP&A Act).

The project will be referred to the Australian Department of Climate Change, Energy, the Environment and Water (Australian DCCEEW) for potential impacts to matters of national environmental significance (MNES) under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Should the Australian DCCEEW determine the project is a controlled action under Section 75 of the EPBC Act, an assessment and approval under the EPBC Act will be required. This is expected to be under the bilateral agreement between the Australian Government and the NSW Government.

The preliminary BAR improves the accuracy and resolution of likely biodiversity constraints early in the assessment process; thereby facilitating project design (i.e. impact avoidance approach) while minimising the potential for significant project risk. This assessment supports the scoping report and request for Secretary's Environmental Assessment Requirements (SEARs); and will provide the basis for the Biodiversity Development Assessment Report (BDAR) as part of the Environmental Impact Statement (EIS).

For this study, the following terms have been adopted:

- **project area** - corresponds with the outer boundary of the property on which the proposed wind farm would be located, which covers an area of approximately 7,671 hectares (ha). The project area has been subject to desktop-based assessments and literature review
- **survey boundary** - comprises a 200 m corridor around access tracks and turbines for the purpose of field-based assessments, which covers a total area of 1,508 ha. The survey boundary adopted for this assessment represents a precautionary extent and does not reflect the final disturbance footprint.

The broader boundary has been used to facilitate ecological surveys across the landscape, allowing biodiversity values to be identified early and enabling the application of the 'avoid, minimise, offset' hierarchy. The results of these surveys will inform detailed design and micrositing to avoid and minimise impacts to biodiversity, with the final disturbance area expected to be significantly smaller than the indicative survey boundary.

Regulatory context

The project must have regard for environmental matters per the EP&A Act and future development within the project area would require:

- formal assessment under the Biodiversity Offset Scheme (BOS): supporting BDAR and associated retirement of offset credits
- formal assessment in accordance with the objectives of *the Fisheries Management Act 1994* (FM Act): identification of FM Act listed threatened entities and impact assessments (7-part Tests) if necessary, as part of the BDAR.

Landscape context

The project area is located within the Bundarra Downs subregion of the New England Tablelands Bioregion and intersects with three NSW (Mitchell) Landscapes; Dingo Spur Meta-sediments, Uralla Basalts and Sands and Moonbi - Walcha Granites. The project area has an undulating topography with elevation ranging from 960 to 1,250 m above sea level.

Boorolong Creek runs from the northeast corner of the project area to the southeast, with several dams located within the project area, the largest being Rileys Creek in the north-eastern corner.

Vegetation across the region has been subject to historic grazing and clearing for agriculture, which has subsequently led to gaps in connectivity and fragmentation within the landscape. However, there is still a large expanse of land within the project area which provides connectivity for fauna species, particularly the vegetated ridgelines connecting the northern extent of the project area to the south.

Ecological communities

Analysis of the previous broadscale mapping and field data (limited to preliminary ecological surveys) revealed that the project area comprised of a mix of intact native woodland and heathlands predominantly

along the ridgelines, hilly areas and slopes, derived grassland (i.e. >50% native cover) and cleared and exotic patches.

At this preliminary stage, approximately 982 ha of native woodland vegetation and a further 598 ha of derived native grassland has been mapped within the survey boundary, comprising of 18 native Plant Community Types (PCTs):

- PCT 3344: New England Ribbon Gum Grassy Forest
- PCT 3353: Guyra Silvertop Stringybark Moist Forest
- PCT 3351: Armidale Creekflat Snow Gum Woodland-Scrub
- PCT 3359: New England Hills Stringybark-Box Woodland
- PCT 3363: Western New England Blakely's Red Gum-Box Grassy Forest
- PCT 3702: Northwest New England Ranges Caley's Ironbark Woodland
- PCT 3705: Western New England Hills Apple-Stringybark Forest
- PCT 3710: Western New England Hills Orange Gum-Ironbark Forest
- PCT 3722: Western New England Box-Tumbledown Gum Grassy Forest
- PCT 3724: Western New England Caley's Ironbark-Tumbledown Gum Forest
- PCT 3725: Western New England Ranges Orange Gum-Blackbutt Forest
- PCT 3727: Western New England Silvertop Stringybark Forest
- PCT 3728: Western New England Hills Blackbutt-Stringybark Forest
- PCT 3729: Western New England Youmans Stringybark Shrub Forest
- PCT 3854: New England Rockplate Shrubland
- PCT 4125: New England Youmans Stringybark-Box Forest
- PCT 4142: New England Hills Red Gum-Stringybark Shrub Forest.

Direct impacts to native vegetation generates a biodiversity credit obligation under the Biodiversity Assessment Method, 2020 (BAM; DPIE 2020). Ecosystem credits measure the value of threatened and non-threatened vegetation communities. Based on the preliminary findings of this assessment, the project would generate an average offset obligation of 27 ecosystem credits per ha of PCT impact.

Based on the preliminary assessment, one threatened ecological community (TEC) listed under both the *Biodiversity Conservation Act 2016* (BC Act) and the EPBC Act was confidently identified within the survey boundary:

- 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 – a critically endangered ecological community (CEEC).

This CEEC is associated with PCT 3359 and 3363 in both moderate to good and derived grassland condition states where the vegetation currently or previously dominant/ co-dominant in *Eucalyptus melliodora* (Yellow Box) and/or *E. blakelyi* (Blakely's Red Gum).

Two additional BC Act and EPBC Act listed communities were tentatively identified within the survey boundary:

- New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC, listed under the BC Act and EPBC Act
- Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion – an endangered ecological community (EEC) listed under the BC Act.

Threatened and migratory species

Extensive suitable flora and fauna habitats occur across the survey boundary including hollow bearing trees, bush rock and extensive outcrop, streams, flowering/fruiting trees and shrubs, and koala feed trees.

Field validated likelihood-of-occurrence data identified that the project area may provide habitat for approximately 58 locally occurring (i.e. <10 km) threatened fauna species and approximately 20 threatened flora species with a moderate or greater likelihood of occurrence. Two threatened fauna species were identified during opportunistic surveys within the project area: Diamond Firetail (*Stagonopleura guttata*) and Scarlet Robin (*Petroica boodang*); both of which are ecosystem credit species associated with the extensive woodland habitat present.

Serious and irreversible impact

A serious and irreversible impact (SAII) is one likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct in accordance with the principles set out in clause 6.7(2) of the Biodiversity Conservation Regulation 2017.

Two TECs are regarded as a SAII candidate communities under the BC Act:

- 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
- New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion.

Nine candidate fauna and flora species associated with the project are listed entities at risk of SAII:

- Tusked Frog (*Adelotus brevis*)
- Regent Honeyeater (*Anthochaera phrygia*) (Breeding and foraging)
- Large-eared Pied Bat (*Chalinolobus dwyeri*)
- Peppered Tree Frog (*Litoria piperata*)
- Glandular Frog (*Litoria subglandulosa*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*) (Breeding)
- Stuttering Frog (*Mixophyes balbus*)
- Brush-tailed Rock-wallaby (*Petrogale penicillata*)
- Narrow-leaved Bertya (*Bertya ingramii*).

Important area habitat mapping for the Regent Honeyeater is located, approximately 800 m west of the project area. Due to the collision risks associated with the project, this species is important for consideration of prescribed impacts.

An assessment of the SAII would be completed during the BDAR component of the EIS.

Indirect and prescribed impacts

The project would have indirect and prescribed impacts on local ecological communities and species. Formal assessment of these impacts would be required during the preparation of the BDAR. The key prescribed impact for consideration at an early stage is impacts resulting from wind turbine strikes on protected animals. Extensive baseline monitoring and post-construction monitoring is required to determine the extent of impacts within a collision risk assessment to inform a bird and bat management plan.

Recommendations

The project would automatically trigger the BOS given the presence of native vegetation, threatened species, and TEC (per the precautionary principle) within the project area. As a result, the project must conform to the

'avoid, minimise, offset' hierarchy required by the BOS. Using the hierarchy, proponents must firstly avoid impacts, secondly minimise them and finally offset residual impacts which could not be avoided as the last resort.

Based on the preliminary assessments undertaken, the following recommendations are made to avoid and minimise impacts on biodiversity:

- further vegetation integrity analysis within the survey boundary should be undertaken early within the assessment process to refine the vegetation mapping with a focus on assessing the condition and extent of to guide avoidance measures
- refine the project footprint to maximise opportunities to avoid biodiversity values and incorporate results and constraints identified during targeted surveys as per the BAM. Biodiversity values relevant to the project area include the following:
  - threatened ecological communities, particularly the CEECs and entities at risk of a SAII:
    - 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
    - New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC
  - larger patches of vegetation with connectivity to the broader landscape, that are likely to provide significant habitat values for a variety of local and threatened fauna (e.g. large remnant trees bearing significant hollows, preferred koala feed trees, winter flowering trees for migratory songbirds, flower and nectar bearing trees, etc.)
  - impact avoidance and minimisation techniques within aquatic and riparian habitats
- identify and maximise avoidance of potential bird and bat movement corridors across the landscape
- prioritise locating project infrastructure on existing cleared land and/or historically disturbed pasture.

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GLOSSARY AND ABBREVIATIONS

Term / Acronym	Description
AHD	Australian Height Datum
AOBV	Areas of outstanding biodiversity value
Applicant	Northern Tablelands WF Project Pty Ltd
Application	Application for development consent under Part 4.7 of the EP&A Act; and determination under Part 9 of the EPBC Act.
APZ	Asset protection zone
ARA	Animal Research Authority
asl	Above sea level
ASS	Acid sulfate soils
Associated residence	A residence on privately-owned land in respect of which the owner has reached an agreement with the applicant in relation to the development and management of impacts.
ASX	Australian Securities Exchange
Australian DCCEEW	Australian Department of Climate Change, Energy, the Environment and Water
BAM	Biodiversity Assessment Method
BAR	Biodiversity Assessment Report
BBUS	Bird and bat utilisation surveys
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BCS	Biodiversity, Conservation and Science division
BDAR	Biodiversity Development Assessment Report
BESS	Battery Energy Storage System
BOM	Bureau of Meteorology
BOS	Biodiversity Offset Scheme
BV Map	Biodiversity Values Map
CEEC	Critically endangered ecological community
CPHR	Conservation Programs, Heritage, and Regulation (formerly BCS)
Cth	Commonwealth
DAWE	Department of Agriculture, Water and the Environment
DBH	Diameter at breast height
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DECC	Former NSW Department of Environment and Climate Change
DPE	Former NSW Department of Planning and Environment
DPHI	NSW Department of Planning, Housing and Infrastructure
DPIE	Former NSW Department of Planning Industry and Environment
EEC	Endangered ecological community
EIS	Environmental impact statement
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW)
EP&A Regulation	*Environmental Planning and Assessment Regulation 2021* (NSW)
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
FM Act	*Fisheries Management Act 1994* (NSW)
GDE	Groundwater dependent ecosystem
GIS	Geographic Information system
ha	hectare
IBRA	Interim Biogeographic Regionalisation for Australia

Term / Acronym	Description
KFH	Key Fish Habitat
KTP	Key threatening process
km	kilometre
kV	kilovolt
LGA	Local government area
LLS	Local Land Services
Local Area	Land within 10 kilometres of the project area
LoOA	Likelihood of occurrence assessment
m	metre
MNES	Matter of national environmental significance
MW	Megawatt
MWh	Megawatt hours
NEM	National Energy Market
Non-associated residence	A residence on privately-owned land in respect of which the owner has not reached an agreement with the applicant in relation to the management of impacts associated with the development
Non-associated residence (other project)	A residence on privately-owned land which does not have an agreement for the project, however, does have an agreement with another project.
NPWS	National Park and Wildlife Service
NP&W Act	*National Parks and Wildlife Act 1974* (NSW)
NSW	New South Wales
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
NTWFP	Northern Tablelands WF Project
NVR	Native Vegetation Regulatory
OEL	Origin Energy Limited
OEPL	Origin Energy Power Limited
PCT	Plant community type
PMST	Protected Matters Search Tool
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Project	Construction, operation and decommissioning of the proposed Northern Tablelands Wind Farm located approximately 18 kilometres north west of Armidale.
Project area	The indicative development area for the project located on land owned by Origin Energy Limited, as shown in Figure 1-1.
Project disturbance footprint	Area of project-related disturbance determined for the assessment of environmental impacts, which will be refined for the EIS.
RDP	Rapid Data Point
Receiver	Assessment location – defined for specific assessments e.g. noise
REZ	Renewable Energy Zone
RFS	Rural Fire Service
SAII	Serious and irreversible impact
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State significant development
Survey boundary	The survey boundary nominated for the project includes a 200 m corridor around access tracks and turbines for the purpose of field-based assessments, which covers a total area of 1,508 ha.
SVTM	State Vegetation Type Map
TEC	Threatened ecological community

Term / Acronym	Description
Threatened entities	State and Commonwealth listed threatened species or ecological communities
TSPD	Threatened Species Profile Database
VI	Vegetation Integrity

1 INTRODUCTION

Northern Tablelands WF Project Pty Ltd (NTWFP) as the trustee for Northern Tablelands WF Project Trust (the special purpose vehicle, SPV), proposes to construct, operate, and decommission the Northern Tablelands Wind Farm (the project). NTWFP is a wholly owned subsidiary of Origin Energy Power Limited (OEPL, Origin), held by the ultimate parent company of Origin Energy Limited (OEL) an Australian Securities Exchange (ASX) listed entity.

The project is located within the New England Renewable Energy Zone (REZ), approximately 18 kilometres (km) northwest of Armidale in New South Wales (see **Figure 1-1**).

RPS AAP Consulting Pty Ltd (RPS) was engaged by Origin Energy Power Limited (OEPL, Origin) to prepare a preliminary Biodiversity Assessment Report (BAR) to support the scoping report for the proposed Northern Tablelands Wind Farm (the project).

The Preliminary BAR improves the accuracy and resolution of likely biodiversity constraints early in the assessment process; thereby facilitating project design (i.e. impact avoidance approach) while minimising the potential for significant project risk. This assessment supports the scoping report and request for Secretary's Environmental Assessment Requirements (SEARs); and will provide the basis for the Biodiversity Development Assessment Report (BDAR) as part of the Environmental Impact Statement (EIS)

1.1 The project

The project would involve the construction, operation, and decommissioning of a wind farm and battery energy storage system (BESS). The wind farm would consist of up to 76 wind turbines, which would supply up to 608 megawatts (MW), and a BESS with a capacity of up to 800 MW/1,000 megawatt hours (MWh) storage of electricity into the National Energy Market (NEM).

The wind farm would be inter-connected via a series of underground and/or above ground cables connecting the wind turbines to a central substation, which would be located within the footprint for the proposed North Hub, to be constructed by EnergyCo as part of the New England REZ Network Infrastructure Project.

The project would have a preliminary estimated development cost of more than $30 million and would be State significant development (SSD) as defined under the New South Wales *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Approval will be required from the Minister for Planning and Public Spaces under Part 4 the New South Wales *Environmental Planning and Assessment Act 1979* (EP&A Act).

The project is also being referred to the Australian Department of Climate Change, Energy, the Environment and Water (Australian DCCEEW) for potential impacts to matters of national environmental significance (MNES) under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Should the Australian DCCEEW determine the project is a controlled action under Section 75 of the EPBC Act, an assessment and approval under the EPBC Act will be required. This is expected to be under the bilateral agreement between the Australian Government and the NSW Government.

The project is intended to be constructed in a single stage, and would include the following key components (see **Figure 1-2**):

- up to 76 wind turbines, with a maximum tip height of up to 300 m and a hardstand at the base of each turbine
- a BESS with a discharge rate of up to 800 MW, and a duration depth of up to 1,000 MWh
- electrical infrastructure including:
  - up to three substations with a step-up facility and/or a switching station dependent on final connection requirements
  - underground and overhead electrical reticulation connecting the wind turbines to the substations
  - a high-voltage connection (330 kV and 500 kV) to the New England REZ Network Infrastructure Project
- permanent on-site ancillary infrastructure:

  - operations and maintenance facility
  - internal access road network, with access and egress points from and to public roads
  - meteorological masts
  - utility and amenity services
- potential upgrades to the surrounding local road network for the expected traffic volumes and oversize and/or over mass vehicles during construction, and maintenance during operation
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas
  - quarry sites for construction material (rock for access tracks and hardstands)
  - rock crushing facilities and concrete batching plants
  - temporary meteorological devices (such as meteorological masts)
  - potential construction workforce accommodation on-site
- site access:
  - via Boorolong Road and Romani Road to the north, and Warrane Road to the east
  - transport route from Port of Newcastle to Boorolong Road and Romani Road would be via New England Highway to the east
- land tenure
  - the project area is freehold land, comprising 77 lots and owned by OEPL.

At the end of its practical life, the wind farm would be decommissioned, and the site returned to its pre-existing land use in consultation with the affected landholders.

1.2 The project area

For this scoping study, the following terms are used throughout in relation to the wind farm as shown in **Figure 1-2**:

- **project area -** The project area corresponds with the outer boundary of the property on which the proposed wind farm would be located, which covers an area of approximately 7,671 hectares (ha).
- **survey boundary -** includes a 200 m corridor around access tracks and turbines for the purpose of field-based assessments, which covers a total area of 1,508 ha. This corridor ensures the EIS will adequately identify potential disturbance impacts but also provide flexibility for the proposed layout to be refined within the surveyed area during detailed design.

The survey boundary adopted for this assessment represents a precautionary assessment extent and is not indicative of the final disturbance footprint. The boundary has intentionally been defined to encompass a much broader area than is anticipated to be impacted, incorporating all potential locations for turbines, reticulation lines, access tracks, etc with a 200 m corridor.

This approach ensures that ecological surveys are conducted over a sufficiently large landscape to identify biodiversity constraints and values early in the design process. By capturing a wider area for ecological surveys, the project can appropriately apply the ‘avoid, minimise, offset’ hierarchy required by the Biodiversity Offset Scheme. The information obtained with this broad survey boundary will inform the detailed design and micrositing of infrastructure to avoid and minimise ecological impacts to the greatest extent possible. The final disturbance footprint is expected to be significantly smaller than the survey boundary presented in this report. As such, while the mapped boundary provides a comprehensive context for survey coverage, it does not represent the extent of actual impacts associated with the project.

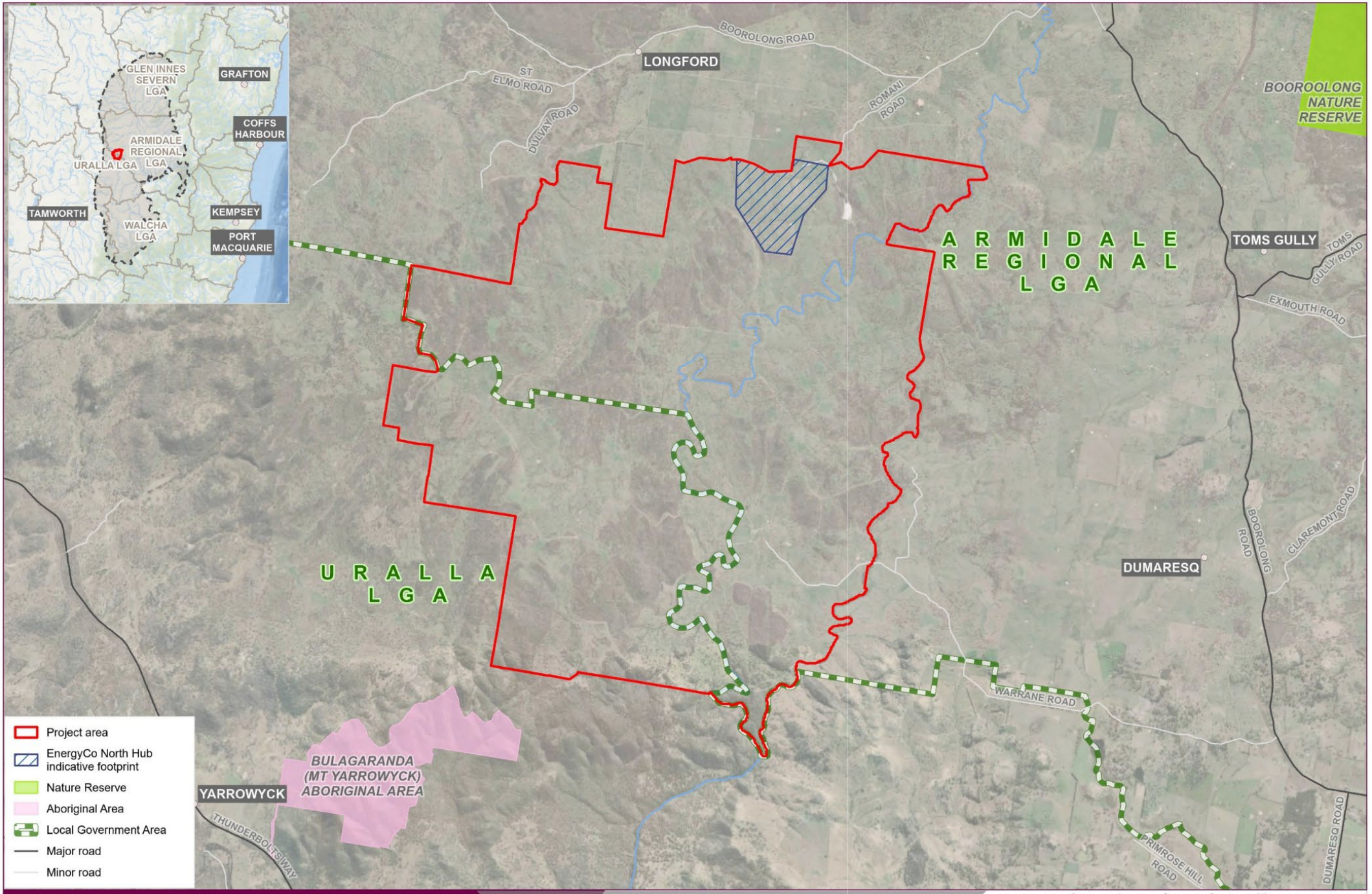


FIGURE 1-1 LOCATION MAP

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Biodiversity (NTWF)

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 15/09/2025
MAP FILE: Location
VERSION: B

PROJECT PATH: C:_Azure\OneDrive - Tetra Tech, Inc\Northern Tablelands_WindFarm_CONFIDENTIAL - RPS_AAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEE\NVSYD15661_BiodiversityFigure.aprx

1. This plan was prepared for the sole purposes of the Client for the specific Purpose of producing a photographic overlay plan. This plan is strictly limited to the Purpose and will not be used for any other application, purpose, use or matter. The plan is presented without the assumption of a duty of care to any other person other than the Client, and may not be relied on by a Third Party.

2. Without limiting paragraph 1 above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.

3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

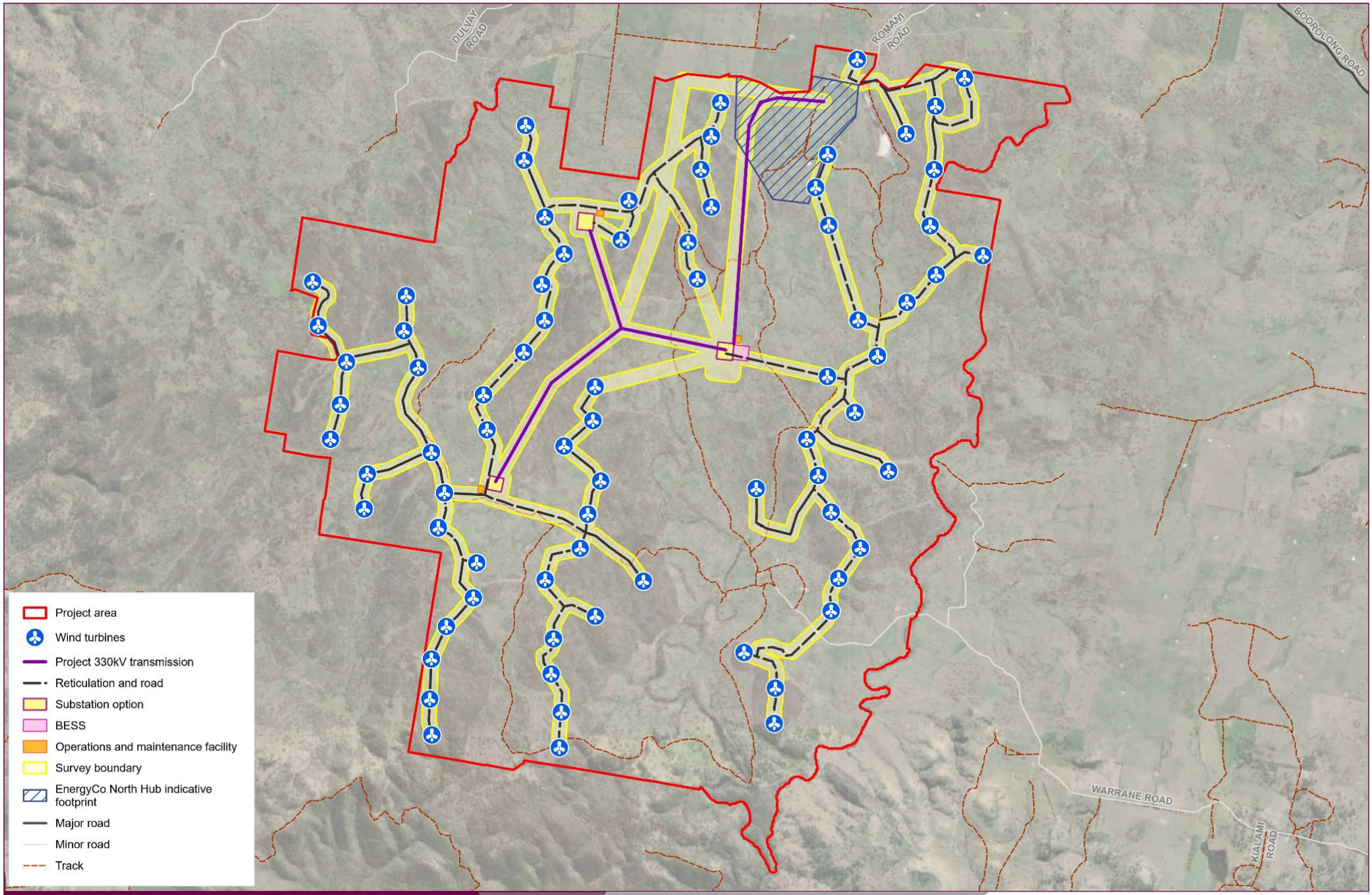


FIGURE 1-2 PRELIMINARY PROJECT LAYOUT

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 15/09/2025
MAP FILE: Project Layout
VERSION: B

DATA SOURCES
Client, RPS, NSWSS, RPS, Earthstar Geographics

1. This plan was prepared for the sole purposes of the Client for the specific Purpose of producing a photographic overlay plan. This plan is strictly limited to the Purpose and will not be used for any other application, purpose, use or matter. The plan is presented without the assumption of a duty of care to any other person other than the Client, and may not be relied on by a Third Party.

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PROJECT PATH: C:_AzureOneDrive - Tetra Tech, Inc\Northern Tablelands_WindFarm_CONFIDENTIAL - RPS_AAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEENVSYD15661_BiodiversityFigure.aprx

1.3 Purpose

The purpose of this report is to provide initial preliminary biodiversity advice on the project area based on desktop research, and a preliminary investigation of the survey boundary. It is noted that no detailed biodiversity assessments have been conducted to date. This report aims to:

- identify biodiversity constraints from a detailed desktop assessment
- confirm the presence of some of these constraints through a rapid survey boundary inspection
- provide advice to avoid and minimise impacts
- provide advice on the requirements for the SEARs.

1.4 Qualifications and licensing

1.4.1 Qualifications

Reporting and review were undertaken by Tara Boreham (Bachelor of Science), Biodiversity Assessment Method Accredited Assessor [BAAS23039]), Polina Zadorojnaya (Bachelor of Science; BAAS23014), James Madden (Bachelor of Science, Master of Research, BAAS24030) and Brooke Sanders (Bachelor of Environmental Science and Management).

Fieldwork was conducted by Tara Boreham, Brooke Sanders, James Madden and Jackie Chan (Bachelor of Science).

1.4.2 Licensing

Investigations performed as part of this study were conducted under the following licences, approvals and authorities:

- NSW National Parks and Wildlife Service Scientific Investigation Licence SL100536 (Valid to 31 July 2026)
- Animal Research Authority (ARA) for project number: RVF 21/902(2) with project title *Fauna Surveys as part of Environmental Studies*. This gives authority for animal research to occur under the NSW *Animal Research Act 1985*
- The project Approval Period is from 21 March 2022 to 21 March 2027 with the ARA approval period being from 13 March 2023 to 13 March 2027 (reauthorised annually following compliance with the ARA conditions).

2 REGULATORY CONTEXT

2.1 Commonwealth

2.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) is the Australian Government's central piece of environmental legislation. It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the EPBC Act as Matters of National Environmental Significance (MNES).

The nine MNES to which the EPBC Act applies are:

1. World heritage properties
2. National heritage places
3. Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
4. Nationally threatened species and ecological communities
5. Migratory species (listed under bilateral migratory bird agreements including Japan [JAMBA], China [CAMBA], Republic of Korea [ROKAMBA])
6. Commonwealth marine areas
7. The Great Barrier Reef Marine Park
8. Nuclear actions (including uranium mining)
9. A water resource, in relation to coal seam gas development and large coal mining development.

The project will be referred to the Australian DCCEEW to determine if it is a controlled action (Section 68[1] of the EPBC Act).

2.1.2 NSW Bilateral Agreement

To achieve streamlining benefits for all New South Wales proponents that use the Biodiversity Offset Scheme (BOS; refer **Section 2.2.2.1**) and need approval under the EPBC Act, the Australian Government has endorsed the BOS under the EPBC Act Condition-setting Policy.

Proponents in New South Wales who need an EPBC Act approval can use the BOS to assess and meet their biodiversity offset requirements.

2.2 State

2.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) establishes the system of environmental planning and assessment in New South Wales. Approval for the project would be sought under Part 4, Division 4.7 of the EP&A Act, which outlines the approval pathway for development deemed to be SSD.

2.2.2 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act 2016* (BC Act) is administered by the New South Wales Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW). The BC Act gives provisions to declare and protect threatened species, populations and ecological communities with a legal threatened status in New South Wales Threatened species (and populations) and ecological communities are listed in Schedules 1 and 2 of the BC Act, respectively. The BC Act also lists ‘Key Threatening Processes’ (KTP) that may threaten the survival of these threatened entities.

2.2.2.1 Biodiversity Assessment Method 2020

An accredited assessor is required to apply the *Biodiversity Assessment Method 2020* (BAM) when preparing a biodiversity development assessment report (BDAR). The BAM would also be applied to identify reasonable measures and strategies that can be taken to avoid and minimise impacts on biodiversity.

Notional BAM plot data and other Geographic Information System (GIS) information will be populated in the BAM Calculator and "run" (**Appendix E**). Outputs generated from the initial run will be included in an interim credit report from the BAM Calculator relating to the development corridor, clearly identifying the 'Ecosystem Credits' and the 'Species Credits' required to be retired to meet "no net loss", plus any other matters requiring consultation with NSW DCCEEW.

Ultimately, the field data and subsequent BAM credit calculations for the development corridor would be utilised to produce a BDAR. Reporting is required to be conducted for the formal project application in accordance with the BAM requirements, being:

- Stage 1 – Biodiversity assessment
- Stage 2 – Impact assessment (biodiversity values)
- Stage 3 – Improving biodiversity values.

2.2.2.2 Biodiversity Offset Scheme

The Biodiversity Offsets Scheme (BOS) applies to all SSD and State Significant Infrastructure (SSI) projects. A BDAR would be required for the proposed SSD unless the Secretary for NSW DEECCW determines that the project is not likely to have a significant impact and issue a BDAR Waiver.

This would only occur if the project avoided direct impacts (clearing and/or modification) and/or indirect impacts to all native vegetation, including native groundcovers. The project is unlikely to avoid all direct and indirect impacts to native vegetation, therefore a waiver will not be sought, and a BDAR will be prepared as part of the EIS in accordance with the BAM.

2.2.3 Fisheries Management Act 1994

The objectives of the *Fisheries Management Act 1994* (FM Act) are to conserve, develop and share the fishery resources of the state for the benefit of present and future generations. One of the objectives of the FM Act is to promote ecologically sustainable development and to conserve threatened species, populations and ecological communities of fish and marine vegetation.

The FM act has identified 'Key Fish Habitats' (KFH) as those aquatic habitats that are important to the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally, and the survival and recovery of threatened aquatic species.

Impacts to waterways, including KFH and mapped distribution for listed threatened aquatic species would trigger the FM Act. Formal assessment in accordance with the objectives of the FM Act would be required as part of the BDAR, including identification of FM Act listed threatened entities and impact assessments (7-part Tests) if necessary.

2.2.4 Local Land Services Act 2013

The *Local Land Services Act 2013* (LLS Act) formalised the establishment of Local Land Services in 2014. The land management and biodiversity reform framework amendment was developed alongside the BC Act to ensure a balanced approach to rural land management and biodiversity conservation in New South Wales. The legislation came into effect on 25 August 2017. The LLS Act designates rural areas of the state where the clearing of native vegetation is or is not regulated.

The draft Native Vegetation Regulatory (NVR) map provides a visual representation of the categories of land defined and outlined in the LLS Act and LLS Regulation. The map provides guidance to proponents and landholders about where categories of land described in the legislation occur. The land categories help determine if an approval is required under the Land Management (Native Vegetation) Code 2018 (Land

Management Code) or if allowable activities can be utilised to clear vegetation. The NVR map includes six categories as outlined in **Table 2-1**.

Mapping of vulnerable and sensitive regulated land continues to legally restrict land clearing in those areas across New South Wales.

Mapping of Category 1-Exempt and Category 2-Regulated Land is in draft. While in draft, Category 1 and 2 lands can be considered for vegetation management (DPE 2022b). Where the BOS applies, an assessment of prescribed impacts is required on Category 1 - Exempt Land. Clearing of native vegetation on Category 1 - Exempt Land does not require assessment under the BAM (Subsection 1.5.1(d.)).

In practice, this means impact assessment relating to vegetation integrity and habitat suitability are not required on Category 1 – Exempt Land, and biodiversity credits are not generated in the BAM Calculator (BAM-C). The BAM needs to be applied to any part of the project area that is not Category 1 – Exempt Land.

Table 2-1 Native Vegetation Regulation land category

Land Category	Colour	Criteria
Category 1 – Exempt Land	Blue	• Land cleared of native vegetation as at 1 January 1990 or lawfully cleared after 1 January 1990 and before 25 August 2017 • Land containing low conservation value grasslands or groundcover • Native vegetation identified as regrowth in a Property Vegetation Plan (PVP) under the repealed Native Vegetation Act 2003 only where the PVP specifies a regrowth date • Land bio-certified under the BC Act.
Category 2 – Regulated Land (not including vulnerable or sensitive land)	Yellow	• Land not cleared of native vegetation as at 1 January 1990 or unlawfully cleared of native vegetation after 1 January 1990 • Land containing native vegetation grown or preserved using public funds • Land subject to an expired remedial action to restore or protect the biodiversity values • Land in the proximity area of a coastal wetland or littoral rainforest areas of the coastal zone under the *Coastal Management Act 2016* • Land subject to (or previously subject to) a private native forestry plan under either the *Forestry Act 2012* or the *Native Vegetation Act 2003* • Land subject to a private native forestry plan or private native forestry PVP that is in force • Land containing medium conservation value grasslands • Land containing low conservation grasslands beneath the canopy or drip line of woody vegetation • Land is a travelling stock reserve (unless the land is located in the Western Division) • The land is otherwise prescribed by the Local Land Services Regulation as category 2–regulated land.
Category 2 - Vulnerable Regulated Land	Orange	• Steep (greater than 18 degrees from the horizontal) or highly erodible land • Protected riparian areas • Land that is otherwise environmentally sensitive.
Category 2 - Sensitive Regulated Land	Pink	• Where the Environment Agency Head reasonably believes it to contain: – old growth forest, rainforest, critically endangered ecological communities or critically endangered plants, or core koala habitat – high conservation value grasslands – land recommended for declaration as areas of outstanding biodiversity value – Ramsar wetlands within the meaning of the EPBC Act – land described as Coastal Wetlands or Littoral Rainforest in the coastal zone referred to in the *Coastal Management Act 2016* – land subject to an approved conservation measure that was the basis for other land being biodiversity certified – conservation areas under the Southern Mallee Land Use Agreement – native vegetation that must be retained under the *Plantation and Reafforestation Act 1999*

Land Category	Colour	Criteria
		– land subject to a condition of development consent requiring the land to be set aside for conservation purposes under the EP&A Act. • Land contained in the following types of agreements: – biodiversity stewardship agreements, conservation agreements, and wildlife refuge agreements made under the BC Act – conservation agreement made under the *National Parks and Wildlife Act 1974* – trust agreements made under the *Nature Conservation Trust Act 2001* – conservation areas made under Southern Mallee Land use Agreements – registered property agreements made under the *Native Vegetation Conservation Act 1997* – incentive or conservation property vegetation plans made under the *Native Vegetation Act 2003* that have not expired. • Land required to be set aside, offset or retained as a condition of development consent or subject to a remedial direction, including: – land required to be set aside under a code compliant certificate made under the Land Management (native vegetation) Code 2018 – land currently subject to a remedial action to restore or protect biodiversity values – land required to be set aside under a Ministerial Order made under the *Native Vegetation Act 2003* – land established as an offset in a property vegetation plan made under the *Native Vegetation Act 2003* – land contains native vegetation that is required to be retained under a plantation authorisation made under the *Plantations and Reafforestation Act 1999* – the land is, by a condition of a development consent or approval under the EP&A Act notified to the Environment Agency Head, required to be set aside for nature conservation, for re-vegetation of native vegetation or as a native vegetation offset.
Sensitive and Vulnerable land category overlap	Brown	• Category 2 - Vulnerable regulated land and Category 2 - Sensitive regulated land apply.
Excluded Land	Grey	• Land Management (Native Vegetation) Code 2018 and allowable activities do not apply.

3 METHODOLOGY

3.1 Overview

Methods used to characterise the biodiversity values of the project area comprised desktop and field-based investigation techniques. For the purpose of this assessment the project area was used to undertake desktop investigations, whilst the survey boundary was the focus for field-based investigations. The following sections outline survey methods, effort and limitations of the investigation.

3.2 Desktop research

3.2.1 Databases

A review of relevant information was performed to gain an understanding of the biodiversity values occurring or potentially occurring within the project area. Information sources reviewed for a 10 km radius of the project area included:

- BAM Calculator species output (NSW DCCEEW 2025a)
- flora and fauna records contained in the NSW DCCEEW BioNet database (NSW DCCEEW 2025b)
- vegetation Plant Community Type (PCT) descriptions (NSW DCCEEW 2025c)
- flora and fauna contained in the DCCEEW Protected Matters Search tool (Cth DCCEEW 2025d).

3.2.2 Spatial datasets

Desktop analysis of vegetation cover including a review of the resources listed below:

- Mitchell Landscapes (NPWS 2002)
- IBRA Region and subregion mapping (NSW DCCEEW 2016)
- NSW State Vegetation Type Map (NSW DCCEEW 2025f)
- Fisheries Spatial Data Portal (DPI 2025a)
- recent aerial imagery of the project area.

3.2.3 Likelihood of occurrence

A likelihood of occurrence analysis was prepared to help refine the ‘subject species’ list for consideration. Five ‘likelihood of occurrence’ categories have been attributed to identified threatened biodiversity by considering:

- the recency of threatened species observations (i.e. recent being less than 10 years and proximity to the project area), including application of landscape factors such as patch size and connectivity
- habitat descriptions as provided in the Threatened Species Profile Database (NSW DCCEEW 2025d)
- habitat value and condition as determined through the survey boundary inspection
- the effect of existing KTPs.

The five likelihood of occurrence ratings are described in Table 3-1.

Table 3-1 Likelihood of occurrence criteria

Likelihood	Criteria for flora species	Criteria for fauna species
None	Habitat within the project area and vicinity is unsuitable for the species.	Habitat within the project area and vicinity is unsuitable for the species.
Low	Non-cryptic species not detected during targeted surveys (if completed). Habitat within the project area is unsuitable for cryptic species due to low habitat abundance, disturbance, lack of appropriate geology, vegetation classification and/or landscape position. Potential for no or few species records.	Habitat within the project area is unsuitable for the species due to low habitat abundance, disturbance, lack of appropriate habitat features and/or occurrence outside of known species' distribution. Suitable habitat may be present in the locality and the species has potential to occur at some point in its life cycle, however occurrence is highly unlikely and limited (i.e., potential for fly-by but no suitable foraging habitat present). Potential for no or few species records.
Moderate	The project area contains suitable habitat for the species, including appropriate vegetation classification, geology and landscape position. However, habitat may be considered low-quality, fragmented and/or existing in a highly urbanised environment which is unlikely to provide optimum habitat conditions for species' occurrence. Potential for few recent records.	The project area contains suitable foraging resources and occurs within the known species' distribution. However, critical habitat elements (i.e., breeding habitat) are absent. The project area is unlikely to support resident populations but may be visited by the species intermittently or at certain points of its life cycle. Potential for few recent records.
High	The project area contains high-quality suitable habitat for the species, including appropriate vegetation classification, geology and landscape position. The project area forms part of a large area of habitat for this species which has not been subject to recent disturbance (i.e. clearing, fire). Potential for many recent records.	The project area contains suitable foraging and breeding resources for the species and occurs within the known species' distribution. The project area forms part of a large area of high-quality suitable habitat with abundant critical habitat elements. The project area is likely to support resident populations and may be visited by the species during regular seasonal movements or migration. Potential for many recent records.
Known	Species identified within the project area.	Species identified within the project area.

3.3 Field survey

Field survey techniques applied during the investigation of the survey boundary included:

- Rapid Data Point (RDP) survey (**Section 3.3.1.1**)
- Vegetation Integrity (VI) survey (**Section 3.3.1.2**)
- threatened flora searches (**Section 3.3.2.1**)
- fauna searches including habitat surveys and targeted searches (**Section 3.3.3**).

The following sections describe the survey techniques relevant to this investigation. Survey effort and locations are described in **Section 3.3** and **Figure 3-1.**

3.3.1 Vegetation

The classification and description of native vegetation was informed by the analysis of data from RDPs and VI surveys. Vegetation mapping was aided by the dual connection of RDPs and tree canopy species mapping. These survey techniques are further described in the following sections with results presented in **Section 4.2**.

3.3.1.1 Rapid Data Points

RDPs were collected at each proposed wind turbine location as well as opportunistically to aid vegetation boundary delineation, typing and condition analysis. Opportunistic RDP locations were selected to collect representational data and ground truth the findings of the desktop investigation as carried out in **Section 3.2.** Environmental variables considered when determining opportunistic RDPs included the following:

- existing land use
- slope and aspect
- landforms (e.g. riparian zones, ridges)
- vegetation classification.

Measures obtained represent a simplified dataset comparable to the BAM method. Dominant vascular flora species were recorded to provide a high-level estimate of dominant tree, shrub, grass, and herb species within a 10 m radius of the RDP. High-threat weed species were also identified. It is important to note that due to the location of the survey boundary and existing land uses, it was not possible to situate the RDP sites 50 m away from disturbances (i.e. roads, driveways, buildings). However, RDP locations are representative of the current condition of the vegetation within the survey boundary

3.3.1.2 Vegetation integrity

Vegetation Integrity plots (i.e. BAM plots) are undertaken in accordance with the BAM. A total of 21 BAM plots have been conducted so far, however additional BAM plots would be required during the EIS.

The BAM method involves estimating the vegetation composition, structure and function to determine the vegetation integrity. Flora species observed within the 20 x 20 m (400 metres squared [m^2]) plots were assigned to a growth form as listed in **Table 3-2** and given a score of abundance and coverage (also see **Plate 3-1).** High threat weed species were identified. The method used to measure these attributes is detailed in the BAM 2020). Vegetation condition scores comprising of a composition score, structure score, function score and Vegetation Integrity (VI) score were calculated using the BAM Calculator (BAM-C).

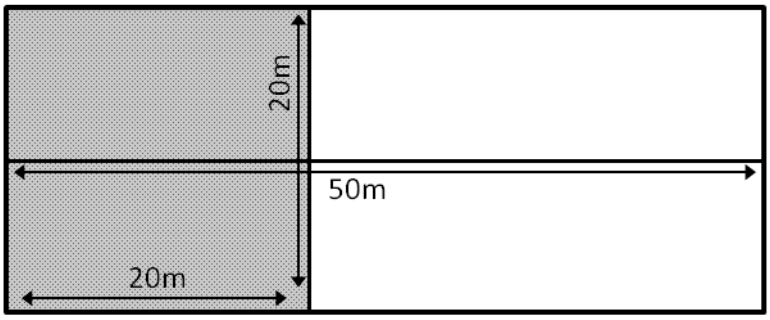


Plate 3-1 BAM plot dimensions

Table 3-2 BAM growth form groups and attributes

Composition (20 x 20-meter plot)	Structure (20 x 20-meter plot)	Function (20 x 50-meter plot)
a) Tree richness (TR)	a) Tree cover (TC)	a) Number of large trees (No.LT)
b) Shrub richness (SR)	b) Shrub cover (SC)	b) Tree regeneration (TR)
c) Grass and grass-like richness (GGR)	c) Grass and grass-like cover (GGC)	c) Tree stem size class (TSSC)
d) Forb richness (FR)	d) Forb cover (FC)	d) Total length of fallen logs (TLFL)
e) Fern richness (FeR)	e) Fern (cover (FeC)	e) Litter cover (1m^2 subplots x 5) (LC)
f) Other richness (OR)	f) Other cover (OC)	f) High threat exotic vegetation cover (THE)
		g) Hollow-bearing trees (HBT)

- **Vegetation structure:** The structural complexity and age structure of vegetation was quantified by counting the number of large trees (i.e. > 50 cm diameter at breast height [DBH]), presence of tree canopy species regeneration and tree stem size classes (i.e. presence of trees with a DBH of 5-9 cm, 10-20 cm, 20-30 cm, 30-50 cm, 50-80 cm and >80 cm). This was measured for the 1,000 m^2 plot
- **Hollow-bearing Trees:** The number of hollow-bearing trees were counted within the 1,000 m^2 plot
- **Fallen Log Length:** The total linear length of fallen logs exceeding 10 cm in diameter were calculated within the 1,000 m^2 plot

- **Litter Cover:** The per cent cover of dead litter cover was estimated in five, 1 m^2 quadrats in the 1,000 m^2 plot.

3.3.1.3 PCT identification

PCT identification was based on the results obtained from an analysis of rapid floristic survey data only and therefore is preliminary and subject to change following complete biometric plot analysis. A preliminary analysis of the survey data, matching outputs to PCTs in BioNet Vegetation Classification was performed using the following resources:

- PCT identification tool (BioNet Vegetation Classification application; NSW DCCEEW 2025c). This involved selecting known criteria such as general location, vegetation structure and/or dominant species present to identify the likely vegetation communities present within the project area
- State Vegetation Type Map (SVTM; NSW DCCEEW 2025f). Vegetation maps were utilised as a preliminary indicator of the PCTs that might occur within the project area.

3.3.1.4 Vegetation mapping

The assessment of broad condition zones was to stratify areas of the same PCT into a vegetation zone for the purpose of identifying preliminary vegetation mapping and ground truthing the SVTM. Additional surveys are required to finesse the vegetation mapping, particularly to differentiate PCTs with relatively small differences in species assemblage and structure.

Relatively homogenous land cover (i.e. vegetation zones) were visually delineated, from recent aerial imagery and assigned preliminary map units based on relevant regional vegetation mapping for investigation. Vegetation boundaries were refined, and condition classes defined to produce vegetation zones (i.e. PCT and condition state). Qualitative condition codes used to subcategorise PCTs are outlined in **Table 3-3**.

Table 3-3 PCT condition classes

Vegetation Condition Class	Description
High	Vegetation community generally resembles pre-European levels of condition, structure and overall integrity. Vegetation is resilient to weed invasion due to dominance of native species within the ground, shrub and canopy layers.
Good	Native canopy present. The understorey is dominated by natives (>50 % native cover). Vegetation condition is below benchmark value but above that defined for poor condition.
Moderate	Native vegetation in a structurally modified state, exemplified by an unnatural dominance of species in a non-characteristic stratum combined with the absence of characteristic species in the dominant strata (e.g. native grasslands derived from grassy woodlands, native shrublands derived from dry sclerophyll forests).
Poor	Understorey dominated by exotic species (i.e., > 50% exotic cover). Native shrub layer has been replaced by weeds.
Derived	No native canopy or shrub storey present, however ground cover dominant (i.e., >50% native cover) in native grasses. • Land with a vegetation integrity score <15 where the PCT is representative of an endangered or critically endangered ecological community
Disturbed/cleared	• Land with a vegetation zone has a vegetation integrity score <17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits), or is representative of a vulnerable ecological community • Land with a vegetation zone has a vegetation integrity score <20 where the PCT is not representative of a TEC or associated with threatened species habitat.

Vegetation zone extents were calculated estimated using GIS and reported. Where data gaps were identified, such as in locations that were unable to be surveyed, SVTM was relied upon, along with field data collected in adjacent areas.

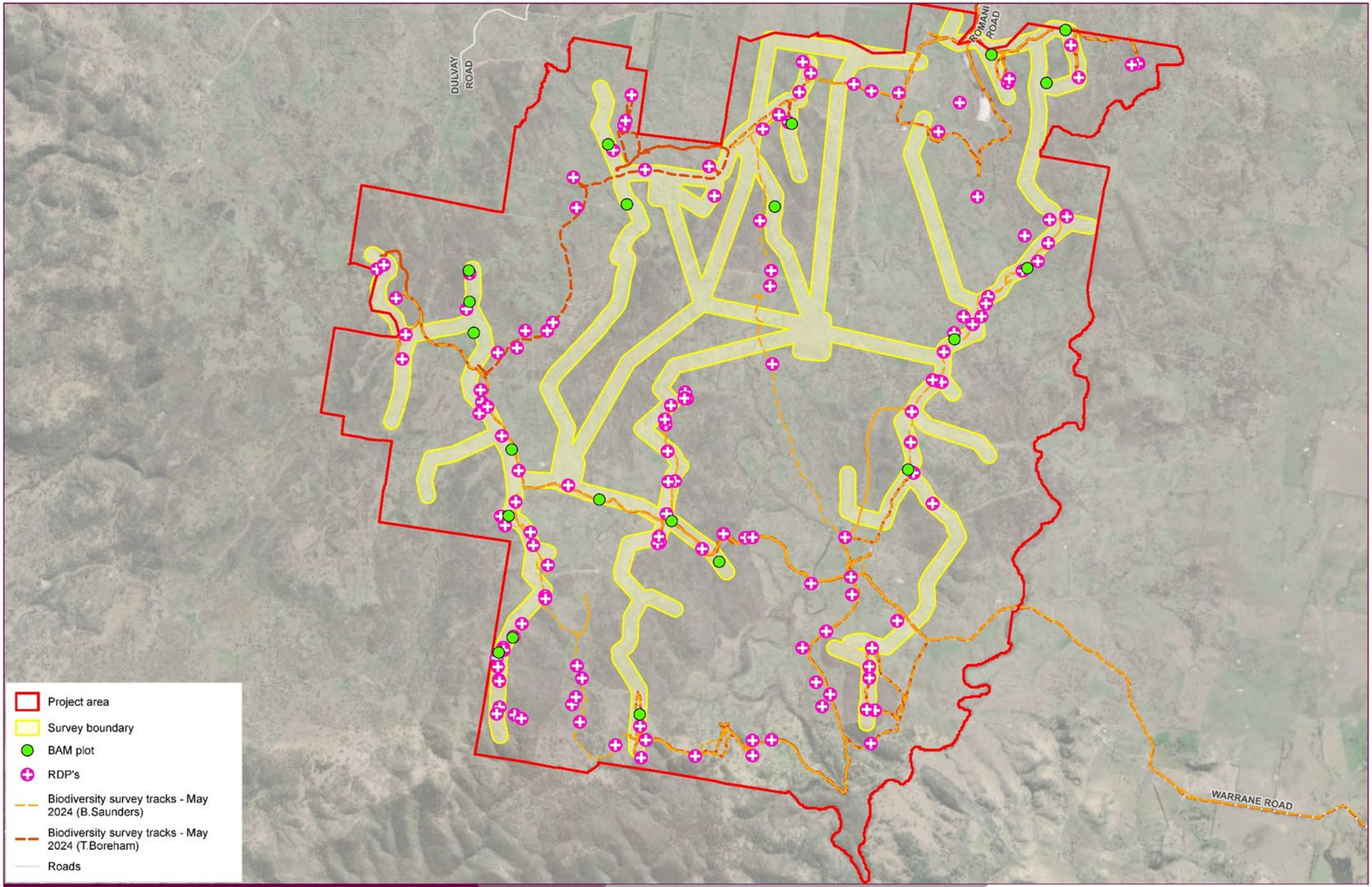


FIGURE 3-1 VEGETATION SURVEYS

1. This plan was prepared for the sole purposes of the Client for the specific Purpose of producing a photographic overlay plan. This plan is strictly limited to the Purpose and will not be used for any other application, purpose, use or matter. The plan is presented without the assumption of a duty of care to any other person other than the Client, and may not be relied on by a Third Party.

2. Without limiting paragraph 1 above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.

3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE: Veg Survey
VERSION: A

PROJECT PATH: C:\...\Origin\OneDrive - Tetra Tech, Inc\Archer+Tablelance_WestFarm_CONFIDENTIAL - RPS_MAP Geospatial intelligence Services\03. Projects\02_Biodiversity\OEENVSYD\15661_BiodiversityFigure.aprx

0 1 2 3 Km
SCALE 1:70,000
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWSS, RPS, Earthstar Geographics

3.3.2 Flora

3.3.2.1 Threatened flora searches

Habitat suitability for threatened flora was systematically and opportunistically assessed throughout the survey boundary in conjunction with RDP surveys. No formal targeted threatened flora surveys were undertaken as part of this assessment (**Section 4.4.2**).

3.3.3 Fauna

3.3.3.1 Fauna habitat survey

The nature and extent of fauna habitats within the survey boundary were opportunistically assessed in conjunction with RDP surveys. RDP assessments for threatened and native fauna included consideration of important indicators of habitat condition and complexity, including the occurrence of microhabitats such as tree hollows, fallen logs, bush rock, caves and crevices, manmade structures, riparian areas, wetlands and water bodies. Indirect indicators of fauna use of the survey boundary, such as droppings, diggings, footprints, scratches, nests, burrow paths and runways, were recorded. In conjunction with threatened species surveys, observations for koala activity (individual, scratch marks, scats etc) were searched for opportunistically (**Section 4.5**).

3.3.3.1.1 Hollow-bearing trees

Hollow-bearing trees were opportunistically mapped. For each of these trees, the number and class of hollow were quantified. Hollow diameter classes are listed below:

- Class 1: <5 cm (typically used by microbats, small birds and arboreal mammals)
- Class 2: 5-20 cm (typically used by small to medium parrots and medium to large arboreal mammals)
- Class 3: >20 cm (typically used by medium to large parrots, owls and large arboreal mammals).

3.3.3.1.2 Non-specific surveys

Opportunistic sightings obtained from active searches used secondary indications (scratches, scats, diggings, tracks etc.) and direct observation to census resident fauna. Observations recorded included:

- distinctive scats left by mammals
- scratch marks made by various types of arboreal animals
- nests made by various birds
- feeding scars on Eucalyptus trees made by gliders
- whitewash, regurgitation pellets and prey remains from owls
- aural recognition of bird and frog calls
- skeletal material of vertebrate fauna
- searches beneath rocks and logs for reptiles and frogs
- chewed *Allocasuarina* cones – indicative of foraging Glossy Black-cockatoo (*Calyptorhynchus lathami*).

3.4 Weather and timing

Vegetation survey effort performed as part of this investigation is summarised in **Table 3-4**.

Table 3-4 Vegetation survey timing, effort and weather conditions (Armidale Tree Group Nursery: 056037, BOM 2025)

Survey undertaken (e.g., method / targeted species)	Date	Temperature Minimum (ºC)	Temperature Maximum (ºC)	Rainfall (mm)
RDP's and observational fauna survey	13/05/2024	3.9	15.5	0.0
	14/05/2024	2.4	19.6	0.0
	15/05/2024	2.9	20.8	0.2
	16/05/2024	6.7	19.2	0.0
	17/05/2024	7.7	17.5	0.0
BAM plots	21/01/2025	9.2	28.6	0
	22/01/2025	14.4	31.6	0
	23/01/2025	16.2	28.2	6

3.5 Limitations

Limitations associated with this assessment are presented in the following sections. The limitations have been considered specifically in relation to threatened species assessments, results, and conclusions.

3.5.1 Data availability and accuracy

The collated threatened flora and fauna species records obtained from the BioNet Database for the region are known to vary in accuracy and reliability due to the reliability of information provided to the CPHR division of NSW DCCEEW, and/or the need to protect specific threatened species locations. For the purposes of this preliminary BAR this information has been considered to have an accuracy of plus and/or minus 1 km, however for some threatened species, records may be denatured by up to 2 km.

Similar limitations are known to exist with the EPBC Protected Matters Search Tool.

Data recorded by RPS during the survey period has been gathered using Garmin 64s handheld GPS units with up to three metre accuracy, Map Grid of Australia (MGA) 2020 (MGA 20-GDA 94) Zone 56.

3.5.2 Survey boundary access

Due to the scale of the project area and condition of access tracks, only 54 of the 76 turbine locations were accessed. As such, the remaining 22 wind turbine locations have been limited to a desktop assessment only. Similarly, areas of the survey boundary were added following the completion of surveys in May 2024 and January 2025, with results for areas not surveyed (as displayed in **Figure 3-1**) limited to a desktop assessment. For this report, the vegetation mapped by the SVTM and any associated Threatened Ecological Community was assumed to be present per the precautionary principle.

4 BIODIVERSITY ASSESSMENT

4.1 Landscape context

An overview of the landscape context relevant to the project area is outlined in **Table 4-1.**

Table 4-1 Landscape context summary

Feature	Description
IBRA	Bundarra Downs subregion of the New England Tablelands Bioregion (**refer to Section 4.1.1**)
New South Wales (Mitchell) Landscapes	The project area intersects with three landscapes (refer to **Section 4.1.2**): • Dingo Spur Meta-sediments • Uralla Basalts and Sands • Moonbi - Walcha Granites.
Topography	The project area has an undulating topography with elevation ranging from 960 m to 1,250 m Australian Height Datum (AHD) (refer to **Section 4.1.3**).
Rivers, streams, estuaries and dams.	Boorolong Creek run from the northeast corner of the project area, through the centre before exiting toward the southeast. This specific creek is not mapped as KFH. There are a number of dams within the project area, the largest being Rileys Creek in the north-eastern corner of the Project area (refer to **Section 4.1.7**).
Soils	The project area intersects with three soil classifications, including: • Kandasols • Kurosols • Rudosols. Refer to **Section 4.1.3** for a description of each soil landscape.

4.1.1 Bioregion (IBRA7)

The majority of the project area is located within the Bundarra Downs subregion of the New England Tablelands Bioregion (**Figure 4-1**) described as follows (NPWS 2003):

The New England Tablelands bioregion lies between the North Coast and Nandewar bioregions in northeast New South Wales, extending north just into Queensland. In New South Wales, the bioregional boundary extends from north of Tenterfield to south of Walcha and includes towns such as Armidale and Guyra, with Inverell just outside the boundary.

The bioregion includes parts of the MacIntyre, Clarence, Gwydir, Macleay, Namoi and Manning River catchments. The bioregion lies mainly in the temperate to cool temperate climate zone of New South Wales, which is characterised by warm summers, with uniform rainfall generally occurring in summer. A warmer, sub-humid climate is present in the northeastern edge of the bioregion on the boundary of the North Coast. The New England Tableland Bioregion is a stepped plateau of hills and plains with elevations between 600 and 1500 m on Permian sedimentary rocks, intrusive granites and extensive Tertiary basalts. Rainfall, temperature and soils change with topography and bedrock, and the vegetation is very diverse with a high degree of endemism.

The New England fold belt in the northeast of the state is composed of sedimentary rocks of Carboniferous and Permian age that were extensively faulted during a period of rapid continental plate movement associated with granite intrusions in the late Carboniferous. Much of the bedrock is now overlain by Tertiary basalt flows rarely exceeding 100 m in thickness that lie on river gravels and sands or on lake sediments. As the basalt erodes the sands are exposed and have been mined for the sapphires, diamonds, gold and tin ore that they contain.

The Bundarra Downs subregion geology consists of Lower Carboniferous mudstones, lithic sandstones and conglomerates. The landscape is characterised as the upper catchment of the Gwydir River, consisting of undulating to low hilly country with dendritic drainage pattern. To the east of Bundarra Downs, hills rise along granite metamorphic contact ridges.

Typical soils are harsh texture contrast soils, generally yellow, thinner and stonier on steep slopes. Some areas of slightly saline soils.

In the west, dominant vegetation includes *Eucalyptus albens* (White Box), *Eucalyptus microcarpa* (Grey Box), *Eucalyptus melliodora* (Yellow Box), and *Eucalyptus blakelyi* (Blakely's Red Gum), with *Eucalyptus sideroxylon* (Mugga Ironbark) on stony ridges and *Eucalyptus camaldulensis* (River Red Gum) along streams. In the east, the vegetation is dominated by *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus dealbata* (Tumbledown Red Gum), *Eucalyptus albens* (White Box), *Eucalyptus melliodora* (Yellow Box), *Callitris endlicheri* (Black Cypress Pine) and *Brachychiton populneus* (Kurrajong).

4.1.2 New South Wales (Mitchell) Landscape

The project area intersects with three Mitchell Landscape units, the majority of which is the Dingo Spur Meta-sediments. The ridgeline in the most south-western corner intersections with the Uralla Basalts and Sands landscape, whilst the ridgeline in the most south-eastern corner of the project area intersects with the Moonbi – Walcha Granites landscape (**Figure 4-2**). The landscapes are described in **Table 4-2** below (NPWS 2002).

Table 4-2 New South Wales (Mitchell) Landscapes (NPWS 2002) of the project area

NSW Mitchell Landscape	Landscape, geology, and rainfall	Soil	Vegetation
Dingo Spur Meta-sediments	Steep ranges and hills intersected by a dendritic drainage pattern leading into deep gorges with high waterfalls on the Great Escarpment, extends west onto the tablelands. Gorges incised into faulted, steep dipping Devonian quartzose sandstone, greywacke, massive argillite and slate. Tablelands area on Permo-Carboniferous mudstone, lithic sandstone, tuff, slate, hornfels and some schist. General elevation 300 to 1400m, local relief 600m.	Shallow stony loam on steep scree slopes with moderate organic content. Shallow gradational loam and sandy loam elsewhere with deeper uniform profiles in low valleys.	A very complex vegetation environment encompassing coastal closed forests, dry hardwood forests and cold high plateau components. Open forest of New England blackbutt (*Eucalyptus andrewsii ssp. campanulata*), messmate (*Eucalyptus obliqua*), Silvertop stringybark (*Eucalyptus laevopinea*) with New England peppermint (*Eucalyptus cinerea*), Snow gum (*Eucalyptus pauciflora*) and Black sallee (*Eucalyptus stellulata*) in high cool environments. Dry closed forest species such as Shatterwood (*Backhousia sciadophora*), Giant stinging tree (*Dendrocnide excelsa*), Shiny-leaved stinging tree (*Dendrocnide photinophylla*), and Yellow tulip (*Drypetes australasica*) in lower moister environments and in patches on scree slopes where protected from fire. River oak (*Casuarina cunninghamiana*) along all streams and dry hardwood forests of; Yellow box (*Eucalyptus melliodora*), Blakely's red gum (*Eucalyptus blakelyii*), Broad-leaved stringybark (*Eucalyptus caliginosa*) and Cabbage gum *(Eucalyptus amplifolia)* on valley floors.
Uralla Basalts and Sands	Undulating stepped high plateau on Tertiary basalt with underlying fluvial sand and gravel resting on an exhumed landscape of Permian granites. General elevation 950 to 1250m, local relief 150m.	Red structured loams on ridges, brown structured gradational clay loams on slopes, dark self-mulching clays in valleys and red or yellow earth on sands and exposed granite.	Open forest or woodland of Manna *gum (Eucalyptus viminalis)* with some Roughbarked apple *(Angophora floribunda).* Snow gum *(Eucalyptus pauciflora)* and Black sallee *(Eucalyptus stellulata)* on cold valley floors and exposed peaks. Silvertop stringybark *(Eucalyptus laevopinea),* Yellow box *(Eucalyptus melliodora)* and Blakely's red gum *(Eucalyptus blakelyii)* on lower elevations in the west.
Moonbi - Walcha Granites	Complex of steep ranges, plateau and rounded peaks with abundant large tors and rock domes on Permian	Soils vary with rock type, depth of alteration and topographic position. Thin gritty loams near rock	Vegetation also varies and includes open forest and woodland of; White cypress pine *(Callitris glaucophylla),* White box *(Eucalyptus albens),* Caley's ironbark *(Eucalyptus caleyi),* Tumbledown red gum

NSW Mitchell Landscape	Landscape, geology, and rainfall	Soil	Vegetation
	granite, granodiorite and porphyry, general elevation 500 to 1320m, local relief 100 to 300m with the plateau at an average of 1000 to 1150m.	outcrop on crests, uniform to gradational earths on gentle slopes and red and yellow texture-contrast profiles in valleys.	*(Eucalyptus dealbata),* Silver-leaved ironbark *(Eucalyptus melanophloia),* Yellow box *(Eucalyptus melliodora),* Orange gum *(Eucalyptus prava),* Silvertop stringybark *(Eucalyptus laevopinea),* Western golden wattle *(Acacia decora),* Lightwood *(Acacia implexa),* Kangaroo thorn *(Acacia paradoxa),* and Hickory wattle *(Acacia obliquinervia)* on lower western slopes. *Prostanthera nivea - Acacia viscidula* shrubland adjacent to rock outcrop with; Orange gum, Black cypress pine *(Callitris endlicheri),* Tumbledown red gum, Kurrajong *(Brachychiton populneus),* and Port Jackson fig *(Ficus rubiginosa).*

4.1.3 Topography

Topography within the project area ranges from 960 m to 1,250 m AHD. Three main ridgelines run south to north through the middle of the project area with the south-west of the project area having some of the higher peaks. Terrain is predominantly undulating with some flat land occurring to the east.

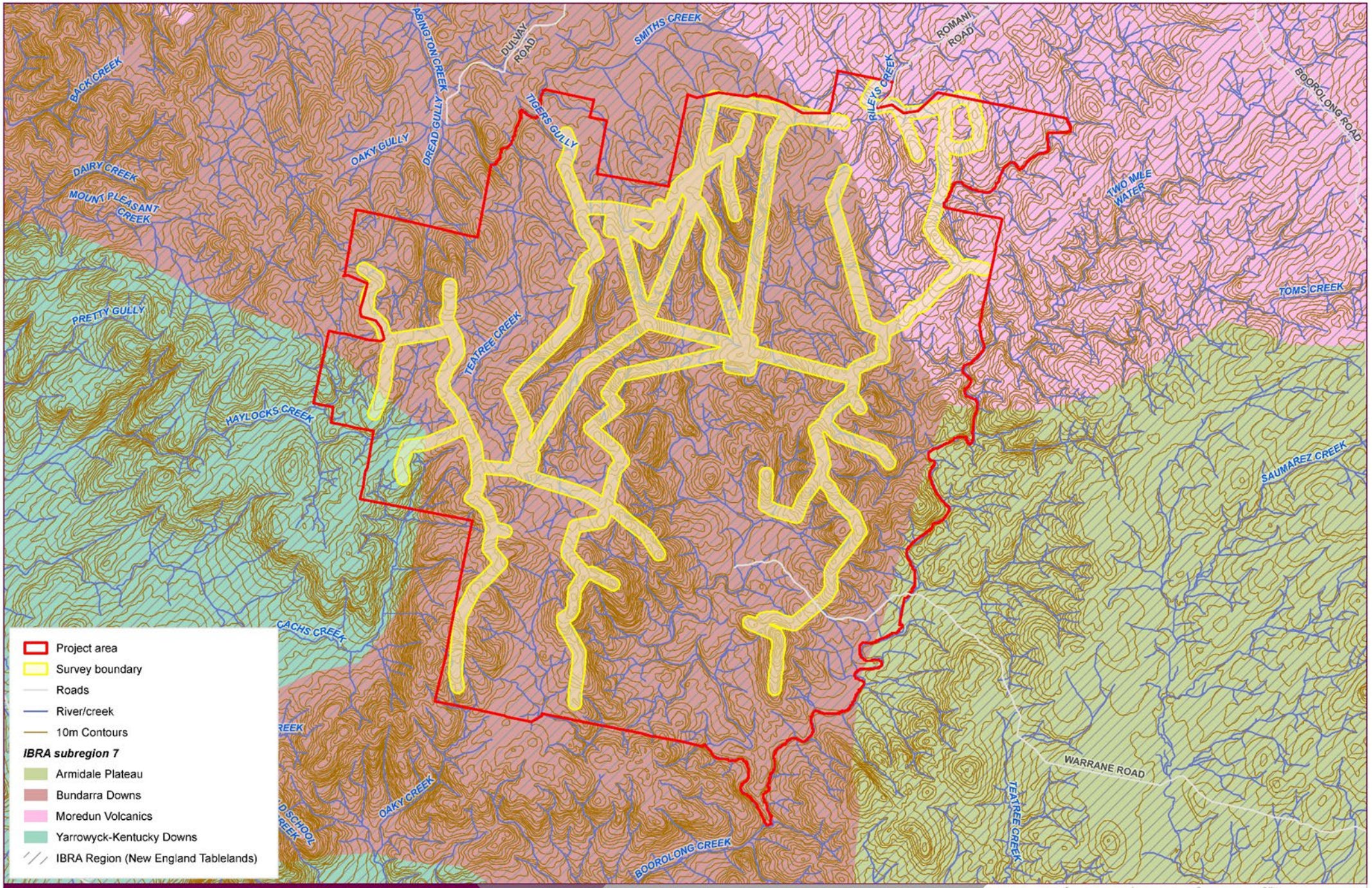


FIGURE 4-1 IBRA BIOREGION

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OENVESYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE:IBRA Bioregions
VERSION:A

0 1 2 3 Km
SCALE 1:70,000
A4 SIZE / Projection: GDA2020 MGA Zone 55

DATA SOURCES
Client, RPS, NSWSS, RPS, The IBRA 7 update program was coordinated by Auricht Projects in cooperation with Australian Government and State/Territory environment and conservation agencies.

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3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

PROJECT PATH: C:_AzuriteOneDrive - Tetra Tech, Inc\Northern Tablelands_WindFarm_CONFIDENTIAL - RPS_MP\Geospatial intelligence Services\05_Projects\02_Biodiversity\OENVSYD-5661_Biodiversity\Figure.aprx

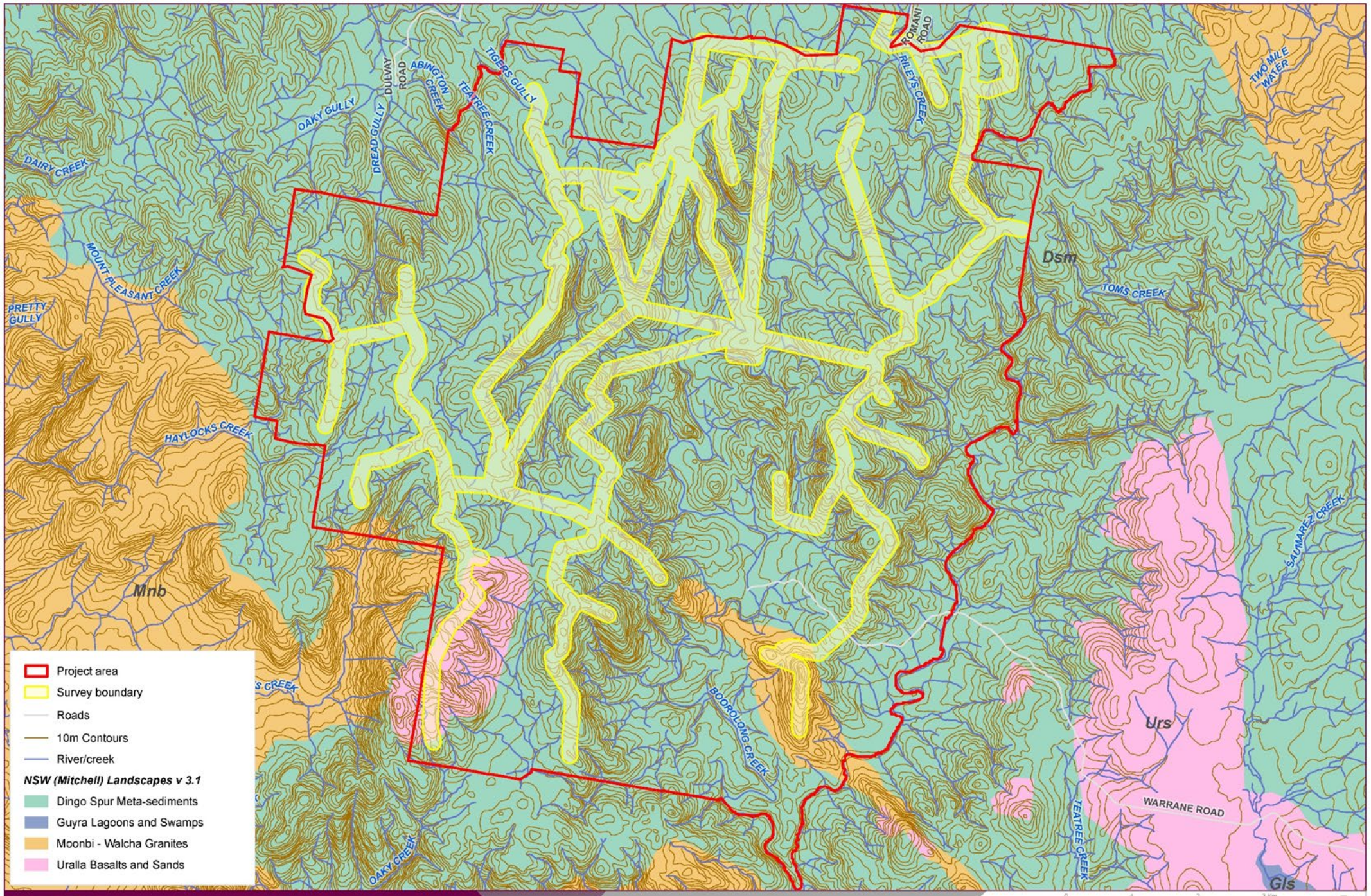


FIGURE 4-2 NSW (MITCHELL) LANDSCAPE

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CLIENT: Origin Energy Pty Ltd
PROJ: AU213015881
LOCATION: Biodiversity (NTWF)

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE: Mitchell Landscape
VERSION: A

DATA SOURCES
Client, RPS, NSWSS, RPS

PROJECT PATH: C:\...\Tetra Tech, Inc\Northern Tablelands Wind Farm - CONFIDENTIAL - RPS_MP\Geospatial Intelligence Services\05_Projects\02_Biodiversity\GREENSKY\5061_BiodiversityFigure.aprx

4.1.4 Soils

Soil profiles within the project area comprise of soils described by the Greater Soil Group as Yellow Earths, Red-Yellow Podzolic, Yellow Podzolic Soils and Lithosols Soils. The Australian Soil Classification describe the majority of the project area as Kandasols on the ridges and Kurosols in the valleys. A small portion of the project area in the south-western corner is mapped as Rudosols and Kurosols (see **Figure 4-3**).

Greater Soil Group:

- Yellow Earths – occurs predominately on ridgelines. Soils become gradually more clayey with depth, are weakly structured and are not as well drained
- Red-Yellow Podzolic Soils – a poor soil with many limitations, including low soil pH, low clay content, low aggregate stability, low nutrient content, and susceptibility to compaction. Organic matter is the only indicator of fertility in these soils. The soil is highly erodible and more acidic on the surface than subsoil
- Yellow Podzolic Soils - less fertile soils that occur within the valleys predominately on the western side of the project area
- Lithosols- occur on steep slopes in the west of the project area. A type of azonal soil consisting chiefly of unweathered or partly weathered rock fragments, usually found on steep slopes
- Soloths – Occurs along Cachs Creek in the west of the project area. Similar to a solodic soil but acidic throughout the profile. Tends to be a more typical soil of the humid regions where the exchangeable cations in the B Horizon of the solodised soils have been leached out.

Australian Soil Classification

- Kandasols – red, yellow and grey massive earths. They generally have a sandy to loamy-surface soil, grading to porous sandy-clay subsoils with low fertility and poor water-holding capacity
- Kurosols – soils with a strong increase in clay content between topsoil and subsoil, with strongly acidic subsoils. They are strongly acidic (pH below 5.5)
- Rudosols – typically acidic with variable nutrient availability, good infiltration and low water holding characteristics. Rudosols include very shallow rocky and gravelly soils across rugged terrain.

Land soil capability within the project area is mapped as having very severe limitations across grazed landscapes and moderate to severe limitations within some vegetated zones. Acidification is mapped as having severe limitations across a large proportion of the project area which has been previously cleared for grazing.

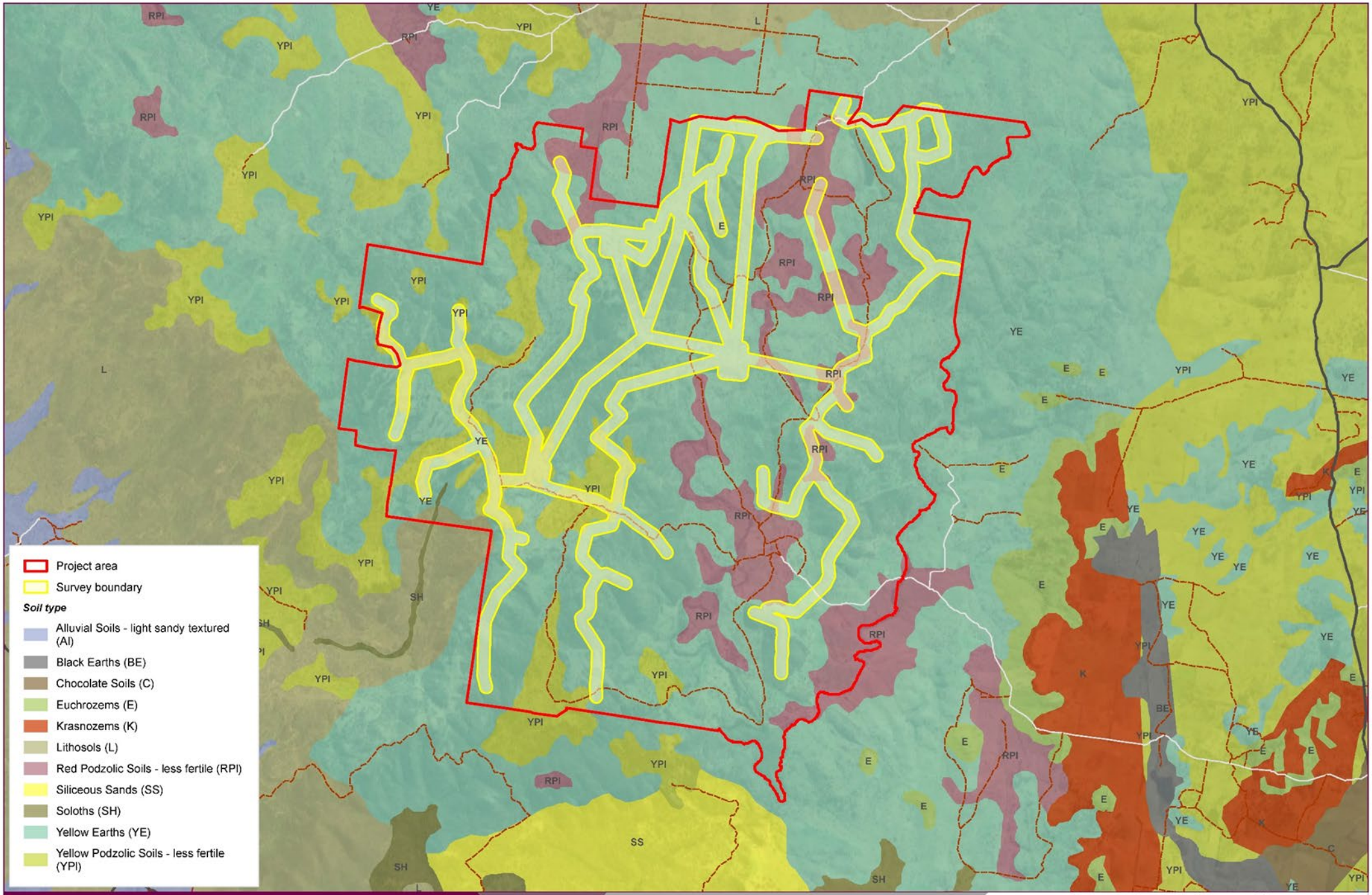


FIGURE 4-3 SOIL LANDSCAPES

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CLIENT: Samsung
PROJ: AU213014783
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE: Soil Landscape
VERSION: B

SCALE 1:75,000
A4 SIZE / Projection: GDA2020 MGA Zone 56

0 1 2 3 Km

DATA SOURCES
Client, RPS, NSWSS, RPS, Google, Department of Planning, Industry and Environment (2020) Soil Group (GSG) Soil Type map of NSW - Version 4.0, Department of Planning, Industry and Environment, Parramatta.

PROJECT PATH: C:\...\Tetra Tech, Inc\Northern Tablelands Wind Farm - CONFIDENTIAL - RPS_MAP Geospatial Intelligence Services\05_Projects\02_Biodiversity\GREENSKY 5061_Biodiversity\Figures.aprx

4.1.5 Connectivity

Vegetation within the locality has been subject to historic grazing and clearing for agriculture as early as the 1830s (NSW Environment and Heritage 2003), which has subsequently led to gaps in connectivity and fragmentation within the landscape. However, within the project area there is still a large expanse of land which provides connectivity for fauna species, particularly along the vegetated ridgelines connecting the northern extent of the project area to the south.

There are two main ridgelines which begin at the northern boundary and provide a large buffer of vegetation to allow mobile fauna species to transverse south into the Bulagaranda Aboriginal Area (formerly known as the Mount Yarrowyck Nature Reserve). Riparian vegetation along Boorolong Creek consists of patches of riparian vegetation particularly toward the south. This is important for less mobile amphibious species such as frogs which rely on patches of riparian vegetation to disperse throughout the landscape.

A greater proportion of cleared agricultural land occurs throughout the eastern portion of the project area, although scattered paddock trees within the open grassy woodland enable mobile species such as birds, bats and some mammals to disperse throughout the landscape (see **Figure 4-4**).

4.1.6 Groundwater Dependent Ecosystems

All watercourses within the project area are a part of the Gwydir River catchment area. Medium potential Groundwater Dependent Ecosystems occur along Boorolong Creek and Toms Creek consisting of Plant Community Type 84 River Oak - Rough-barked Apple - red gum - box riparian tall woodland (wetland) of the Brigalow Belt South and Nandewar Bioregions.

4.1.7 Rivers and streams

All watercourses within the project area are a part of the Gwydir River catchment area (see **Figure 4-5**). Within the project area there are several named and unnamed watercourses which drain into Gwydir / Rocky River in the south, and Abington Creek in the north of the project area. There are also numerous ephemeral drainage lines present, and some farm dams scattered across the project area, the largest being Rileys Creek in the northeastern corner of the project area.

'Stream order' is used to describe the hierarchy of streams from the top to the bottom of a catchment. The Strahler stream order system is used to describe the hierarchy of streams from the top to the bottom of a catchment is based on the confluence (joining) of streams of the same order (DPE 2022). Watercourses identified within the project area and their Strahler stream order are listed below:

- Abington Creek (perennial) – 5
- Boorolong Creek (perennial) – 6
- Toms Creek (perennial) – 5
- Cachs Creek (intermittent) – 2
- Dread Gully (intermittent) – 3
- Haylocks Creek (intermittent) – 2
- Rileys Creek (intermittent) – 4
- Teatree Creek (intermittent) – 3
- Tigers Gully (ephemeral) – 1.

Boorolong Creek flows into the Gwydir River approximately 10 km south of the project area. Boorolong Creek was important habitat for threatened species such as the Boorolong Frog (*Litoria booroolongensis*) which is now locally extinct (NSW Environment and Heritage 2020).

4.1.7.1 Key Fish Habitat

The project area contains mapped FM Act Key Fish Habitat (KFH) for the Murray Darling Basin North. KFHs coincides with the third, fourth and fifth Strahler order streams within the project area. Tributaries of Tigers

Gully, Teatree Creek, Dread Gully and Abington Creek are KFH (NSW DPI 2018) which flow in a north-westerly direction. A small section of Haylock's Creek is mapped as KFH which flows in a south-westerly direction. Boorolong Creek and Toms Creek are the main permanent waterways intersecting the centre and eastern border of the project area. They are mapped as sixth and fifth Strahler order streams respectively and flow into the Gwydir River.

Sections of Rileys Creek KFH, which flows into Boorolong Creek, intersects the survey boundary in the north-eastern section of the project area. Watercourses would require buffers to avoid development impacts.

4.1.7.2 Wetlands

No wetlands are mapped within the project area, although there are several farm dams which supply a water resource to stock grazing over the land. The largest of the dam occurs along a section of Rileys Creek. The water body spans approximately 1 km by 150 m at the widest point. Farm dams may also provide habitat for a range of aquatic bird species which were observed utilising the dams during survey boundary investigations. The nearest important wetland is Dumaresq Dam Reserve (New England Wetlands NSW023) located approximately 15 km west of the project area The closest wetland is Little Llangothlin Nature Reserve, located 40 km north-east of the project area. Little Llangothlin Nature Reserve is a Ramsar wetland, its significance due to the wetland being one of the few high-altitude freshwater lagoons in New South Wales in near-natural condition.

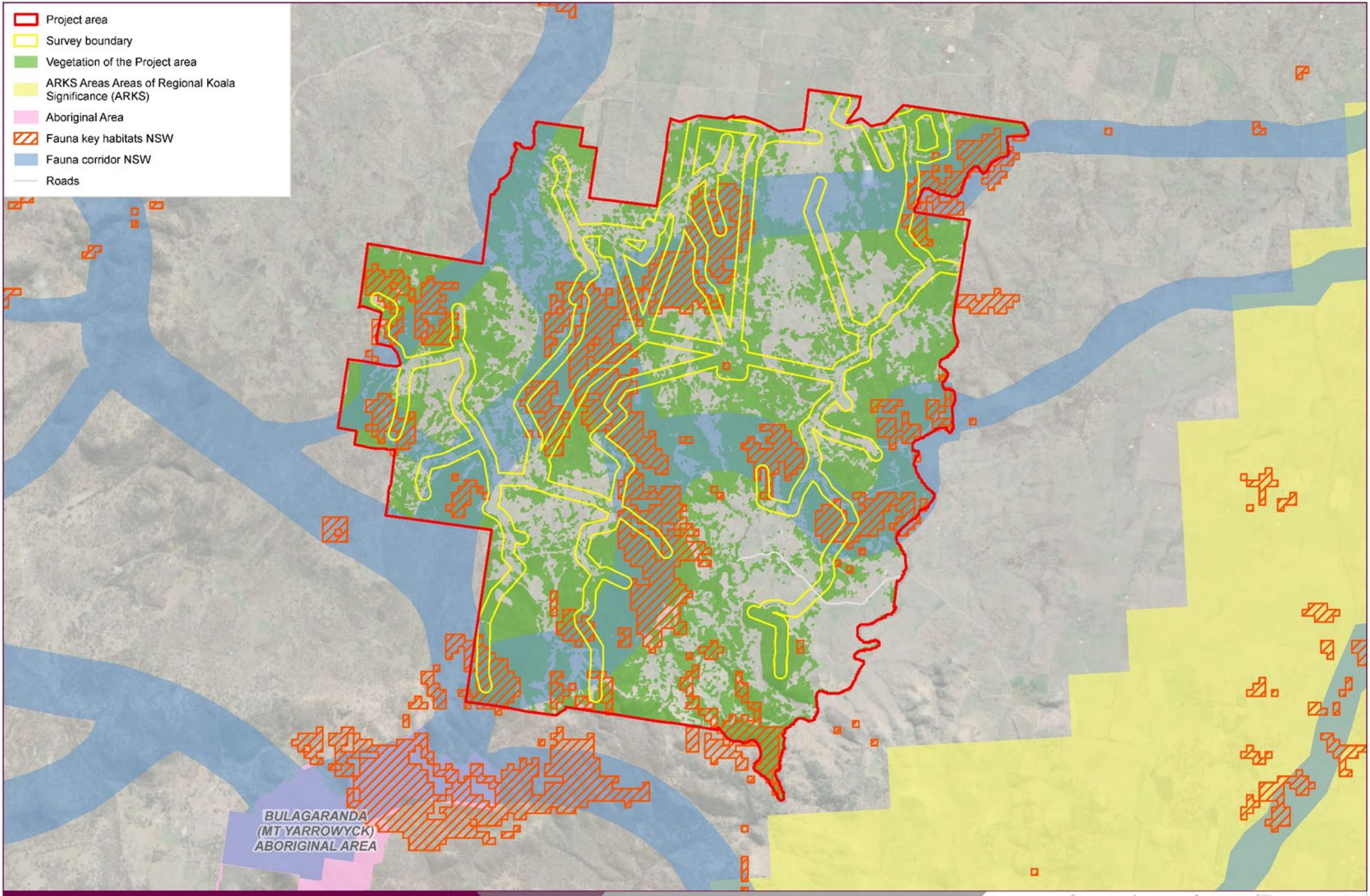


FIGURE 4-4 CONNECTIVITY

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE: Connectivity
VERSION: A

0 1 2 3 Km
SCALE 1:75,000
A4 SIZE / Projection: GDA2020 MGA Zone 56

DATA SOURCES
Client, RPS, NSWSS, RPS, Earthstar Geographics

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PROJECT PATH: C:\Users\OneDrive - Tetra Tech, Inc\Archer+Tablelands_WindFarm_CONFIDENTIAL - RPS_MAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEENVSYD-15661_Biodiversity\Figure.aprx

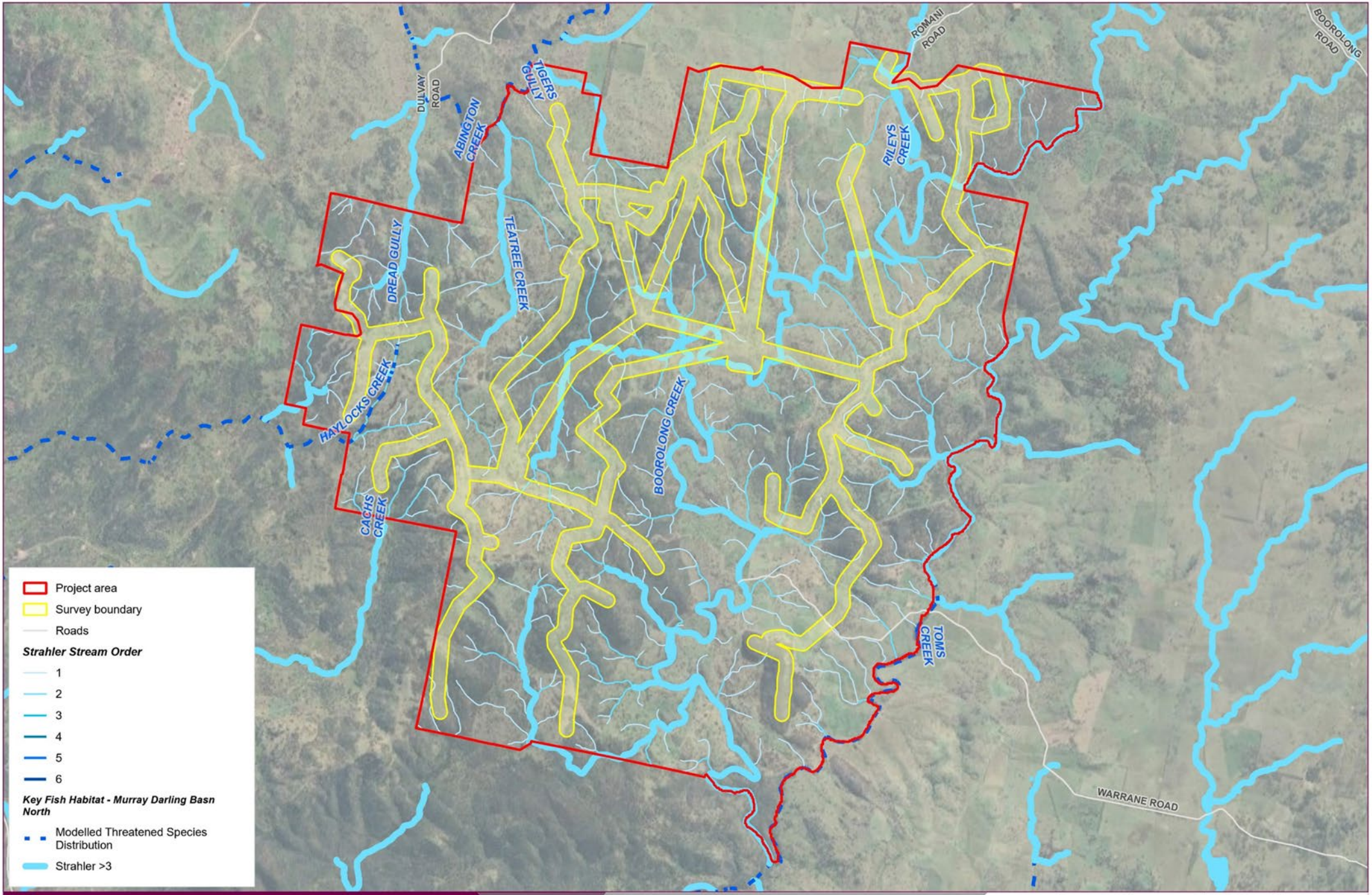


FIGURE 4-5 HYDROLOGY

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CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 22/08/2025
MAP FILE: Hydrology
VERSION: A

0 1 2 3 Km
SCALE 1:65,000
A4 SIZE / Projection: GDA2020 MGA Zone 55

DATA SOURCES
Client, RPS, NSWSS, RPS, Google, © State of New South Wales through Department of Primary Industries and Regional Development 2025

PROJECT PATH: C:_AzureOneDrive - Tetra Tech, Inc\Northern Tablelands_WindFarm_CORFIDENTIAL - RPS_AAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEENVSYD15661_Biodiversity\Figure.aprx

4.1.8 Important areas

4.1.8.1 Biodiversity values

Clause 7.3(3) of the Biodiversity Conservation Regulation 2017 describes 11 types of land the Environment Agency Head may include on the BV Map.

The project area contains mapped biodiversity values which are associated with the following categories:

- Old Growth Forests – Old growth forests are currently defined as an ecologically mature forest where the effects of disturbances are now negligible
- Biodiverse riparian land – Biodiverse riparian land is land within 20 m of a bed or bank of a named natural watercourse or waterbody
- Threatened species or communities with potential for serious and irreversible impacts.

4.1.8.2 Areas of outstanding biodiversity value

Areas of outstanding biodiversity value (AOBV) are declared under the BC Act to identify, highlight and effectively manage sites that make significant contributions to the persistence of biodiversity in New South Wales, Australia and globally. There are four AOBV in New South Wales (NSW DCCEEW 2024c):

- Gould's Petrel – critical habitat declaration
- Little penguin population in Sydney's North Harbour – critical habitat declaration
- Mitchell's Rainforest Snail in Stotts Island Nature Reserve – critical habitat declaration
- Wollemi Pine – critical habitat declaration.

No registered AOBVs occur within the project area or surrounds. No impacts to the above AOBV are expected as a result of the project.

4.1.8.3 Wetlands of national environmental significance (Ramsar)

The closest Ramsar Wetland is the Little Llangothlin Nature Reserve, located 40 km north-east of the project area. Little Llangothlin Nature Reserve is a Ramsar wetland, its significance due to the wetland being one of the few high-altitude freshwater lagoons in New South Wales in near-natural condition. Gwydir Ramsar wetlands are also located 230 km north-west from the project area.

4.1.8.4 BAM important habitat mapping

No important areas for the Swift Parrot, Regent Honeyeater, Migratory Shorebird or Plains Wanderer important habitat mapping occurs within the project area. Regent Honeyeater important habitat mapping is located approximately 800 m west of the project area (see **Figure 4-6**).

4.1.9 State Environmental Planning Policy (Biodiversity and Conservation) 2021

State environmental planning policy for koala habitat protection is contained in two chapters of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021*:

- Chapter 3 ‘Koala habitat protection 2020’ applies to rural zoned land (RU1 Primary Production, RU2 Rural Landscape and RU3 Forestry) in 74 local government areas (LGAs)
- Chapter 4 ‘Koala habitat protection 2021’ applies to the remaining zones in 74 LGAs, and to all zones in Metropolitan Sydney (Blue Mountains, Campbelltown, Hawkesbury, Ku-ring-gai, Liverpool, Northern Beaches, Hornsby, Wollondilly) and the Central Coast.

Chapters 3 and 4 of the *SEPP (Biodiversity and Conservation) 2021* aims to encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a

permanent free-living population over their present range and reverse the current trend of koala population decline by:

- requiring the preparation of plans of management before development consent can be granted in relation to areas of core koala habitat
- encouraging the identification of areas of core koala habitat
- encouraging the inclusion of areas of core koala habitat in conservation zones.

The Uralla and Armidale Regional LGAs are listed in Schedule 2 of the *SEPP (Biodiversity and Conservation) 2021*, therefore, Chapter 3 'Koala habitat protection 2020' of the SEPP applies. The project area occurs within the Northern Tablelands koala management area. Additionally, koala use trees listed in Schedule 3 of the SEPP were identified within the project area including:

- *Angophora floribunda*
- *Eucalyptus blakelyi*
- *Eucalyptus calignosa*
- *Eucalyptus laevopinea*
- *Eucalyptus melliodora*
- *Eucalyptus nova-anglica*
- *Eucalyptus youmanii.*

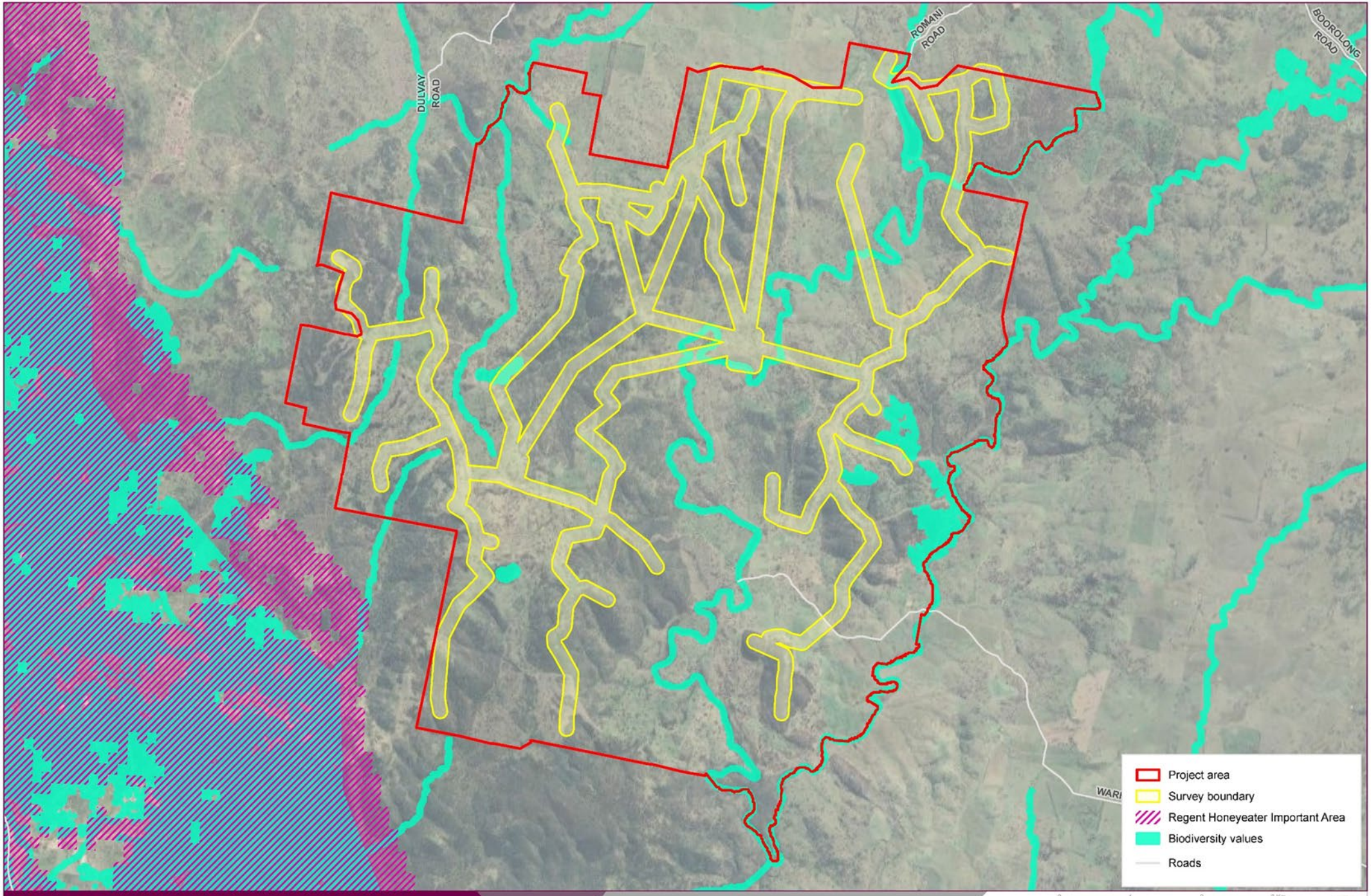


FIGURE 4-6 BAM IMPORTANT AREAS

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2. Without limiting paragraph 1 above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.

3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15681
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE: BAM Important Area
VERSION: A

0 1 2 3 Km
SCALE 1:65,000
A4 SIZE / Projection: GDA2020 MGA Zone 55

DATA SOURCES
Client, RPS, NSWSS, RPS, Google

PROJECT PATH: C:\Users\OneDrive - Tetra Tech, Inc\Armidale\Tablelance_WindFarm_CONFIDENTIAL - RPS_MAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEENVSYD-5661_Biodiversity\Figure.aprx

4.1.10 Draft Native Vegetation Regulatory map

The draft native vegetation regulatory (NVR) map displays all available categories identified in the LLS Act. This includes:

- Category 1 – Exempt Land (draft)
- Category 2 – Regulated Land (draft)
- Category 2 – Vulnerable Regulated Land (in-force)
- Category 2 – Sensitive Regulated Land (in-force)
- Areas where Category 2 – Sensitive and Vulnerable Regulated Lands overlap (in-force).

Mapping of Category 2 – Vulnerable Regulated Land and Category 2 – Sensitive Regulated Land once finalised would legally restricts land clearing in those areas across NSW and should be considered it when making decisions about native vegetation management. The project area consists of:

- Category 1 – Exempt Land – located within previously cleared areas in the valleys that exhibit existing disturbance for grazing. This is the second most dominant category in the survey boundary
- Category 2 – Regulated Land – occurs across the majority of the project area on slopes and ridgetops. This is representative of partially cleared to relatively intact woodland areas across the project area. This is the most dominant category in the survey boundary
- Category 2 – Vulnerable Regulated Land – occurs along riparian habitats and intact woodland on steep slopes. This occurs where the survey boundary crosses riparian areas and within intact woodland in the south-west and south-east of the survey boundary
- Category 2 – Sensitive Regulated Land – occurs in two small patches in the centre west of the project area, and a larger patch in the centre east of the project area
- Category 2 – Sensitive and Vulnerable Regulated Lands occur where the above two categories overlap.

The NVR map would require formal update and assessment following PCT mapping refinement for the project area.

4.1.10.1 Historical imagery

Historical imagery from 1980 shows there has been extensive historical clearing pre-dating 1990 (refer **Plate 4-1)**. Category 1 - Exempt Land category applies to land that was cleared prior to 1990. Generally, the current extent of clearing is similar to the 1980 extent of clearing, though forest regrowth has occurred. Some additional clearing is evident west of Rileys Creek dam, and construction of the dam has occurred since 1980.



Plate 4-1 Historical imagery from 3/08/1980 (left; New South Wales Spatial services Department of Customer Service) and recent imagery from Google Airbus 18/03/2023–24/01/2024 (right; Google 2025)

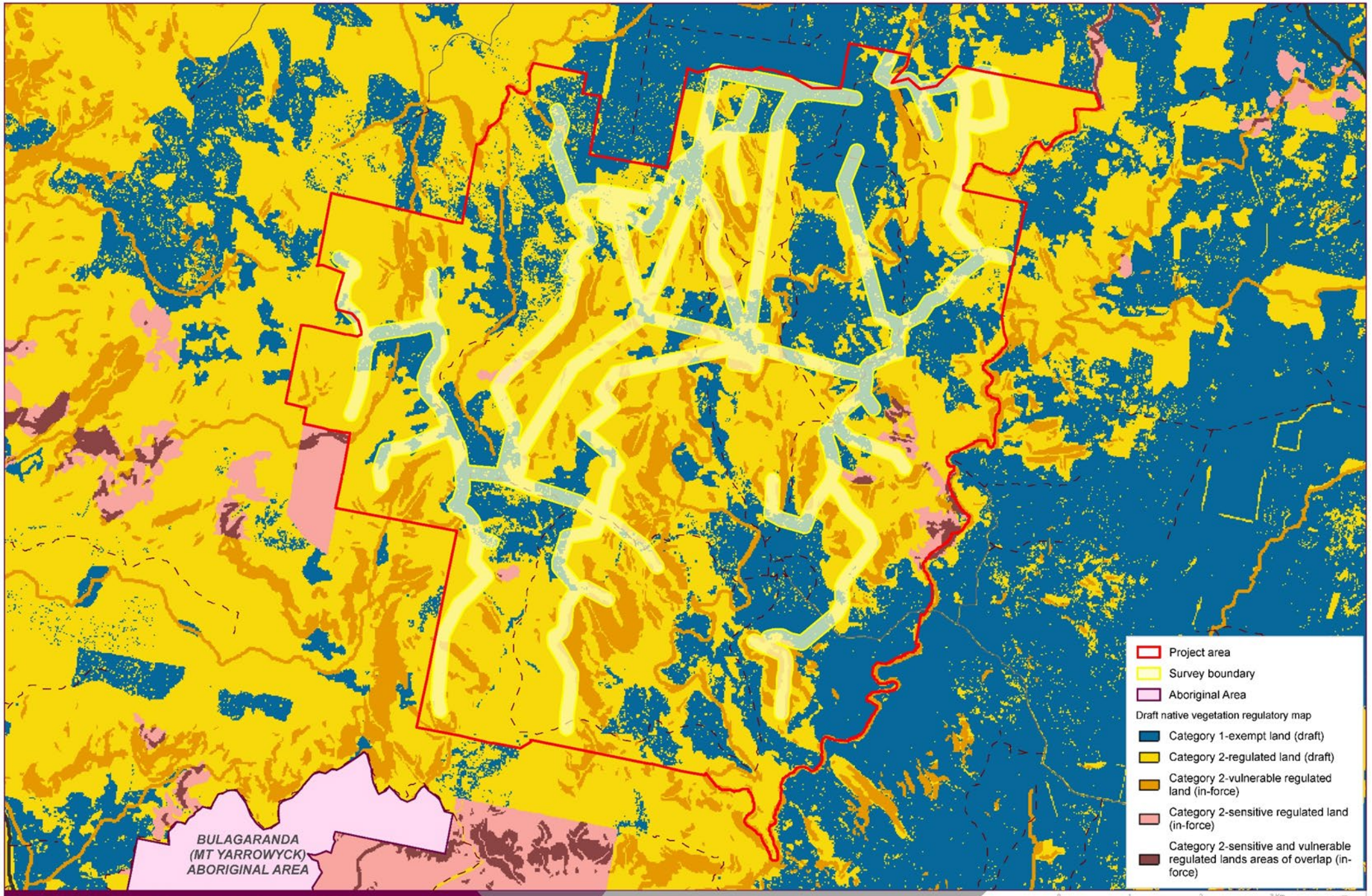


FIGURE 4-7 DRAFT NATIVE VEGETATION REGULATORY MAP

CLIENT: Origin Energy Pty Ltd
PROJ: 804-OEENVSYD-15881
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE:NVR mapping
VERSION:A

0 1 2 3 Km
SCALE 1:65,000
A4 SIZE / Projection: GDA2020 MGA Zone 55

DATA SOURCES
Client, RPS, NSWSS, RPS

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3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

PROJECT PATH: C:\Users\OneDrive - Tetra Tech, Inc\Horizon\Tableplace_WindFarm_CONFIDENTIAL - RPS_MAP Geospatial Intelligence Services\05_Projects\02_Biodiversity\OEENVSYD-5861_Biodiversity\Figure.aprx

4.1.11 Likelihood of occurrence

Database searches identified 58 threatened fauna species, 20 threatened flora species and five Threatened Ecological Communities (TECs) as having a moderate to high potential to occur within a 10 km radius of the project area (NSW DCCEEW 2025b, Cth DCCEEW 2025; **Table 4-3**).

Field investigations have focused on evaluating the importance of habitat located within the survey boundary for these species. The complete LoO analysis is in **Appendix D.**

Table 4-3 Species with a moderate or greater likelihood of occurrence

Scientific Name	Common Name	BC Act	EPBC Act	LoO
Amphibia				
Adelotus brevis - endangered population	Tusked Frog population in the Nandewar and New England Tableland Bioregions	E	-	Moderate
Litoria booroolongensis	Booroolong Frog	E	E	Moderate
Litoria castanea	Yellow-spotted Tree Frog	CE	CE	Moderate
Litoria subglandulosa	Glandular Frog	V	V	Moderate
Mixophyes balbus	Stuttering Frog	E	V	Moderate
Aves				
Anthochaera phrygia	Regent Honeyeater	CE	CE	Moderate
Aphelocephala leucopsis	Southern Whiteface	V	V	Moderate
Apus pacificus	Fork-tailed Swift	-	M,MAR	Moderate
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	High
Botaurus poiciloptilus	Australasian Bittern	E	E	Moderate
Burhinus grallarius	Bush Stone-curlew	E	-	Moderate
Calidris acuminata	Sharp-tailed Sandpiper	-	V,M,MAR	Moderate
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	Moderate
Circus assimilis	Spotted Harrier	V	-	Moderate
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	High
Daphoenositta chrysoptera	Varied Sittella	V	-	High
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	Moderate
Falco subniger	Black Falcon	V	-	Moderate
Gallinago hardwickii	Latham's Snipe	V	V,M,MAR	Moderate
Grantiella picta	Painted Honeyeater	V	V	Moderate
Hieraaetus morphnoides	Little Eagle	V	-	Moderate
Hirundapus caudacutus	White-throated Needletail	-	V,M,MAR	High
Lathamus discolor	Swift Parrot	E	CE,MAR	High
Lophoictinia isura	Square-tailed Kite	V	-	High
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E	E	Moderate
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	-	Moderate
Neophema chrysostoma	Blue-winged parrot	-	MAR	Moderate
Neophema pulchella	Turquoise Parrot	V	-	Moderate
Ninox connivens	Barking Owl	V	-	High
Ninox strenua	Powerful Owl	V	-	High
Oxyura australis	Blue-billed Duck	V	-	High
Parvipsitta pusilla	Little Lorikeet	V	-	High

Scientific Name	Common Name	BC Act	EPBC Act	LoO
Petroica boodang	Scarlet Robin	V	-	Known
Petroica phoenicea	Flame Robin	V	-	Moderate
Pyrrholaemus sagittatus	Speckled Warbler	V	-	High
Rostratula australis	Australian Painted Snipe	E	E, MAR	Moderate
Stagonopleura guttata	Diamond Firetail	V	V	Known
Tringa nebularia	Common Greenshank	-	E,M,MAR	Moderate
Tyto novaehollandiae	Masked Owl	V	-	Moderate
Mammalia				
Cercartetus nanus	Eastern Pygmy-possum	V	-	Moderate
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	Moderate
Chalinolobus picatus	Little Pied Bat	V	-	Moderate
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Moderate
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	Moderate
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	High
Myotis macropus	Southern Myotis	V	-	Moderate
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	Moderate
Petauroides volans	Greater Glider	E	E	High
Petaurus australis	Yellow-bellied Glider	V	V	Moderate
Petaurus norfolcensis	Squirrel Glider	V	-	High
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	Moderate
Phascolarctos cinereus	Koala	E	E	High
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	High
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	Moderate
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	Moderate
Reptilia				
Myuchelys belli	Western Sawshelled Turtle, Bell's Turtle	E	E	Moderate
Uvidicolus sphyrurus	Border Thick-tailed Gecko	V	V	Moderate
Flora				
Acacia pubifolia	Velvet Wattle	E	V	Moderate
Asterolasia rupestris subsp. recurva		CE	-	Moderate
Boronia granitica	Granite Boronia	V	E	Moderate
Caladenia amnicola	Bundarra Spider Orchid	E	E	Moderate
Callistemon pungens		-	V	Moderate
Dichanthium setosum	Bluegrass	V	V	High
Diuris pedunculata	Small Snake Orchid	E	E	Moderate
Eucalyptus caleyi subsp. ovendenii	Ovenden's Ironbark	V	V	Moderate
Eucalyptus magnificata	Northern Blue Box	E	-	Moderate
Eucalyptus mckieana	McKie's Stringybark	V	V	High
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	Moderate
Eucalyptus rubida subsp. barbigerorum	Blackbutt Candlebark	V	V	Moderate
Euphrasia arguta	Eyebright	CE	CE	Moderate
Grevillea scortechinii subsp. sarmentosa	Backwater Grevillea	V	-	Moderate
Haloragis exalata subsp. velutina	Tall Velvet Sea-berry	V	V	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	LoO
Picris evae	Hawkweed	V	V	Moderate
Pimelea venosa	Bolivia Hill Rice-flower	E	E	High
Swainsona sericea	Silky Swainson-pea	V	-	Moderate
Thesium australe	Austral Toadflax	V	V	High
Vincetoxicum forsteri	Tylophora linearis	V	E	Moderate
Fish				
Maccullochella peelii	Murray Cod	-	V	Moderate

V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, M = Migratory, - = Not listed

Table 4-4 BC Act and EPBC Act TECs predicted to occur in the locality

BC Act Listing	EPBC Act Listing	Source
Not listed	Critically Endangered - Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion)	PMST (Cth DCCEEW 2025).
Endangered - Howell Shrublands in the New England Tableland and Nandewar Bioregions	Not listed	PMST (Cth DCCEEW 2025), SVTM (NSW DCCEEW 2025f)
Critically Endangered - White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the New South Wales 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 - White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC.	PMST (Cth DCCEEW 2025), SVTM (NSW DCCEEW 2025f)
Critically Endangered - New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion	Critically Endangered - New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands	SVTM (NSW DCCEEW 2025f)
Critically Endangered - Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion	Not listed	SVTM (NSW DCCEEW 2025f)

4.1.12 Predicted threatened species (ecosystem credits)

Predicted threatened species generate 'ecosystem credits' and are known as 'ecosystem credit species'. Ecosystem credit species are threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys.

Thirty-four ecosystem credit species are associated with the PCTs mapped within the project area (**Table 4-8).** These species do not need to be surveyed for to confirm presence/absence as they are assumed to be present within the project area.

Table 4-5 Predicted ecosystem credit species

Ecosystem credit species	Common name	BC Act listing	EPBC Act listing
Anseranas semipalmata	Magpie Goose	V	-
Anthochaera phrygia	Regent Honeyeater	CE	CE
Aphelocephala leucopsis	Southern Whiteface	V	V
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-

Ecosystem credit species	Common name	BC Act listing	EPBC Act listing
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V
Chthonicola sagittata	Speckled Warbler	V	-
Circus assimilis	Spotted Harrier	V	-
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V
Daphoenositta chrysoptera	Varied Sittella	V	-
Dasyurus maculatus	Spotted-tailed Quoll	V	E
Ephippiorhynchus asiaticus	Black-necked Stork	E	-
Falco subniger	Black Falcon	V	-
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-
Glossopsitta pusilla	Little Lorikeet	V	-
Grantiella picta	Painted Honeyeater	V	V
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	MAR
Hieraaetus morphnoides	Little Eagle	V	-
Hirundapus caudacutus	White-throated Needletail	P	V,M,MAR
Lathamus discolor	Swift Parrot	E	CE,MAR
Lophoictinia isura	Square-tailed Kite	V	-
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	E
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	-
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-
Neophema pulchella	Turquoise Parrot	V	-
Pachycephala olivacea	Olive Whistler	V	-
Petaurus australis	Yellow-bellied Glider	V	-
Petroica phoenicea	Flame Robin	V	MAR
Pseudomys novaehollandiae	New Holland Mouse	P	V
Pseudomys oralis	Hastings River Mouse	E	E
Pteropus poliocephalus	Grey-headed Flying-fox	V	V
Rostratula australis	Australian Painted Snipe	E	E
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-
Stagonopleura guttata	Diamond Firetail	V	V

V = Vulnerable, E = Endangered, CE = Critically Endangered, M = Migratory, MAR = Marine, - = Not Listed.

4.1.13 Candidate threatened species (Species credits)

Candidate threatened species generate ‘species credits’ and are known as ‘species credit species’. Species credit species are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. A targeted survey or an expert report is required to confirm the presence of these species. Ecological surveys may identify additional threatened species within the project area for inclusion as species credit species.

4.1.13.1 Flora

The BAM regards all threatened flora species as ‘species credit’ species. Targeted surveys or an expert report are required for those species identified by BAM-C. A total of 12 threatened flora species have been considered as candidate species for this assessment (**Table 4-6Table 4-5**).

Table 4-6 Candidate threatened flora species

Scientific name	Common name	BC Act	EPBC Act	NSW DCCEEW approved survey period	SAII candidate species	Habitat constraint
Bertya ingramii	Narrow-leaved Bertya	E	E	All year	YES	Within 20 m of cliffs, escarpments, or rocky areas.
Boronia granitica	Granite Boronia	V	E	All year	-	Within 50 m of granite outcrops or slabs.
Callistemon pungens	-	-	V	September to February	-	-
Callitris oblonga	Pygmy Cypress Pine	V	V	All year	-	-
Dichanthium setosum	Bluegrass	V	V	November to May	-	-
Diuris pedunculata	Small Snake Orchid	E	E	September to October	-	-
Eucalyptus magnificata	Northern Blue Box	E	-	All year	-	-
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	All year	-	-
Hakea fraseri	Gorge Hakea	V	V	All year	-	Within 50 m of rocky slopes of river gorges or gorge rims.
Haloragis exalata subsp. *Velutina*	Tall Velvet Sea-berry	V	V	All year	-	-
Swainsona sericea	Silky Swainson-pea	V	-	September to November	-	-
Thesium australe	Austral Toadflax	V	V	November to February	-	-

V = Vulnerable, E = Endangered, CE = Critically Endangered, - = Not Listed.

4.1.13.2 Fauna

Targeted surveys or an expert report are required for fauna species identified as species credit species by BAM-C. A total of 22 threatened fauna species have been considered as candidate species for this assessment (**Table 4-6**).

Opportunistic threatened fauna surveys confirmed the presence of two additional threatened fauna species, Diamond Firetail (*Stagonopleura guttata;* BC Act: Vulnerable) and the Scarlet Robin (*Petroica boodang*; BC Act: Vulnerable), within the project area.

Table 4-7 Candidate threatened fauna species

Scientific name	Common name	BC Act	EPBC Act	SAII candidate species	Habitat constraints
Adelotus brevis	Tusked Frog (endangered population in the Nandewar and New England Tableland Bioregions)	EP	-	YES	-
Anthochaera phrygia	Regent Honeyeater	CE	CE	YES	As per Important Habitat Map.
Burhinus grallarius	Bush Stone-curlew	E	-	-	-
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	-	-
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	-	Hollow bearing trees - Living or dead tree with hollows greater than 15 cm diameter and greater than 8 m above ground.

Scientific name	Common name	BC Act	EPBC Act	SAII candidate species	Habitat constraints
Cercartetus nanus	Eastern Pygmy- possum	V	-	-	-
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	YES	Within 2 kilometres of rocky areas containing km, overhangs, escarpments, outcrops, or crevices, or within 2 km of old mines or tunnels.
Haliaeetus leucogaster	White-bellied Sea- Eagle	V	-	-	Within 1 km of a river, lake, large dam or creek, wetland and coastline. Living or dead mature trees within suitable vegetation within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines.
Hieraaetus morphnoides	Little Eagle	V	-	-	Nest trees - live (occasionally dead) large old trees within vegetation).
Litoria piperata	Peppered Tree Frog	CE	V	YES	-
Litoria subglandulosa	Glandular Frog	V	V	YES	-
Lophoictinia isura	Square-tailed Kite	V	-	-	Nest trees.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	YES	Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'; observation type code 'E nest-roost'; with numbers of individuals >500; or the scientific literature.
Mixophyes balbus	Stuttering Frog	E	V	YES	-
Ninox connivens	Barking Owl	V	-	-	Hollow bearing trees - living or dead tree with a hollow >20 cm diameter that occurs >4 m above the ground.
Ninox strenua	Powerful Owl	V	-	-	Hollow bearing trees - living or dead tree with a hollow >20 cm diameter that occurs >4 m above the ground.
Petauroides volans	Greater Glider	E	E	-	-
Petaurus norfolcensis	Squirrel Glider	V	-	-	-
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	YES	Within 1 km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or cliff lines.
Phascolarctos cinereus	Koala	E	E	-	Presence of koala use trees.
Pteropus poliocephalus	Grey-headed Flying- fox	V	V	-	Breeding camps.
Tyto novaehollandiae	Masked Owl	V	-	-	Hollow bearing trees - living or dead tree with a hollow >20 cm diameter that occurs >4 m above the ground.

V = Vulnerable, EP = Endangered Population, E = Endangered, CE = Critically Endangered, - = Not Listed.

4.2 Vegetation

Analysis of the previous broadscale mapping and field data obtained from preliminary field surveys revealed that the project area comprises a mix of native woodland predominantly along the ridgelines, hilly areas and slopes. Derived grassland occurred along edges of intact patches of woodland, and across paddocks that exhibited >50% cover of native grass species. Cleared and exotic areas were limited to degraded patches of paddock that displayed >50% of pasture grasses.

Intact vegetation across the project area consists primarily Dry Sclerophyll Forests (Shrubby sub-formation) and Grassy Woodlands with mixed canopy of *Eucalyptus melliodora* (Yellow Box), *E. youmanii* (Youman's Stringybark), *E. caliginosa* (Broad-leaved Stringybark), *E. blakelyi* (Blakely's Red Gum), *E. banksii* (Tenterfield Woollybutt) and *E. prava* (Orange Gum).

Some patches were dominant in just one or two canopy species, whilst other patches displayed a diverse canopy, a midstory of *Acacia buxifolia* (Box-leaved Wattle), *Bursaria spinosa* (Native Blackthorn) and *Cassinia quinquefaria*.

The ground cover was sparsely populated by grasses, forbs, and ferns including *Bothriochloa macra* (Red Grass), *Cymbopogon refractus* (Barbed Wire Grass), *Panicum effusum* (Hairy Panic), and *Wahlenbergia spp.* Heathlands were observed on two rigdelines, which exhibited stunted eucalypt growth, and dense shrub canopy. Exotic species including *Rubus fruticosus* (Blackberry) and *Cirsium vulgare* (Spear Thistle) were dominant throughout the survey boundary.



Plate 4-2 Cleared exotic vegetation dominant (i.e. >50%) in exotic pasture grass species

4.2.1 Plant community type

The vegetation within the project area and survey boundary is comprised of 18 native PCTs and cleared/exotic vegetation. Vegetation communities are summarised in **Section 4.2.1.1** through to **Section 4.2.1.15** and displayed in **Table 4-8**. A description of the vegetation and condition identified within each assessed turbine location is provided in **Appendix A**.

Table 4-8 Preliminary PCTs within the survey boundary and project area

PCT	Description	Condition	Area (hectares)	
			Survey boundary[1]	Project area
0	Cleared/exotic	Poor	17.91	50.55
3344	New England Ribbon Gum Grassy Forest	Moderate	5.69	30.48
3351	Armidale Creekflat Snow Gum Woodland-Scrub	Moderate	19.68	156.30
3353	Guyra Silvertop Stringybark Moist Forest	Moderate	12.61	61.90
3359	New England Hills Stringybark-Box Woodland	Derived	597.89	2,682.92
		Moderate to Good	100.35	523.91
3363	Western New England Blakely's Red Gum-Box Grassy Forest	Poor and Good	117.40	660.89
3702	Northwest New England Ranges Caley's Ironbark Woodland	Moderate	1.87	29.66
3705	Western New England Hills Apple-Stringybark Forest	Moderate	19.49	113.82
3710	Western New England Hills Orange Gum-Ironbark Forest	Moderate	28.58	116.14
3722	Western New England Box-Tumbledown Gum Grassy Forest	Moderate	83.94	591.32
3724	Western New England Caley's Ironbark-Tumbledown Gum Forest	Moderate	35.53	327.05
3725	Western New England Ranges Orange Gum-Blackbutt Forest	Moderate	93.66	612.70
3727	Western New England Silvertop Stringybark Forest	Moderate	3.99	57.60
3728	Western New England Hills Blackbutt-Stringybark Forest	Moderate	204.09	709.28
3729	Western New England Youmans Stringybark Shrub Forest	Moderate	43.71	282.68
3854	New England Rockplate Shrubland	Moderate	21.88	35.79
4080	Northwest River Oak-Apple Forest	Moderate	17.44	92.87
4125	New England Youmans Stringybark-Box Forest	Moderate	37.96	233.45
4142	New England Hills Red Gum-Stringybark Shrub Forest	Moderate	61.99	301.97
	Total		***1,508.22***	***7,671.28***

[1]Vegetation impact areas reported are based on the precautionary survey boundary (refer **Section 1.2**) and represent a conservative overestimate. Final disturbance areas will be significantly reduced following detailed design in response to ecological surveys.

4.2.1.1 PCT 3344: New England Ribbon Gum Grassy Forest

Table 4-9 PCT 3344: New England Ribbon Gum Grassy Forest

Attribute	Description
Photo	
Description:	A tall sclerophyll open forest with scattered, soft-leaved shrubs and a mid-dense to dense, grassy groundcover, widespread on undulating terrain on the New England Tableland from Niangala to Bolivia Hill. The canopy of this PCT includes a diverse suite of trees, with *Eucalyptus viminalis* commonly present. The remaining eucalypts typically have a frequency of 30% or less however at least one of them will usually be present at a site. These include *Eucalyptus dalrympleana*, *Angophora floribunda*, *Eucalyptus melliodora*, *Eucalyptus nova-anglica*, *Eucalyptus blakelyi* and *Eucalyptus caliginosa*. The shrub layer is very sparse and commonly includes the scrambling *Rubus parvifolius*, rarely accompanied by the low-growing shrubs *Pimelea curviflora* and *Lespedeza juncea* subsp. sericea. The mid-dense to dense ground layer is mainly comprised of grasses and forbs with some twiners, almost always including *Poa sieberiana* and very frequently *Desmodium varians*, *Geranium solanderi*, *Themeda triandra*, *Asperula conferta*, *Hydrocotyle laxiflora* and *Sorghum leiocladum*. This PCT primarily occurs in small, often disturbed patches in an agricultural landscape, often on metasediments however also granite, acid volcanics and basalt substrates. It typically occurs above 930 m asl in cold, moist environments however is known to occur at lower elevations of around 800 m. This PCT has a weak floristic relationship to PCT 3339 which occurs nearby in colder areas on basalt, however, differs in that Eucalyptus pauciflora is common, whereas in PCT 3344 it only occurs rarely.
Condition	Moderate condition (VI 60.1) consisting of relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop, old growth trees).
Dominant species	*Eucalyptus dalrympleana, Angophora floribunda, Eucalyptus melliodora, Eucalyptus nova-anglica, Eucalyptus blakelyi* and *Eucalyptus caliginosa.*
BAM plot	*22*
Justification	Vegetation within the survey boundary contains dominant species diagnostic of PCT 3344 such as *Eucalyptus dalrympleana,* stringybarks including *Eucalyptus caliginosa* and box gums including *Eucalyptus melliodora.* These species occur on sheltered slopes on higher nutrient soils predominately located within the Uralla Basalts and Sand landscape. *Eucalyptus viminalis* and *Eucalyptus nova-anglica* was also identified within this vegetation zone at lower elevations within riparian areas.

Attribute	Description
	The ground cover within this vegetation zone on sheltered slopes included *Poa seiberiana*, with limited shrub layer.
Vegetation formation	Grassy Woodlands
Percent cleared	84.70%
Associated TEC	• BC Act: New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion (Critically Endangered) • BC Act: Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion (Endangered) • EPBC Act: New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands (Critically Endangered).

4.2.1.2 PCT 3351: Armidale Creekflat Snow Gum Woodland-Scrub

Table 4-10 PCT 3351: Armidale Creekflat Snow Gum Woodland-Scrub

Attribute	Description
Photo	
Description:	A mid-high sclerophyll shrubby woodland to shrubland found along creeks draining the central New England plateau, from Armidale north to Warra National Park and from Lyndhurst west to Longford, generally in damp cold drainage lines (including some rocky sites) and margins of broad swampy creek flats. This PCT occurs at elevations of 950-1,350 m asl with mean annual rainfall of 750-950 mm, on a variety of substrates including sedimentary, basaltic, acid volcanic and granitoid geologies. The sparse canopy commonly includes *Eucalyptus pauciflora* with occasional *Eucalyptus nova-anglica*, or *Eucalyptus caliginosa* on drier margins. A variable, sparse to dense shrub layer is almost always dominated by *Leptospermum polygalifolium*, commonly with scattered sprawling *Rubus parvifolius* and tall *Bursaria spinosa* and occasionally *Hakea microcarpa*. The ground layer commonly includes *Lomandra longifolia*, tall grasses and sedges including *Carex gaudichaudiana, Poa labillardierei var*. labillardierei, *Juncus usitatus, Cyperus lucidus, Imperata cylindrica* and *Poa sieberiana*, ferns *Adiantum aethiopicum* and *Pteridium esculentum* and soft forbs of damp habitats including *Epilobium billardierianum, Hydrocotyle tripartita, Myriophyllum variifolium, Persicaria decipiens* and *Viola caleyana.* This PCT may grade into treeless fen PCT 3944 in wetter semi-permanent parts of swampy drainage lines and be replaced by drier woodland or forest types such as PCTs 3503 or 3339 on adjacent slopes.
Condition	This community exists in predominately a moderate to good condition state where identified, however low occurrence of this community likely exists within the survey boundary and additional survey is required.
Dominant species	*Eucalyptus pauciflora* with occasional *Eucalyptus nova-anglica,* or *Eucalyptus caliginosa* with a midstorey of *Leptospermum polygalifolium.*
Justification	Small, scattered patches of vegetation within the survey boundary along drainage lines contained a dense midstorey of *Leptospermum polygalifolium* and canopy of *Eucalyptus caliginosa.* No *Eucalyptus pauciflora* was identified within the survey boundary and additional survey would be required to confirm PCT presence.
Vegetation formation	Grassy Woodlands
Percent cleared	78.06%
Associated TEC	No associated TECs.

4.2.1.3 PCT 3353: Guyra Silvertop Stringybark Moist Forest

Table 4-11 PCT 3353: Guyra Silvertop Stringybark Moist Forest

Attribute	Description
Photo	
Description:	A tall grassy sclerophyll open forest to woodland restricted to hilly country on the cool flanks of the high central New England plateau. Many plots occur in an east-west band between Lyndhurst and Longford, others on the western flanks of Ben Lomond in the Moredun area, and others to the south between Walcha and Uralla including Sidling Hill and Ohio Peak. This PCT occurs at elevations of 950-1350 m asl with mean annual rainfall of 750-950 mm, on a diverse range of substrates including basaltic, felsic igneous, granitoid, sedimentary and metamorphosed sedimentary geologies. The canopy almost always contains *Eucalyptus laevopinea*, occasionally with *Eucalyptus melliodora*, and a sparse shrub stratum that commonly includes tall *Bursaria spinosa* and *Lissanthe strigosa*, occasionally with *Hibbertia linearis*. The ground layer is commonly grassy and almost always includes *Poa sieberiana*, commonly with *Elymus scaber* and occasionally *Dichelachne micrantha* or *Microlaena stipoides*. Also common in the ground layer are a diverse suite of moist soft-leaved tableland forbs including Geranium solanderi, Desmodium varians, Dichondra repens, *Glycine clandestina, Acaena novae-zelandiae, Veronica calycina, Hydrocotyle laxiflora, Scleranthus biflorus, Rumex brownii* and *Poranthera microphylla*. At lower, warmer elevations on the tablelands to the west and south this community may be replaced by PCT 3344, or by PCT 3339 on the high cool basalt plateau around Guyra.
Condition	This community exists in predominately a moderate (VI 69.4) condition state, with relatively high diversity and functional components, however, have a scattered midstorey and lack canopy diversity.
Dominant species	*Eucalyptus laevopinea,* occasionally with *Eucalyptus melliodora*
BAM plot	*13, 14*
Justification	The vegetation within the survey boundary contains dominant species diagnostic of PCT 3353 such as *Eucalyptus laevopinea, Eucalyptus calignosa* and *Eucalyptus melliodora* in the canopy and is located within the landscape position as described above. Previous vegetation mapping (NSW DCCEEW 2025f) identified vegetation within the survey boundary as PCT 3353 which is consistent with ground truthed data.
Vegetation formation	Grassy Woodlands
Percent cleared	65.68%
Associated TEC	No associated TECs.

4.2.1.4 PCT 3359: New England Hills Stringybark-Box Woodland

Table 4-12 PCT 3359: New England Hills Stringybark-Box Woodland

Attribute	Description
Photo	**Moderate to good condition:**  **Derived condition:** 
Description:	A tall sclerophyll open forest with a mid-stratum of dry and soft-leaved species and a mid-dense grassy ground layer that is widespread on slopes and rises of the low hills of the New England Tableland between the Torrington plateau and the Walcha area. The canopy almost always includes box eucalypts (*Eucalyptus melliodora* or *Eucalyptus bridgesiana*) and stringybarks (usually *Eucalyptus caliginosa*), commonly associated with *Eucalyptus blakelyi*.

Attribute	Description
	A sparse mid-stratum includes shrubs and small trees, very frequently including *Lissanthe strigosa* and Acacias, most frequently *Acacia filicifolia* and *Acacia implexa*, with *Cassinia quinquefaria* commonly occurring. The mid-dense ground layer is mainly comprised of graminoids and forbs with some twiners and hardy ferns, very frequently including *Poa sieberiana*, *Desmodium varians* and *Dichondra repens*, with *Microlaena stipoides*, *Dichelachne micrantha*, *Aristida ramosa*, *Geranium solanderi*, *Cheilanthes sieberi* subsp. *sieberi* and *Lomandra multiflora* subsp. *multiflora* all commonly occurring. This PCT primarily occurs in small patches in an agricultural landscape that are probably associated with shallower soils on rises or steeper slopes. It typically occurs at elevations of 910 m asl or above in a cold, dry environment on a variety of substrates. It is not closely related floristically to nearby PCTs, however at the western edge of its distribution, it grades into PCT 3363. Both PCTs share boxes, *Eucalyptus blakelyi* and stringybarks in their canopy however *Eucalyptus caliginosa* is rare in PCT 3363. The derived condition state lacks canopy and mid-storey, however, is dominant (i.e., >50%) in native grass species.
Condition	This community exists in two condition states, moderate to good and derived: **Moderate to good:** (VI 40.7) patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum. **Derived condition:** (VI – 27.4) patches have been assigned to all native dominant (i.e., >50% grasslands across the survey boundary.
Dominant species	*Eucalyptus caliginosa* (New England Stringybark), *Eucalyptus melliodora* (Yellow Box), and *Eucalyptus blakelyi* (Blakely's Redgum).
BAM plot	*1, 4, 6, 11, 15, 16, 18*
Justification	The vegetation within the survey boundary contains dominant species diagnostic of PCT 3359 such as *Eucalyptus caliginosa* (New England Stringybark), *Eucalyptus melliodora* (Yellow Box), and *Eucalyptus blakelyi* (Blakely's Redgum) in the canopy and is located within the landscape position as described above. Previous vegetation mapping (NSW DCCEEW 2022) identified vegetation within the survey boundary as PCT 3359 which is consistent with ground truthed data. The species diversity is relatively high across this vegetation zone and varies throughout the survey boundary (i.e. intact woodland and partially cleared woodland) therefore is considered to be in moderate to good condition. Within derived grassland areas, there was no canopy present, however the grass layer was dominant in *Sporobolous crebra* (Rats-tail Grass), *Bothriochloa macra* (Red Grass), *Poa* spp., *Microlaena stipoides* (Weeping Grass), and *Eragrostis* sp.
Vegetation formation	Grassy Woodlands
Percent cleared	82.44%
Associated TEC	• BC Act: 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) • EPBC Act: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered).

4.2.1.5 PCT 3363: Western New England Blakelys Red Gum-Box Grassy Forest

Table 4-13 PCT 3363: Western New England Blakelys Red Gum-Box Grassy Forest

Attribute	Description
Photo	
Description	A tall sclerophyll open forest with a dry shrub layer and a mid-dense, grassy ground layer that occurs on undulating terrain or mid to lower slopes on the western New England Tableland between the Torrington plateau and the Bendemeer area. The canopy very frequently includes *Eucalyptus blakelyi* and box eucalypts (*Eucalyptus melliodora* or *Eucalyptus bridgesiana*), commonly associated with *Angophora floribunda* and stringybarks (*Eucalyptus macrorhyncha* or *Eucalyptus laevopinea*). The shrub layer is sparse, commonly including scattered individuals of *Hibbertia obtusifolia* or *Melichrus urceolatus*. The mid-dense ground layer is mainly comprised of grasses, forbs, twiners, hardy ferns and graminoids, almost always including *Aristida ramosa*, very frequently *Cymbopogon refractus* and *Cheilanthes sieberi subsp. sieberi*, with *Poa sieberiana*, G*eranium solanderi, Desmodium varians, Dichondra repens, Glycine clandestina* and *Vittadinia cuneata* all common. This PCT is often associated with granite however is also known from metasediments and acid volcanics. It typically occurs at elevations above 720 m asl in warm, moist environments and primarily occurs at the interface between naturally vegetated land on shallower soils and more fertile soils that have been cleared for agriculture. This PCT is weakly related floristically to PCT 3722 which occurs nearby in a similar environment however differs in having a canopy with a diverse suite of eucalypts all of which are present at less than 40% of sites. *Eucalyptus blakelyi* is rarely present in PCT 3722 and it has a more prominent mid-stratum in which Acacias are almost always present and *Notelaea microcarpa* and *Olearia elliptica* subsp. *elliptica* are common.
Condition	This community exists in predominately two condition states, good (VI 78.5) and poor (VI 29.4) which have been subject to have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus bridgesiana* (Apple Box), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus blakelyi* (Blakely's Redgum), *Angophora floribunda* (Rough-barked Apple) and *Eucalyptus macrorhyncha* (Red Stringybark) *or Eucalyptus laevopinea* (Silvertop Stringybark)
Justification	*Eucalyptus blakelyi* (Blakely's Redgum) is highly dominant and commonly present with *Eucalyptus melliodora* (Yellow Box) and *Eucalyptus macrorhyncha* (Red Stringybark) within the project area.

Attribute	Description
	The shrub-layer commonly includes dominant species such as *Hibbertia obtusifolia* (Hoary Guinea Flower). The project area is associated with granite substrate and occurs at elevations around 750 m asl.
BAM plot	*7, 8, 20*
Vegetation formation	Grassy Woodlands
Percent cleared	72.25%
Associated TEC	• BC Act: 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) • EPBC Act: White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Critically Endangered).

4.2.1.6 PCT 3705: Western New England Hills Apple-Stringybark Forest

Table 4-14 PCT 3705: Western New England Hills Apple-Stringybark Forest

Attribute	Description
Description	A tall mixed sclerophyll open forest with a dry mid-stratum and a patchy, grassy ground layer. This PCT occurs on slopes and near small drainage lines on plateaus with extensive granite outcrops, along the Nandewar Range and near Mount Yarrowyck on the New England Tableland. The canopy very frequently includes *Angophora floribunda* and *Eucalyptus macrorhyncha*, commonly with *Callitris endlicheri.* A suite of box and red gum species are collectively very frequent, though individual species are occasional to rare; the most frequent being *Eucalyptus bridgesiana, Eucalyptus blakelyi*, *Eucalyptus melliodora, Eucalyptus prava* and *Eucalyptus dealbata*. The mid-stratum is diverse and very frequently includes Hibbertia *obtusifolia, Melichrus urceolatus, Brachyloma daphnoides, Leucopogon muticus* and at least one tall Acacia species, of which the most frequent are *Acacia neriifolia, Acacia leiocalyx subsp. leiocalyx* and *Acacia penninervis*. The sparse ground layer is mainly comprised of grasses, rushes, twiners and forbs. Species very frequently include *Cymbopogon refractus, Luzula flaccida, Dichelachne micrantha, Geranium solanderi* and *Senecio diaschides*. The presence of *Luzula flaccida* and *Senecio diaschides* and the occasionally occurring species *Ranunculus lappaceus* and *Hydrocotyle sibthorpioides*, suggest that the soil in this community is seasonally damp. This PCT has not been extensively cleared because it is found on hilly terrain with relatively shallow soil. It occurs in cold, dry environments typically receiving below 810 mm mean annual rainfall. It is weakly related floristically to PCT 3698 which occurs nearby, however differs in that it occurs on skeletal soils, *Eucalyptus prava* is almost always present in its canopy and *Eucalyptus bridgesiana* and *Eucalyptus blakelyi* are typically absent. This PCT is also weakly related to PCT 3726 which also occurs nearby and has similar canopy species, however, differs in that it lacks the sedges and forbs associated with seasonally damp soil.
Condition	This community exists in two condition states, good and moderate. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Angophora floribunda* (Rough-barked Apple) and *Eucalyptus macrorhyncha* (Red Stringybark).
Justification	The project area includes vegetation representing a dominance of *Angophora floribunda* (Rough-barked Apple) and *Eucalyptus macrorhyncha* (Red Stringybark), although no *Callitris* was present. Red Gum and Box species including *Eucalyptus blakelyi* (Blakely's Redgum) and *Eucalyptus melliodora* (Yellow Box) were also frequent.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	46.88%
Associated TEC	PCT 3705 has no associated TECs.

4.2.1.7 PCT 3722: Western New England Box-Tumbledown Gum Grassy Forest

Table 4-15 PCT 3722: Western New England Box-Tumbledown Gum Grassy Forest

Attribute	Description
Photo	
Description	A tall sclerophyll open forest with a mid-stratum of dry and soft-leaved species and patchy, grassy ground layer that occurs on mid to lower slopes of the hills from Nundle to north of the Torrington plateau on the western New England Tableland and the North-west Slopes of NSW. Collectively, red gums and box eucalypts are both commonly present however the primary characteristic of the canopy is that no species is clearly dominant and that all trees known from this PCT are individually occasional to rare. The red gums are represented by *Eucalyptus dealbata* and *Eucalyptus blakelyi* and the boxes by *Eucalyptus moluccana, Eucalyptus albens* and *Eucalyptus melliodora*. Other species comprising the canopy are *Angophora floribunda*, stringybarks *(Eucalyptus macrorhyncha, Eucalyptus laevopinea)* and Ironbarks *(Eucalyptus sideroxylon, Eucalyptus caleyi).* The sparse mid-stratum is layered with the small trees almost always featuring *Acacia* species, usually *Acacia implexa* or *Acacia neriifolia,* commonly with scattered *Notelaea microcarpa*. Smaller shrubs in the mid-stratum almost always include *Hibbertia obtusifolia,* very frequently M*elichrus urceolatus* with *Olearia elliptica subsp. elliptica* and *Cassinia laevis* both commonly occurring. The sparse to mid-dense ground layer is mainly comprised of grasses, forbs, twiners, graminoids and hardy ferns. *Cymbopogon refractus* is almost always present with *Cheilanthes sieberi subsp. sieberi, Aristida ramosa, Desmodium varians, Dichelachne micrantha, Oxytes brachypoda, Lomandra multiflora subsp. multiflora* and *Dichondra repens* all very frequently occurring. It occurs on a variety of substrates in a warm, dry environment with a mean annual rainfall typically below 800 mm. It is related floristically to PCT 3363 which occurs in similar environments; however its canopy and mid-stratum differs in that *Eucalyptus blakelyi* is very frequent, Acacias are occasional and *Notelaea microcarpa* and *Olearia elliptica subsp. elliptica* are both rare.
Condition	This community exists in two condition states, good and moderate. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus dealbata* (Tumbledown Red Gum) and *Eucalyptus blakelyi* (Blakely's Red Gum) and the boxes by *Eucalyptus moluccana, Eucalyptus albens* (White-Box) and *Eucalyptus melliodora* (Yellow-Box).

Attribute	Description
Justification	The vegetation within the survey boundary contains dominant species diagnostic of PCT 3722 such as *Eucalyptus blakelyi* (Blakely's Red Gum) with *Eucalyptus melliodora* (Yellow Box). No *Eucalyptus dealbata* was identified in the survey boundary and dominant species are also consistent with PCT 3363. Additional survey is required to determine the best fit PCT.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	63.24%
Associated TEC	PCT 3722 has no associated TECs.

4.2.1.8 PCT 3725: Western New England Ranges Orange Gum-Blackbutt Forest

Table 4-16 PCT 3725: Western New England Ranges Orange Gum-Blackbutt Forest

Attribute	Description
Photo	
Description	A tall sclerophyll open forest with a dry mid-stratum and grassy ground layer that occurs on slopes with shallow soils on the ranges of the western New England Tableland, from the Glen Innes area to west of Walcha. The canopy very frequently includes *Eucalyptus prava*, commonly associated with *Eucalyptus andrewsii*, typically with a high cover. Species from the stringybark eucalypt group are common, with the most frequent being *Eucalyptus caliginosa* and *Eucalyptus youmanii*. The sparse mid-stratum is layered and includes shrubs and small trees, almost always including *Brachyloma daphnoides* and commonly *Cassinia quinquefaria*. Other mid-stratum trees and shrubs include Acacia species, which are almost always present and Leucopogon species which are common, although all individual species are occasional or rare. The most frequent of these include taller *Acacia rubida* or *Acacia implexa,* smaller *Acacia buxifolia* and *Leucopogon muticus*. The mid-dense ground layer is mainly comprised of graminoids, forbs and hardy ferns, very frequently including a high cover of *Rytidosperma pallidum*. Other very frequent species with a lower cover include *Cheilanthes sieberi subsp. sieberi, Cymbopogon refractus, Dichelachne micrantha* and *Goodenia hederacea,* commonly with *Lomandra multiflora subsp. multiflora, Aristida ramosa, Poa sieberiana* and *Themeda triandra.* This PCT occurs on granite, acid volcanics and metasediments at elevations of above 850 m asl in cold, dry environments. It is not closely related floristically to nearby PCTs. This community adjoins the grassy forest PCT 3363, which occurs in a similar region on lower slopes with deeper soils and has a canopy in which *Eucalyptus blakelyi* and *Eucalyptus melliodora* are common to very frequent.
Condition	This community exists in two condition states, good and moderate. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus prava* (Orange Gum) and *Eucalyptus andrewsii* (New England blackbutt) with *Eucalyptus youmanii* (Youman's Stringybark) or *Eucalyptus caliginosa* (Broad-leaved Stringybark).
Justification	Vegetation within the survey boundary contains dominant species diagnostic of PCT 3725 such as *Eucalyptus prava* (Orange Gum) and *Eucalyptus andrewsii* (New England blackbutt) commonly with

Attribute	Description
	the stringybark *Eucalyptus youmanii* (Youman's Stringybark) or *Eucalyptus caliginosa* (Broad-leaved Stringybark). These species occur on granite ridges and slopes at elevations of above 850 m asl.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	72.74%
Associated TEC	PCT 3725 has no associated TECs.

4.2.1.9 PCT 3727: Western New England Silvertop Stringybark Forest

Table 4-17 PCT 3727: Western New England Silvertop Stringybark Forest

Attribute	Description
Photo	
Description	A tall sclerophyll woodland to open forest with a mid-stratum of dry and soft-leaved species and a ground layer of grasses and graminoids that occurs on slopes and rises in ranges along the western fall of the New England Tableland from Glenrock north to Tingha, with outlying occurrences on high ranges to the west including in Hobden Hill Nature Reserve. *Eucalyptus laevopinea* is almost always present in the canopy, commonly associated with *Angophora floribunda* and rarely *Eucalyptus quinniorum* which may be locally prominent. The sparse mid-stratum includes taller Acacia species, most frequently *Acacia implexa* or *Acacia neriifolia*, and several smaller shrubs, very frequently including *Melichrus urceolatus, Hibbertia obtusifolia* and *Olearia viscidula* and commonly *Olearia elliptica subsp. elliptica* and *Bursaria spinosa*. The mid-dense ground layer is mainly comprised of graminoids and forbs with some twiners, very frequently including *Poa sieberiana, Desmodium varians and Dichelachne micrantha, and commonly Glycine clandestina, Lepidosperma laterale, Geranium solanderi, Lomandra longifolia, Lomandra multiflora subsp. multiflora* and *Lomandra filiformis*. This PCT occurs on granite and metasediments, typically occurring above 660 m asl in warm, moist environments, however, is also known to occur down to 500 m asl. It is not closely related floristically to nearby PCTs, however its distribution overlaps with PCT 3354 in the Wallabadah area. Eucalyptus laevopinea is also present in the canopy of PCT 3354 which differs in that box eucalypts are almost always present, shrubs such as *Hibbertia obtusifolia, Melichrus urceolatus* and *Olearia viscidula* are rare or absent and it primarily occurs on basalt on the Liverpool Range.
Condition	This community exists in two condition states, good (VI 82.1) and moderate. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus laevopinea* (Silvertop stringbark), *Eucalyptus andrewsii* and *Eucalyptus caliginosa* (Broad-leaved Stringybark).
BAM plot	*19*
Justification	Vegetation within the survey boundary contains dominant species diagnostic of PCT 3722 such as *Eucalyptus laevopinea (Silvertop stringbark) and Eucalyptus caliginosa*. These species occur on granite ridges and slopes at elevations of above 850 m asl. This PCT shares similarities with PCT 3353, and additional survey is required to differentiate between the two PCTs and confirm presence of PCT 3727 within the survey boundary.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	48.92%

Attribute	Description
Associated TEC	PCT 3727 has no associated TECs.

4.2.1.10 PCT 3728: Western New England Hills Blackbutt-Stringybark Forest

Table 4-18 PCT 3728: Western New England Hills Blackbutt-Stringybark Forest

Attribute	Description
Photo	
Description	A tall sclerophyll open forest with a dry shrub layer and patchy ground layer of grasses and graminoids. This PCT occurs on shallow soils on rises and upper slopes on hilly plateaus or ranges of the western New England Tableland, from north-west of Tenterfield to Watsons Creek Nature Reserve. A high cover of *Eucalyptus andrewsii* is almost always present in the canopy, very frequently associated with stringybarks which are individually rare, the most frequent being *Eucalyptus mckieana, Eucalyptus youmanii* and *Eucalyptus caliginosa*. The sparse shrub layer is diverse, very frequently including *Monotoca scoparia*, and almost always *Acacia* and *Leucopogon* species, of which *Acacia buxifolia* and *Leucopogon melaleucoides* are the most frequent. Other common shrubs include *Brachyloma daphnoides, Melichrus urceolatus, Persoonia fastigiata* and *Hovea linearis*. The sparse to mid-dense ground layer is mainly comprised of graminoids, hardy forbs and twiners. Species very frequently include *Goodenia hederacea, Rytidosperma pallidum, Dianella revoluta, Lomandra filiformis, Patersonia sericea* and *Poa sieberiana*, commonly with *Caustis flexuosa* and *Hardenbergia violacea.* This PCT typically occurs on acid volcanics, however is also known from granite and sedimentary substrates. It typically occurs at elevations of above 900 m asl in cold, moist environments. It is weakly related floristically to PCT 3700 which occurs on granite on the Tingha and Torrington plateaus, and also has *Eucalyptus andrewsii* in its canopy, however, differs from this PCT in that *Angophora floribunda* is very frequent.
Condition	This community exists in good condition which are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum.
Dominant species	Always contains *Eucalyptus andrewsii* (New England blackbutt) and commonly occurs with *Eucalyptus mckieana, Eucalyptus youmanii* and *Eucalyptus caliginosa.*
Justification	Vegetation within the survey boundary contains dominant species diagnostic of PCT 3728 such as *Eucalyptus andrewsii* (New England blackbutt), *Eucalyptus youmanii* (Youman's Stringybark) and *Eucalyptus caliginosa* (Broad-leaved Stringybark). These species occur on granite ridges and slopes at elevations of above 850 m asl.

Attribute	Description
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	52%
Associated TEC	PCT 3728 has no associated TECs.

4.2.1.11 PCT 3729: Western New England Youmans Stringybark Shrub Forest

Table 4-19 PCT 3729: Western New England Youmans Stringybark Shrub Forest

Attribute	Description
Photo	
Description	A dry shrub/grass sclerophyll open forest to woodland of infertile ranges along the western fall of the New England Tableland, from Single National Park and Happy Valley south to Watsons Creek Nature Reserve, Aberbaldie Nature Reserve and Niangala. This PCT occurs at elevations of 950-1300 m asl in locations receiving 750-950 mm mean annual rainfall, on sandy soils derived predominantly from granitoid and acid volcanic substrates and occasionally metamorphosed sediments. A tall to very tall tree canopy very frequently includes *Eucalyptus andrewsii* and commonly *Eucalyptus youmanii*, with a sparse to patchy shrub layer that very frequently includes *Melichrus urceolatus* and commonly *Leucopogon lanceolatus, Hibbertia obtusifolia* and *Brachyloma daphnoides*. The ground layer is almost always dominated by *Poa sieberiana*, very frequently with *Microlaena stipoides, Galium gaudichaudii, Hardenbergia violacea* and *Viola betonicifolia*, and commonly including *Gonocarpus tetragynus, Lomandra longifolia, Glycine clandestina, Hydrocotyle sibthorpioides, Luzula flaccida, Dichelachne micrantha, Goodenia hederacea, Pteridium esculentum, Veronica calycina, Lomandra filiformis, Dianella revoluta, Wahlenbergia stricta* and *Rytidosperma pallidum*. This community tends to occur on sheltered lower slopes and undulating country with relatively deep soils and may grade into PCTs 3710 or 3854 on dry upper slopes with shallower soils. On damp drainage lines it may be replaced by PCT 3956.
Condition	This community exists in two condition states, good and moderate. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the moderate condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus andrewsii* (New England Blackbutt) with *Eucalyptus youmanii* (Youman's Stringybark)
Justification	The project area includes areas of vegetation with a high cover of *Eucalyptus andrewsii* (New England Blackbutt) with *Eucalyptus youmanii* (Youman's Stringybark) at elevations of 950-1300 metres above sea level.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)

Attribute	Description
Percent cleared	58.37%
Associated TEC	PCT 3729 has no associated TECs.

4.2.1.12 PCT 3854: New England Rockplate Shrubland

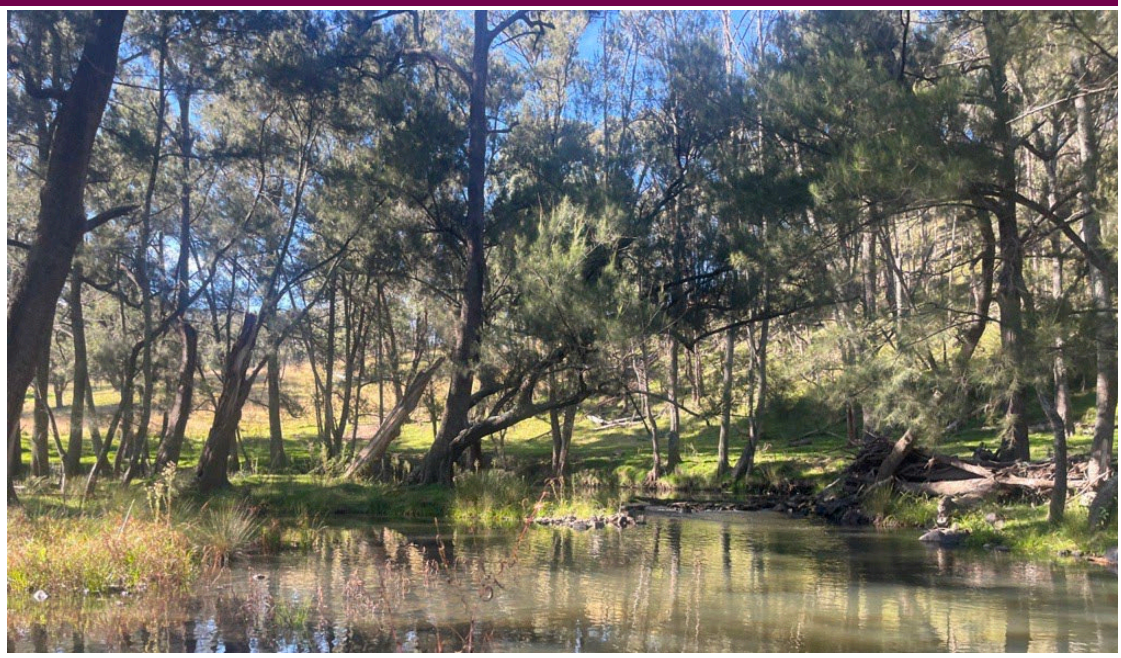
Table 4-20 PCT 3854: New England Rockplate Shrubland

Attribute	Description
Photo	
Description	A tall open shrubland with occasional taller pines and eucalypts and a very sparse ground layer. This PCT is found where skeletal soil has developed among extensive granite or rhyolite outcrops on hilly plateaus or ranges on the New England Tableland between Tenterfield and Uralla. The sparse to mid-dense shrub layer is diverse and almost always includes *Calytrix tetragona*, *Leucopogon muticus* and one or more *Acacia* species, the most frequent being *Acacia viscidula* or *Acacia triptera*. Other shrubs very frequently include *Cryptandra amara* and *Ozothamnus obcordatus*, commonly *Leptospermum novae-angliae* and occasionally *Brachyloma daphnoides*. Scattered *Callitris endlicheri* are almost always present and *Eucalyptus prava* is common. The ground layer is sparse and is mainly comprised of scattered graminoids, forbs and hardy ferns, very frequently including *Cheilanthes sieberi* subsp. *sieberi* and *Stypandra glauca*. Other ground layer species commonly include *Brachyscome stuartii*, *Gonocarpus teucrioides*, *Pomax umbellata* and *Trachymene incisa* subsp. *incisa*, occasionally with *Gonocarpus tetragynus*, and either *Aristida calycina* or *Aristida ramosa*. This PCT is defined from only six plots and caution is required in the evaluation and assignment of new plots to this PCT. This community typically occurs at elevations of above 740 m asl in cold, moist environments. It is not closely related floristically to nearby PCTs; however it occurs in small patches among rock outcrops or extensive woodlands on deeper soils that include canopy species such as *Callitris endlicheri*, red gums, ironbarks or stringybarks.
Condition	This community exists in two condition states, good and disturbed. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the disturbed condition patches have had previous clearing and are missing one or more stratum such as within previously cleared easements.
Dominant species	Canopy, if present, includes *Eucalyptus prava* (Orange Gum) and *Callitris endlicheri.* Shrub layer includes *Calytrix tetragona*, *Leucopogon muticus* and one or more *Acacia* species.
Justification	Canopy was dominant in *Eucalyptus prava* (Orange Gum) with a high diversity of shrub species including *Leucopogon* species and *Acacia* species. Topography and granite substrate are consistent with the PCT description.

Attribute	Description
Vegetation formation	Heathlands
Percent cleared	40.26%
Associated TEC	• BC Act: Howell Shrublands in the New England Tableland and Nandewar Bioregions (Endangered).

4.2.1.13 PCT 4080: Northwest River Oak-Apple Forest

Table 4-21 PCT 4080: Northwest River Oak-Apple Forest

Attribute	Description
Photo	
Description	A tall to very tall Casuarina open forest with a sparse mid-stratum of soft-leaved species and a mid-dense ground layer of grasses and graminoids that occurs on stream flats between Gulgong and the Queensland border on the North-west Slopes, western New England Tableland and Hunter River catchment. The canopy almost always includes a high cover of *Casuarina cunninghamiana subsp. cunninghamiana*, commonly associated with more scattered *Angophora floribunda* and occasionally with *Eucalyptus blakelyi* or *Eucalyptus camaldulensis* which can be locally prominent along some streams. The mid-stratum is sparse and very frequently includes scattered individuals of *Notelaea microcarpa* and, while shrubs such as *Phyllanthus subcrenulatus*, *Bursaria spinosa* and the scrambler *Rubus parvifolius* are occasional to rare. The mid-dense ground layer contributes much of the species richness in this PCT and is primarily comprised of graminoids and forbs. *Microlaena stipoides* and *Rumex brown*ii are almost always present, *Urtica incis*a and *Lomandra longifolia* very frequently occur, and *Dichondra repens, Austrostipa verticillata, Commelina cyanea* and *Geranium solanderi* are common. This PCT primarily occurs in an agricultural landscape and is susceptible to weed invasion through flood events and from adjoining pasture. It occurs in hot, dry environments with a mean annual rainfall typically below 800 mm. It is only weakly related floristically to other riverine forests on the coast and tablelands of eastern New South Wales.
Condition	This community exists in a poor to moderate condition state along banks of major streams in the project area. All patches of PCT 4080 are affected by grazing and weeds however canopy is intact.
Dominant species	*Casuarina cunninghamiana subsp. cunninghamiana,*
Justification	A high cover of *Casuarina cunninghamiana subsp. Cunninghamiana* along Boorolong Creek and Tom's Creek.
Vegetation formation	Forested Wetlands
Percent cleared	63.37%
Associated TEC	No associated TECs.

4.2.1.14 PCT 4125: New England Youmans Stringybark-Box Forest

Table 4-22 PCT 4125: New England Youmans Stringybark-Box Forest

Attribute	Description
Photo	
Description	A tall sclerophyll open forest with a mid-stratum with soft-leaved species and a mid-dense, grassy ground layer that occurs on slopes in a hilly, localised part of the New England Tableland to the west of Armidale, NSW. The canopy almost always includes a high cover of *Eucalyptus youmanii* with more scattered boxes (*Eucalyptus melliodora* or occasionally *Eucalyptus bridgesiana*). The sparse mid-stratum includes a range of shrubs, almost always including *Bursaria spinosa* and commonly the scrambler *Rubus parvifolius* and *Cassinia quinquefaria,* commonly with a taller Acacia species such as *Acacia filicifolia*. The mid-dense ground layer is mainly comprised of grasses, forbs and graminoids, and almost always includes *Microlaena stipoides,* very frequently *Geranium solanderi* and commonly Poa *sieberiana, Veronica calycina, Acaena novae-zelandiae, Hydrocotyle laxiflora* and *Scleranthus biflorus*. This PCT typically occurs above 900 m asl in a cold, dry environment on metasediments, granite and basalt. PCT 3359 occurs nearby in a similar topographic position, however, differs from this PCT in having *Eucalyptus caliginosa*, rather than *Eucalyptus youmanii*, as the most frequent stringybark species.
Condition	This community exists in two condition states, moderate (VI 59.9) and poor (VI 37.7). The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the disturbed condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus youmanii* (Youman's Stringybark) with *Eucalyptus melliodora* (Yellow Box).
BAM plot	*2, 3, 5, 9, 10, 12, 17*
Justification	A high cover of *Eucalyptus youmanii* (Youman's Stringybark) is present within the project area with *Eucalyptus melliodora* (Yellow Box) and a mid-stratum of *Bursaria spinosa.*
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	75.62%
Associated TEC	PCT 4125 has no associated TECs.

4.2.1.15 PCT 4142: New England Hills Red Gum-Stringybark Shrub Forest

Table 4-23 PCT 4142: New England Hills Red Gum-Stringybark Shrub Forest

Attribute	Description
Description	A tall sclerophyll open forest with a sparse mid-stratum of small trees and shrubs and a mid-dense, grassy ground layer, sampled on the New England Tableland primarily around Mount Yarrowyck but with scattered occurrences south to Kentucky and north to Bolivia Hill Nature Reserve. The canopy commonly includes *Eucalyptus melliodora*, gums (*Eucalyptus prava* or rarely *Eucalyptus dealbata*) and stringybarks (*Eucalyptus laevopinea, Eucalyptus caliginosa, Eucalyptus macrorhyncha* or *Eucalyptus youmanii*). The sparse mid-stratum almost always includes *Cassinia quinquefaria* and very frequently *Bursaria spinosa*, with one or more taller Acacia species of which *Acacia neriifolia* and *Acacia implexa* are the most frequent and abundant. The mid-dense ground layer is mainly comprised of grasses, forbs, twiners and hardy ferns, and almost always includes Dichondra repens, very frequently *Cheilanthes sieberi subsp. sieberi* and commonly *Microlaena stipoides, Cymbopogon refractus, Desmodium varians, Lepidosperma laterale, Hydrocotyle laxiflora* and *Rytidosperma racemosum*. This PCT occurs above 860 m asl in a cold, dry environment on granite, acid volcanics and metasediments. The occurrences of this PCT are widely separated and it is unclear whether it occurs elsewhere on the New England Tableland. PCT 3725 occurs nearby in similar topographic positions, however it has a different floristic character including *Eucalyptus andrewsii* being a common canopy component and *Eucalyptus melliodora* absent to rare.
Condition	This community exists in two condition states, good and disturbed. The good condition patches are relatively undisturbed patches with all strata intact with high habitat value (ground logs, shrub cover, rock outcrop), whilst the disturbed condition patches have had previous clearing and are missing one or more stratum.
Dominant species	*Eucalyptus melliodora* (Yellow Box), *Eucalyptus prava* (Orange Gum), and *Eucalyptus dealbata* (Tumbledown Red Gum).
Justification	A high cover of *Eucalyptus melliodora* (Yellow Box), *Eucalyptus prava* (Orange Gum), and *Eucalyptus dealbata* (Tumbledown Red Gum) occurs within the project area with occurrences of *Eucalyptus youmanii* (Youman's Stringybark). However, there is a high degree of similarity between PCT 4142 and PCT 3359. Additional survey is required to confirm the presence of PCT 4142.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	47.05%
Associated TEC	PCT 4142 has no associated TECs.

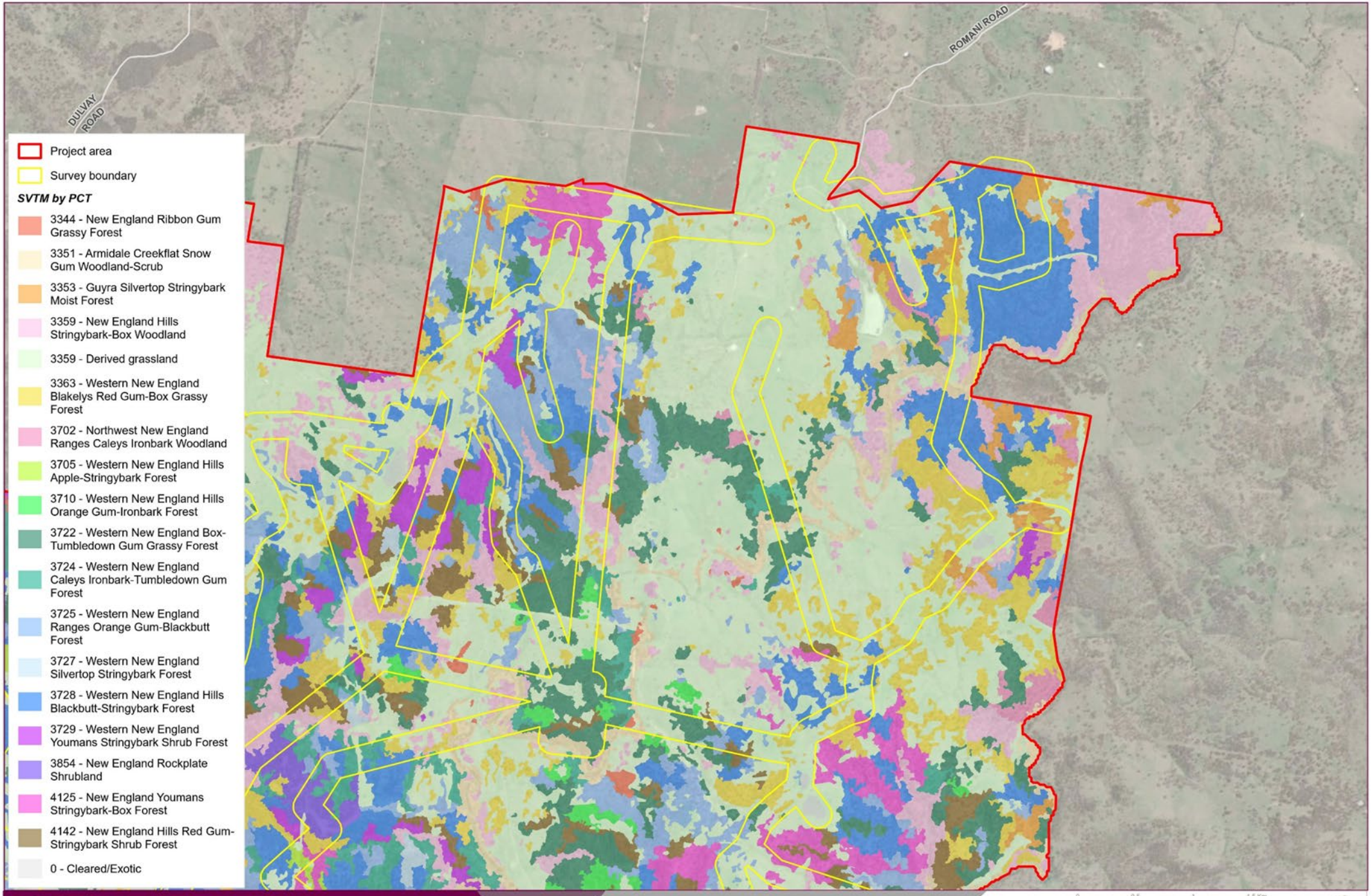


FIGURE 4-8 A PLANT COMMUNITY TYPES

1. This plan was prepared for the sole purposes of the Client for the specific Purpose of producing a photographic overlay plan. This plan is strictly limited to the Purpose and will not be used for any other application, purpose, use or matter. The plan is presented without the assumption of a duty of care to any other person other than the Client, and may not be relied on by a Third Party.

2. Without limiting paragraph 1 above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.

3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 22/08/2025
MAP FILE: PCT
VERSION: A

0 0.5 1 1.5 Km
SCALE 1:40,000
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWSS, RPS, Maxar

PROJECT PATH: C:_AzureOneDrive - Tetra Tech, Inc\Northern Tablelands_WindFarm_CORP\DENTIAL - RPS_AAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEENVSYD15661_Biodiversity\Figure.aprx

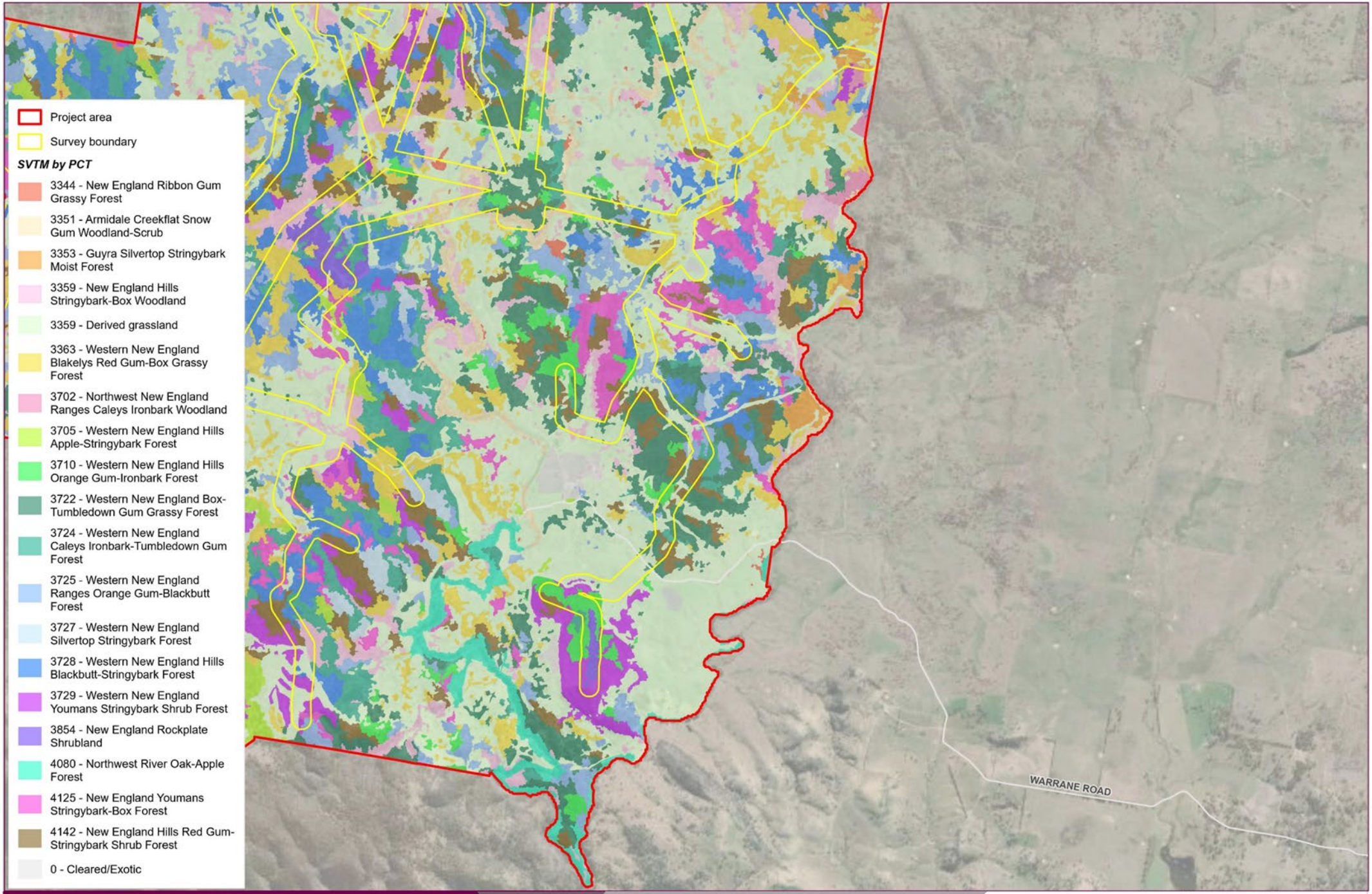


FIGURE 4-8 B PLANT COMMUNITY TYPES

1. This plan was prepared for the sole purposes of the Client for the specific Purpose of producing a photographic overlay plan. This plan is strictly limited to the Purpose and will not be used for any other application, purpose, use or matter. The plan is presented without the assumption of a duty of care to any other person other than the Client, and may not be relied on by a Third Party.

2. Without limiting paragraph 1 above, this plan may not be copied, distributed, or reproduced by any process unless this note is clearly displayed on the plan.

3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 22/08/2025
MAP FILE: PCT
VERSION: A

0 0.5 1 1.5 2 2.5 Km
SCALE 1:56,000
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWSS, RPS, Earthstar Geographics

PROJECT PATH: C:_AzureOneDrive - Tetra Tech, Inc\Northern Tablelands_WindFarm_CORFIDENTIAL - RPS_AAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEENVSYD15661_Biodiversity\Figure.aprx

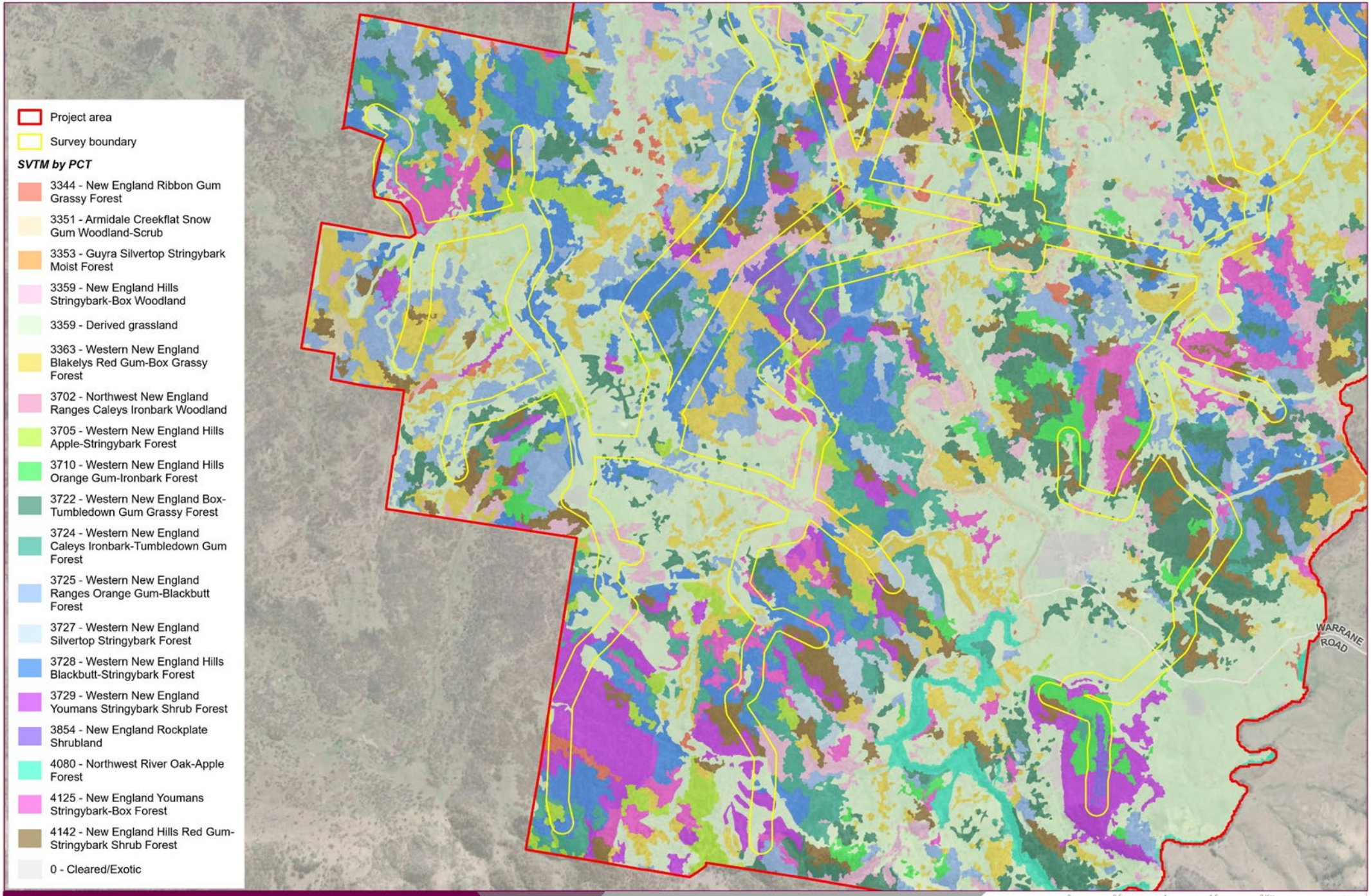


FIGURE 4-8 C PLANT COMMUNITY TYPES

CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15661
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 22/08/2025
MAP FILE:PCT
VERSION:A

SCALE 1:48,000
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWSS, RPS, Earthstar Geographics

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3. The aerial photography used in this plan has not been rectified. This image has been overlaid as a best fit on the boundaries shown and position is approximate only.

PROJECT PATH: C:_Azure\OneDrive - Tetra Tech, Inc\Northern Tablelands_Wind Farm_CONFIDENTIAL - RPS_AAP Geospatial Intelligence Services\03_Projects\02_Biodiversity\OEEENVSYD15661_Biodiversity\Figure.aprx

4.3 Threatened ecological communities

Mapped PCTs are associated with four BC Act listed TECs and two EPBC Act listed TECs, with an additional EPBC Act TEC identified from the PMST (refer **Section 4.1.11**), as detailed in **Table 4-24**. The vegetation within the survey boundary may conform to three BC Act listed and two EPBC Act listed TECs highlighted (purple shading) below.

Key diagnostic characteristics for these BC Act and EPBC Act listed TECs and the potential conformity of the vegetation within the survey boundary is discussed in **Sections 4.3.1** and **4.3.2**.

Table 4-24 Threatened Ecological Communities with the potential to occur within the survey boundary

PCT	BC Act Listing	EPBC Act Listing
N/A	Not listed	Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion)
3854	Howell Shrublands in the New England Tableland and Nandewar Bioregions EEC.	Not listed
3359 & 3363	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 CEEC.	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC.
3344	New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC.	New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands CEEC.
	Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC.	Not listed

4.3.1 BC Act listed threatened ecological communities

4.3.1.1 Howell Shrublands in the New England Tableland and Nandewar Bioregions

The Howell Shrublands in the New England Tableland and Nandewar Bioregions is an Endangered Ecological Community listed under the BC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this EEC is summarised in **Table 4-25**.

Based on this preliminary assessment, the vegetation within the survey boundary is considered unlikely to conform to the listing criteria for this EEC.

Table 4-25 Key diagnostic characteristics for the Howell Shrublands in the New England Tableland and Nandewar Bioregions EEC (NSW Threatened Species Scientific Committee 2011)

Key diagnostic characteristics	Conformity
The ecological community is characterised by the assemblage of species listed under the Final Determination (NSW Threatened Species Scientific Committee 2011).	Unlikely – of the 114 species that characterise this EEC, only five were identified within the survey boundary.
Howell Shrublands has been recorded primarily around Copeton Dam and Goonoowigal near Inverell with a small occurrence (about 10 ha) at Warrabah. These occurrences are within the New England Tableland and Nandewar Bioregions.	Unlikely – although the project is within the New England Tableland Bioregion, previously recorded locations for this EEC are over 50 km away.
The ecological community is dominated by low shrubs, particularly *Homoranthus prolixus* and *Babingtonia densifolia*. Occasionally all shrubs may be absent giving a grassland structure or *Callitris endlicheri* and various eucalypts such as *Eucalyptus dealbata* and *Eucalyptus prava* may be present giving the appearance of a low open woodland.	Possible – while *Eucalyptus dealbata* and *E.prava* were recorded within the survey boundary, the dominant shrub species were absent.

Key diagnostic characteristics	Conformity
The ecological community occurs on granitic outcrops and has been recorded on Gilgai Granite (undifferentiated), leucoadamellite, and Tingha Granite.	Unlikely – while granite outcrops are present within the survey boundary, Gilgai and Tingha Granite (near Inverell) occurs over 50 km away (Astrid Carlton 2012).

4.3.1.2 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

The 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 (Box Gum Woodland) is a CEEC listed under the BC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this CEEC is summarised in **Table 4-26.**

Box Gum Woodland is characteristically dominated by one or more of the species *Eucalyptus albens* (White Box), *E. melliodora* (Yellow Box) and *E. blakelyi* (Blakely's Red Gum)is typically dominated by *E. melliodora* (Yellow Box) and *E. blakelyi* (Blakely's Red Gum) in the eastern parts of its range (generally the tablelands above 600 m above sea level).

Other tree species are sometimes associated with the community either as occasional occurrences or infrequent sub-dominants, but rarely as co-dominant species. In the south-east these include *E. bridgesiana* (Apple Box), *E. goniocalyx* (Bundy) and occasionally *E. nortonii* (Large-Flowered Bundy). In the north-east, species include *Angophora floribunda* (Rough-Barked Apple), *E. bridgesiana* (Apple Box) and occasionally *E. caliginosa* (Broad-Leaved Stringybark) or *E. youmanii* (Youman's Stringybark). *Bursaria spinosa* (Blackthorn), *Hibbertia obtusifolia* (Hoary Guinea Flower) and *Lissanthe strigosa* (Peach Heath) also occur in the eastern parts of the range, along with *Cassinia longifolia* and *Exocarpos cupressiformis* (Native Cherry) in the south-east, and *Acacia filicifolia* (Fern-Leaved Wattle), *A. implexa* (Hickory Wattle), *Cassinia quinquefaria* and *Jacksonia scoparia* (Dogwood) in the north-east (NSW Threatened Species Scientific Committee 2020).

Based on the preliminary assessment, it is likely that the vegetation within the survey boundary would conform to the listing criteria for this CEEC. Some of the vegetation communities within the project area align with the TEC listing where it is dominant or co-dominant in *E. melliodora* (Yellow Box) and/or *E. blakelyi* (Blakely's Red Gum).

In the survey boundary and broader project area, patches of Box Gum Woodland were generally dominated by *E. melliodora* (Yellow Box) or *E. blakelyi* with occurrences of *E. caliginosa* (Broad-Leaved Stringybark) or *E. youmanii* (Youman's Stringybark) with an understorey of native grasses, and occasional shrubs such as *Bursaria spinosa* (Blackthorn), *Hibbertia obtusifolia* (Hoary Guinea Flower) and *Lissanthe strigosa* (Peach Heath) which is typical of this community in the northeast of its range (**Plate 4-3**). PCTs within the survey boundary and broader project area that are consistent with this listing include:

- PCT 3359: New England Hills Stringybark-Box Woodland
- PCT 3363: Western New England Blakely's Red Gum-Box Grassy Forest.

The native grassland within the survey boundary (**Plate 4-4**) may also meet the criteria for this listing which includes derived forms. This preliminary assessment indicates that there is approximately 218 ha of Box Gum Woodland in moderate to good condition within the survey boundary (and ~1,184 ha within the project area). Additionally, approximately 598 ha in the survey boundary of derived grassland may meet the criteria for this listing[2]. See **Figure 4-9** for the highly preliminary extent of this TEC within the survey boundary. Additional vegetation integrity plot surveys should be undertaken to confirm the extent of this TEC in the survey boundary.

[2] Vegetation impact areas reported are based on the precautionary survey boundary (refer **Section 1.2**) and represent a conservative overestimate. Final disturbance areas will be significantly reduced following detailed design in response to ecological surveys.



Plate 4-3 **Example of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland identified within the survey boundary in 'moderate' condition with evidence of partial clearing**



Plate 4-4 **Example of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland identified within the survey boundary in 'derived' condition**

Table 4-26 Key diagnostic characteristics for Boc Gum Woodland CEEC (NSW Threatened Species Scientific Committee 2020)

Key diagnostic characteristics	Conformity
The ecological community is characterised by the assemblage of species listed under the Final Determination (NSW Threatened Species Scientific Committee 2020).	Likely – of the 115 species that characterise this CEEC, 10 were identified within the survey boundary.
The ecological community occurs 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	Yes – the project area is within the New England Tableland Bioregion.
The ecological community is characterised by widely spaced trees with canopies not touching and projected foliage cover generally less than 30%.	Yes – open woodland that matches this description is present within the survey boundary.
The ecological community is characteristically dominated by one or more of the species *Eucalyptus albens* (White Box), *E. melliodora* (Yellow Box) and *E. blakelyi* (Blakely's Red Gum).	Yes – *E. melliodora* (Yellow Box) and *E. blakelyi* (Blakely's Red Gum) commonly occur in the survey boundary.
The ecological community is characterised by a number of understorey species, including the dominant tussock grasses *Themeda triandra* and *Poa sieberiana*, with a range of other forbs and grasses.	Likely – a wide range of native grasses and forbs occur in the survey boundary.
The ecological community is known to occur on hilly to undulating landscapes in areas with soils of moderate fertility derived from a range of lithologies, including alkaline and acid volcanics, granites, sediments, serpentinites and metamorphics.	Yes – these types of landscapes and soils are found throughout the survey boundary.
The ecological community spans a range in elevation from approximately 170 m above sea level on the western slopes of the Great Dividing Range to approximately 1,200 m.	Yes – the elevation of the survey boundary ranges from 960 - 1,250 m above sea level.

4.3.1.3 New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion

The New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion is a CEEC listed under the BC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this EEC is summarised in **Table 4-27**.

Based on a preliminary assessment, it is possible that the vegetation within the survey boundary or greater project area conforms to the listing criteria for this CEEC. Additional vegetation integrity plot surveys should be undertaken to confirm the presence and extent of this TEC.

Table 4-27 Key diagnostic characteristics for the New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC (NSW Threatened Species Scientific Committee 2013)

Key diagnostic characteristics	Conformity
The ecological community occurs on basalts and sediments is New England Tableland Bioregion.	Yes – the project is located within the New England Tableland Bioregion and occurs on basalts and sediments.
The ecological community is characterised by the assemblage of species listed under the Final Determination (NSW Threatened Species Scientific Committee 2013).	Possible – of the 103 species that characterise this CEEC, seven were identified within the Survey boundary.
The ecological community is dominated by trees of *Eucalyptus nova-anglica* and occasionally with *E. dalrympleana* subsp. *heptantha*, as a co-dominant. The tree layer is usually 8-20 m tall with a sparse cover up to 30%. There are few shrub species present, and none are abundant within the community. Ground cover is usually	Possible – a patch of isolated *Eucalyptus nova-anglica* was identified along a first order stream off Boorolong Creek. Scattered occurrences of and *E. dalrympleana* were identified within the south-western portion of the

Key diagnostic characteristics	Conformity
dense with *Asperula conferta*, *Poa sieberiana*, *Themeda australis*, *Juncus filicaulis*, *Dichondra repens*, *Carex inversa*, *Rumex brownii*, *Acaena ovina* and *Desmodium varians* commonly occurring.	survey boundary, however the two species were not noted in conjunction. Both woodland patches had low occurrence of shrub species and were dominant in grasses and forbs.
The ecological community occurs primarily in valley flats subject to cold air drainage.	Likely – these conditions are likely present within the project area.

4.3.1.4 Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion

The Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion is an EEC listed under the BC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this EEC is summarised in **Table 4-28**.

Based on a preliminary assessment, it is possible that the patches of the vegetation within the south-western corner of the survey boundary would conform to the listing criteria for this EEC. See **Figure 4-9** for the preliminary extent of this TEC within the survey boundary.

Additional vegetation integrity plot surveys should be undertaken to confirm the extent of this TEC in the survey boundary.

Table 4-28 Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC (NSW Threatened Species Scientific Committee 2011)

Key diagnostic characteristics	Conformity
The ecological community occurs in New England Tableland Bioregion.	Yes – the project is located within the New England Tableland Bioregion.
The ecological community typically occurs at elevations of 700 – 1,500 m asl.	Yes – the elevation of the Survey boundary ranges from 960 - 1,250 m asl.
The ecological community is mainly confined to the high undulating basalt plateau with deep, chocolate or krasnozem loam soils.	Yes – the soil within the south-western corner of the Survey boundary (see **Figure 4-2**) is described as a basalt plateau with clay loams on slopes.
The ecological community is characterised by the assemblage of species listed under the Final Determination (NSW Threatened Species Scientific Committee 2011).	• Possible – of the 53 species that characterise this CEEC, two were identified within the Survey boundary: *Eucalyptus dalrympleana* and *Eucalyptus viminalis*. These species were uncommon but present in patches within the south-western corner of the project area.
The ecological community is characterised by a tree layer usually 20 m tall, reaching up to 30 m in resource-rich sites, but considerably shorter than 20 m on exposed or damp sites or where past clearing has removed mature trees.	Yes – such woodland is present within the survey boundary, whereby the canopy reaches up to 30 m in the south-western corner of the survey boundary.
Common overstorey species include *Eucalyptus viminalis* (Ribbon Gum), *E. dalrympleana* subsp. *heptantha* (Mountain Gum), *E. pauciflora* (Snow Gum or White Sallee) and occasionally *E. stellulata* (Black Sallee). The understorey comprises a sparse layer of shrubs including *Acacia dealbata*, *Pultenaea microphylla* and *Pimelea linifolia* and a dense to very dense grassy ground cover dominated by *Poa sieberiana* var. *sieberiana, P. labillardieri* var. *labillardieri, Themeda australis* and *Elymus scaber* with herbs such as *Acaena* spp. *Ammobium alatum, Asperula conferta, Geranium solanderi, Ranunculus lappaceus* and numerous other species	Possible – some of these commonly occurring species were identified within the survey boundary in the south-western section. *Eucalyptus dalrympleana* subsp. *heptantha* and *Eucalyptus viminalis* were identified, with a ground layer of native tussock grasses (including *Poa* spp. and *Rytidosperma* spp.).

4.3.2 EPBC Act listed threatened ecological communities

4.3.2.1 Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion)

The Upland Wetlands of New England Tablelands and Monaro Plateau is an EEC listed under the EPBC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this EEC is summarised in **Table 4-29.**

Based on a preliminary assessment, it is unlikely that the vegetation within the survey boundary would conform to the listing criteria for this EEC.

Table 4-29 Upland Wetlands of New England Tablelands and Monaro Plateau EEC (Cth DCCEEW 2005)

Key diagnostic characteristics	Conformity
The ecological community occurs in the following IBRA bioregions: New England Tableland Bioregion and South Eastern Highlands Bioregion.	Yes – the project is located within the New England Tableland Bioregion.
The ecological community consists of near-permanent, intermittent or ephemeral wetlands. Near-permanent and intermittent wetlands support an average of 15 and 24 native flora species, respectively. Ephemeral wetlands have less diverse native flora (11 species) and are often degraded owing to livestock grazing disturbance.	No – no permanent wetlands or near-permanent wetlands were identified. Farm dams and creeks are the common types of water bodies in the project area.
These wetlands occur on undulating, mostly basalt plateau with organic soils, forming in the lagoons, over dark chocolate loam.	No – whilst basalt soils are mapped within the survey boundary in the west, no wetlands were mapped or previously identified.
Associated vegetation of this ecological community includes closed to mid-dense sedgeland and grassland. Deep lagoons tend to have vegetation on shores and shallow reaches whereas shallow wetlands have vegetation across the depression. Associated species include water plants, grasses, sedges and forbs such as *Potamogeton tricarinatus, Myriophyllum variifolium, Nymphoides geminata, Eleocharis acuta, E. pusilla Stellaria angustifolia, Pratia surrepens, Hydrocotyle tripartita, Juncus fockei, Epilobium billardierianum* subsp. *cinereum, Brachyscome radicans, Agrostis avenacea var. avenacea, Glyceria australis, Cardamine tenuifolia, Crassula helmsii, Limosella australis, Ranunculus diminutus, Persicaria prostrata,* and *Chara* spp. Trees and shrubs do not naturally occur in the wetlands, but stands fringing wetlands regulate run-off and act as a buffer.	No - these diagnostic species were not identified within the survey boundary.

4.3.2.2 White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

The White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland is a CEEC listed under the EPBC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this CEEC is summarised in **Table 4-30Table 4-30**.

Based on a preliminary assessment, it is likely that the vegetation within the survey boundary would conform to the listing criteria for this CEEC.

Patches of two PCTs (3359 and 3363) are likely to conform to the EPBC Act listed TEC. The native grassland within the survey boundary may also meet the criteria for this listing which includes derived forms. This preliminary assessment indicates there is approximately 218 ha of White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in moderate to good condition within the survey boundary (and ~1,184 ha within the project area).

Additionally, approximately 598 ha of derived grassland in the survey boundary may meet the criteria for this listing. Refer **Figure 4-9** for the preliminary extent of this TEC within the survey boundary.

Additional vegetation integrity plot surveys should be undertaken to confirm the extent of this TEC in the survey boundary.

Table 4-30 Key diagnostic characteristics for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC (Cth DCCEEW 2023)

Key diagnostic characteristics	Conformity
The ecological community occurs in the following IBRA bioregions: Brigalow Belt South, Murray Darling Depression, Nandewar, New England Tableland, NSW North Coast, NSW South Western Slopes, Riverina, South Eastern Queensland, South East Corner, South East Coastal Plain, South Eastern Highlands, Southern Volcanic Plain, Sydney Basin and Victorian Midlands	Yes – the project is located within the New England Tableland Bioregion.
The ecological community has, or previously had, an overstorey dominated or co-dominated by *Eucalyptus albens* (White Box) and/or *E. melliodora* (Yellow Box) and/or *E. blakelyi* (Blakely's Red Gum).	Yes – *E. melliodora* (Yellow Box) and *E. blakelyi* (Blakely's Red Gum) commonly occur in the survey boundary.
It has a predominantly native ground layer.	Yes – areas of the survey boundary were dominated by native grasses and forbs.
Tussock grasses are conspicuous in the ground layer.	Yes – native tussock grasses (including *Poa* spp. and *Rytidosperma* spp.) were identified within the survey boundary.
Amongst the grass tussocks and sometimes in swathes, a range of broad-leaved forbs and petaloid monocots may be a major component of the plant diversity.	Yes – a range of forbs (such as *Wahlenbergia* spp.) and petaloid monocots were identified within the survey boundary.
The average shrub cover of the whole patch must be less than 30% to be part of the listed ecological community.	Likely – open woodland with minimal shrub cover is present across the survey boundary.

4.3.2.3 New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands

The New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands is a CEEC listed under the EPBC Act. Key diagnostic characteristics and the conformity of vegetation within the survey boundary for this CEEC is summarised in **Table 4-31**.

Based on a preliminary assessment, it is likely that a small patch of this TEC occurs within the project area along Boorolong Creek (see **Plate 4-5** and **Figure 4-9**). However, this TEC was identified only within the greater project area and has not yet been identified within the survey boundary.

Additional vegetation integrity plot surveys should be undertaken to confirm the extent of this TEC in the survey boundary.

Table 4-31 Key diagnostic characteristics for the New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands CEEC (Cth TSSC 2011)

Key diagnostic characteristics	Conformity
The ecological community is a type of temperate grassy eucalypt woodland to open forest in which the tree canopy is dominated or co-dominated by *Eucalyptus nova-anglica* (New England Peppermint).	Yes – a patch of isolated *Eucalyptus nova-anglica* (see **Plate 4-5**) was identified along a first order stream off Boorolong Creek.
The ecological community mainly occurs on the tablelands of southern Queensland and northern New South Wales, known as the New England or Northern tablelands.	Yes – the project is located within the New England Tableland Bioregion.
The ecological community generally occurs on valley flats and lower slopes subject to cold air drainage at elevations of 900 to 1,400 m above sea level.	Yes – elevation of the Survey boundary ranges from 960 - 1,250 m asl and contains valleys and lower slopes likely subject to cold air drainage.
The ecological community has a tree canopy that is typically 8 to 20 m high with a variable crown cover ranging from less than 30% in woodlands to 30-50% in open forests. The tree canopy is dominated or co-dominated by *Eucalyptus nova-anglica*.	Yes – a patch of isolated *Eucalyptus nova-anglica* was identified along a first order stream off Boorolong Creek.

Key diagnostic characteristics	Conformity
Typically, shrubs are sparse or absent in the ecological community. When shrubs are present, typical species that may occur include: *Leucopogon fraseri* (Sharp Beard-heath), *Melichrus urceolatus* (Urn-heath), *Lissanthe strigosa* (Peach Heath), *Rubus parvifolius* (Native Raspberry) and *Bursaria spinosa* (Blackthorn), and *Acacia dealbata* (Silver Wattle).	Yes – within the patch of *Eucalyptus nova-anglica,* shrubs were absent.
The ground layer is usually dominated by a range of native grasses and other herbs. The grass layer is usually continuous, commonly including *Poa sieberiana* (Grey Tussock Grass), *Themeda triandra* (Kangaroo Grass), with many other native grasses and forbs common.	Yes – within the patch of *Eucalyptus nova-anglica,* the grass layer was continuous and consisted of native grasses and forbs.



Plate 4-5 Vegetation patch dominant in *Eucalyptus nova-anglica* along Boorolong Creek within the project area

[2] Vegetation impact areas reported are based on the precautionary survey boundary (refer Section 1.2) and represent a conservative overestimate. Final disturbance areas will be significantly reduced following detailed design in response to ecological surveys.

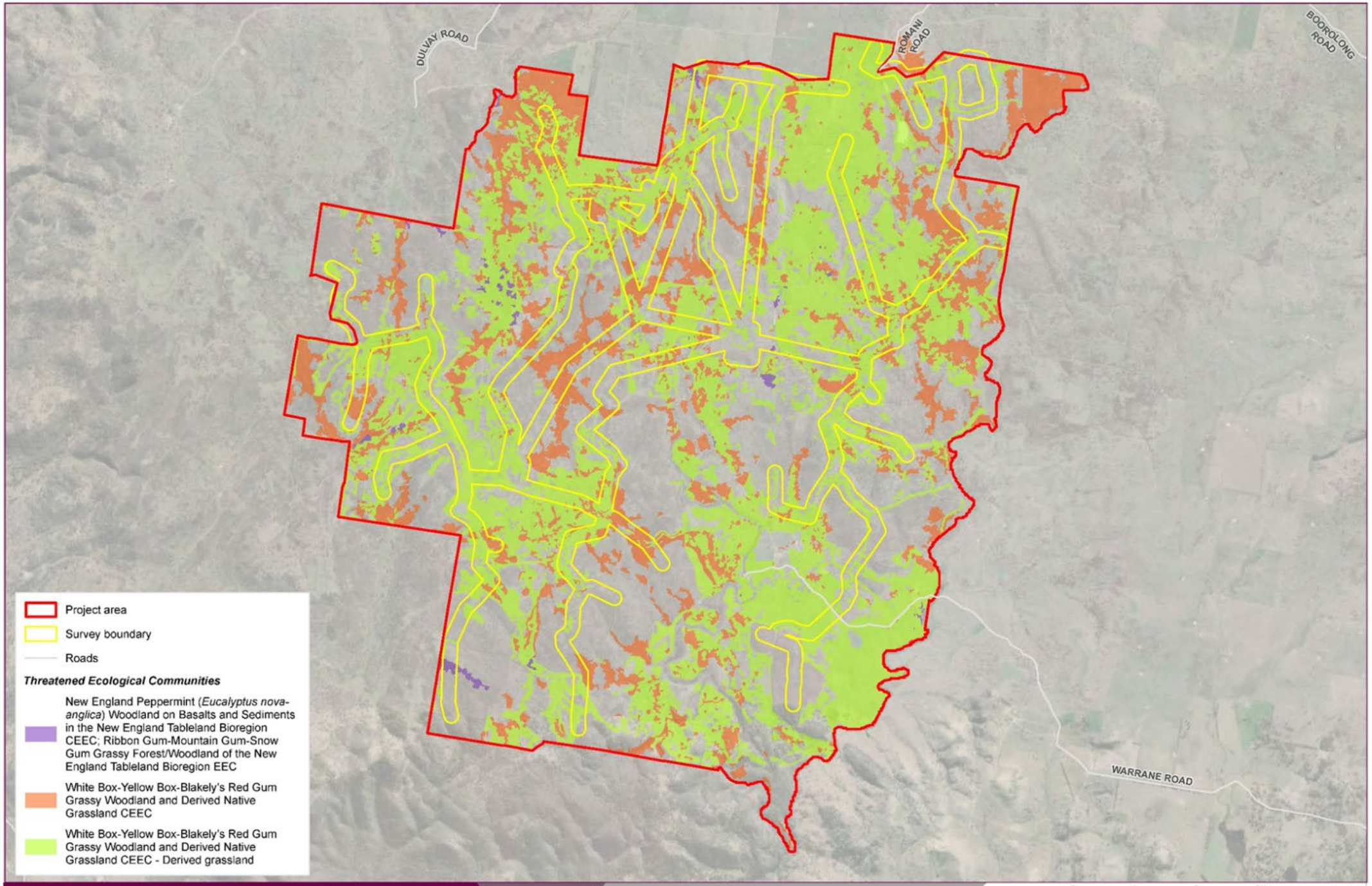


FIGURE 4-9 THREATENED ECOLOGICAL COMMUNITIES

CLIENT: Origin Energy Pty Ltd
PROJ: OEENVSYD15661
LOCATION: Biodiversity (NTWF)

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE:TEC
VERSION:A

0 1 2 3 Km
SCALE 1:75,000
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWLS, RPS, Earthstar Geographics

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4.4 Flora

A total of 41 species were recorded within the RDP and BAM plots within the survey boundary. Of these species, 33 are native and six are exotic (see full list in **Appendix B**).

4.4.1 Exotic species

A total of six exotic species were identified within the survey boundary (refer to **Table 4-32**). Exotic species with Biosecurity duties, their management requirements under the *Biosecurity Act 2015*, and status as a weed of national significance (WoNS) and or High Threat Weed, are listed in **Table 4-32**. One WoNs was identified within the project area.

Of concern, *Rubus fruticosus* (Blackberry) was identified throughout the survey boundary and infestations should be contained.

Table 4-32 Biosecurity Duties for Weeds occurring within the survey boundary

Scientific Name	Common Name	WoNS	High Threat Weed	Duty under *Biosecurity Act 2015*
Cirsium vulgare	Spear Thistle	-	-	**General biosecurity duty** 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.
Conyza spp.	Fleabane	-	-	**General biosecurity duty** 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.
Rubus fruticosus	Blackberry	YES	YES	**General biosecurity duty** 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. **Prohibition on certain dealings** Must not be imported into the state, sold, bartered, exchanged or offered for sale. All species in the *Rubus fruiticosus* species aggregate have this requirement, except for the varietals Black Satin, Chehalem, Chester Thornless, Dirksen Thornless, Loch Ness, Murrindindi, Silvan, Smooth Stem, and Thornfree. **Regional recommended measure* (for regional priority - containment)** Whole of region: land managers mitigate the risk of new weeds being introduced to their land. Within exclusion zone: Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Notify local control authority if found. Within core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.

4.4.2 Threatened flora

No threatened flora species were recorded within the survey boundary during preliminary surveys. One occurrence of *Eucalyptus nicholii* has been previously recorded within the project area (**Figure 4-10**), however the record is old (1929) and has low accuracy. Database searches identified 20 threatened flora species with a moderate to high potential to occur within the locality as identified in **Section 3.2.3.**

Seasonal targeted threatened flora surveys would be required to specifically search for candidate threatened species with a known or predicted distribution within the project area (see **Table 4-6**).

4.5 Fauna

4.5.1 General findings

A total of 41 native and three exotic fauna species were identified within the survey boundary. See **Appendix B** for the full fauna inventory.

4.5.1.1 Birds

Opportunistic bird surveys identified 39 species within or adjacent to the survey boundary. Many of the species' observations commonly occur in rural environment such as Noisy Miner (*Manorina melanocephala*), Australian Magpie (*Gymnorhina tibicen*), Masked Lapwing (*Vanellus miles*) and Australian King-Parrot (*Alisterus scapularis*). Two species listed as Vulnerable under the BC Act were identified including the Diamond Firetail (*Stagonopleura guttata*), and Scarlet Robin (*Petroica boodang*).

Vegetation observed within the survey boundary are compatible for supporting foraging and nesting of nectivorous, insectivorous and carnivorous bird species. Large dams within the survey boundary provide suitable habitat for a suite of water birds and migratory species. *Allocasuarina* species were observed along watercourses within and adjacent to the survey boundary which may provide important foraging habitat for the South-eastern Glossy Black Cockatoo (*Calyptorhynchus lathami lathami*). Small hollows (2–10 cm diameter) were recorded across the survey boundary and one large hollow (>20 cm diameter) capable of supporting nesting owls was observed in a dead stag, however more are expected.

4.5.1.2 Amphibians and reptiles

No reptile species were observed within the survey boundary during opportunistic surveying, however one turtle shell was found along a small tributary in the south-western corner of the survey boundary. Habitat conditions necessary to support terrestrial reptiles (i.e. such as basking sites, flowing water, surface rock, rocky outcrops, log shelters and tree cover) are present throughout the survey boundary. As a result of these conditions, reptile species may utilise the survey boundary.

One amphibian species was opportunistically detected within the survey boundary. The Common Eastern Froglet (*Crinia signifera*) was heard calling within vegetated dam habitats and creeks. Optimal amphibian habitat occurs within the survey boundary such as flowing water including Boorolong Creek and permanent waterbodies including dams with aquatic vegetation for other frog species.

4.5.1.3 Mammals

Eastern Grey Kangaroos (*Macropus giganteus*) were observed within and adjacent to the survey boundary. Mature hollow-bearing trees within the south-western extent of the survey boundary may provide habitat for threatened arboreal marsupials such as the Yellow-bellied Glider (*Petaurus australis*) and Greater Glider (*Petauroides volans*).

4.5.1.4 Microbats

No microbat species were identified during within the survey boundary. Tree fissures and hollows may support opportunistic roosting, however no cave or human-made habitats such as culverts or stormwater drains were observed within the survey boundary.

4.5.2 Fauna habitat

Key fauna habitat features identified during preliminary surveys are summarised in **Table 4-33**.

Table 4-33 Key habitat features of the survey boundary

Habitat feature	Extent and condition within survey boundary
Hollow-bearing trees	The majority of hollow bearing trees were recorded in old growth forest in the south-western corner of the survey boundary. Small hollows (2-10 cm diameter) were recorded across the survey boundary and one large hollow (>20 cm diameter) capable of supporting nesting owls was observed in a dead stag.
Dead wood including stags and ground logs	Numerous fallen stags and logs are located within the survey boundary. Some large fallen logs were hollow providing potential sheltering habitat for reptiles, insects, and small passerine birds.
Weed thickets	One WoNS of concern, *Rubus fruticosus* (Blackberry), was identified throughout the survey boundary which leads to habitat degradation and out competition of natives (DPI 2025b). *Rubus fruticosus* also provides habitat and shelter for invasive species such as pigs and rabbits which were recorded within the survey boundary.
Bush rock and rocky outcrops	A large number of natural rocky outcrops and surface rocks were present on and near the survey boundary. A number of arthropods including scorpions and spiders were recorded underneath bush rocks during survey boundary investigations.
Waterbodies such as wetlands, streams, rivers and dams	A natural waterbody, namely Boorolong Creek and its tributaries, are located within the survey boundary. Numerous dams provide permanent water for a range of aquatic bird species which were observed utilising the dams during survey boundary investigations. The largest dam is located within the north-eastern extent of survey boundary and is approximately 1 km in length, providing potential habitat for a range of waterbird species, amphibians and fish species.
Nests and roosts	No stick nests were observed within the survey boundary.
Distinctive scats (e.g., those of the Spotted-tailed Quoll or Koala)	No distinctive scats were located within the survey boundary.
Allocasuarina spp.	*Allocasuarina* spp. were present within the survey boundary, particularly along Boorolong Creek.
Flying-fox camps	No roosts or evidence of recent roosts were observed on the survey boundary. The closest recorded Flying Fox camps (Cth DCCEEW 2024) are situated north of the survey boundary in the township of Yarrowyck and east in the township of Armidale.
Microchiropteran bat subterranean roosts (caves, culverts, tunnels and disused mine shafts)	No distinctive subterranean bat roosts were observed within the survey boundary.
Winter-flowering eucalypts	*Eucalyptus mellidora, Eucalyptus moluccana, Eucalyptus albens, Eucalyptus caliginosa,* and *Eucalyptus banksii* are present in the survey boundary and could provide seasonal foraging habitat.
Koala feed trees	*Eucalyptus mellidora, Eucalyptus dalrympleana, Eucalyptus malacoxylon, Eucalyptus prava,* and *Euxcalyptus blakelyi* were present within the survey boundary and may support Koala feeding. These trees are listed as secondary koala food trees under Schedule 3 of the *State Environmental Planning Policy (Biodiversity and Conservation) 2021*; Northern Tablelands koala Management Area. No primary food source trees occur within the survey boundary.
Amphibian habitats	The survey boundary contains an existing creek (Boorolong Creek) and varied permanent water sources including small to large dams (including a human-made dam approximately one kilometre in length) which create areas of ponding
Mistletoes	Numerous mistletoes were located through the entirety of the survey boundary. Mistletoes are important food sources for bird and bat species that occur within the area.

4.5.3 Threatened fauna

Two threatened fauna species were opportunistically identified within the survey boundary:

- Diamond Firetail (*Stagonopleura guttata;* BC Act: Vulnerable; EPBC Act: Vulnerable)
- Scarlet Robin (*Petroica boodang*; BC Act: Vulnerable).

Historically, the White-throated Needletail (*Hirundapus caudacutus*) has been recorded at the Rileys Creek dam in the north-east of the project area. Multiple occurrences of the Koala (*Phascolarctos cinereus*) have been previously recorded outside of the project area on neighbouring properties and public roads (**Figure 4-10**; NSW DCCEEW 2025b). Additionally, database searches identified 58 threatened fauna species with a moderate to high potential to occur within the locality as identified in **Section 3.2.3.**

Seasonal targeted threatened fauna surveys would be required for candidate threatened species with a known or predicted distribution within the survey boundary (see **Table 4-7**).

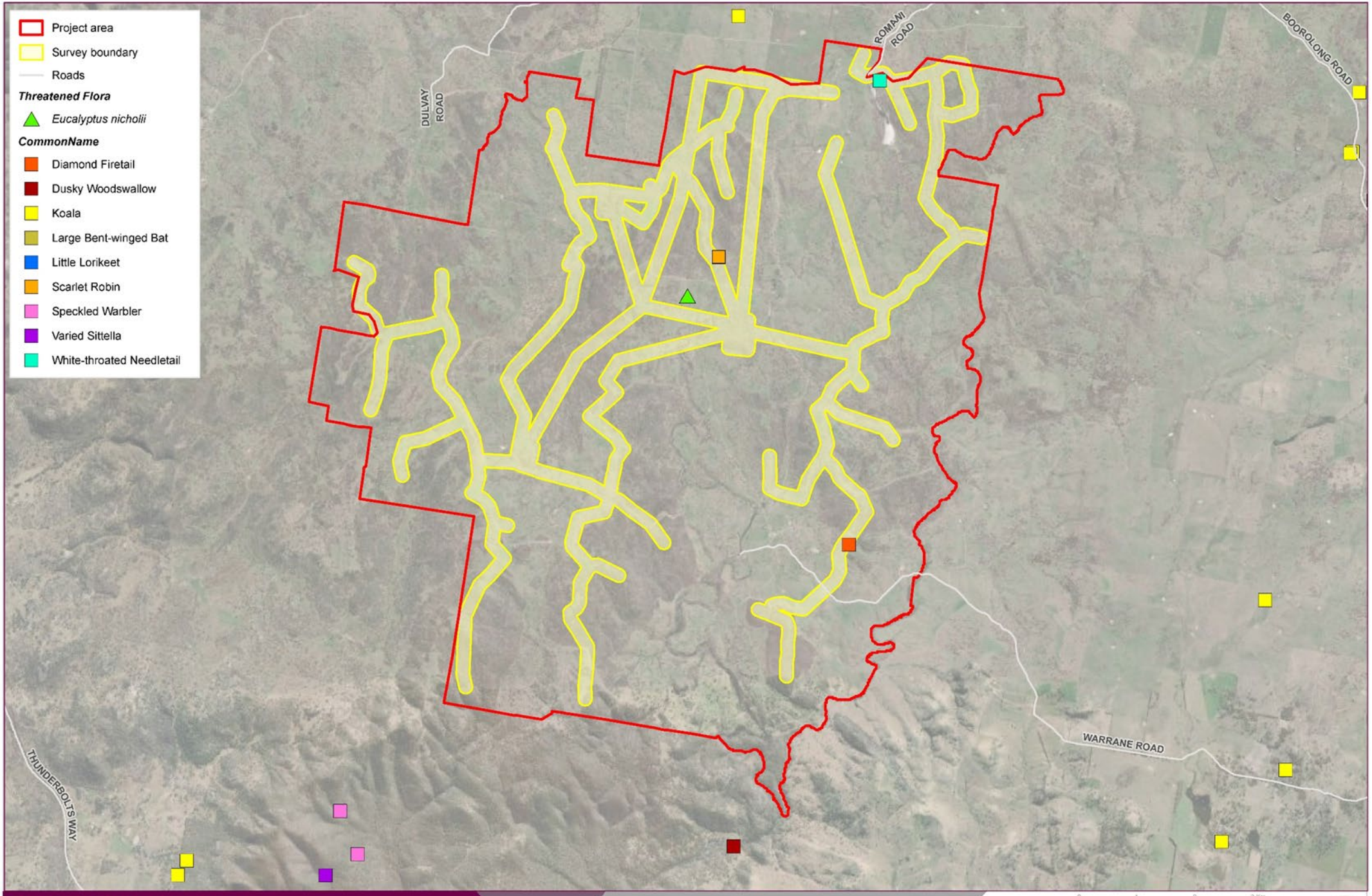


FIGURE 4-10 THREATENED SPECIES

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CLIENT: Origin Energy Pty Ltd
PROJ: 604-OEENVSYD-15681
LOCATION: Armidale, NSW

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 21/08/2025
MAP FILE: Th Species
VERSION: A

0 1 2 3 Km
SCALE 1:80,000
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWSS, RPS, Earthstar Geographics

PROJECT PATH: C:\Users\OneDrive - Tetra Tech, Inc\Anchor+Tablelance_WindFarm_CONFIDENTIAL - RPS_MAP Geospatial Intelligence Services\03_Projects\02_Sydney\OEENVSYD-15681_Biodiversity\Figure.aprx

4.6 Matters of National Environmental Significance

Matters of national environmental significance (MNES) relevant to the project area are addressed below.

4.6.1 World heritage properties

The project area is not within proximity to a World Heritage Area.

4.6.2 National heritage places

The project area is not within proximity to a National Heritage Place.

4.6.3 Wetlands of international importance (declared Ramsar wetlands)

The project area is not within proximity to a declared Ramsar wetland. The closest Ramsar Wetland is the Little Llangothlin Nature Reserve, located 40 km north-east of the project area. Gwydir Ramsar wetlands are also located 230 km north-west from the project area.

4.6.4 The Great Barrier Reef Marine Park

The Great Barrier Reef Marine Park does not occur within or adjacent to the project area.

4.6.5 Commonwealth Marine Area

The project area is not within proximity to a Commonwealth Marine Area.

4.6.6 Listed threatened ecological communities

Two EPBC Act listed TECs are associated with the PCTs mapped within the project area being:

- White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC
- New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands CEEC.

A detailed assessment of EPBC Act listed TECs is provided in **Section 4.3.2**.

4.6.7 Listed threatened and migratory species

One EPBC Act listed threatened fauna species was identified within the survey boundary during opportunistic surveys:

- Diamond Firetail (*Stagonopleura guttata;* EPBC Act: Vulnerable).

Historical records of the White-throated Needletail (*Hirundapus caudacutus*) have been recorded at Rileys Creek dam in the north-east of the project area and multiple occurrences of the Koala (*Phascolarctos cinereus*) have been recorded outside of the project area on neighbouring properties and public roads (**Figure 4-10**; NSW DCCEEW 2025b).

A total of 30 threatened/migratory fauna species and 14 threatened flora species listed under the EPBC Act have habitats which may occur within the locality (refer to **Appendix D**).

Species that have a moderate or greater likelihood of occurrence within the project area are listed in **Table 4-34** and **Table 4-35**.

Table 4-34 EPBC Act listed threatened fauna species with a moderate to high likelihood of occurrence

Scientific Name	Common Name	EPBC Act Status
Litoria booroolongensis	Booroolong Frog	E
Litoria castanea	Yellow-spotted Tree Frog	CE
Litoria subglandulosa	Glandular Frog	V
Mixophyes balbus	Stuttering Frog	V
Anthochaera phrygia	Regent Honeyeater	CE
Aphelocephala leucopsis	Southern Whiteface	V
Apus pacificus	Fork-tailed Swift	M,MAR
Botaurus poiciloptilus	Australasian Bittern	E
Calidris acuminata	Sharp-tailed Sandpiper	V,M,MAR
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V
Gallinago hardwickii	Latham's Snipe	V,M,MAR
Grantiella picta	Painted Honeyeater	V
Hirundapus caudacutus	White-throated Needletail	V,M,MAR
Lathamus discolor	Swift Parrot	CE,MAR
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E
Rostratula australis	Australian Painted Snipe	E, MAR
Stagonopleura guttata	Diamond Firetail	V
Tringa nebularia	Common Greenshank	E,M,MAR
Chalinolobus dwyeri	Large-eared Pied Bat	E
Dasyurus maculatus	Spotted-tailed Quoll	E
Nyctophilus corbeni	Corben's Long-eared Bat	V
Petauroides volans	Greater Glider	E
Petaurus australis	Yellow-bellied Glider	V
Petrogale penicillata	Brush-tailed Rock-wallaby	V
Phascolarctos cinereus	Koala	E
Pteropus poliocephalus	Grey-headed Flying-fox	V
Myuchelys belli	Western Sawshelled Turtle, Bell's Turtle	E
Uvidicolus sphyrurus	Border Thick-tailed Gecko	V
Maccullochella peelii	Murray Cod	V

V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, M = Migratory

Table 4-35 EPBC Act listed threatened flora species with a moderate to high likelihood of occurrence

Scientific Name	Common Name	EPBC Act Status
Acacia pubifolia	Velvet Wattle	V
Boronia granitica	Granite Boronia	E
Caladenia amnicola	Bundarra Spider Orchid	E
Callistemon pungens		V
Dichanthium setosum	Bluegrass	V
Diuris pedunculata	Small Snake Orchid	E
Eucalyptus caleyi subsp. ovendenii	Ovenden's Ironbark	V
Eucalyptus mckieana	McKie's Stringybark	V
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V
Eucalyptus rubida subsp. barbigerorum	Blackbutt Candlebark	V
Picris evae	Hawkweed	V
Pimelea venosa	Bolivia Hill Rice-flower	E
Thesium australe	Austral Toadflax	V
Vincetoxicum forsteri	Tylophora linearis	E

V = Vulnerable, E = Endangered

5 DISCUSSION

5.1 Vegetation communities

Direct impacts associated with the proposed project area would be subject to further assessment at the EIS stage in accordance with the BAM. Further field surveys are required to confirm the extent and condition of vegetation clearing requirements (i.e. additional vegetation integrity plots in line with the BAM).

At this preliminary stage, approximately 892 ha of native woodland vegetation and a further 598 ha of derived native grassland has been mapped within the survey boundary, comprised of 18 native PCTs. Where BAM plots were undertaken, VI scores are also summarised as follows:

- PCT 3344: New England Ribbon Gum Grassy Forest – VI 60.1
- PCT 3351: Armidale Creekflat Snow Gum Woodland-Scrub
- PCT 3353: Guyra Silvertop Stringybark Moist Forest – VI 69.4
- PCT 3359: New England Hills Stringybark-Box Woodland –VI 27.4 (Derived), VI 40.7 (Poor)
- PCT 3363: Western New England Blakely's Red Gum-Box Grassy Forest – VI 29.4 (Poor), VI 78.5 (Good)
- PCT 3702: Northwest New England Ranges Caley's Ironbark Woodland
- PCT 3705: Western New England Hills Apple-Stringybark Forest
- PCT 3710: Western New England Hills Orange Gum-Ironbark Forest
- PCT 3722: Western New England Box-Tumbledown Gum Grassy Forest
- PCT 3724: Western New England Caley's Ironbark-Tumbledown Gum Forest
- PCT 3725: Western New England Ranges Orange Gum-Blackbutt Forest
- PCT 3727: Western New England Silvertop Stringybark Forest – VI 82.1
- PCT 3728: Western New England Hills Blackbutt-Stringybark Forest
- PCT 3729: Western New England Youmans Stringybark Shrub Forest
- PCT 3854: New England Rockplate Shrubland
- PCT 4125: New England Youmans Stringybark-Box Forest – VI 59.9
- PCT 4142: New England Hills Red Gum-Stringybark Shrub Forest.

The direct impact to native vegetation generates a biodiversity credit obligation under the BAM. Ecosystem credits measure the value of non-threatened vegetation communities and TECs that provide habitat for threatened species, that can be reliably predicted to occur based on the presence of PCTs and landscape features.

An offset for all impacts on PCTs is generated if the vegetation zone has a vegetation integrity score of:

a. ≥15, where the PCT is representative of an EEC or a CEEC

b. ≥17, where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community

c. ≥20, where the PCT does not represent a TEC and is not associated with threatened species habitat.

Based on the preliminary findings of this assessment, the project would generate an average offset obligation of 27 ecosystem credits per hectare of PCT impact. See **Appendix E** for preliminary BAM calculator outputs.

5.2 Threatened ecological communities

Based on the preliminary assessment, one BC Act listed and EPBC Act listed TEC was confidently identified within the survey boundary.

- 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 CEEC.

This TEC is associated with PCT 3359 and 3363 in both moderate and derived grassland condition states where the vegetation was previously, or is currently dominant or co-dominant in *E. melliodora* (Yellow Box) and/or *E. blakelyi* (Blakely's Red Gum).

In the survey boundary and broader project area, patches of Box Gum Woodland were generally dominant in *E. melliodora* (Yellow Box) or *E. blakelyi,* occurrences of *E. caliginosa* (Broad-Leaved Stringybark) or *E. youmanii* (Youman's Stringybark) with an understorey of native grasses, and occasionally shrubs such as *Bursaria spinosa* (Blackthorn), *Hibbertia obtusifolia* (Hoary Guinea Flower) and *Lissanthe strigosa* (Peach Heath) which is typical of this community in the northeast of its range. This CEEC is common throughout the project area, and it is estimated that there is 217 hectares of White Box-Yellow Box- Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC in the survey boundary with potential to be directly (i.e. clearing) and indirectly impacted. A further 598 ha may meet the listing under a derived grassland condition. Additional survey and vegetation mapping will ascertain the extent of this CEEC within the survey boundary.

Two additional TECs were tentatively identified within the survey boundary, however additional survey is required to confirm the presence and extent of these communities:

- BC and EPBC Act listed New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC
- BC Act listed Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC.

New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands CEEC may occur in the project area where there is a dominance of *Eucalyptus nova-anglica* in the canopy. Whilst the Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC may occur where there is a dominance of *Eucalyptus dalrympleana* subsp. *heptantha* and *Eucalyptus pauciflora*. The project may result in direct (i.e., clearing) and indirect (i.e. fragmentation) impacts of these TECs.

Direct impacts to TECs would be formally assessed within the BDAR during the EIS process. At this preliminary stage, all above listed TECs are assumed present within the project area in accordance with the precautionary principle.

5.2.1 Serious and irreversible impacts

Two TECs are regarded as a serious and irreversible impact (SAII) candidate communities under the BC Act:

- 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
- New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion.

An assessment of SAII would be completed in the BDAR as part of the EIS if any direct or indirect impacts are proposed to these communities.

5.3 Threatened species

Threatened species would require formal assessment in accordance with BAM under the BC Act at the EIS phase. Under the BAM, there are two distinct categories of threatened species:

- **Ecosystem species**: are readily predicted by habitat surrogates. Ecosystem credits species do not require any formal assessment under the BAM. These species are predicted to occur based on the vegetation type/s present. Any ecosystem species however, that are listed under the EPBC Act, would require their own assessment in a separate component of the assessment report
- **Species credits:** are not readily predicted by habitat or vegetation. Species credit species require targeted survey and if identified (or likely based on other data), then habitat must be mapped. Species credits carry their own offset obligation and are additional to assessments of native vegetation.

Threatened species that may occur in the survey boundary and require formal survey are discussed further below.

5.3.1 Threatened fauna

The field validated likelihood-of-occurrence data (**Appendix D**) identified that the project area may provide habitat for 58 locally occurring threatened fauna species with a moderate of greater likelihood of occurrence (**Section 4.1.11**).

Two threatened fauna species were identified within the survey boundary during opportunistic surveys; Diamond Firetail (*Stagonopleura guttata*) and Scarlet Robin (*Petroica boodang*). Additional occurrences of the Koala (*Phascolarctos cinereus*) and White-throated Needletail (*Hirundapus caudacutus*) have been previously recorded within or adjacent the project area. These avian species are ecosystem credit species that are associated with the extensive woodland habitat. The Koala is a candidate species and populations are considered likely to be supported by the abundant feed trees in the project area.

Additionally, the native vegetation present may provide potential foraging and sheltering habitat for five threatened frog species, 34 threatened bird species, eight threatened mammal species, eight threatened microbat species, two threatened reptiles and one threatened fish which have habitat within the project area or have been historically sighted within the locality.

Twenty-two threatened fauna species have been identified as candidate species relevant to this assessment of which eight are listed as entities at risk of SAII (**Section 4.1.13.2**):

- Tusked Frog (*Adelotus brevis*)
- Regent Honeyeater (*Anthochaera phrygia*)
- Large-eared Pied Bat (*Chalinolobus dwyeri*)
- Peppered Tree Frog (*Litoria piperata*)
- Glandular Frog (*Litoria subglandulosa*)
- Large Bent-winged Bat (*Miniopterus orianae oceanensis*breeding)
- Stuttering Frog (*Mixophyes balbus*)
- Brush-tailed Rock-wallaby (*Petrogale penicillata*).

Important area habitat mapping for the Regent Honeyeater falls outside of the survey boundary, approximately 800 m west (**Figure 4-6**).However due to the collision risks associated with the project, this species is important for consideration of prescribed impacts.

Of the highest concern are SAII bird species and microbat species that may be potentially impacted by the construction and operation of the wind farm. An assessment of the SAII would need to be completed in the BDAR as part of the EIS.

It is important to note that at this stage, no suitable cave habitat for microbats has been identified and very few historical records of threatened microbats exist within the locality. However, these species would require detailed seasonal surveys and careful consideration through the project planning phase.

The Koala has been recorded in high numbers within the locality. Whilst the Koala is less mobile than avian and microbat species most at risk of impact due to rotor strike, they still traverse across the landscape.

Primary feed trees (**Table 4-33**) and woodland connectivity are essential to this species which would also require careful consideration. Woodland connectivity is also essential for small sedentary birds and arboreal mammals such as the Greater Glider and Squirrel Glider.

Additionally, rock outcrops and steep slopes (key habitat for the Brush-tailed Rock-Wallaby and reptiles) are also frequent within the survey boundary and along ridgetops selected for turbine locations.

Other threatened fauna species of note are avian species that have been previously recorded in high abundance within the locality such as the Dusky Woodswallow, Varied Sitella, Little Eagle and White-throated Needletail. The Dusky Woodswallow and Varied Sitella are reliant of eucalypt woodland, however the Little Eagle and White-throated Needletail are often observed soaring at higher altitudes (>80 m) therefore at higher risk of blade-strike.

5.3.2 Threatened flora

The field validated likelihood-of-occurrence data (**Appendix D**) identified that the project area may provide habitat for 18 locally occurring threatened flora species with a moderate of greater likelihood of occurrence. Extensive numbers of *Eucalyptus mckieana* have been recorded in the locality and the open forest woodland, soil landscape and associated canopy species within the project area are consistent with the description for this species.

Twelve flora candidate species were identified as relevant to this assessment, of which one is listed as SAII: Narrow-leaved Bertya (*Bertya ingramii* refer **Section 4.1.13.1**). These species mentioned above are most at risk of potential direct impact by the construction of the wind farm.

Further details regarding the distribution, habitats, and ecology of each threatened species are provided in **Appendix D**. An assessment of the SAII would need to be completed in the BDAR as part of the EIS.

5.4 Indirect impacts

The project may have indirect impacts on local ecological communities and species. The following indirect impacts may be applicable to the project (as listed in the BAM):

- inadvertent impacts to adjacent habitat or vegetation
- reduced viability of adjacent habitat due to edge effects
- increased risk of starvation or exposure and loss of shade or shelter
- loss of breeding habitat
- removal and disturbance of rocks, including bush rock
- erosion and sedimentation
- air quality/dust emissions
- weeds and pathogens and pest species.

Project components that have the potential to cause indirect impacts on biodiversity values include:

- electrical reticulation network consisting of substation(s), switchyard, transmission line and internal electrical reticulation
- internal access tracks
- hardstands and construction laydown areas
- an operation and maintenance facility including car parking
- site construction compound(s) including security fencing
- ancillary storage area.

The nature, extent, and duration of the potential indirect impacts in relation to the project are described broadly in **Table 5-1.**

Potential mitigation measures to minimise or mitigate these indirect impacts are detailed in **Section 5**.

Table 5-1: Potential indirect impacts associated with the project

Indirect impact	Details
Reduction in surface water quality and changes to surface water flows	The project may lead to changes in hydrology and water quality as a result of: • disruption to natural flows and processes due to increased hard surface area • increase of hard surfaces leading to an increased volume of water entering downstream waterways • introduction of contaminants into surface water, such as nutrients, chemicals, and sediment from urban and other land uses, including the disturbance of soils during construction.
Changes to groundwater	The project may affect groundwater quality, including from salinity and contamination as a result of: • clearing for construction • construction works involving large excavations • diversion of surface water, including installation of buildings and hard surfaces.
Soil disturbance	The project may cause soil erosion and sedimentation and disturbance to contaminated soils, which can lead to changes in water quality as a result of: • vegetation clearing • construction works involving large excavations • the management of spoil during construction.
Spread of disease	The project may increase the risk of spreading infection/disease as a result of: • soil transportation on contaminated footwear, vehicles and machinery, and in residential garden establishment • increased site visitation rates • earthworks and activities conducted during construction • increased surface water runoff.
Spread of weeds	The project may increase the spread of invasive species and weeds as a result of: • new environmental conditions at the edges of developments such as altered light levels, windspeed, and temperature, that may facilitate the spread of weeds • use of inappropriate species in landscaping and revegetation • accidental dispersal of weed seeds and plant material • altered fire regimes.
Predation/competition/land degradation by pest/domestic fauna	The project may increase the spread of pest fauna and/or access to natural areas by domestic fauna, leading to increased predation and competition with native fauna as a result of: • clearing that creates new movement pathways that can be used by pest fauna to expand their range • clearing that changes conditions at the edges of habitat that favour pest fauna • direct predation of native fauna by pest/domestic fauna • pest fauna destroying habitat and spreading disease.
Altered fire regimes and increased fire risk	The project has the potential to alter fire regimes and increase fire risk as a result of: • arson or the accidental lighting of fires • increased burns for hazard reduction to protect assets, particularly within asset protection zones • reduced burns in some areas due to risk to urban areas.
Fauna mortality and injury, fauna displacement and the introduction of barriers to fauna movement	The project may increase the likelihood of fauna mortality and fauna displacement, and would introduce barriers to fauna movement as a result of: • direct mortality as a result of collisions with vehicles or new structures, shooting, poaching, or secondary poisoning during pest control • displacement due to clearing for the development • introduction of linear barriers such as fences, roads and railways, which can affect fauna movement and predation.
Fauna disturbance due to noise, dust or light	The project may increase noise, dust and light as a result of: • clearing for the development • construction activities, including use of heavy vehicles and machinery

Indirect impact	Details
	• increased noise levels from traffic due to new roads or increased traffic on existing roads • artificial light from commercial areas, and along transport routes.
Inadvertent impacts on adjacent habitat or vegetation	The project may cause inadvertent impacts on adjacent habitat, vegetation or important habitat features, such as hollow bearing trees as a result of: • impacts adjacent to construction sites • road, trail and powerline maintenance • high frequency land management such as mowing and slashing or weed control.

5.5 Prescribed biodiversity impacts

Prescribed biodiversity impacts are impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/or loss of habitat.

Prescribed additional biodiversity impacts (prescribed impacts) must be assessed as part of the BOS, as per clause 6.1 of the BC Regulation.

Such prescribed impacts (including direct and indirect impacts) include (section 6 of the BAM; DPIE 2020):

(a) the impacts of development on the following habitat of threatened species or ecological communities

(i) karst, caves, crevices, cliffs and other geological features of significance

(ii) rocks

(iii) human made structures

(iv) non-native vegetation.

(b) the impacts of development on the connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range

(c) the impacts of development on movement of threatened species that maintains their lifecycle

(d) the impacts of development on water quality, water bodies and hydrological processes that sustain threatened species and threatened ecological communities (including from subsidence or upsidence resulting from underground mining or other development)

(e) the impacts of wind turbine strikes on protected animals

(f) the impacts of vehicle strikes on threatened species of animals or on animals that are part of a threatened ecological community.

Of the above prescribed impacts, the development with the project has the potential to result in prescribed impacts to all (**Table 5-2**).

Mitigation measures that are applicable to the project have been discussed in **Section 6.**

Table 5-2: Potential prescribed impacts associated with the project

Prescribed impact type	Associated potential direct impacts	Associated potential indirect impacts
Rocks	Removal of habitat (rocks)	Removal of rock outcrop habitat and reduction in sheltering and basking rock habitat for reptiles.
Human-made structures	Removal of habitat (structures)	Human disturbance Noise or light disturbance.
Non-native vegetation	Removal of habitat (non-native vegetation)	Disturbance Weed invasion Spread of plant/animal disease Pest animals/predation/competition Soil erosion/sedimentation Urban run-off (water quality).

Prescribed impact type	Associated potential direct impacts	Associated potential indirect impacts
Habitat connectivity/movement	Reduction in connectivity through the loss of stepping stone habitat	Reduction in habitat connectivity and edge effects
Water bodies/hydrological processes	Removal of habitat (water bodies)	Change in water flows/quantity/run-off (water quality)
Wind turbine strikes on protected animals	Bird and bat strike.	Bird and bat mortality due to rotor strike is likely. Extensive baseline monitoring and post-construction monitoring is required to determine the extent of impacts to inform a Bird and Bat Management Plan.
Vehicle strikes	Death of species individuals	Increased vehicle movement during construction and operation may increase risk of vehicle strike.

5.5.1.1 Wind turbine strikes on protected fauna

Operational impacts to threatened and protected bird and bat species are primarily associated with the risk of mortality through turbine collision, barotrauma impacts and barrier effects through behavioural avoidance of infrastructure. Species most at risk are those that frequent the rotor sweep area and/or species with potential for ongoing population impacts once the project is operational. This includes:

- migrating bats and birds, as a single migration event through the wind farm may affect a significant proportion of the local population
- flocking birds, where a higher number of mortalities could occur in one event
- colonial roosting bats, as removal of one roosting site may affect a local population
- high-flying microbats, particularly those of conservation concern
- raptors which use landform features such as ridges and slopes for ascendance and soaring through updrafts. They also manoeuvre close to blades to prey on carrion below. These species are at low density in the landscape and removal of even one breeding pair may be significant at a local level
- waterbirds, which may be less able to manoeuvre around moving turbine blades
- scavenger species such as raptors and passerines attracted by crops, livestock or carrion may be more frequent at wind farms resulting in an increased risk collision risk.

Most woodland birds and bats forage within canopy and move below the turbine height, therefore are considered a lower risk of direct impact, however, would experience indirect impacts through changes in foraging habitat and habitat exclusion (Ellerbrok et al. 2022, Ellerbrok et al. 2023, BL&A 2017, Smales 2006). Sedentary woodland species are more likely able to be avoided early in the project design or assessed thoroughly to confirm that impacts are manageable.

The two closest operational wind farms to the project area are White Rock Wind Farm, approximately 60 km north, and the Sapphire Wind Farm, approximately 75 km north of the project area. Ongoing bird and bat monitoring has been occurring since 2017 at White Rock Wind Farm and 2018 at Sapphire Wind Farm. No management trigger (i.e. mortality of a threatened bird or bat species or high numbers of non-threatened species) has occurred during the monitoring at the Sapphire Wind Farm (Nature Advisory 2024). The results from the monitoring program and the mortality estimates suggested it is unlikely that mortalities of any species would significantly impact these populations on a state level, regional level or overall (BL&A 2019).

Highest mortalities have occurred to the Wedge-tailed Eagle (*Aquila audax*) which is an at-risk species due to its frequency within the rotor sweep area. However, the Wedge-tailed Eagle is not considered to meet the criteria of a threatened species under NSW State or Commonwealth legislation. The White-throated Needletail (*Hirundapus caudacutus*; Vulnerable) is considered an at-risk species due to its soaring height. One mortality of the White-throated Needletail has been recorded at the White Rock Wind Farm, though it is considered the risk to this species remains low as the species is widespread and numerous in eastern and south-eastern Australia and the loss of one individual is considered to have a negligible impact on the overall population (BL&A 2017).

The White-striped Freetail Bat (*Tadarida australis*) and Gould's Wattled Bat (*Chalinolobus gouldii*) are the most commonly impacted bat species in eastern Australia (Bennet et al. 2022). This is related to their habit of foraging at height above the tree line leading to this species being regularly impacted at wind farms in southeastern Australia, though neither meeting the criteria for a threatened species.

Ongoing seasonal bird and bat utilisation surveys within the project area will provide baseline monitoring data and allow for detailed assessments of operation risk to threatened and protected bird and bat species.

An assessment of impacts of wind turbine strike on protected fauna is required by Section 8.3.5 of the BAM as per **Table 5-3** during preparation of the BDAR.

Table 5-3 Prescribed impact considerations for wind farm developments

Prescribed impact consideration	Action
Predict the impact on species living in, or likely to fly over, the proposed development site, including bat or bird strike and barotrauma.	Prepare a collision risk assessment informed by bird and bat utilisation surveys over a two-year baseline period.
Predict the rate and timing of impact per turbine per year for species likely to be affected.	Model the rate and timing of collisions with turbines for high-risk species.
Predict the consequences of impacts for the persistence of populations.	Model the rate and timing of collisions with turbines for high-risk species.
Predict the cumulative impacts of the proposed development alongside existing wind farms, on species mortality, movement patterns and use of adjacent habitat.	Consider cumulative impacts of neighbouring windfarms.
Predict the likelihood and nature of impacts on aerial species living in, or likely to fly over, the proposed development site, including barriers to migratory pathways, and breeding, feeding and resting resources.	Conduct a risk assessment and detailed impact assessment for aerial fauna.
Predict the impact of avoidance behaviour for migratory species relative to migration distances, and the availability of suitable habitat for breeding, feeding and resting over the migration route.	Map key breeding, feeding and resting areas for migratory fauna if present. If present, conduct modelling and risk assessment for collision. prioritise avoidance principals where required.
Justify predictions with reference to data, collision risk modelling (if available), relevant literature or other published sources including any publications by the Department.	Conduct a literature review to inform modelling and risk assessment process.
Map the disturbance zone around wind turbines, and the significant landscape and habitat features within that zone, for species likely to be affected, e.g. hollow bearing trees and important habitat for migratory species.	Incorporate disturbance zones around wind turbines into the construction areas footprint to allow for an area of additional impact around each turbine for assessment under the BDAR. Map key habitat features for local and migratory species.

6 RECOMMENDATIONS

The project would automatically trigger the Biodiversity Offset Scheme (BOS) given the presence of native vegetation, threatened species, and TECs (per the precautionary principle) within the project area. As a result, the project must conform to the 'avoid, minimise, offset' hierarchy required by the BOS.

Impacts from clearing native vegetation and threatened species habitat can be avoided by locating the project disturbance footprint in areas:

- lacking biodiversity values (i.e., previously cleared areas that are dominant in exotic species)
- where the native vegetation or threatened species habitat is in the poorest condition. Due to the large extent of derived native grassland, derived native grassland should be favoured over areas of intact woodland vegetation
- that avoid habitat for species with a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC/SAII or a highly cleared PCT
- that are outside of the buffer area around breeding habitat features such as nest trees or caves.

The design development process for the project must be completed in consideration of:

- alternative modes or technologies that would avoid or minimise impacts on biodiversity values
- alternative routes that would avoid or minimise impacts on biodiversity values
- alternative locations that would avoid or minimise impacts on biodiversity values, and/or
- alternative sites within a property on which the project is located that would avoid or minimise impacts on biodiversity values.

Based on the preliminary assessments undertaken across the current project area and survey boundary, the following recommendations are made to avoid and minimise impacts on biodiversity:

- further vegetation integrity analysis within the survey boundary should be undertaken early within the assessment process to refine the vegetation mapping. Vegetation integrity analysis should focus on assessing the condition and extent of TECs within the survey boundary to guide avoidance measures, particularly those at risk of SAII (**Section 5.2**)
- refine the project disturbance footprint to maximise avoidance of biodiversity values. The design development process should address identified constraints and future ecological surveys proposed for the BAM, including vegetation integrity assessments and targeted surveys for threatened flora and fauna. Biodiversity values relevant to the project area include the following:
  - Threatened Ecological Communities, particularly the CEEC and entity at risk of SAII:
    - 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
    - New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion CEEC.
  - larger patches of vegetation with connectivity to the broader landscape. Additionally, old growth remnant trees which were a prevalent feature within the south-western corner of the project area should be prioritised for avoidance as these likely provide significant habitat values for a variety of local and threatened fauna (i.e. large remnant trees bearing significant hollows, preferred koala feed trees, winter flowering trees for migratory songbirds, flower and nectar bearing trees, etc.)
  - impact avoidance and minimisation techniques within aquatic and riparian habitats which may provide suitable habitat for threatened fauna (e.g. Western Sawshelled Turtle, Tusked Frog, Booroolong Frog, Glandular Frog and Stuttering Frog).
- identify and maximise avoidance of potential bird and bat movement corridors across the landscape
- Prioritise existing cleared land and/or historically disturbed pasture for the project disturbance footprint.

These recommendations are further detailed below.

6.1 Refine the project disturbance footprint

The following recommendations are made to avoid and minimise impacts to biodiversity, with respect to the current project area:

- refine the project disturbance footprint to maximise avoidance of high biodiversity values, particularly those with potential for SAII
- prioritise existing cleared land and/or treeless native pasture for infrastructure
- define appropriate setbacks for wind turbines from significant areas of native vegetation to minimise potential bird and bat strike
- identify and maximise avoidance of potential bird and bat movement corridors across the landscape
- incorporate biodiversity (including likely offsets) into the project design considerations including route options analysis.

The project area contains two CEECs (also listed as entities at risk of SAII):

- 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
- New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion.

For SSD projects, the role of the decision maker is to take likely SAII into consideration and determine if there are any additional and appropriate measures that would minimise the impact if approval is granted. Assessments of SAII will be completed as part of the BDAR prepared as part of the EIS.

Detailed vegetation surveys would be completed to assess the condition and extent of vegetation within the project area. This would include a formal assessment of the grasslands present on-site, noting that the CEEC previously described can occur as a derived native grassland. Avoidance of areas conforming to this derived native grassland condition of the CEEC may also require demonstration of avoidance.

The project area contains suitable habitat for a variety of threatened species including the Koala, Regent Honeyeater and threatened frog species Glandular Frog, Tusked Frog and Peppered Tree Frog which are at risk of SAII.

Conducting a micro-siting exercise, avoidance of riparian corridors and connectivity corridors would assist in improving the feasibility of the project, by placing components of the project (i.e. wind turbine locations, compounds, reticulation network; refer to **Section 1.1**) in areas that minimise the impacts to biodiversity. This could also include detailed specialist biodiversity studies such as habitat mapping and PCT mapping to identify key areas of habitat for threatened species that the project can 'design around'.

Any reduction in the extent of the project footprint in areas of biodiversity constraint would improve the viability of the project and reduce impacts to biodiversity as a result of the project.

6.1.1 Impact avoidance measures already undertaken

Preliminary ecological constraints mapping was informally undertaken for a preliminary turbine layout that was focused on maximising the potential wind resource across the site. The preliminary constraints mapping focused on areas that were identified as CEEC.

The initial risk assessment identified eight wind turbines located in areas with very high constraints, 18 wind turbines with high constraint, 30 wind turbines with moderate constraint and 20 wind turbines with low constraint based on the following risk scale (**Table 6-1**).

Noting that the initial risk review was based predominantly on existing State vegetation mapping (NSW DCCEEW, 2025f) and some preliminary biodiversity field survey, one wind turbine initially located in a patch of intact and high condition threatened ecological community was moved east to an area that has previously been cleared and disturbed. This turbine location has been surveyed and the State vegetation mapping at that turbine location has been validated by field survey.

The other highly constrained turbine locations, where the State vegetation mapping is yet to be validated by detailed field survey will continue to be refined through the EIS as the biodiversity assessment progresses, and existing data is ground-truthed and targeted surveys progress.

Table 6-1 Preliminary constraints mapping ranking

Constraint Ranking	Description
Low	Vegetation is predominantly cleared and/or dominated by exotic grassland.
Moderate	Non-threatened native vegetation with evidence of partial clearing/in poor-moderate condition.
High	Threatened ecological community in partially cleared/poor condition.
Very high	Threatened ecological community in good condition and/or high habitat values for threatened species.

6.2 Identify and maximise avoidance of potential bird and bat movement corridors across the landscape

Conducting a bird and bat utilisation study early in the project's development process would allow the project to identify key risk areas to bird and bat strike from the ongoing operation of the wind farm.

Similar to the micro-siting exercise described above, this would allow the project to avoid bird and bat movement corridors by placing turbines in areas of low (or no) activity by bird and bat species.

6.3 Prioritise historically disturbed areas

Incorporating biodiversity considerations into the design development process and maintaining habitat corridors between and throughout the project area and surrounding locality, particularly to the Bulagaranda (Mount Yarrowyck) Aboriginal Area, would reduce potential biodiversity impacts.

In New South Wales, biodiversity carries a fiscal cost to the impacts of development. This is guided by the BAM and is quantified through the requirement for retiring credits in accordance with the BOS. Credits are quantified on the development site, and then must be offset by either:

1. retiring credits based on like-for-like offset rules
2. funding a biodiversity conservation action that benefits the threatened species, habitat or ecological community
3. making a payment to the Biodiversity Conservation Fund calculated using the Biodiversity Conservation Fund Charge System.

It should be noted that making a payment to the Biodiversity Conservation Fund may not be a viable offsetting strategy under the EPBC Act, and the Australian Minister for the Environment would need to endorse the Biodiversity Conservation Fund for this project.

The cost of offsets can be substantial for a project of this size. Generally, the BAM would require offset ratios for ecosystem credits in excess of 10:1 (offset: impact) and this can result in a significant downstream cost of operation for the project.

Species credits would be additional to this. Designing around previously disturbed areas that yield lower vegetation integrity would generate fewer credits which can reduce the total cost of a project. It is to note, that even derived grassland communities can produce substantial offset obligations, however preference toward degraded areas would reduce overall biodiversity impacts of the project.

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Appendix A
Wind Turbine Site Analysis

Apx Table 1 Wind Turbine 1

Wind Turbine ID	1
Photo	
% Native Vegetation Cover	20
Dominant species	No canopy present. *Rubus fruticosus* (Blackberry), native grasses (*Sporobolous crebra*) and exotic pasture grasses.
Habitat features	Rocky outcrop and surface rock
Condition	Low, heavily grazed
PCT	Cleared/exotic
Associated TEC	No
Constraint ranking	Low

Apx Table 2 Wind turbine 2

Wind Turbine ID	2
Photo	
% Native Vegetation Cover	30
Dominant species	Exotic pasture grasses and *Sporobolous* sp., *Eucalyptus caliginosa* (Broad-leaved Stringybark), and *Eucalyptus youmanii* (Youman's Stringybark) on the fringes.
Condition	Low, heavily grazed
Habitat features	Rocky outcrop, mistletoe
PCT	Cleared/ exotic
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 3 Wind Turbine 5

Wind Turbine ID	5
Photo	
% Native Vegetation Cover	90
Dominant species	*Eucalyptus melliodora* (Yellow Box), *Eucalyptus caliginosa* (Broad-leaved Stringybark). Exotic pasture grasses.
Condition	Moderate to High
Habitat features	Woodpile, no rock outcrop
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	No
Constraint ranking	Moderate to High

Apx Table 4 Wind Turbine 6

Wind Turbine ID	6
Photo	
% Native Vegetation Cover	60
Dominant species	*Sporobolous* spp., *Acacia* spp, *Eucalyptus dealbata* (Tumbledown Gum), *Eucalyptus melliodora* (Yellow Box).
Condition	Moderate
Habitat features	Rocky outcrop and surface rocks
PCT	3363 - Western New England Blakelys Red Gum-Box Grassy Forest
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 5 Wind Turbine 8

Wind Turbine ID	8
Photo	
% Native Vegetation Cover	50
Dominant species	*Microlaena stipoides* (Weeping Grass), *Sporobolous* sp., *Bothriochloa macra* (Red grass), *Eucalyptus caliginosa* (Broad-leaved Stringybark)
Condition	Moderate to High
Habitat features	Limited surface rock
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	No
Constraint ranking	Moderate to High

Apx Table 6 Wind Turbine 9

Wind Turbine ID	9
Photo	
% Native Vegetation Cover	100
Dominant species	No canopy species. *Microlaena stipoides* (Weeping Grass), *Sporobolous* spp, *Dichelachne* spp.
Condition	Moderate
Habitat features	Rocky outcrop and surface rocks
PCT	Derived grassland
Associated TEC	No
Constraint ranking	Moderate

Apx Table 7 Wind Turbine 10

Wind Turbine ID	10
Photo	
% Native Vegetation Cover	100
Dominant species	*Cassinia quinquefaria* (Rosemary Cassinia), *Bursaria spinosa* (Sweet Bursaria), *Eucalyptus callignosa* (Broad-leaved Stringybark), *Eucalyptus banksia* (Tenterfield Woolybutt)
Condition	Moderate
Habitat features	Fallen logs, some rocky outcrop
PCT	3728 – Western New England Hills Blackbutt-Stringybark Forest
Associated TEC	No
Constraint ranking	Moderate

Apx Table 8 Wind Turbine 12

Wind Turbine ID	12
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus caliginosa* (Broad-leafed Stringybark), *Eucalyptus banksii* (Tenterfield Woollybutt), *Microliena stipoides* (Weeping Grass), *Cassina quinquefaria* (Rosemary Cassina), and *Bursaria spinosa* (Sweet Bursaria).
Condition	Moderate to High
Habitat features	Rocky outcrop, hollow logs
PCT	3728 – Western New England Hills Blackbutt-Stringybark Forest
Associated TEC	No
Constraint ranking	Moderate to High

Apx Table 9 Wind Turbine 13

Wind Turbine ID	13
Photo	
% Native Vegetation Cover	50
Dominant species	No canopy present. Exotic pasture grasses and native grass species.
Condition	Low to Moderate
Habitat features	Rocky outcrops
PCT	Derived grassland
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 10 Wind Turbine 22

Wind Turbine ID	22
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus blakelii* (Blakely's Red Gum) and native grasses
Condition	Moderate
Habitat features	Rocky outcrop and logs
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 11 Wind Turbine 23

Wind Turbine ID	23
Photo	
% Native Vegetation Cover	80
Dominant species	Exotic pasture grasses, native grass species and *Eucalyptus caliginosa* (Broad-leaved Stringybark)
Condition	Low to Moderate
Habitat features	Minimal rock habitat
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 12 Wind Turbine 24

Wind Turbine ID	24
Photo	
% Native Vegetation Cover	90
Dominant species	*Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark), and *Eucalyptus melliodora* (Yellow Box). Native grass species present.
Condition	Low to Moderate
Habitat features	Rocky outcrop
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 13 Wind Turbine 25

Wind Turbine ID	25
Photo	
% Native Vegetation Cover	90
Dominant species	No canopy, native grass species and exotic pasture grasses.
Condition	Low - moderate
Habitat features	Rocky outcrop
PCT	Derived grassland
Associated TEC	No
Constraint ranking	Moderate

Apx Table 14 Wind Turbine 26

Wind Turbine ID	26
Photo	
% Native Vegetation Cover	90
Dominant species	*Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus malacoxylon* (Moonbie Apple), *Eucalyptus banksii* (Tenterfield Woollybutt). Native grasses present.
Condition	Moderate to High
Habitat features	Some rocky outcrop present
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 15 Wind Turbine 27

Wind Turbine ID	27
Photo	
% Native Vegetation Cover	80
Dominant species	Native and pasture grasses, *Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus melliodora* (Yellow Box), and *Eucalyptus andrewsii* (New England Blackbutt).
Condition	Moderate
Habitat features	Minimal rocky habitat present
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 16 Wind Turbine 28

Wind Turbine ID	28
Photo	
% Native Vegetation Cover	90
Dominant species	No canopy present. *Bothriochloa macra* (Red Grass), *Bothriochloa decipiens*, *Sporobolus crebra* (Rats-tail Grass), *Panicum effusum* (Hairy Panic Grass), *Microlaena stipoides* (Weeping Grass)
Condition	Moderate
Habitat features	Minimal rocky habitat present
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate – Derived grassland

Apx Table 17 Wind Turbine 29

Wind Turbine ID	29
Photo	
% Native Vegetation Cover	50
Dominant species	*Tagetes minuta* (Stinking Roger), exotic pasture grasses, native grass species present.
Condition	Low to Moderate
Habitat features	Rocky outcrops
PCT	Cleared/exotic
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 18 Wind Turbine 30

Wind Turbine ID	30
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus banksii* (Tenterfield Woolybutt), and *Bursaria spinosa* (Sweet Bursaria)
Condition	High
Habitat features	Fallen logs
PCT	3728 – Western New England Hill Blackbutt-Stringybark Forest
Associated TEC	White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	High

Apx Table 19 Wind Turbine 31

Wind Turbine ID	31
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus dalrympleana, Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark), and *Eucalyptus dealbata* (Tumble-down Gum).
Condition	High
Habitat features	Fallen logs, surface rocks
PCT	3344 - New England Ribbon Gum Grassy Forest
Associated TEC	New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion BC Act listed CEEC. New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands BC Act listed CEEC. Ribbon Gum-Mountain Gum-Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EPBC Act listed EEC.
Constraint ranking	High

Apx Table 20 Wind Turbine 32

Wind Turbine ID	32
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus dealbata* (Tumble-down Gum), *Eucalyptus youmanii* (Youman's Stringybark), and *Eucalyptus caliginosa* (Broad-leaved Stringybark)
Condition	High
Habitat features	Fallen logs, surface rocks
PCT	3728 – Western New England Hill Blackbutt-Stringybark Forest
Associated TEC	No
Constraint ranking	High

Apx Table 21 Wind Turbine 33

Wind Turbine ID	33
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus prava* (Orange Gum), *Acacia* sp, native grass species.
Condition	High
Habitat features	Rocky outcrops and ground logs
PCT	3854 – New England Rockplate Shrubland
Associated TEC	No
Constraint ranking	High

Apx Table 22 Wind Turbine 34

Wind Turbine ID	34
Photo	
% Native Vegetation Cover	70
Dominant species	Native grasses and intrusions of *Setaria* spp., *Eucalyptus melliodora* (Yellow Box), *Eucalyptus youmanii* (Youman's Stringybark), and *Eucalyptus caliginosa* (Broad-leaved Stringybark)
Condition	Moderate to High
Habitat features	Rocky outcrop
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	No TEC association
Constraint ranking	Moderate to High

Apx Table 23 Wind Turbine 35

Wind Turbine ID	35
Photo	
% Native Vegetation Cover	70
Dominant species	*Eucalyptus melliodora* (Yellow Box), *Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark) on the fringes. Intrusions of *Rubus fruticosus aggregate* (Blackberry). Native grass species and exotic grasses.
Condition	Low to Moderate
Habitat features	Some surface rocks
PCT	4125 – New England Youmans Stringybark-Box Forest
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 24 Wind Turbine 36

Wind Turbine ID	36
Photo	
% Native Vegetation Cover	70
Dominant species	*Eucalyptus melliodora* (Yellow Box), *Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus caliginosa* (Broad-leaved Stringybark)
Condition	Moderate
Habitat features	Ground logs and limited rock habitat
PCT	3359 – New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 25 Wind Turbine 37

Wind Turbine ID	37
Photo	
% Native Vegetation Cover	90
Dominant species	*Sporobolous* sp, *Eragrostis* sp, *Eucalyptus banksii* (Tenterfield Woolybutt), and pasture grasses.
Condition	Low to Moderate
Habitat features	Rocky outcrops and ground logs
PCT	3728 – Western New England Hills Blackbutt – Stringybark Forest
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 26 Wind Turbine 38

Wind Turbine ID	
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus youmanii* (Youman's Stringybark), and *Eucalyptus melliodora* (Yellow Box)
Condition	High
Habitat features	Surface rock
PCT	3359 – New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	High

Apx Table 27 Wing Turbine 43

Wind Turbine ID	43
Photo	
% Native Vegetation Cover	95
Dominant species	No canopy present. *Bothriochloa macra* (Red Grass), *Wahlenbergia* sp., and *Sporobolus* sp. Exotic pasture grasses present.
Condition	Moderate
Habitat features	Some surface rock
PCT	3728 – Western New England Hill Blackbutt-Stringybark Forest
Associated TEC	No
Constraint ranking	Moderate

Apx Table 28 Wind Turbine 44

Wind Turbine ID	44
Photo	
% Native Vegetation Cover	95
Dominant species	*Cassinia quinquefaria* (Rosemary Cassinia), *Bursaria spinosa* (Sweet Bursaria). Some *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus banksii* (Tenterfield Woolybutt) regrowth.
Condition	Moderate
Habitat features	Surface rocks
PCT	3728 – Western New England Hill Blackbutt-Stringybark Forest
Associated TEC	No
Constraint ranking	Moderate

Apx Table 29 Wind Turbine 45

Wind Turbine ID	45
Photo	
% Native Vegetation Cover	100
Dominant species	*Rytidosperma pallidum* (Red-anther Wallaby Grass), *Poa sieberiana*, *Acacia buxifolia* (Box-leaf Wattle), *Eucalyptus andrewsii* (New England Blackbutt), *Eucalyptus macrorhyncha* (Red Stringybark), *Eucalyptus prava* (Orange Gum).
Condition	Moderate to High
Habitat features	Surface rocks
PCT	3725 - Western New England Ranges Orange Gum-Blackbutt Forest
Associated TEC	No
Constraint ranking	High

Apx Table 30 Wind Turbine 46

Wind Turbine ID	46
Photo	
% Native Vegetation Cover	30
Dominant species	*Rubus fruticosus* (Blackberry) and exotic grasses.
Condition	Low to Moderate
Habitat features	Rocky outcrop and surface rocks
PCT	Exotic/cleared
Associated TEC	No
Constraint ranking	Low

Apx Table 31 Wind Turbine 47

Wind Turbine ID	47
Photo	
% Native Vegetation Cover	80
Dominant species	*Eucalyptus banksii* (Tenterfield Woolybutt), *Acacia* sp., and *Rubus fruticosus* (Blackberry). Native grass species present.
Condition	Moderate
Habitat features	Rocky outcrop and surface rocks
PCT	3728 – Western New England Hill Blackbutt-Stringybark Forest
Associated TEC	No
Constraint ranking	Moderate

Apx Table 32 Wind Turbine 48

Wind Turbine ID	48
Photo	
% Native Vegetation Cover	50
Dominant species	*Sporobolus* spp., *Bothriochloa macra* (Red grass) and *Rubus fruticosus* (Blackberry).
Condition	Low to Moderate
Habitat features	Rocky outcrops and ground logs
PCT	Disturbed, but fringing PCT 3728
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 33 Wind Turbine 49

Wind Turbine ID	49
Photo	
% Native Vegetation Cover	50
Dominant species	No canopy present. Exotic pasture grasses and native grass species.
Condition	Low to Moderate
Habitat features	Rocky outcrops
PCT	Exotic/cleared
Associated TEC	N/A
Constraint ranking	Low to Moderate

Apx Table 34 Wind Turbine 50

Wind Turbine ID	50
Photo	
% Native Vegetation Cover	50
Dominant species	*Sporobolus crebra* (Rats-tail Grass), *Paspalum* sp., *Eragrostis* sp., *Juncus* sp., *Setaria parviflora* (Knotroot Bristlegrass)
Condition	Low
Habitat features	Limited rock habitat
PCT	Exotic/cleared
Associated TEC	N/A
Constraint ranking	Low to Moderate

Apx Table 35 Wind Turbine 56

Wind Turbine ID	56
Photo	
% Native Vegetation Cover	80
Dominant species	*Eucalyptus blakelyi* (Blakely's Redgum) and *Eucalyptus* melliodora (Yellow Box) and *Tagetes minuta* (Stinking Roger).
Condition	Low to moderate
Habitat features	Rocky outcrops
PCT	3728 – Western New England Hills Blackbutt-Stringybark Forest
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Low to Moderate

Apx Table 36 Wind Turbine 57

Wind Turbine ID	57
Photo	
% Native Vegetation Cover	80
Dominant species	*Eucalyptus*. melliodora (Yellow Box), *Eucalyptus blakelyi* (Blakely's Redgum), Conyza sp., *Sporobolus crebra* (Rats-tail grass), *Bothriochloa macra* (Red grass), *Rytidosperma pallidum* (Red-anther Wallaby Grass), *Paspalum dilatatum* (Dallis Grass), *Setaria parviflora* (Knotroot Bristlegrass).
Condition	Low to Moderate
Habitat features	Rocky outcrops
PCT	3363 – Western New England Blakelys Red Gum-Box Grassy Forest
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 37 Wind Turbine 58

Wind Turbine ID	58
Photo	
% Native Vegetation Cover	90
Dominant species	No canopy present. *Conyza* sp., *Sporobolus crebra* (Rats-tail grass), *Bothriochloa macra* (Red grass), *Microlaena stipoides* (Weeping grass), and *Eragrostis* sp.
Condition	Low to Moderate
Habitat features	Rocky outcrops
PCT	Derived native grassland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.
Constraint ranking	Moderate.

Apx Table 38 Wind Turbine 59

Wind Turbine ID	59
Photo	
% Native Vegetation Cover	80
Dominant species	*Eucalyptus melliodora* (Yellow Box), *Eucalyptus blakelyi* (Blakely's Redgum), pasture grasses and native grasses
Condition	Low to Moderate
Habitat features	No rocky habitat present.
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Low to Moderate

Apx Table 39 Wind Turbine 60

Wind Turbine ID	60
Photo	
% Native Vegetation Cover	80
Dominant species	*Eucalyptus melliodora* (Yellow Box), exotic grasses and native grasses.
Condition	Low to Moderate
Habitat features	Rocky outcrop and surface rocks
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Low to Moderate

Apx Table 40 Wind Turbine 61

Wind Turbine ID	61
Photo	
% Native Vegetation Cover	80
Dominant species	*Eucalyptus melliodora* (Yellow Box), exotic grasses and native grasses.
Condition	Moderate
Habitat features	No rocky habitat present
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 41 Wind Turbine 62

Wind Turbine ID	62
Photo	
% Native Vegetation Cover	50
Dominant species	*Sporobolus crebra* (Rats-tail Grass), *Juncus* sp., *Eragrostis* sp., *Circium* sp., *Rubus fruticosus* (Blackberry) and pasture grasses.
Condition	Low to Moderate
Habitat features	No rocky habitat present
PCT	Cleared/exotic
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 42 Wind Turbine 66

Wind Turbine ID	66
Photo	
% Native Vegetation Cover	50
Dominant species	*Sporobolus crebra* (Rats-tail Grass), *Bothriochloa macra* (Red Grass), *Cynodon dactylon* (Couch Grass).
Condition	Low
Habitat features	Some surface rock
PCT	Cleared/exotic
Associated TEC	No
Constraint ranking	Low to Moderate

Apx Table 43 Wind Turbine 67

Wind Turbine ID	67
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus blakelyi* (Blakely's Redgum), *Angophora floribunda (Rough-barked Apple), Eucalyptus melliodora* (Yellow Box).
Condition	Moderate
Habitat features	No rocky habitat present
PCT	3705 - Western New England Hills Apple-Stringybark Forest
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 44 Wind Turbine 68

Wind Turbine ID	68
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus prava* (Orange Gum). Native grass species present.
Condition	High
Habitat features	Surface rock
PCT	3854 – New England Rockplate Shrubland
Associated TEC	No
Constraint ranking	Moderate to High

Apx Table 45 Wind Turbine 69

Wind Turbine ID	69
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus prava* (Orange Gum), *Eucalyptus banksii* (Tenterfield Woolybutt), *Cassinia* spp., *Acacia* spp. and native grasses.
Condition	High
Habitat features	Surface rock and mistletoes
PCT	3854 – New England Rockplate Shrubland
Associated TEC	No
Constraint ranking	High

Apx Table 46 Wind Turbine 70

Wind Turbine ID	70
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus youmanii* (Youman's Stringybark), *Eucalyptus banksii* (Tenterfield Woolybutt). Native grass species present.
Condition	Moderate to High
Habitat features	Surface rock and ground logs
PCT	3729 – Western New England Youmans Stringybark Shrub Forest
Associated TEC	No
Constraint ranking	High

Apx Table 47 Wind Turbine 71

Wind Turbine ID	71
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus melliodora* (Yellow Box), and sapling eucalypts.
Condition	High
Habitat features	Mistletoes, small hollows, and fallen logs. Minimal rocks
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	High

Apx Table 48 Wind Turbine 72

Wind Turbine ID	72
Photo	
% Native Vegetation Cover	100
Dominant species	*Sporobolus crebra* (Rats-tail Grass), *Setaria parviflora* (Knotroot Bristlegrass), *Conyza* sp. *Eucalyptus malacoxylon* (Moonbie Apple), *Eucalyptus melliodora* (Yellow Box) on the fringes.
Condition	Moderate
Habitat features	No rocky habitat present
PCT	Derived native grassland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 49 Wind Turbine 73

Wind Turbine ID	73
Photo	
% Native Vegetation Cover	50
Dominant species	*Eucalyptus malacoxylon* (Moonbie Apple), native grass species and exotic pasture grasses.
Condition	Moderate
Habitat features	Minimal surface rock
PCT	Derived native grassland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	Moderate

Apx Table 50 Wind Turbine 74

Wind Turbine ID	74
Photo	
% Native Vegetation Cover	100
Dominant species	*Eucalyptus melliodora* (Yellow Box), *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus youmanii* (Youman's Stringybark), *Acacia* sp., *Cassinia quinquefaria* (Rosemary Cassinia), *Sporobolus crebra* (Rats-tail Grass), *Poa* sp., and *Bothriochloa macra* (Red Grass).
Condition	Moderate to High
Habitat features	Mistletoes, ground logs and some surface rock
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	High

Apx Table 51 Wind Turbine 75

Wind Turbine ID	75
Photo	
% Native Vegetation Cover	100
Dominant species	*Echinopogon* sp., *Microlaena stipoides* (Weeping Grass), *Cymbopogon refractus* (Barbed-wire Grass), *Eucalyptus melliodora* (Yellow Box), *Eucalyptus caliginosa* (Broad-leaved Stringybark), *Eucalyptus youmanii* (Youman's Stringybark) and *Eucalyptus andrewsii* (New England Blackbutt).
Condition	High
Habitat features	Fallen logs, no rocky outcrops
PCT	3359 - New England Hills Stringybark-Box Woodland
Associated TEC	BC Act and EPBC Act listed CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland
Constraint ranking	High

Appendix B
Species List

Apx Table 52: RDP - Flora species list

Scientific Name	Common Name	Family	BC Act	EPBC Act	Exotic
Acacia buxifolia	Box-leaved Wattle	Fabaceae (Mimosoideae)	-	-	
Acacia spp.	Wattle	Fabaceae (Mimosoideae)	-	-	
Angophora floribunda	Rough-barked Apple	Myrtaceae	-	-	
Bothriochloa macra	Red Grass	Poaceae	-	-	
Bursaria spinosa	Native Blackthorn	Pittosporaceae	-	-	
Cassinia quinquefaria		Asteraceae	-	-	
Cassinia spp.		Asteraceae	-	-	
Cirsium vulgare	Spear Thistle	Asteraceae	-	-	YES
Conyza spp.	Fleabane	Asteraceae	-	-	YES
Cymbopogon refractus	Barbed Wire Grass	Poaceae	-	-	
Cynodon dactylon	Common Couch	Poaceae	-	-	
Bothriochloa decipiens	Bluegrass	Poaceae	-	-	
Dichelachne spp.		Poaceae	-	-	
Echinopogon spp.		Poaceae	-	-	
Eragrostis spp.		Poaceae	-	-	
Eucalyptus andrewsii	Gum-topped Peppermint	Myrtaceae	-	-	
Eucalyptus banksii	Tenterfield Woollybutt	Myrtaceae	-	-	
Eucalyptus blakelyi	Blakely's Red Gum	Myrtaceae	-	-	
Eucalyptus caliginosa	Broad-leaved Stringybark	Myrtaceae	-	-	
Eucalyptus dalrympleana	Mountain Gum	Myrtaceae			
Eucalyptus dealbata	Tumbledown Red Gum	Myrtaceae	-	-	
Eucalyptus macrorhyncha	Red Stringybark	Myrtaceae	-	-	
Eucalyptus melliodora	Yellow Box	Myrtaceae	-	-	
Eucalyptus nova-anglica	New England peppermint	Myrtaceae			
Eucalyptus prava	Orange Gum	Myrtaceae	-	-	
Eucalyptus youmanii	Youman's Stringybark	Myrtaceae	-	-	
Juncus spp.		Juncaceae	-	-	
Microlaena stipoides	Weeping Grass	Poaceae	-	-	
Panicum effusum	Hairy Panic	Poaceae	-	-	
Paspalum dilatatum	Paspalum	Poaceae	-	-	YES
Paspalum spp.		Poaceae	-	-	
Poa spp.		Poaceae	-	-	
Rubus fruticosus	Blackberry complex	Rosaceae	-	-	YES
Rytidosperma pallidum	Redanther Wallaby Grass	Poaceae	-	-	
Setaria parviflora	Knotroot Bristle-grass,	Poaceae	-	-	YES
Setaria spp.		Poaceae	-	-	
Sporobolus creber	Slender Rat's Tail Grass	Poaceae	-	-	
Sporobolus spp.	Rat's Tail Couch	Poaceae	-	-	
Tagetes minuta	Stinking Roger	Asteraceae	-	-	YES
Wahlenbergia spp.	Bluebell	Campanulaceae	-	-	

Apx Table 53 Fauna species list

Common name	Scientific name	BC Act	EPBC Act	Invasive species	Number of individuals	Observation Type
Amphibia						
Common Eastern Froglet	*Crinia signifera*	-	-	-	10	W
Aves						
Australasian Darter	*Anhinga novaehollandiae*	-	-	-	1	W
Australasian Grebe	*Tachybaptus novaehollandiae*	-	-	-	1	W
Australian King Parrot	*Alisterus scapularis*	-	-	-	7	W
Australian Magpie	*Gymnorhina tibicen*	-	-	-	19	W,O
Australian Pipit	*Anthus novaeseelandiae*	-	-	-	5	W
Australian Raven	*Corvus coronoides*	-	-	-	1	W
Australian Wood Duck	*Chenonetta jubata*	-	-	-	20	O
Common Myna	*Acridotheres tristis*	-	-	-	15	W
Crested Pigeon	*Ocyphaps lophotes*	-	-	-	2	W
Crimson Rosella	*Platycercus elegans*	-	-	-	75	O
Diamond Firetail	*Stagonopleura guttata*	V	-	-	5	W
Eastern Rosella	*Platycercus eximius*	-	-	-	10	O
Eurasian Coot	*Fulica atra*	-	-	-	6	W
Fan-tailed Cuckoo	*Cacomantis flabelliformis*	-	-	-	1	W
Galah	*Eolophus roseicapilla*	-	-	-	32	W
Grey Fantail	*Rhipidura albiscapa*	-	-	-	1	W
Laughing Kookaburra	*Dacelo novaeguineae*	-	-	-	2	W
Little Black Cormorant	*Phalacrocorax sulcirostris*	-	-	-	6	W
Little Pied Cormorant	*Microcarbo melanoleucos*	-	-	-	2	W
Little Raven	*Corvus mellori*	-	-	-	1	W
Masked Lapwing	*Vanellus miles*	-	-	-	9	W
Musk Lorikeet	*Glossopsitta concinna*	-	-	-	2	W
Noisy Miner	*Manorina melanocephala*	-	-	-	25	W
Pacific Black Duck	*Anas superciliosa*	-	-	-	9	W
Red-rumped Parrot	*Psephotus haematonotus*	-	-	-	14	O
Scarlet Robin	*Petroica boodang*	V	-	-	4	W
Silvereye	*Zosterops lateralis*	-	-	-	1	W
Striated Pardalote	*Pardalotus striatus*	-	-	-	1	W
Superb Fairy wren	*Malurus cyaneus*	-	-	-	7	W
Unidentified Button Quail	*Turnix* sp	-	-	-	2	O
Unidentified Flycatcher	*Myiagra* sp	-	-	-	1	W
Unidentified Thornbill	*Acanthiza* sp	-	-	-	5	W
Wedge-tailed Eagle	*Aquila audax*	-	-	-	5	O
Welcome Swallow	*Hirundo neoxena*	-	-	-	51	W,O

Common name	Scientific name	BC Act	EPBC Act	Invasive species	Number of individuals	Observation Type
White-faced Heron	*Egretta novaehollandiae*	-	-	-	5	W
White-winged Chough	*Corcorax melanorhamphos*	-	-	-	1	W
Willie Wagtail	*Rhipidura leucophrys*	-	-	-	2	W
Mammalia						
Eastern Grey Kangaroo	*Macropus giganteus*	-	-	-	21	W
Pig	*Sus scrofa*	-	-	Yes	3	O
Rabbit	*Oryctolagus cuniculus*	-	-	Yes	11	W
Unidentified Deer	*Cervus* sp	-	-	Yes	1	O
Other						
Black Rock Scorpion	*Urodacus manicatus*	-	-	-	5	O

Appendix C
EPBC Act Protected Matters Search Tool

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 15-Sep-2025

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	4
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	53
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	1100 - 1200km upstream from Ramsar site	In feature area
Gwydir wetlands: gingham and lower gwydir (big leather) watercourses	200 - 300km upstream from Ramsar site	In feature area
Riverland	1000 - 1100km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	1200 - 1300km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities			[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.			
Community Name	Threatened Category	Presence Text	Buffer Status
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community likely to occur within area	In feature area
Upland Wetlands of the New England Tablelands (New England Tableland Bioregion) and the Monaro Plateau (South Eastern Highlands Bioregion)	Endangered	Community likely to occur within area	In buffer area only
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Anthochaera phrygia](#) Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area	In feature area
[Aphelocephala leucopsis](#) Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In buffer area only
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calyptorhynchus lathami lathami](#) South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Erythrotriorchis radiatus](#) Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor			
Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Melanodryas cucullata cucullata			
South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Polytelis swainsonii			
Superb Parrot [738]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata			
Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only
CRUSTACEAN			
Euastacus maccai			
Terrestrial Crayfish [83149]	Endangered	Species or species habitat may occur within area	In feature area
FISH			
Bidyanus bidyanus			
Silver Perch, Bidyan [76155]	Endangered	Species or species habitat may occur within area	In buffer area only
Maccullochella peelii			
Murray Cod [66633]	Vulnerable	Species or species habitat may occur within area	In feature area
FROG			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Litoria castanea			
Yellow-spotted Tree Frog, Yellow-spotted Bell Frog [1848]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Nyctophilus corbeni			
Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In feature area
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Acacia pubifolia Velvet Wattle [19799]	Vulnerable	Species or species habitat may occur within area	In feature area
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bertya sp. Clouds Creek (M.Fatemi 4) [84675]	Endangered	Species or species habitat may occur within area	In buffer area only
Boronia granitica Granite Boronia [18598]	Endangered	Species or species habitat likely to occur within area	In feature area
Cadellia pentastylis Ooline [9828]	Vulnerable	Species or species habitat may occur within area	In feature area
Caladenia amnicola [76141]	Endangered	Species or species habitat known to occur within area	In buffer area only
Callistemon pungens [55581]	Vulnerable	Species or species habitat known to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diuris pedunculata Small Snake Orchid, Two-leaved Golden Moths, Golden Moths, Cowslip Orchid, Snake Orchid [18325]	Endangered	Species or species habitat likely to occur within area	In feature area
Eucalyptus caleyi subsp. ovendenii Ovenden's Ironbark [56193]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Eucalyptus mckieana McKie's Stringybark [20199]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus nicholii Narrow-leaved Peppermint, Narrow-leaved Black Peppermint [20992]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Euphrasia arguta [4325]	Critically Endangered	Species or species habitat may occur within area	In feature area
Haloragis exalata subsp. velutina Tall Velvet Sea-berry [16839]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat known to occur within area	In feature area
Vincetoxicum forsteri listed as Tylophora linearis [92384]	Endangered	Species or species habitat may occur within area	In feature area
REPTILE			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Aprasia parapulchella Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat may occur within area	In feature area
Myuchelys belli Western Sawshelled Turtle [86075]	Endangered	Species or species habitat known to occur within area	In feature area
Uvidicolus sphyrurus Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Commonwealth Lands [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Commonwealth Land Name	State	Buffer Status
Communications, Information Technology and the Arts - Telstra Corporation Limited		
Commonwealth Land - Australian Telecommunications Commission [11635]	NSW	In buffer area only

Listed Marine Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans			
Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Bulagaranda (Mt Yarrowyck)	Aboriginal Area	NSW	In buffer area only

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Residential Subdivision & Assoc Infrastructure Kareela Road	2005/2102	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Appendix D
Likelihood of Occurrence

Apx Table 54 Likelihood Of Occurrence

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Amphibia						
Adelotus brevis - endangered population	Tusked Frog population in the Nandewar and New England Tableland Bioregions	E	-	-	The Tusked Frog is found widely along the coast and adjacent ranges from central Queensland to the Sydney region of NSW, with an isolated population being known from northern QLD. Tusked Frogs were once found west to the New England Tableland and North West Slopes (Nandewar bioregion) but are now very rare there, and the population in these regions has been listed as an Endangered Population under the TSC Act. They remain more common in lower elevation coastal areas. The species has been recorded in a wide range of habitats including rainforests, wet forests, dry sclerophyll forests and flooded grassland and pasture. They are usually found near creeks, ditches and ponds, and males call while hidden amongst vegetation or debris.	Moderate
Litoria booroolongensis	Booroolong Frog	E	E	-	The Booroolong Frog is found along permanent western flowing streams of the Great Dividing Range through most of NSW and down into northern Victoria. Streams range from small slow-flowing creeks to large rivers and the adults are found on or near cobble banks and other rock structures within stream margins and shelter under rocks or amongst vegetation near the ground on the stream edge. The species occurs along streams in both forested areas and open pasture but has been affected by the presence of the introduced willow tree. Booroolong Frogs sometimes basks in the sun on exposed rocks near flowing water during summer.	Moderate
Litoria castanea	Yellow-spotted Tree Frog	CE	CE	-	There is only a single known extant population of the Yellow-Spotted Bell Frog, which occurs on the Southern Tablelands, although it is possible that other scattered population are present within the region. The species was previously found up as far as the Armidale region in northern NSW. This frog is found in association with large permanent ponds or slow flowing streams that contain emergent vegetation such as bullrushes which is uses as basking sites. The species may prove to be simply a subpopulation of the more widespread Southern Bell Frog.	Moderate
Litoria piperata	Peppered Tree Frog	CE	V	-	Not recorded in the wild since the 1970s. Previously found on the New England Tablelands from south of Armidale to the Gibraltar Range, at an altitude of 800 to 1000 m. Individuals were located in streamside vegetation and under rocks and fallen timber along rocky streams flowing eastward from the Tablelands. They closely resemble Pearsons Tree Frog and may just be a sub-population of this common frog.	Low

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Litoria subglandulosa	Glandular Frog	V	V	-	This is the very similar looking sister species to Davies Tree Frog and is found at higher altitudes of the Great Dividing Range from the Dorrigo area of NSW to almost the Queensland border. Within this range the New England Tree Frog can be found along permanent streams in rainforest, moist and dry eucalypt forest or in subalpine swamps, often being present in cleared country where streams retain fringing vegetation. Males call from this vegeation through spring and the tadpoles have highly unusual and modified mouthparts, the reason for which has yet to be determined.	Moderate
Mixophyes balbus	Stuttering Frog	E	V	-	Associated with streams in dry sclerophyll and wet sclerophyll forests and rainforests of more upland areas of the Great Dividing Range of NSW and down into Victoria. Breeding occurs along forest streams with permanent water where eggs are deposited within nests excavated in riffle zones by the females and the tadpoles swim free into the stream when large enough to do so. Outside of breeding, individuals range widely across the forest floor and can be found hundreds of metres from water	Moderate
Actitis hypoleucos	Common Sandpiper	-	M, MAR	-	Utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	Low
Aves						
Anseranas semipalmata	Magpie Goose	V	MAR	-	Mainly found in shallow wetlands less than 1 m deep, with a dense growth of rushes or sedges. The Magpie Goose is still relatively common in the Australian northern tropics, but had disappeared from south-east Australia by 1920 due to drainage and overgrazing of reed swamps used for breeding. Since the 1980s there have been an increasing number of records in central and northern NSW. Vagrants can follow food sources to south-eastern NSW.	Low
Anthochaera phrygia	Regent Honeyeater	CE	CE	-	The Regent Honeyeater mainly inhabits temperate woodlands and open forests of the inland slopes of south-east Australia. Birds are also found in drier coastal woodlands and forests in some years. The distribution of the species has contracted dramatically in the last 30 years to between north-eastern Victoria and south-eastern Queensland. There are only three known key breeding regions remaining: north-east Victoria (Chiltern-Albury), and in NSW at Capertee Valley and the Bundarra-Barraba region. In NSW the distribution is very patchy and mainly confined to the two main breeding areas and surrounding fragmented woodlands. In some years flocks converge on flowering coastal woodlands and forests.	Moderate
Aphelocephala leucopsis	Southern Whiteface	V	V	-	Southern whiteface occur across most of mainland Australia south of the tropics, from the northeastern edge of the Western Australian wheatbelt, east to the Great Dividing Rang. There is a broad hybrid zone between the two subspecies extending north from the western edge of the Nullarbor Plain. The northern boundary extends to about Carnarvon in the west, to the southern Northern Territory in central Australia, but is slightly further south in Queensland where the species is largely confined to the south-west of the Mitchell Grass Downs and along the southern state border.	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Apus pacificus	Fork-tailed Swift	-	M,MAR	-	The Fork-tailed Swift is almost exclusively aerial, flying from less then one metre to at least 300 metres above ground and probably much higher.	Moderate
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	-	The Dusky Woodswallow is widespread in eastern, southern and southwestern Australia. In New South Wales it is widespread from coast to inland, including the western slopes of the Great Dividing Range and farther west. It is sparsely scattered in, or largely absent from, much of the Upper Western region. The Dusky Woodswallow is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests; very occasionally in moist forests or rainforests. At sites where Dusky Woodswallows are recorded the understorey is typically open with sparse eucalypt saplings, acacias and other shrubs, including heath. The ground cover may consist of grasses, sedges or open ground, often with coarse woody debris (Higgins and Peter 2002). Birds are also often observed in farm land, usually at the edges of forest or woodland or in roadside remnants or wind breaks with dead timber.	High
Botaurus poiciloptilus	Australasian Bittern	E	E	-	The Australasian Bitterns is widespread but uncommon over south-eastern Australia. In NSW they may be found over most of the state except for the far north-west. Favours permanent freshwater wetlands with tall, dense vegetation, particularly bullrushes and spikerushes. Hides during the day amongst dense reeds or rushes and feed mainly at night on frogs, fish, yabbies, spiders, insects and snails.	Moderate
Burhinus grallarius	Bush Stone-curlew	E	-	-	The Bush Stone-curlew is found throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range. Inhabits open forests and woodlands with a sparse grassy groundlayer and fallen timber. Largely nocturnal, being especially active on moonlit nights. Feed on insects and small vertebrates, such as frogs, lizards and snakes. Nest on the ground in a scrape or small bare patch	Moderate
Calidris acuminata	Sharp-tailed Sandpiper	-	V,M,MAR	-	Freshwater or saltwater wetlands- the muddy edges of lagoons, swamps, lakes, dams, soaks, sewage dams or temporary floodwaters.	Moderate
Calidris ferruginea	Curlew Sandpiper	CE	CE,M,MAR	-	The Curlew Sandpiper is distributed around most of the coastline of Australia. It occurs along the entire coast of NSW, particularly in the Hunter Estuary, and sometimes in freshwater wetlands in the Murray-Darling Basin. It generally occupies littoral and estuarine habitats, and in New South Wales is mainly found in intertidal mudflats of sheltered coasts. It also occurs in non-tidal swamps, lakes and lagoons on the coast and sometimes the inland	Low

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Calidris melanotos	Pectoral Sandpiper	-	M,MAR	-	Tends to live and feed over shallow coastal waters- the estuaries, lagoons and channels around river and harbour entrances and along the shallows close in shore.	Low
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	V	V	-	The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina. Inhabits open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods.	Moderate
Circus assimilis	Spotted Harrier	V	-	-	The Spotted Harrier occurs throughout the Australian mainland, except in densly forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population. 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.	Moderate
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	-	Found in eucalypt woodlands (including box-gum woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and river red gum forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; usually not found in woodlands with a dense shrub layer; fallen timber is an important habitat component for foraging; also recorded, though less commonly, in similar woodland habitats on the coastal ranges and plains.	High
Daphoenositta chrysoptera	Varied Sittella	V	-	-	The Varied Sittella is sedentary and inhabits most of mainland Australia except the treeless deserts and open grasslands, with a nearly continuous distribution in NSW from the coast to the far west. Inhabits wide variety of dry eucalypt forests and woodlands, usually with either shrubby under storey or grassy ground cover or both, in all climatic zones of Australia. Usually in areas with rough-barked trees, such as stringybarks or ironbarks, but also in paperbarks or mature Eucalypts with hollows.	High
Ephippiorhynchus asiaticus	Black-necked Stork	E	-	-	Mainly found on shallow, permanent, freshwater terrestrial wetlands, and surrounding marginal vegetation, including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters, as well as extending into adjacent grasslands, paddocks and open savannah woodlands. They also forage within or around estuaries and along intertidal shorelines, such as saltmarshes, mudflats and sandflats, and mangrove vegetation.	Moderate
Erythrotriorchis radiatus	Red Goshawk	E	E	-	Red Goshawks inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats	Low

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
					include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	
Falco hypoleucos	Grey Falcon	V	V	-	Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast. Also occurs near wetlands where surface water attracts prey. In NSW it occurs on the plains of the Murray-Darling Basin, and particularly west of the Darling River.	Low
Falco subniger	Black Falcon	V	-	-	Black Falcons are most likely to be seen on the western slopes and plains, although they visit the tablelands and occur in the drier and more open coastal valleys and floodplains. Black Falcons live in woodland, grassland and tree-dotted agricultural land in flat to undulating terrain, and will hunt over pasture and crops.	Moderate
Gallinago hardwickii	Latham's Snipe	V	V,M,MAR	-	Latham's Snipe is a non-breeding migrant to the south east of Australia including Tasmania, passing through the north and New Guinea on passage. Latham's Snipe breed in Japan and on the east Asian mainland. seen in small groups or singly in freshwater wetlands on or near the coast, generally among dense cover. They are found in any vegetation around wetlands, in sedges, grasses, lignum, reeds and rushes and also in saltmarsh and creek edges on migration.	Moderate
Grantiella picta	Painted Honeyeater	V	V	-	The Painted Honeyeater is nomadic and occurs at low densities throughout its range. The greatest concentrations of the bird and almost all breeding occurs on the inland slopes of the Great Dividing Range in NSW, Victoria and southern Queensland. During the winter it is more likely to be found in the north of its distribution. Inhabits boree, brigalow and box-gum woodlands and box-ironbark forests.	Moderate
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	MAR	-	Inhabits coastal and near coastal areas, building large stick nests, and feeding mostly on marine and estuarine fish and aquatic fauna. The White-bellied Sea-eagle is distributed around the Australian coastline, including Tasmania, and well inland along rivers and wetlands of the Murray Darling Basin.	Low
Hieraaetus morphnoides	Little Eagle	V	-	-	Most abundant in lightly timbered areas with open areas nearby. Often recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. May nest in farmland, woodland and forest in tall trees. The Little Eagle is distributed throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment.	Moderate
Hirundapus caudacutus	White-throated Needletail	-	V,M,MAR	-	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges.	High
Lathamus discolor	Swift Parrot	E	CE,MAR	-	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. In NSW mostly occurs on the coast and south west slopes. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW . This species is migratory,	High

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
					breeding in Tasmania and also nomadic, moving about in response to changing food availability.	
Lophoictinia isura	Square-tailed Kite	V	-	-	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is often associated with ridge and gully forests dominated by Eucalyptus longifolia, Corymbia maculata, E. elata or E. smithii. Individuals appear to occupy large hunting ranges of more than 100km2. They require large living trees for breeding, particularly near water with surrounding woodland -forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.	High
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E	E	-	Occupy a wide range of eucalypt woodlands, Acacia shrublands and open forests. The south-eastern form (subspecies cucullata) is found from Brisbane to Adelaide and throughout much of inland NSW, with the exception of the extreme north-west, where it is replaced by subspecies picata. However, it is common in few places, and rarely found on the coast	Moderate
Melithreptus gularis gularis	Black-chinned Honeyeater (eastern subspecies)	V	-	-	In NSW it is widespread, with records from the tablelands and western slopes of the Great Dividing Range to the north-west and central-west plains and the Riverina. It is rarely recorded east of the Great Dividing Range, although regularly observed from the Richmond and Clarence River areas. It has also been recorded at a few scattered sites in the Hunter, Central Coast and Illawarra regions, though it is very rare in the latter. Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts.	Moderate
Motacilla flava	Yellow Wagtail	-	M,MAR	-	Often seen near water. Listen for high-pitched, piercing call note. Common breeder on Arctic tundra from Alaska to Russia; found in grassy and waterside habitats in Southeast Asian wintering grounds and in migration.	Low
Neophema chrysostoma	Blue-winged parrot	-	MAR	-	Found across south-eastern Australia. Lives in savannah woodland, grasslands, orchards, farmlands, marshes, heath, dunes, and other open habitats up to 1,200 m above sea level. It is one of only three species of parrot that make regular yearly migrations over a sea or ocean, with many members of the species flying between Tasmania, where they breed in spring and summer, and the mainland, where they winter.	Moderate
Neophema pulchella	Turquoise Parrot	V	-	-	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland. Nests in tree hollows, logs or posts, from August to December. It lays four or five white, rounded eggs on a nest of decayed wood dust.	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Ninox connivens	Barking Owl	V	-	-	The Barking Owl is found throughout continental Australia except for the central arid regions. Although still common in parts of northern Australia, the species has declined greatly in southern Australia and now occurs in a wide but sparse distribution in NSW. Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas.	High
Ninox strenua	Powerful Owl	V	-	-	In NSW, it is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Can occupy both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. It is most commonly recorded within red turpentine in tall open forests and black she-oak within open forests. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials.	High
Oxyura australis	Blue-billed Duck	V	-	-	Widespread in NSW, but most common in the southern Murray-Darling Basin area. Birds disperse during the breeding season to deep swamps up to 300 km away. It is generally only during summer or in drier years that they are seen in coastal areas. The Blue-billed Duck prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation.	High
Pachycephala olivacea	Olive Whistler	V	-	-	Mostly inhabit wet forests above about 500m. During the winter months they may move to lower altitudes. Forage in trees and shrubs and on the ground, feeding on berries and insects. The Olive Whistler is endemic to south-eastern Australia. It occurs from the coast to the Great Dividing Range, ranging from Tasmania and south-east South Australia, through New South Wales to the McPherson Range in south-east Queensland	Low
Parvipsitta pusilla	Little Lorikeet	V	-	-	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.	High
Petroica boodang	Scarlet Robin	V	-	-	The Scarlet Robin is found from SE Queensland to SE South Australia and also in Tasmania and SW Western Australia. In NSW, it occurs from the coast to the inland slopes. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs.	Known
Petroica phoenicea	Flame Robin	V	-	-	Flame Robins are found in a broad coastal band from southern Queensland to just west of the South Australian border. The species is also found in Tasmania. The preferred habitat in summer includes eucalyptus forests and woodland, whilst in winter prefers open woodlands and farmlands. It is considered migratory. The Flame Robin breeds from about August to January.	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Polytelis swainsonii	Superb Parrot	V	V	-	The Superb Parrot is found throughout eastern inland NSW. On the South-western Slopes their core breeding area is roughly bounded by Cowra and Yass in the east, and Grenfell, Cootamundra and Coolac in the west. Birds breeding in this region are mainly absent during winter, when they migrate north to the region of the upper Namoi and Gwydir Rivers. Inhabits box-gum, box-cypress-pine and boree woodlands and river red gum forest.	Low
Pyrrholaemus sagittatus	Speckled Warbler	V	-	-	The Speckled Warbler lives in a wide range of eucalypt dominated communities that have a grassy understorey, often on rocky ridges or in gullies. Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy. The Speckled Warbler has a patchy distribution throughout south-eastern Queensland, the eastern half of NSW and into Victoria, as far west as the Grampians. The species is most frequently reported from the hills and tablelands of the Great Dividing Range, and rarely from the coast.	High
Rostratula australis	Australian Painted Snipe	E	E, MAR	-	In NSW, this species has been recorded at the Paroo wetlands, Lake Cowell, Macquarie Marshes and Hexham Swamp. Most common in the Murray-Darling Basin. Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds.	Moderate
Stagonopleura guttata	Diamond Firetail	V	V	-	Found in grassy eucalypt woodlands, including box-gum woodlands and snow gum woodlands. Also occurs in open forest, mallee, natural temperate grassland, and in secondary grassland derived from other communities. It is widely distributed in NSW, with a concentration of records from the Northern, Central and Southern Tablelands, the Northern, Cental and South Western Slopes and the North West Plains and Riverina. Not commonly found in coastal districts, though there are records from near Sydney, the Hunter Valley and the Bega Valley.	Known
Tringa nebularia	Common Greenshank	-	E,M,MAR	-	Habitat is diverse, both inland and coastal. Found inland on both permanent and temporary wetland- billabongs, swamps, lakes, floodplains, sewage, farms and saltwater ponds. On the coast, it uses sheltered estuaries and bays with extensive mudflats, mangrove swamps, muddy shallows of harbours and lagoons and occasionally rocky tidal edges.	Moderate
Tyto novaehollandiae	Masked Owl	V	-	-	Inhabits a diverse range of wooded habitat that provide tall or dense mature trees with hollows suitable for nesting and roosting. Mostly recorded in open forest and woodlands adjacent to cleared lands. Nest in hollows, in trunks and in near vertical spouts or large trees, usually living but sometimes dead. Nest hollows are usually located within dense forests or woodlands. Extends from the coast where it is most abundant to the western plains. Overall records for this species fall within approximately 90% of NSW, excluding the most arid north-western corner.	Moderate
Mammalia						
Aepyprymnus rufescens	Rufous Bettong	V	-	-	The original range from Coen in north Queensland to central Victoria has been reduced to a patchy distribution from Cooktown, Queensland, to north-eastern NSW as far south as Mt Royal National Park. In NSW it has largely vanished from inland areas but there are sporadic, unconfirmed records from the Pilliga and Torrington districts. Rufous Bettongs	Low

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
					inhabit a variety of forests from tall, moist eucalypt forest to open woodland, with a tussock grass understorey. A dense cover of tall native grasses is the preferred shelter. They sleep during the day in cone-shaped nests constructed of grass in a shallow depression at the base of a tussock or fallen log. At night they feed on grasses, herbs, seeds, flowers, roots, tubers, fungi and occasionally insects.	
Cercartetus nanus	Eastern Pygmy-possum	V	-	-	Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source, however will feed on insects when nectar and pollen are less available. Will often nest in tree hollows, but can also construct its own nest . Because of its small size it is able to utilise a range of hollow sizes including very small hollows.	Moderate
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	-	Located in a variety of drier habitats, including the dry sclerophyll forests and woodlands to the east and west of the Great Dividing Range. Can also be found on the edges of rainforests and in wet sclerophyll forests. This species roosts in caves and mines in groups of between 3 and 37 individuals. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in caves, overhangs, mine adits and concrete structures such as derelict buildings. They remain loyal to the same cave over many years.	Moderate
Chalinolobus picatus	Little Pied Bat	V	-	-	The Little-Pied Bat is found in inland Queensland and NSW (including Western Plains and slopes) extending slightly into South Australia and Victoria. Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress-pine forest, mallee, Bimbil box. Roosts in caves, rock outcrops, mine shafts, tunnels, tree hollows and buildings.	Moderate
Dasyurus maculatus	Spotted-tailed Quoll	V	E	-	Spotted-tailed Quoll are found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Queensland. Only in Tasmania is it still considered common. Recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline. Quolls use hollow-bearing trees, fallen logs, other animal burrows, small caves and rock outcrops as den sites.	Moderate
Falsistrellus tasmaniensis	Eastern False Pipistrelle	V	-	-	The Eastern False Pipistrelle is found on the south-east coast and ranges of Australia, from southern Queensland to Victoria and Tasmania. Prefers moist habitats, with trees taller than 20 m. Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings. Hunts beetles, moths, weevils and other flying insects above or just below the tree canopy.	Moderate
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	-	Eastern Bent-wing Bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures. Form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young.	High
Myotis macropus	Southern Myotis	V	-	-	The Large-footed Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Nyctophilus corbeni	Corben's Long-eared Bat	V	V	-	The South-eastern Long-eared Bat has a limited distribution that is restricted around the Murray-Darling Basin in south-eastern Australia. Even in this region its distribution is scattered and it is rarely recorded. It occurs in far eastern South Australia, in areas north of the Murray River, east of Canegrass Station and south of the Barrier Highway. These areas include the Riverland Biosphere Reserve, Danggali Conservation Park and the Birds Australia Gluepot Reserve. It is distributed throughout inland NSW except in the north-west area which is dominated by treeless plains. It can be found in the Hunter Valley, extending from central NSW to the eastern Hunter Valley coast. Considered Nyctophilus timorensis south eastern form under TSC Act.	Moderate
Petauroides volans	Greater Glider	E	E	-	The Southern Greater Glider occurs in eastern Australia, where it has a broad distribution from around Proserpine in Queensland (Qld), south through NSW and the Australian Capital Territory (ACT), to Wombat State Forest in central Victoria. It is typically found in highest abundance in taller, montane, moist eucalypt forests on fertile soils, with relatively old trees and abundant hollows in north and south-eastern NSW.	High
Petaurus australis	Yellow-bellied Glider	V	V	-	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.	Moderate
Petaurus norfolcensis	Squirrel Glider	V	-	-	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey. Require abundant tree hollows for refuge and nest sites. Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.	High
Petrogale penicillata	Brush-tailed Rock-wallaby	E	V	-	Found in rocky areas in a wide variety of habitats including rainforest gullies, wet and dry sclerophyll forest, open woodland and rocky outcrops in semi-arid country. Commonly sites have a northerly aspect with numerous ledges, caves and crevices. The range of the Brush-tailed Rock-wallaby extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. In NSW they occur from the Queensland border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit.	Moderate
Phascolarctos cinereus	Koala	E	E	-	Inhabits eucalypt forests and woodlands. The suitability of these forests for habitation depends on the size and species of trees present, soil nutrients, climate and rainfall. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.	High

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Potorous tridactylus	Long-nosed Potoroo	V	V	-	Inhabits coastal heath and wet and dry sclerophyll forests. Generally found in areas with rainfall greater than 760 mm. Requires relatively thick ground cover where the soil is light and sandy. The long-nosed potoroo is found on the south-eastern coast of Australia, from Queensland to eastern Victoria and Tasmania, including some of the Bass Strait islands. In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range.	Low
Pseudomys novaehollandiae	New Holland Mouse	-	V	-	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes.	Low
Pseudomys oralis	Hastings River Mouse	E	E	-	A patchy distribution spanning the Great Dividing Rane from the Hunter Valley, south of Mt Royal, north to the Bunya Mountains near Kingaroy in south-east Queensland, at elevations between 300 m and 1100 m. A variety of dry open forest types with dense, low ground cover and a diverse mixture of ferns, grass, sedges and herbs. Access to seepage zones, creeks and gullies is important, as is permanent shelter such as rocky outcrops.	Undecided
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	-	Grey-headed Flying-foxes are generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Bats commute daily to foraging areas, usually within 15 km of the day roost although some individuals may travel up to 70 km.	High
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	-	Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows. When foraging for insects, flies high and fast over the forest canopy, but lower in more open country. Forages in most habitats across its very wide range, with and without trees; appears to defend an aerial territory. The Yellow-bellied Sheathtail-bat is a wide-ranging species found across northern and eastern Australia.	Moderate
Scoteanax rueppellii	Greater Broad-nosed Bat	V	-	-	Prefer moist gullies in mature coastal forests and rainforests, between the Great Dividing Range and the coast. They are only found at low altitudes below 500 m. In dense environments they utilise natural and human-made opening in the forest for flight paths. Creeks and small rivers are favoured foraging habitat. This species roosts in hollow tree trunks and branches.	Moderate
Reptilia						
Anomalopus mackayi	Five-clawed Worm-skink	E	V	-	The Five-clawed Worm-skink is known to occur in both remnant and non-remnant woodlands and grasslands. In areas modified by agriculture and other human activities, the species has been found sheltering under artificial materials lying flat on the ground, such as discarded railway sleepers, sheet metal and hay bales . On floodplains in NSW it occupies grasslands and grassy, open woodlands on heavy black and grey, alluvial	Low

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					cracking clay soils from 135–200 m above sea level. On the lower north-western slopes of the Great Dividing Range in New South Wales, the species occurs in White Box (Eucalyptus albens) and sometimes ironbark-mixed, grassy woodland on self mulching, friable, basalt derived, red-black to black clay-loam soils. The species has been found occurring in burrows in open paddocks with few trees, cropped grass and moist black soil.	
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	-	Inhabits sloping, open woodland areas with predominantly native grassy groundlayers, particularly those dominated by kangaroo grass. Sites are typically well-drained, with rocky outcrops or scattered, partially-buried rocks.	Low
Myuchelys belli	Western Sawshelled Turtle, Bell's Turtle	E	E	-	In NSW, currently found in four disjunct populations in the upper reaches of the Namoi, Gwydir and Border Rivers systems, on the escarpment of the North West Slopes. Occurs in shallow to deep pools in upper reaches or small tributaries of major rivers I granite country. Occupied pools are most commonly less than 3m deep with rocky or sandy bottoms and patches of vegetation.	Moderate
Uvidicolus sphyrurus	Border Thick-tailed Gecko	V	V	-	Occurs in dry sclerophyll open forest and woodland associated with outcrops of granite, basalt, sandstone and metamorphic rocks. The majority of sites are associated with granite outcrops. Surveys conducted in north-eastern NSW indicate that geckos may show a preference for easterly aspects and the base of rock scarps. The composition of vegetation appears to have little influence on the occurrence of geckos. Shelter sites include rocks, decaying logs, bark, and litter in rocky rubble. Shelter sites are usually laying on a litter substrate and shaded by nearby vegetation. Litter depth at shelters located during CRA surveys varied between one and 10 cm.	Moderate
Euastacus simplex	Simple Crayfish	-	-	E	The simple crayfish is endemic to the headwater reaches (typically between approximately 1100 and 1400 m above sea level) of the New England region of New South Wales (NSW) (Morgan 1997). This species was once considered a widespread species, occurring in various drainage systems including the Styx River (Macleay River Basin) and Nymboida and Guy Fawkes rivers (Clarence River Basin) in the north and the Hastings River Basin in the south (Morgan 1997). However, the southern extent of what was thought to be the range of this species is now considered to be that of other species of Euastacus.	Low
Flora						
Acacia pubifolia	Velvet Wattle	E	V	-	Velvet Wattle generally grows in dry shrubby woodland on granite and metasediment soils. Velvet Wattle occurs in NSW and Qld. In NSW it is known from two main populations, one north of Emmaville and the other near Warrabah National Park.	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Arthraxon hispidus	Hairy Jointgrass	V	V	-	Occurs over a wide area in south-east Queensland, the northern tablelands and north coast of NSW. Moisture and shade-loving grass, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps.	Low
Asterolasia rupestris subsp. recurva	Asterolasia rupestris subsp. recurva	CE	-	-	Asterolasia rupestris subsp. recurva is restricted to the Parlour Mountains north west of Armidale on the New England Tableland, northern NSW. Only one population is known, with all individuals occurring along a single creekline on private freehold land (Mole et al. 2002; Copeland 2021).	Moderate
Bertya sp. Clouds Creek (M.Fatemi 4)	Bertya sp. Clouds Creek (M.Fatemi 4)	E	-	-	Endemic to north-eastern New South Wales where it occurs from the Gibraltar Range, east of Glen Innes, to the Macleay Gorges, south-east of Armidale. The species typically occurs within heath or low shrubland vegetation surrounded by stunted eucalypts at altitudes from 300-1000 m above sea level.	Low
Boronia granitica	Granite Boronia	V	E	-	Grows on granitic soils amongst rock outcrops, often in rock crevices, and in forests and woodlands on granite scree and shallow soils. Important site characteristics include low precipitation and high levels of solar radiation.	Moderate
Cadellia pentastylis	Ooline	V	V	-	Ooline occurs on the western edge of the NSW north-west slopes, from Mt Black Jack near Gunnadah to west of Tenterfield, and extends into Queensland to Carnarvon Range and Callide Valley, south-west of Rockhampton. Ooline grows in dry rainforest, semi-evergreen vine thickets and sclerophyll ecological communities, often locally dominant or as an emergent.	Low
Caladenia amnicola	Caladenia amnicola	E	E	-	Caladenia amnicola is restricted to a single location west of Armidale on the New England Tableland, northern NSW.	Moderate
Callistemon pungens	Callistemon pungens	-	V	-	Occurs in south-east Queensland and the northern tablelands of northeast NSW. In NSW, it occurs from near Inverell to the eastern escarpment in New England, along rocky watercourses usually with sandy granite (or occasionally basalt) creek beds and generally among naturalised species.	Moderate
Dichanthium setosum	Bluegrass	V	V	-	Occurs on the New England Tablelands, North West Slopes and Plains and the Central Western Slopes of NSW, as well as in Queensland and Western Australia. It occurs widely on private property, including in the Inverell, Guyra, Armidale and Glen Innes areas. Often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture.	High
Diuris pedunculata	Small Snake Orchid	E	E	-	Confined to NSW. It was originally found scattered from Tenterfield south to the Hawkesbury River, but is now mainly found on the New England Tablelands, around Armidale, Uralla, Guyra and Ebor. Grows on grassy slopes or flats, often on peaty soils in moist areas. Also known from shale and trap soils, on fine granite, and among boulders.	Moderate

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Eucalyptus caleyi subsp. ovendenii	Ovenden's Ironbark	V	V	-	Grows in grassy woodland on dry, shallow soils of moderate fertility. Preferred altitudes are 610 to 820 m, on granitic substrates.	Moderate
Eucalyptus magnificata	Northern Blue Box	E	-	-	Grassy open forest or woodland on shallow, sandy or loamy soils. Occurs on moderately hilly sites and at the edge of gorges, usually at altitudes from 900 - 1050 m.	Moderate
Eucalyptus mckieana	McKie's Stringybark	V	V	-	Eucalyptus mckieana is found in grassy open forest or woodland on poor sandy loams, most commonly on gently sloping or flat sites.	High
Eucalyptus nicholii	Narrow-leaved Black Peppermint	V	V	-	Typically grows in dry grassy woodland, on shallow soils of slopes and ridges. Found primarily on infertile soils derived from granite or metasedimentary rock. Seedling recruitment is common, even in disturbed soils, if protected from grazing and fire.	Moderate
Eucalyptus rubida subsp. barbigerorum	Blackbutt Candlebark	V	V	-	Woodland on medium or high fertility soils. Ofton on cold flats.	Moderate
Euphrasia arguta	Euphrasia arguta	CE	CE	-	Occur in eucalypt forest with a mixed grass and shrub understorey within Nundle State forest. Sites have either been logged in the last few decades, or appear to have regrown from past clearing.	Low
Grevillea scortechinii subsp. sarmentosa	Backwater Grevillea	V	-	-	Restricted to granite country on the New England Tablelands, including granitic outcrops, slabs and slopes. Grows in shrubby sclerophyll woodland, on granitic slabs and slopes in sandy loam soils. It often grows amongst low granite outcrops.	Moderate
Haloragis exalata subsp. velutina	Tall Velvet Sea-berry	V	V	-	Grows in damp places near watercourses. This subspecies also occurs in woodland on the steep rocky slopes of gorges.	Low
Picris evae	Hawkweed	V	V	-	Hawkweed occurs in Eucalyptus open woodland with a grassy understorey composed of Dichanthium spp. Upper stratum species include Eucalyptus melliodora, E. crebra, E. populnea, E. albens, Angophora subvelutina, Allocasuarina torulosa, and Casuarina cunninghamiana.	Moderate
Pimelea venosa	Bolivia Hill Rice-flower	E	E	-	Associated vegetation is dominated by Eucalyptus species, with an open understorey of Xanthorrhoea and Solanum species. Recorded on deep granite soils or black sandy soils on granite outcrops in open woodland.	High

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
Prasophyllum sp. Wybong	Prasophyllum sp. Wybong	-	CE	-	Endemic to NSW. It is known from seven populations in eastern NSW near Ilford, Premer, Muswellbrook, Wybong, Yeoval, Inverell and Tenterfield.	Low
Pterostylis metcalfei	Metcalfe's Greenhood	E	E	-	Known only from three locations on the New England Tablelands: north of Wollomombi at Wongwibinda, near Hernani west of Dorrigo and at Ebor. Grows in gently sloping, moist depressions or gullies in tall eucalypt forest, often with a shrubby or Snowgrass understorey, on rich loam soils on basalt or granite. Climate is cool and wet.	Low
Swainsona murrayana	Slender Darling Pea	V	V	-	Slender Darling-pea is found in grassland, herbland, and open Black-box woodland, often in depressions. This species grows in heavy grey or brown clay, loam, or red cracking clays. It is often associated with low chenopod shrubs, wallaby-grass and spear grass. The species may require some disturbance and has been known to occur in paddocks that have been moderately grazed or occasionally cultivated.	Low
Swainsona sericea	Silky Swainson-pea	V	-	-	Recorded from the Northern Tablelands to the Southern Tablelands and further inland on the slopes and plains. There is one isolated record from the far north-west of NSW. Its stronghold is on the Monaro. Found in Natural Temperate Grassland and Snow Gum Woodland on the Monaro. Found in Box-Gum Woodland in the Southern Tablelands and South West Slopes. Sometimes found in association with cypress-pines.	Moderate
Thesium australe	Austral Toadflax	V	V	-	Grows in very small populations scattered across eastern NSW, along the coast, and from the Northern to Southern Tablelands. It is also found in Tasmania and Queensland and in eastern Asia. Occurs in grassland or grassy woodland. Grows on kangaroo grass tussocks but has also been recorded within the exotic coolatai grass.	High
Vincetoxicum forsteri	Tylophora linearis	V	E	-	Vincetoxicum forsteri has rarely been collected and is known from eight localities in the Dubbo area and Mt Crow near Barraba in NSW, and 'Myall Park' near Glenmorgan in Queensland. This species is conserved within Goobang National Park, Eura State forest, Goonoo SF, Pilliga West SF and Coolbaggie Nature Reserve. Tylophora linearis grows in dry scrub, open forest and woodlands associated with Melaleuca uncinata, Eucalyptus fibrosa, E. sideroxylon, E. albens, Callitris endlicheri, C. glaucophylla, Allocasuarina luehmannii, Acacia hakeoides, A. lineata, Myoporum spp., and Casuarina spp.	Moderate
Fish						
Maccullochella peelii	Murray Cod	-	V	-	The Murray Cod utilises a diverse range of habitats from clear rocky streams, such as those found in the upper western slopes of NSW to slow-flowing, turbid lowland rivers and billabongs.	Moderate
Bidyanus bidyanus	Silver Perch, Bidyan	-	E	V	Silver Perch were once widespread and abundant throughout most of the Murray-Darling river system. Only one remaining secure and self sustaining population occurs in NSW in the central Murray River downstream of Yarrawonga weir, as well as several anabranches and tributaries. Silver perch seem to prefer fast-flowing, open waters, especially where there are rapids and races, however they will also inhabit warm, sluggish water with cover	Low

Scientific Name	Common Name	BC Act	EPBC Act	FM Act	Habitat	LoO
					provided by large woody debris and reeds. They are omnivorous, feeding on small aquatic insects, molluscs, earthworms and green algae.	

Appendix E
Preliminary BAM Calculator Output

BAM Vegetation Zones Report

Proposal Details

Assessment Id
00049300/BAAS23039/24/00049301

Assessment name
Northern Tablelands Wind Farm

BAM data last updated *
05/08/2025

Assessor Name
Polina Zadorojnaya

Report Created
15/09/2025

BAM Data version *
Current classification (live - default) (82)

Assessor Number
BAAS23014

Assessment Type
Major Projects

BAM Case Status
Open

Assessment Revision
1

BOS entry trigger

Date Finalised
To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Vegetation Zones

#	Name	PCT	Condition	Area	Minimum number of plots	Management zones
1	3344_PBAR	3344-New England Ribbon Gum Grassy Forest	PBAR	1	1	
2	3351_PBAR	3351-Armidale Creekflat Snow Gum Woodland-Scrub	PBAR	1	1	

3	3359_PBAR	3359-New England Hills Stringybark-Box Woodland	PBAR	1	1	
4	3363_PBAR	3363-Western New England Blakelys Red Gum-Box Grassy Forest	PBAR	1	1	
5	3702_PBAR	3702-Northwest New England Ranges Caleys Ironbark Woodland	PBAR	1	1	
6	3705_PBAR	3705-Western New England Hills Apple-Stringybark Forest	PBAR	1	1	
7	3710_PBAR	3710-Western New England Hills Orange Gum-Ironbark Forest	PBAR	1	1	
8	3722_PBAR	3722-Western New England Box-Tumbledown Gum Grassy Forest	PBAR	1	1	
9	3725_PBAR	3725-Western New England Ranges Orange Gum-Blackbutt Forest	PBAR	1	1	
10	3728_PBAR	3728-Western New England Hills Blackbutt-Stringybark Forest	PBAR	1	1	
11	3729_PBAR	3729-Western New England Youmans Stringybark Shrub Forest	PBAR	1	1	
12	4125_PBAR	4125-New England Youmans Stringybark-Box Forest	PBAR	1	1	
13	4142_PBAR	4142-New England Hills Red Gum-Stringybark Shrub Forest	PBAR	1	1	
14	3353_PBAR	3353-Guyra Silvertop Stringybark Moist Forest	PBAR	1	1	

15	3727_PBAR	3727-Western New England Silvertop Stringybark Forest	PBAR	1	1	
16	3854_PBAR	3854-New England Rockplate Shrubland	PBAR	1	1	
17	4080_PBAR	4080-Northwest River Oak-Apple Forest	PBAR	1	1	
18	3724_PBAR	3724-Western New England Caleys Ironbark-Tumbledown Gum Forest	PBAR	1	1	

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00049300/BAAS23039/24/00049301	Northern Tablelands Wind Farm	05/08/2025
Assessor Name	**Report Created**	**BAM Data version ***
Polina Zadorojnaya	15/09/2025	Current classification (live - default) (82)
Assessor Number	**Assessment Type**	**BAM Case Status**
BAAS23014	Major Projects	Open
Assessment Revision	**BOS entry trigger**	**Date Finalised**
1		To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Australian Painted Snipe	Rostratula australis	4080-Northwest River Oak-Apple Forest
Black Falcon	Falco subniger	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest

Black Falcon	Falco subniger	3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Black-necked Stork	Ephippiorhynchus asiaticus	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest

Black-necked Stork	Ephippiorhynchus asiaticus	3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest

Diamond Firetail	Stagonopleura guttata	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest

Dusky Woodswallow	Artamus cyanopterus cyanopterus	3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
Flame Robin	Petroica phoenicea	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		4080-Northwest River Oak-Apple Forest

Flame Robin	Petroica phoenicea	3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Greater Broad-nosed Bat	Scoteanax rueppellii	3727-Western New England Silvertop Stringybark Forest
		4080-Northwest River Oak-Apple Forest
Grey-headed Flying-fox	Pteropus poliocephalus	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Hastings River Mouse	Pseudomys oralis	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3353-Guyra Silvertop Stringybark Moist Forest
Large Bent-winged Bat	Miniopterus orianae oceanensis	3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
Little Eagle	Hieraaetus morphnoides	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub

Little Eagle	Hieraaetus morphnoides	3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Little Lorikeet	Glossopsitta pusilla	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest

Little Lorikeet	Glossopsitta pusilla	3729-Western New England Youmans Stringybark Shrub Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Magpie Goose	Anseranas semipalmata	4080-Northwest River Oak-Apple Forest
New Holland Mouse	Pseudomys novaehollandiae	3351-Armidale Creekflat Snow Gum Woodland-Scrub
Olive Whistler	Pachycephala olivacea	3344-New England Ribbon Gum Grassy Forest
Painted Honeyeater	Grantiella picta	3344-New England Ribbon Gum Grassy Forest
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Regent Honeyeater	Anthochaera phrygia	3344-New England Ribbon Gum Grassy Forest
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest

Regent Honeyeater	Anthochaera phrygia	3722-Western New England Box-Tumbledown Gum Grassy Forest
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
South-eastern Hooded Robin	Melanodryas cucullata cucullata	3344-New England Ribbon Gum Grassy Forest
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3727-Western New England Silvertop Stringybark Forest

South-eastern Hooded Robin	Melanodryas cucullata cucullata	3854-New England Rockplate Shrubland
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Southern Whiteface	Aphelocephala leucopsis	3353-Guyra Silvertop Stringybark Moist Forest
Speckled Warbler	Chthonicola sagittata	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Spotted Harrier	Circus assimilis	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland

Spotted Harrier	Circus assimilis	4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Spotted-tailed Quoll	Dasyurus maculatus	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Square-tailed Kite	Lophoictinia isura	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest

Square-tailed Kite	Lophoictinia isura	3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Swift Parrot	Lathamus discolor	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Turquoise Parrot	Neophema pulchella	4142-New England Hills Red Gum-Stringybark Shrub Forest
Varied Sittella	Daphoenositta chrysoptera	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub

Varied Sittella	Daphoenositta chrysoptera	3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
White-bellied Sea-Eagle	Haliaeetus leucogaster	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest

White-bellied Sea-Eagle	Haliaeetus leucogaster	3729-Western New England Youmans Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
White-throated Needletail	Hirundapus caudacutus	3344-New England Ribbon Gum Grassy Forest
		3351-Armidale Creekflat Snow Gum Woodland-Scrub
		3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3702-Northwest New England Ranges Caleys Ironbark Woodland
		3705-Western New England Hills Apple-Stringybark Forest
		3710-Western New England Hills Orange Gum-Ironbark Forest
		3722-Western New England Box-Tumbledown Gum Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest
		4125-New England Youmans Stringybark-Box Forest
		4142-New England Hills Red Gum-Stringybark Shrub Forest
		3353-Guyra Silvertop Stringybark Moist Forest
		3727-Western New England Silvertop Stringybark Forest
		3854-New England Rockplate Shrubland
		4080-Northwest River Oak-Apple Forest
		3724-Western New England Caleys Ironbark-Tumbledown Gum Forest
Yellow-bellied Glider	Petaurus australis	3344-New England Ribbon Gum Grassy Forest
		3359-New England Hills Stringybark-Box Woodland
		3728-Western New England Hills Blackbutt-Stringybark Forest
		3729-Western New England Youmans Stringybark Shrub Forest

Yellow-bellied Glider	Petaurus australis	3353-Guyra Silvertop Stringybark Moist Forest
Yellow-bellied Sheathtail-bat	Saccolaimus flaviventris	3359-New England Hills Stringybark-Box Woodland
		3363-Western New England Blakelys Red Gum-Box Grassy Forest
		3725-Western New England Ranges Orange Gum-Blackbutt Forest
		4125-New England Youmans Stringybark-Box Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C

BAM Candidate Species Report

Proposal Details

Assessment Id 00049300/BAAS23039/24/00049301	Proposal Name Northern Tablelands Wind Farm	BAM data last updated * 05/08/2025
Assessor Name Polina Zadorojnaya	Report Created 15/09/2025	BAM Data version * Current classification (live - default) (82)
Assessor Number BAAS23014	Assessment Type Major Projects	BAM Case Status Open
Assessment Revision 1	BOS entry trigger	Date Finalised To be finalised

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

List of Species Requiring Survey

Name	Presence	Survey Months
Adelotus brevis - endangered population Tusked Frog population in the Nandewar and New England Tableland Bioregions	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Bertya ingramii Narrow-leaved Bertya	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Burhinus grallarius Bush Stone-curlew	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Caladenia amnicola Caladenia amnicola	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Callistemon pungens Callistemon pungens	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Cercartetus nanus Eastern Pygmy-possum	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Chalinolobus dwyeri Large-eared Pied Bat	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Dichanthium setosum Bluegrass	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Diuris pedunculata Small Snake Orchid	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus magnificata Northern Blue Box	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Eucalyptus nicholii Narrow-leaved Black Peppermint	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Hakea fraseri Gorge Hakea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haliaeetus leucogaster White-bellied Sea-Eagle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Haloragis exalata subsp. velutina Tall Velvet Sea-berry	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Hieraaetus morphnoides Little Eagle	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Litoria piperata Peppered Tree Frog	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Litoria subglandulosa Glandular Frog	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Lophoictinia isura Square-tailed Kite	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Miniopterus orianae oceanensis Large Bent-winged Bat	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Myotis macropus Southern Myotis	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Ninox connivens Barking Owl	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Ninox strenua Powerful Owl	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petauroides volans Southern Greater Glider	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petaurus norfolcensis Squirrel Glider	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Petrogale penicillata Brush-tailed Rock-wallaby	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Phascolarctos cinereus Koala	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Pteropus poliocephalus Grey-headed Flying-fox	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Swainsona sericea Silky Swainson-pea	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Thesium australe Austral Toadflax	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
Tyto novaehollandiae Masked Owl	Yes (assumed present)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Callitris oblonga subsp. parva	Callitris oblonga subsp. parva	Refer to BAR
Regent Honeyeater	Anthochaera phrygia	Habitat constraints
Stuttering Frog	Mixophyes balbus	Refer to BAR
Swift Parrot	Lathamus discolor	Habitat constraints

Appendix E
Preliminary noise impact assessment

Northern Tablelands Wind Farm

Preliminary Noise Impact Assessment

S7927C8

September 2025

sonus.

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Document Title	: Northern Tablelands Wind Farm Preliminary Noise Impact Assessment
Client	: RPS AAP Consulting Pty Ltd
Document Reference	: S7927C8
Date	: September 2025
Author	: Tim Aplin, MAAS
Reviewer	**:** Chris Turnbull, MAAS

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GLOSSARY

A-weighting	Frequency adjustment applied to measured noise levels to replicate the frequency response of the human ear.
Ambient noise level	The noise level of the existing noise sources in the environment (in the absence of the wind farm).
Associated Residence (AR)	A residence, where the landowner has a commercial agreement with the wind farm.
Background noise level	The ambient noise level which excludes intermittent noise sources.
BESS	Battery energy storage system
dB(A)	A-weighted noise or sound power level in decibels.
EIS	Environmental Impact Statement
Equivalent noise level	Energy averaged noise level over a prescribed period of time
Guideline	*Wind Energy Guideline (NSW Department of Planning, Housing and Infrastructure, November 2024)*
ISO 9613-2	International Standard *ISO 9613-2:2024-01 Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors.*
IOA Guide	Institute of Acoustics UK *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* May 2013
National Park	An area of land that has been reserved for the protection and conservation of biodiversity, Australian native plants and animals, ecosystems, places of cultural significance and natural or geological features and protected by law under the National Parks and Wildlife Act 1974. It is separate to other types of protected areas such as Flora Reserves or State Conservation Areas.
Non-associated Residence (NAR)	A residence, where the landowner does not have a commercial agreement with the wind farm.
SEARs	Secretary's Environmental Assessment Requirements
Sound power level	A measure of the sound energy emitted from a source of noise.
The Project	Northern Tablelands Wind Farm
Technical Supplement	*Wind Energy Guideline – Technical Supplement for Noise Assessment (NSW Department of Planning, Housing and Infrastructure, November 2024)*
WTG	Wind turbine generator comprising a three bladed, upstream facing, horizontal axis turbine mounted on steel towers with a common set of generic design components comprising a foundation, tower, nacelle, hub, and blades

1 INTRODUCTION

The Northern Tablelands Wind Farm (the **Project**) is proposed to be constructed approximately 18 kilometres (**km**) northwest of Armidale in New South Wales. The preliminary noise impact assessment has been prepared to assist in the application for the Secretary's Environmental Assessment Requirements (**SEARs**) and to guide the preparation of the Environmental Impact Statement (**EIS**) for the Project.

The assessment includes predictions of noise generated from the operation of wind turbines in accordance with the *Wind Energy Guideline, 2024* (the **Guideline**) and the *Wind Energy Guideline Technical Supplement for Noise Assessment, 2024* (the **Technical Supplement**), both published by the New South Wales Department of Planning, Housing and Infrastructure (**DPHI**).

In addition to the assessment of wind turbine noise, the noise from a proposed battery energy storage system (**BESS**) has been assessed in accordance with the NSW *Noise Policy for Industry 2017* (the **Policy**).

2 PRELIMINARY NOISE IMPACT ASSESSMENT

The preliminary noise impact assessment is based on the following information:

- Wind turbine generator (**WTG**) locations provided in "*NTWF_ScopingProjectLayout_Rev04b.kmz*" and as shown in the following figure.
- Receiver locations summarised in Appendix A, including the classification of the receiver, the distance to the nearest WTG, and the preliminary predicted noise level.
- Bulagaranda (Mount Yarrowyck) Aboriginal Area (**Bulagaranda AA**) in the vicinity of the site provides for recreation and therefore requires an assessment of the predicted noise levels.
- Local topographical contours.
- Noise level data for an indicative WTG with a sound power level of 113 dB(A), including the addition of 1 dB(A) for uncertainty.
- A hub height of up to 200 metres (**m**) above ground level, and a tip height of up to 300 m above ground level.
- The WTG being free of any excessive levels of tonality or any other special noise characteristics, when assessed at the residences.
- Noise data for an indicative 800 Megawatts (**MW**) / 1000 Megawatt hours (**MWh**) BESS with a total sound power level of 121 dB(A).

An overview of the project layout is provided in the following figure.

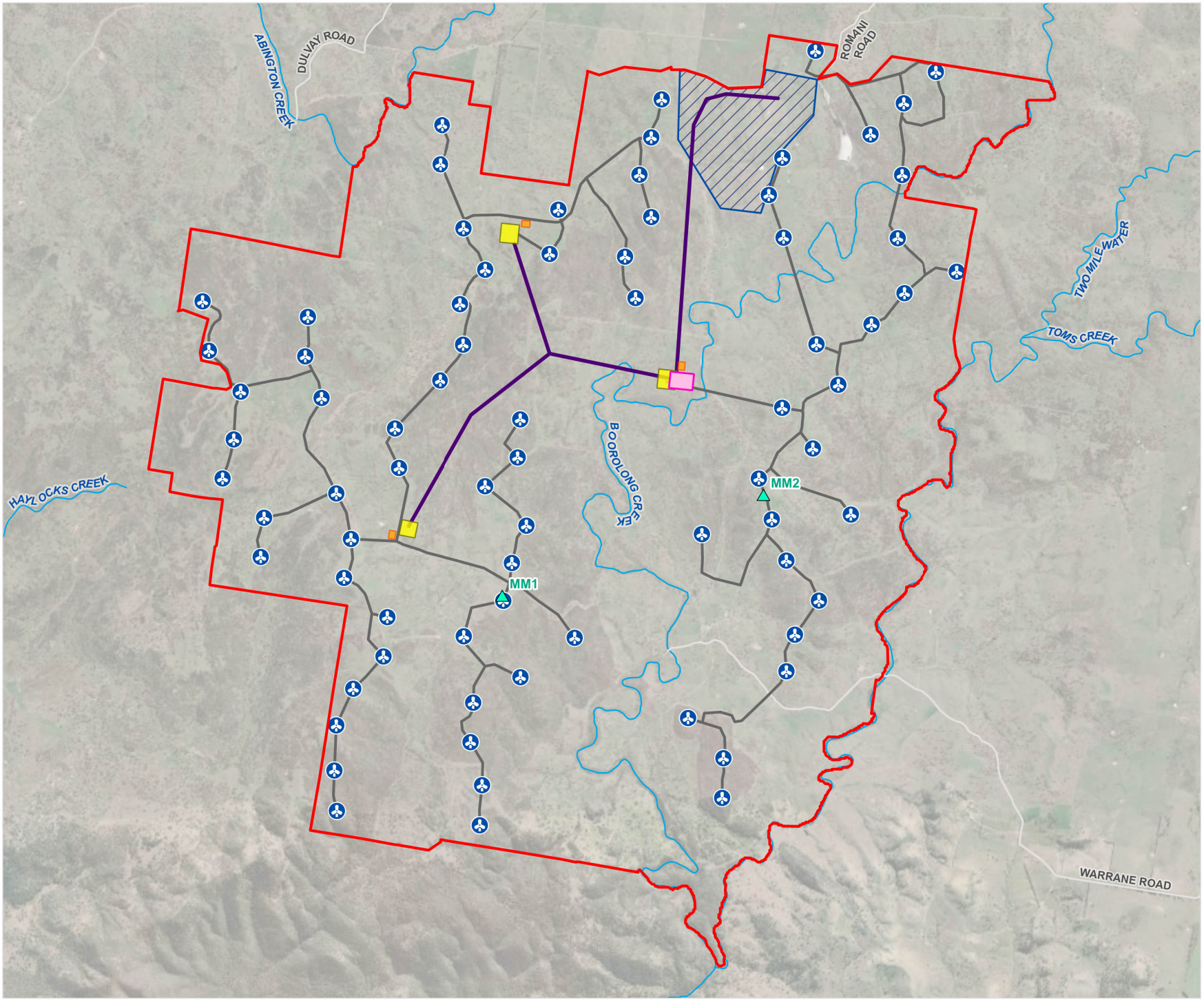


FIGURE 1-2: PROJECT OVERVIEW AND INDICATIVE LAYOUT

2.1 Methodology

2.1.1 Wind Turbine Generators

For the assessment of noise from wind turbines, both the Guideline and the Technical Supplement reference the South Australian EPA's *Wind farms environmental guidelines* (the **SA Guidelines**). Therefore, the assessment methodology (including the noise model and inputs) has been conducted in accordance with the SA Guidelines.

In accordance with the SA Guidelines, predictions of the noise levels at residences have been made using the noise propagation model defined in International Standard *ISO 9613-2:2024-01 Acoustics – Attenuation of sound during propagation outdoors* (**ISO 9613-2**) and the *SoundPLANnoise* noise modelling software. The noise propagation model considers the following influences:

- Sound power levels and noise source locations.
- Separation distances between the noise sources and receivers.
- Topography of the area.
- Influence of the ground.
- Air absorption.
- Meteorological conditions.

ISO 9613-2 provides a methodology for predicting noise levels at sensitive land uses under meteorological conditions favourable to noise propagation. Specifically, the ISO 9613-2 model predicts noise based on the assumption of downwind noise propagation (resulting in higher noise levels) from all wind turbines to all noise sensitive receivers simultaneously, therefore representing a conservative approach.

The SA Guidelines state that the parameters recommended in the Institute of Acoustics' "*A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise"* (May 2013) (the **IOA Guide**) may be used to predict noise levels. Therefore, the following inputs have been used for the noise model:

- 10°C temperature
- 70% relative humidity
- 50% acoustically hard ground and 50% acoustically soft ground.
- Barrier attenuation of no greater than 2 dB(A).
- 4 m receiver height.
- Application of a 3 dB(A) correction where a "concave" ground profile exists as defined by the IOA Guide.

2.1.2 Ancillary Infrastructure

An additional noise model of the Project has been developed to predict the resultant noise levels from ancillary infrastructure at the noise sensitive receivers. Ancillary infrastructure as part of the Project includes a BESS, central substation, underground and overhead electrical reticulation, operations and maintenance facility, internal access road, meteorological masts and utility and amenity services. The noise from the proposed BESS/ancillary infrastructure has been assessed in accordance with the Policy.

Environmental noise predictions have been made using the CONCAWE[1] noise propagation model as implemented in the *SoundPLANnoise* noise modelling software. The CONCAWE noise propagation model considers the following influences:

- Sound power levels and locations of noise sources (including the height of sources).
- Separation distances between noise sources and receivers.
- Shielding provided by the ground topography.
- Influence of the ground and air absorption.
- Meteorological conditions.

The Policy requires the use of either:

- Noise-enhancing meteorological conditions, or
- Standard meteorological conditions, where it can be shown that the noise-enhancing meteorological conditions occur for less than 30% of the time.

The CONCAWE system divides meteorological conditions into six separate “weather categories”, which are dependent on the wind speed, wind direction, time of day and level of cloud cover. Weather Category 1 provides the weather conditions associated with the “lowest” propagation of noise, while Weather Category 6 provides “worst-case” (i.e. highest noise level) conditions. Weather Category 4 provides “neutral” weather conditions for noise propagation (that is, conditions which do not account for the effects of temperature or wind on propagation).

[1] CONCAWE – The oil companies’ international study group for conservation of clean air and water – Europe, ‘The propagation of noise from petrochemical complexes to neighbouring communities’, May 1981.

This assessment provides noise predictions for CONCAWE Weather Category 6 (worst-case) meteorological conditions.

2.2 Criteria

2.2.1 Wind Turbine Generators

The Guideline and Technical Supplement provide criteria based on a baseline limit, when adjusted for tonality and low-frequency noise, of 35 dB(A), or 5 dB(A) above the background noise level at each integer wind speed (whichever is the greater) for non-associated residences. The preliminary assessment is based on the baseline limit, however background noise monitoring conducted as part of the EIS process may result in an increase in the criteria above the baseline limit.

It is noted that the criteria do not apply at associated residences.

As the Bulagaranda AA in the vicinity of the Project provides for recreation, the Technical Supplement requires the noise from WTGs to not exceed 50 dB(A), when adjusted for tonality and low frequency noise, in designated passive recreation areas within national parks (when in use) for a wind speed of 4 m/s or cut in speed, whichever is the greater. It also states that projects will typically meet this criterion at setback distances of 500 m (or greater).

Special Noise Characteristics

Tonality and low frequency noise which may be produced by wind turbines need to be considered in addition to the base noise limits, as part of the assessment in accordance with the Guideline and Technical Supplement.

Tonality

The Guideline notes that the SA Guidelines suggest that the method in the International Standard IEC 61400-11 is appropriate for assessing tonality from wind turbines. However, the NSW EPA assesses tonality with reference to the International Standard *ISO 1996-2:2017, Acoustics – Description, measurement and assessment of environmental noise- Part 2: Determination of sound pressure levels* (**ISO 1996-2**). The survey method in Annex K of ISO 1996-2 defines tonality as when the level of a one-third octave band exceeds the level of the adjacent bands on both sides by:

- 5 dB or more if the centre frequency of the band containing the tone is in the range 500 Hz to 10,000 Hz

- 8 dB or more if the centre frequency of the band containing the tone is in the range 160 Hz to 400 Hz and/or
- 15 dB or more if the centre frequency of the band containing the tone is in the range 25 Hz to 125 Hz.

Low Frequency Noise

The Technical Supplement notes that low frequency noise is typically not a significant feature of modern wind turbine noise where it complies with the relevant A-weighted criteria. However, the following requirement is applicable:

> *"In the unlikely event that excessive low-frequency noise is a repeated characteristic – that is, noise from the wind project would repeatedly be greater than 60 dB(C) – of the wind turbine noise, 5 dB(A) must be added to the predicted or measured noise level from the wind energy project."*

2.2.2 Ancillary Infrastructure

The Policy establishes noise trigger levels based on the existing background noise environment (intrusiveness noise levels) and the amenity for particular land uses (amenity noise levels). The noise trigger levels are the lower values provided by the two methods.

The amenity level for a noise source which operates during the night in a rural area is 40 dB(A). The minimum project intrusiveness noise level for a noise source which operates during the night in a quiet rural area is 35 dB(A), although this may be increased based on the results of background noise monitoring.

Based on the above, the preliminary assessment has assumed a Policy noise trigger level ($L_{Aeq,\ 15\ minute}$) of 35 dB(A) for ancillary infrastructure at all locations.

2.3 Results

2.3.1 Wind Turbine Generators

The highest predicted noise level from WTGs (corresponding to the hub height wind speed of maximum WTG sound power level) is detailed for each residence in Appendix A and is shown graphically in Appendix B. Appendix B shows the predicted 30 dB(A), 35 dB(A), 40 dB(A), 45 dB(A), and 50 dB(A) noise contours. The preliminary predictions indicate that the noise at non-associated residences shown outside of the 35 dB(A) contour achieves the baseline criterion and the noise at non-associated residences inside of the 35 dB(A) contour does not achieve the baseline criterion.

Based on the preliminary modelling, there are nine non-associated residences that have predicted noise levels above 35 dB(A), being NAR_008, NAR_009, NAR_013, NAR_014, NAR_015, NAR_025, NAR_026, NAR_027, and NAR_047 (refer to Appendix B).

The Project will be refined as part of the ongoing design process to seek to minimise noise impacts at all non-associated residences. Potential modifications to the WTG layout, a lower noise WTG, and/or agreements with landowners are options that will be further considered to ensure compliance with relevant criteria at all sensitive receivers is achieved.

The entirety of the Bulagaranda AA lies outside the 45 dB(A) contour line, therefore the 50 dB(A) criterion will inherently also be achieved.

Special Noise Characteristics

Tonality

The penalty for tonality only applies if the tone from the wind farm is audible at the receiver location. However, if the turbine is not itself tonal, then the wind turbine noise at the receiver cannot be tonal. The one-third octave band data supplied have been reviewed against the methodology of Annex K of ISO 1996-2. The one-third octave band data has identified that no penalty for the presence of tonal characteristics is warranted.

Low Frequency Noise

C-weighted predictions have been made to assess if a penalty is required for low frequency noise content. The highest C-weighted prediction made at a non-associated residences is 61 dB(C). As this level exceeds the criterion, a 5 dB penalty for low frequency character may be warranted. However, it is likely that this exceedance will be addressed during the ongoing design process.

The C-weighted predictions for all receivers are provided in Appendix A.

2.3.2 Ancillary Infrastructure

The highest noise level predicted at any residence is 61 dB(A) at receiver ID "AR_006" (associated residence). The highest noise level predicted at any non-associated residence is 28 dB(A) at receiver ID "NAR_014" (non-associated residence), which achieves the 35 dB(A) noise trigger level ($L_{Aeq,15minute}$) for ancillary infrastructure. The exceedance at the associated residence will be addressed during the EIS stage to ensure that amenity is maintained.

3 ACOUSTIC IMPACT ASSESSMENT

A detailed acoustic assessment will be prepared for inclusion in the EIS, addressing the following components:

- WTG noise in accordance with the *Wind Energy Guideline* and *Wind Energy Guideline – Technical Supplement for Noise Assessment*.
- Noise from ancillary infrastructure sources in accordance with the *NSW Noise Policy for Industry 2017.*
- Construction noise in accordance with the *Interim Construction Noise Guideline, 2009*.
- Traffic noise in accordance with the *NSW Road Noise Policy, 2011*.
- Vibration in accordance with *Assessing vibration: A Technical Guideline, 2006*.
- Cumulative noise impacts, considering other developments in the area.

The EIS will incorporate the following information to assist in considering the detailed assessment:

1. Background noise monitoring results.
2. Establishment of criteria in accordance with the background noise monitoring results.
3. Predictions which account for the sound power levels and locations of WTGs and ancillary infrastructure.
4. A construction noise assessment and framework for a management plan.
5. A traffic noise assessment.
6. Commentary on vibration impacts.
7. Noise reduction measures where the relevant operational or construction assessment criteria are not achieved.

APPENDIX A: RECEIVER LOCATIONS

Appendix A.1: Associated Residences

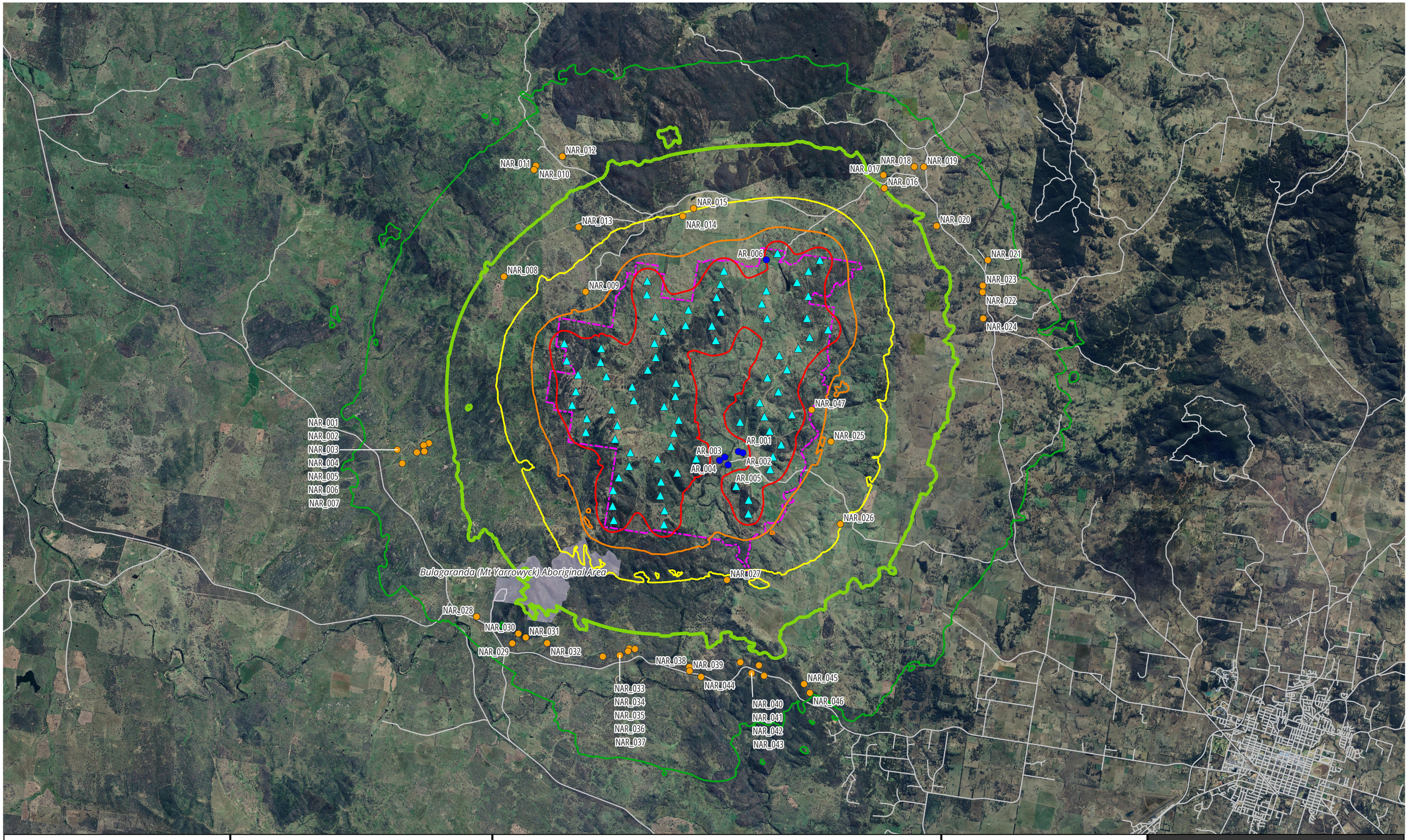
Receiver ID	Receiver Coordinates (GDA 2020 / MGA zone 56)		Nearest WTG	Distance to Nearest WTG [m]	Predicted Noise Level [dB(A)]	Predicted Noise Level [dB(C)]
	Easting	Northing				
AR_001	352381	6634479	22	1054	49	62
AR_002	352540	6634433	65	1078	49	63
AR_003	351896	6634281	40	1019	48	62
AR_004	351709	6634163	40	833	49	62
AR_005	352012	6634006	67	804	49	62
AR_006	353376	6641294	70	458	51	63

Appendix A.2: Non-associated Residences

Receiver ID	Receiver Coordinates (GDA 2020 / MGA zone 56)		Nearest WTG	Distance to Nearest WTG [m]	Predicted Noise Level [dB(A)]	Predicted Noise Level [dB(C)]
	Easting	Northing				
NAR_001	340434	6634059	76	6385	32	51
NAR_002	340953	6634451	76	5771	33	51
NAR_003	341171	6634694	76	5494	33	51
NAR_004	341380	6634775	76	5270	34	52
NAR_005	341196	6634702	76	5467	33	51
NAR_006	341218	6634484	76	5507	33	51
NAR_007	340256	6634543	76	6416	32	50
NAR_008	344048	6640698	75	3199	37	53
NAR_009	346950	6640159	75	1986	43	58
NAR_010	345183	6644639	73	5695	33	51
NAR_011	345115	6644494	73	5640	33	51
NAR_012	346125	6644967	73	5352	33	51
NAR_013	346700	6642455	73	3099	38	54
NAR_014	350403	6642846	8	2434	41	56
NAR_015	350788	6643120	8	2467	40	56
NAR_016	357568	6643837	46	3429	35	52
NAR_017	357534	6644304	46	3769	34	52
NAR_018	358632	6644600	46	4717	33	51

Receiver ID	Receiver Coordinates (GDA 2020 / MGA zone 56)		Nearest WTG	Distance to Nearest WTG [m]	Predicted Noise Level [dB(A)]	Predicted Noise Level [dB(C)]
	Easting	Northing				
NAR_019	358969	6644594	46	4958	32	51
NAR_020	359426	6642498	46	4324	35	52
NAR_021	361243	6641282	46	5969	33	52
NAR_022	361058	6640143	53	5650	34	52
NAR_023	361067	6640376	53	5718	33	52
NAR_024	361080	6639210	53	5529	34	52
NAR_025	355668	6634834	62	1687	45	59
NAR_026	356001	6631902	66	3162	41	57
NAR_027	351973	6629916	69	2477	39	55
NAR_028	343073	6628612	32	5963	31	50
NAR_029	344346	6627664	32	5673	32	50
NAR_030	344561	6628010	32	5269	32	51
NAR_031	344822	6627874	32	5214	32	51
NAR_032	345581	6627670	32	4976	33	51
NAR_033	347563	6627196	32	4866	33	51
NAR_034	348163	6627238	32	4814	33	51
NAR_035	348499	6627480	45	4583	34	52
NAR_036	348457	6627385	45	4687	34	52
NAR_037	348703	6627466	45	4546	34	52
NAR_038	350636	6626826	45	5148	34	52
NAR_039	350646	6626684	45	5290	34	52
NAR_040	352450	6626992	69	5289	35	53
NAR_041	353109	6626883	69	5404	35	53
NAR_042	352848	6626605	69	5670	35	53
NAR_043	353291	6626514	69	5787	34	52
NAR_044	351053	6626474	45	5579	34	51
NAR_045	354714	6626218	69	6371	33	52
NAR_046	354920	6625905	69	6734	31	50
NAR_047	354984	6635964	62	720	48	61

APPENDIX B: NOISE CONTOUR PLOT



0 1 2 3 4 5 km

1:120,000

Map Data ©2024 Google,
Image ©2024 Airbus

NORTHERN TABLELANDS WIND FARM

Preliminary Noise Impact Assessment
200m Hub Height
8 m/s Hub Height Wind Speed
Project Number: S7927
Date Generated: 12 September 2025

Legend

- Associated Residences
- Non-associated Residences
- Bulgandra (Mt Yarrowyck) Aboriginal Area
- Site Boundary
- Proposed WTG Location
- Roads

Noise Contours

- 50 dB(A)
- 45 dB(A)
- 40 dB(A)
- 35 dB(A)
- 30 dB(A)

sonus.

Appendix F
Preliminary social impact assessment spreadsheet

Assessment (SIA) Worksheet

project name:

Date:

CATEGORIES OF SOCIAL IMPACTS	POTENTIAL IMPACTS ON PEOPLE		PREVIOUS INVESTIGATION OF IMPACT		CUMULATIVE IMPACTS		ELEMENTS OF IMPACTS - Based on preliminary investigation					ASSESSMENT LEVEL FOR EACH IMPACT				PROJECT REFINEMENT	MITIGATION / ENHANCEMENT MEASURES
							Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its: You can also provide a narrative description of these characteristics						What methods and data sources will be used to investigate this impact?				
what **social impact categories** could be affected by the project activities	What impacts are likely, and what concerns/aspirations have people expressed about the impact? Summarise how each relevant stakeholder group might experience the impact. NB. Where there are multiple stakeholder groups affected differently by an impact, or more than one impact from the activity, please add an additional row.	Is the impact expected to be **positive or negative**	Has this impact previously been investigated (on this or other project/s)?	If "yes - this project," briefly describe the previous investigation. If "yes - other project," identify the other project and investigation	Will this impact combine with others from this project (think about when and where), and/or with impacts from other projects (cumulative)?	If yes, identify which other impacts and/or projects	**extent** i.e. number of people potentially affected?	**duration** of expected impacts? (i.e. construction vs operational phase)	**intensity** of expected impacts i.e. scale or degree of change?	**sensitivity** or **vulnerability** of people potentially affected?	**level of concern/interest** of people potentially affected?	Level of assessment for each social impact	Secondary data	Primary Data - Consultation	Primary Data - Research	Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?	What **mitigation / enhancement measures** are being considered?
Categories in SIA guideline	Free text	Positive Negative	Yes - this project, Yes - other project, No	Free text	Combined Cumulative Combined and Cumulative No Unknown N/A		Yes No Unknown	Yes No Unknown	Yes No Unknown	Yes No Unknown	Yes No Unknown	Detailed, Standard, Minor, Nothing further on this impact	Free Text			Yes No	Free Text
access	Construction could increase traffic and journey times due to road closures, blocking of thoroughfares, and increased vehicles in the area.	Negative	Yes - this project	Northern Tablelands Wind Farm Constructability assessment	Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, reviseinfrastructure layout to minimise impacts, developmitigation strategies for residual impact with input from specialists.
access	Access could be blocked while roadworks are conducted to ensure roads can accommodate the transport of turbine components (e.g. Boorolong and Romani Roads)	Negative	Yes - this project	Northern Tablelands Wind Farm Constructability assessment	Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, reviseinfrastructure layout to minimise impacts, developmitigation strategies for residual impact with input from specialists.
way of life	Increased pressure on community infrastructure and services may reduce local access.	Negative	Yes - other project	New England North West Regional Plan 2041	Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	Yes	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, reviseinfrastructure layout to minimise impacts, developmitigation strategies for residual impact with input from specialists.
access	The construction of the project and other developments in the REZ could require upgrades to local roads to accommodate the transport of turbine components. This may benefit local drivers in the long term.	Positive	Yes - this project	Northern Tablelands Wind Farm Constructability assessment	Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
community	The project could decrease social cohesion if locals disagree on whether to support the project, or if some feel the benefits are unequally distributed amongst the community.	Negative	Unknown		Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, revise operations plan to prioritise equal benefits across local area
community	The project could increase sense of place by supporting/contributing to values held by the community, i.e., renewable energy and protecting the natural environment.	Positive	Unknown		Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
community	The project itself and the general cumulative renewable energy development in the REZ could impact the community's sense of place.	Negative	No		Yes	Potential for cumulative visual impacts from other renewable energy projects in the area.	No	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from specialists, including consideration of visual screening
culture	The presence of wind turbines may block access to Country for First Nations people of the area.	Negative	Yes - this project	Aboriginal cultural heritage consultation	Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	Yes	Yes	Yes	Yes	Standard	Required	Targeted engagement	Targeted Research	No	Consult First Nations stakeholders and the Local Aboriginal Land Council, revise infrastructure layout to minimise impacts, develop mitigation strategies for impacts with input from specialists and LALC.
culture	Impacts to Aboriginal cultural and/or historic heritage sites.	Negative	Yes - this project	Aboriginal cultural heritage consultation	Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	Yes	Yes	Yes	Yes	Standard	Required	Targeted engagement	Targeted Research	No	Consult First Nations stakeholders and the Local Aboriginal Land Council, revise infrastructure layout to minimise impacts, develop mitigation strategies for impacts with input from specialists and LALC.
decision-making systems	Failure to meet community expectations could erode community trust in decision makers.	Negative	No		Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	Yes	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	Open and transparent communication through all phases of the project. Co-design benefit sharing schemes at both neighbour and community levels, and ensure that input is sought from a diverse range of community members so that the scheme response to the needs and wants of the community. Develop strategies to promote local involvement and employment, and maximise the use of local labour, products and services wherever possible
decision-making systems	The community's real or perceived lack of knowledge and inclusion in the planning and operation of the project could mean they are (or perceive they are) unable to influence project decisions.	Negative	No		Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	Yes	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	Open and transparent communication through all phases of the project. Co-design benefit sharing schemes at both neighbourand community levels, and ensure that input is soughtfrom a diverse range of community members so that thescheme response to the needs and wants of thecommunity. Develop strategies to promote local involvement andemployment, and maximise the use of local labour,products and services wherever possible.
health and wellbeing	Potential increased traffic could increase the road safety risk for local drivers and pedestrians.	Negative	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from specialists.
health and wellbeing	Noise from the construction site could affect the physical and mental health of nearby residents.	Negative	Unknown		Yes	Potential for cumulative noise impacts from other construction projects in the area.	No	No	Yes	Yes	No	Standard	Required	Broad engagement	Not Required	No	Noise management measures will be determined based on the outcomes of the noise impact assessment to be completed as part of the EIS.
health and wellbeing	The wind turbines could negatively impact locals' physical and mental health due to exposure to noise and vibration ('wind turbine syndrome').	Negative	Yes - other project	Burrawong Windfarm - Preliminary Noise Impact Assessment	Yes	Potential for cumulative impacts from other windfarm projects in the area.	No	Yes	Unknown	Unknown	Unknown	Standard	Required	Targeted consultation	Targeted Research	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from affected residents and specialists. Noise management measures will be determined based on the outcomes of the noise impact assessment to be completed as part of the EIS.
livelihoods	Influx of non-local construction workers that may be required in addition to local labour force may result in temporary changes to population and demography of towns within commuting distance of the project.	Negative	Yes - this project	Northern Tablelands Wind Farm Workforce and Accommodation Supply Assessment	No		No	No	No	Unknown	Unknown	Minor	Required	Broad engagement	Targeted Research	No	Further consultation will be carried out with stakeholders including local councils as part of the EIS.
livelihoods	Influx of non-local construction workers that may be required in addition to local labour force may increase use of local businesses such as cafes, restaurants, shops, and accommodation providers.	Positive	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	The project could increase employment opportunities for local construction workers and those in related fields.	Positive	Yes - this project	Northern Tablelands Wind Farm Workforce and Accommodation Supply Assessment	Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	The project could create local employment opportunities for its ongoing operation and maintenance.	Positive	Yes - this project	Northern Tablelands Wind Farm Workforce and Accommodation Supply Assessment	Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	Potential for the project to procure materials from local businesses.	Positive	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	A transition to renewable energy could put pressure on wholesale electricity prices, reducing electricity bills statewide.	Positive	Yes - other project	New England Renewable Energy Zone project Overview	Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	A transition to renewable energy will decrease reliance on finite fossil fuels, meaning a more reliable and secure electricity grid long term.	Positive	Yes - other project	New England Renewable Energy Zone project Overview	Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	Landholder income could be increased and diversified through lease arrangements.	Positive	No		Yes	Potential for cumulative impacts from other renewable energy projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not Required	No	N/A
livelihoods	The construction and operation of the project could disrupt the local agricultural industry and could reduce the available agricultural land.	Negative	No		No		No	No	No	Unknown	Unknown	Minor	Required	Broad engagement	Targeted Research	No	Further consultation will be carried out with stakeholders including local councils as part of the EIS.
surroundings	Visual impact with construction activities and infrastructure creating a visual disturbance to the landscape.	Negative	Yes - other project	Burrawong Windfarm - Preliminary Landscape and Visual Impact Assessment	Yes	Potential for cumulative visual impacts from other construction projects in the area.	No	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from specialists, including consideration of visual screening
surroundings	Visual impact from wind turbines creating a visual disturbance to the landscape.	Negative	Yes - other project	Burrawong Windfarm - Preliminary Landscape and Visual Impact Assessment	Yes	Potential for cumulative visual impacts from other renewable energy projects in the area.	No	No	Yes	No	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from specialists, including consideration of visual screening
way of life	Construction noise, dust and other amenity impacts may adversely impact on the amenity of dwellings and could diminish the ability of people to experience quiet enjoyment at their dwellings.	Negative	Unknown		Yes	Potential for cumulative noise impacts from other construction projects in the area.	No	No	Yes	Yes	No	Standard	Required	Broad engagement	Not Required	No	Noise management measures will be determined based on the outcomes of the noise impact assessment to be completed as part of the EIS.
way of life	Potential impacts to housing availability, rental prices or accommodation capacity.	Negative	Yes - this project	Northern Tablelands Wind Farm Workforce and Accommodation Supply Assessment	Yes	Potential for cumulative impacts from other construction projects in the area bringing more people to the area.	Yes	No	Yes	Yes	Yes	Standard	Required	Broad engagement	Targeted Research	No	Project potentially will use a temporary accommodation facility for construction workers.
livelihoods	The construction and operation of the project could disrupt the local agricultural industry and could reduce the available agricultural land.	Negative	No		No		No	No	Yes	No	Yes	Standard	Required	Broad engagement	Not required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from specialists, including consideration of visual screening
community	Long-term improvements to and investment in utilities infrastructure and associated services leading to improved access and quality of services	Positive	No		No		Yes	Yes	Yes	No	No	Standard	Required	Broad engagement	Not required	No	N/A
community	Opportunities for community investment may contribute to and will likely target social infrastructure and community facilities in nearby towns	Positive	No		No		Yes	Yes	Yes	No	No	Standard	Required	Broad engagement	Not required	No	N/A
livelihoods	Vocational training schemes may build capacity of local tertiary training institutions through partnering and collaboration	Positive	No		No		Yes	Yes	Yes	No	No	Standard	Required	Broad engagement	Not required	No	N/A
culture	Loss of rural heritage values due to re-purposing of land.	Negative	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from affected residents and specialists.
way of life	A broad regional shift towards prioritising land use for renewable energy projects may impact the agricultural way of life in these areas as well as how communities use land for agricultural activities.	Negative	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	No	No	Standard	Required	Broad engagement	Not required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from affected residents and specialists.
surroundings	Reduced ability to practice fire management due to aerial access restrictions	Negative	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	Yes	Yes	Standard	Required	Broad engagement	Targeted Research	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from affected residents and specialists.

CATEGORIES OF SOCIAL IMPACTS	POTENTIAL IMPACTS ON PEOPLE		PREVIOUS INVESTIGATION OF IMPACT		CUMULATIVE IMPACTS		ELEMENTS OF IMPACTS - Based on preliminary investigation					ASSESSMENT LEVEL FOR EACH IMPACT				PROJECT REFINEMENT	MITIGATION / ENHANCEMENT MEASURES
							Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its: You can also consider the various examples of these characteristics						What methods and data sources will be used to investigate this impact?				
what **social impact categories** could be affected by the project activities	What impacts are likely, and what concerns/aspirations have people expressed about the impact? Summarise how each relevant stakeholder group might experience the impact. NB. Where there are multiple stakeholder groups affected differently by an impact, or more than one impact from the activity, please add an additional row.	Is the impact expected to be **positive or negative**	Has this impact previously been investigated (on this or other project/s)?	If "yes - this project," briefly describe the previous investigation. If "yes - other project," identify the other project and investigation	Will this impact combine with others from this project (think about when and where), and/or with impacts from other projects (cumulative)?	If yes, identify which other impacts and/or projects	**extent** i.e. number of people potentially affected?	**duration** of expected impacts? (i.e. construction vs operational phase)	**intensity** of expected impacts i.e. scale or degree of change?	**sensitivity** or **vulnerability** of people potentially affected?	**level of concern/interest** of people potentially affected?	Level of assessment for each social impact	Secondary data	Primary Data - Consultation	Primary Data - Research	Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?	What **mitigation / enhancement measures** are being considered?
health and wellbeing	Increased demand on health services due to presence of construction workers.	Negative	No		Yes	Potential for cumulative impacts from other construction projects in the area.	Yes	No	Yes	Yes	Yes	Standard	Required	Broad engagement	Not Required	No	Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from affected residents and specialists.
health and wellbeing	Potential air quality impacts for landholders/neighbours near to the project site as well as along proposed haulage routes due to dust from construction activities and ground disturbance from traffic on unsealed roads within the project area.	Negative	No		Yes	Potential for cumulative impacts from other construction projects in the area.	No	Yes	Unknown	Unknown	Unknown	Standard	Required	Targeted consultation	Targeted Research	No	Construction and Environmental Management Plan (CEMP) which includes dust suppression measures in accordance with relevant EPA guidelines. Prioritise consultation with affected stakeholders, revise infrastructure layout to minimise impacts, develop mitigation strategies for residual impact with input from affected residents and specialists
surroundings	Vegetation offsets could result in plantings and rehabilitation undertaken on landholder property	Positive	No		Yes	Potential for cumulative impacts from other construction projects in the area.	No	Yes	Yes	No	Yes	Standard	Required	Broad engagement	Targeted Research	No	N/A

Appendix G
Cumulative impact assessment scoping summary

Table 7-1 Key for the cumulative impact assessment scoping table

Level of assessment	Description
Detailed assessment	The project may result in significant impacts on the matter, including cumulative impacts. Detailed assessment is characterised by: • Potential overlap in impacts between a future project and the proposed project • Potential for significant cumulative impacts as a result of the overlap, requiring detailed technical studies to assess the impacts • Sufficient data is available on the future project to allow a detailed assessment of cumulative impacts with the proposed project for the relevant matter • Uncertainties exist with respect to data, mitigation, assessment methods and criteria.
Standard assessment	The project is unlikely to result in significant impacts on the matter, including cumulative impacts. Standard assessments are characterised by: • Impacts are well understood • Impacts are relatively easy to predict using standard methods • Impacts are capable of being mitigated to comply with relevant standards or performance measures • The assessment is unlikely to involve any significant uncertainties or require any detailed cumulative impact assessment.
N/A	No potential overlap in impacts between a future project and the proposed project that would warrant any consideration in the cumulative impact assessment.

Table 7-2 Cumulative impact assessment scoping table summary

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
New England REZ Network Infrastructure Project (SSI-74175972)	Within / adjacent	Proposed					
	Key features: • The project would include development of new transmission lines between Bayswater Power Station Substation and the New England REZ, and ancillary infrastructure including the North Hub.		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species and SAII are possible. Detailed cumulative impact assessment required.	Cumulative landscape and visual impacts possible at nearby sensitive receptors. Detailed cumulative impact assessment required.	Potential overlap of construction, decommissioning and operational phases, with potential risk of cumulative noise impacts. Standard cumulative assessment required.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region as both sites are likely to be serviced by Armidale and Uralla. Detailed cumulative impact assessment required.
Boorolong Wind Farm (SSD-90045958)	Adjacent	Proposed					
	Key features: • The project would include up to 71 wind turbines, battery storage and ancillary infrastructure.		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, SAII and bird and bat strike during operation are possible. Detailed cumulative impact assessment required.	Cumulative landscape and visual impacts possible at nearby sensitive receptors. Detailed cumulative impact assessment required.	Potential overlap of construction, decommissioning and operational phases, with potential risk of cumulative noise impacts. Standard cumulative assessment required.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region as both sites are likely to be serviced by Armidale and Uralla. Detailed cumulative impact assessment required.
Yarrowyck Wind Farm	Adjacent	Feasibility					
	• **Key features:** The project would include wind turbines and ancillary		Cumulative impacts on biodiversity, in	Cumulative landscape and visual impacts	Potential overlap of construction,	Access to Armidale and Uralla via the	Cumulative social impacts anticipated in

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
	infrastructure. No preliminary design information was publicly available during the scoping report phase for this project.		particular clearance of native vegetation, listed threatened species, SAII and bird and bat strike during operation are possible. Detailed cumulative impact assessment required.	possible at nearby sensitive receptors. Detailed cumulative impact assessment required.	decommissioning and operational phases, with potential risk of cumulative noise impacts. Standard cumulative assessment required.	local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	the surrounding community and region as both sites are likely to be serviced by Armidale and Uralla. Detailed cumulative impact assessment required.
Tilbuster Solar Farm (SSD-9619)	10 kilometres east	Approved March 2022 Construction timing unknown					
	Key features: • 150 MW solar farm and 40 MW BESS		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region as both sites are serviced by Armidale. Detailed cumulative impact assessment required.
Tilbuster 2 Solar Farm (SSD-69799460)	15 kilometres east	Proposed					
	Key features: • The proposal involves the construction, operation and		Cumulative impacts on biodiversity, in particular clearance of	Low risk of cumulative visual impacts due to distance between	Low risk of cumulative noise impacts due to distance between	Access to Armidale and Uralla via the local road network are	Cumulative social impacts anticipated in the surrounding

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
	decommissioning of a ground-mounted photovoltaic (PV) solar array, which would generate approximately 140 MW, in addition to the 150 MW generated by the Tilbuster project (above).		native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	proposed developments. No further assessment proposed.	proposed developments. No further assessment proposed.	likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	community and region as both sites are serviced by Armidale. Detailed cumulative impact assessment required.
University of New England Solar Farm	15 kilometres east	Operational since 2020					
	Key features: • 8 MW solar farm		Due to the operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Due to the distance and operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
New England Solar (SSD-9255)	20 kilometres southeast	Approved Construction timing unknown					
	Key features: • The project includes a 720 MW solar farm with energy storage and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
						Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	
Armidale Solar Farm (DA-164-2019)	25 kilometres southeast	Approved					
	Key features: • 5 MW solar farm		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Eathorpe BESS (SSD-49505734)	25 kilometres southeast	Proposed					
	Key features: • The project would include a 100 MW / 200 MWh battery energy storage system with associated infrastructure and connection works		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
						Detailed cumulative impact assessment required.	
Armidale BESS (SSD-23515853)	25 kilometres southeast	Proposed					
	Key features: • 150 MW BESS and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Deeargee Solar Farm (SSD-70753725)	30 kilometres southeast	Proposed					
	Key features: • The project would include a 320 MW Solar Farm, ancillary infrastructure, and a BESS with a capacity of either 1400MW/2800MWh OR 700MW/2800MWh		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
Stringy Bark Solar Farm (DA-112-2019)	30 kilometres southeast	Approved Construction timing unknown					
	Key features: • The project includes a 30 MW solar farm and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Oxley Solar Farm (SSD-10346)	30 kilometres southeast	Approved Construction timing unknown					
	Key features: • The project includes a 215 MW solar farm with a 50 MW BESS and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
Armidale East BESS (SSD-65058714)	30 kilometres southeast	Proposed					
	Key features: • The project would include a 500 MW / 1,000 MWh battery energy storage facility with associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Gara BESS (SSD-71680710)	30 kilometres southeast	Proposed					
	Key features: • The project would include a 400 MW / 1760 MWh battery storage system and associated infrastructure including grid connection		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Thunderbolt Wind Farm	35 km south	Approved Construction timing unknown					

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
(SSD-10807896)	**Key features:** • The project includes 380 MW wind farm with 32 turbines and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, SAII and bird and bat strike during operation are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Metz Solar Farm (SSD-7931)	35 kilometres east	Approved – operational since 2021					
	Key features: • The project includes a 115 MW solar farm and associated infrastructure		Due to the operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Due to the distance and operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Eastern Hub Firming Battery (SSD-71860708)	35 kilometres southeast	Proposed					
	Key features: • The project would include a 1,000 MW battery energy storage system and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible.	Low risk of cumulative visual impacts due to distance between proposed developments.	Low risk of cumulative noise impacts due to distance between proposed developments.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects.

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
			Detailed cumulative impact assessment required.	No further assessment proposed.	No further assessment proposed.	Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Standard cumulative assessment required.
Hillview Wind Farm (SSD-78329994)	35 kilometres southeast	Proposed					
	Key features: • The project would involve the construction, operation and maintenance and decommissioning of a new wind farm with up to 55 wind turbines with a generating capacity of 300 MW and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, SAII and bird and bat strike during operation are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Hillview Solar Farm (SSD-72447960)	35 kilometres southeast	Proposed					
	Key features: • The project would include the construction, operation, and decommissioning of a solar farm with a generation capacity of 272 MW, and ancillary infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
						Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	
Hillgrove mine (DA98/35)	40 kilometres southeast	Approved – operational					
	Key features: • The project is an underground mine primarily extracting gold and antimony.		Due to the operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Due to the distance and operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Cumulative social and economic impacts anticipated in the surrounding community. Standard cumulative assessment required.
Winterbourne Wind Farm (SSD-10471)	50 kilometres south	Proposed					
	Key features: • The project would involve the construction, operation and maintenance and decommissioning of a new wind farm with up to 118 wind turbines, BESS and associated infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, SAII and bird and bat strike during operation are possible. Detailed cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance between proposed developments. No further assessment proposed.	Low risk of cumulative noise impacts due to distance between proposed developments. No further assessment proposed.	Access to Armidale and Uralla via the local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	Cumulative social impacts anticipated in the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.
Wongalea BESS (SSD-85522708)	25 kilometres southeast	Proposed					
	Key features:		Cumulative impacts on biodiversity, in	Low risk of cumulative visual impacts due to	Low risk of cumulative noise impacts due to	Access to Armidale and Uralla via the	Cumulative social impacts anticipated in

Future projects	Approximate distance to the project area	Project status[1]	Potential overlap between impacts of project and impact of other projects				
			Biodiversity	Landscape and visual	Noise	Transport and access	Social and economic
	• The project includes a 300MW/1200MWh BESS and a direct connection to the existing TransGrid managed 132/330kV Armidale Substation		particular clearance of native vegetation, listed threatened species, and SAII are possible. Detailed cumulative impact assessment required.	distance between proposed developments. No further assessment proposed.	distance between proposed developments. No further assessment proposed.	local road network are likely to be impacted. Construction haulage may also impact on the New England Highway in both directions. Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	the surrounding community and region on the sentiment of renewable energy projects. Standard cumulative assessment required.

1 a 'proposed' status incudes developments that are awaiting SEARs, SEARs issued, prepare EIS, or are in the response to submission phase.

Source: https://www.planningportal.nsw.gov.au/major-projects (searched 12/09/25)