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BORO SOLAR FARM

Scoping Report



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ACRONYMS 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.
APZ	Asset protection zone
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.
Applicant	Samsung C&T Renewable Energy Australia Pty Ltd
Australian DCCEEW	Australian Department of Climate Change, Energy, the Environment and Water
BAM	Biodiversity assessment method
BC Act	*Biodiversity Conservation Act 2016* (NSW)
BDAR	Biodiversity development assessment report
BESS	Battery energy storage system
BOM	Bureau of Meteorology
BSAL	Biophysical strategic agricultural land
CEEC	Critically endangered ecological community
CEMP	Construction environmental management plan
CL Act	*Crown Land Management Act 2016* (NSW)
CLM Act	*Contaminated Land Management Act 1997* (NSW)
CM Act	*Coastal Management Act 2016* (NSW)
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
EMF	Electromagnetic field
EMI	Electromagnetic interference
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
FM Act	*Fisheries Management Act 1994* (NSW)
FTE	Full time equivalent
GDE	Groundwater dependent ecosystem
GWh	Gigawatt hour

Term / Acronym	Description
Goulburn Mulwaree LEP	*Goulburn Mulwaree Local Environmental Plan 2009*
Heritage Act	*Heritage Act 1977* (NSW)
ISP	Integrated System Plan
LGA	Local government area
LSC	Land soil capability
LUCRA	Land Use Conflict Risk Assessment
MNES	Matters of National Environmental Significance
NEM	National Energy Market
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
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
OSOM	Oversize over mass
PCT	Plant community type
PHA	Preliminary hazard assessment
PMST	Protected Matters Search Tool
POEO Act	*Protection of the Environment Operations Act 1997* (NSW)
Project	Construction, operation and decommissioning of the Boro Solar Farm, anticipated to have a generation capacity of up to **400** megawatts (up to 150-megawatt solar farm and a 250 megawatts / 1,000-megawatt hours storage BESS)
Project area	The indicative development area for the project located on privately land owned as shown in Figure 3.1.
Project disturbance footprint	Area of project-related disturbance determined for the assessment of environmental impacts, which would be refined for the EIS.
REAP	Registered Environmental Assessment Practitioner
Receiver	Assessment location – defined for specific assessments e.g., noise
RFS	Rural Fire Service
SAII	Serious and irreversible impacts
SEARs	Secretary's environmental assessment requirements
SEPP	State environmental planning policy
SIA	Social impact assessment
SSD	State Significant Development
Study area	The Study area for individual assessments would differ commensurate with the relevant legislation and guidelines for individual aspects.
TEC	Threatened ecological community
TTIA	Traffic and transport impact assessment
VPA	Voluntary planning agreement

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EXECUTIVE SUMMARY

Overview

Samsung C&T Renewable Energy Australia Pty Ltd (SREA) is proposing to construct, operate and decommission a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/1000-megawatt hours storage BESS) (the project). It would occupy an area of approximately 420 hectares in the local government areas of Goulburn Mulwaree Council and the Queanbeyan-Palerang Regional Council, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales.

The project has an estimated development cost exceeding $30 million and is therefore classified as State significant development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Approval would be required from the Minister for Planning and Public Spaces under the NSW *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).

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 under Part 4 Division 4.7 of the EP&A Act.

Project justification

Solar energy will play a critical part in Australia's transition to renewable energy in preparation for the closure of four of the five remaining coal-fired generators in New South Wales by 2035. Australian renewable energy supplied 39.4% of Australia's total electricity in 2023, with solar power the largest contributor to renewable energy generation in Australia accounting for 45 per cent of all renewable generation and 15 per cent of total electricity generation in Australia in the period 2022-2023 (Clean Energy Council 2024).

The project would provide renewable, low-cost energy to the National Energy Market (NEM) and would contribute to the Australian and New South Wales Government's emission reduction targets, while allowing current agricultural practices of sheep grazing to continue on the property.

The expected benefits of the project include:

- Supplying up to 400 megawatts of renewable energy to the NEM, supporting fulfillment of the current obligations under Australian and state government renewable energy targets
- providing for cleaner reliable electricity generation, assisting with meeting the current load demand while reducing GHG emissions and the impacts of climate change
- providing opportunity for regional investment in the New South Wales renewable energy sector.

Community and stakeholder engagement

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

SREA 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 objectives.

Preliminary environmental assessment

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 Secretary's Environmental Assessment Requirements (SEARs) for the EIS and has been prepared in accordance with the *State Significant Development Guidelines – preparing a scoping report* (DPIE 2022a).

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
- biodiversity
- transport and access
- socio-economic
- Aboriginal heritage
- historic heritage
- noise and vibration
- land resources
- water resources
- glint and glare
- hazards and risk
- bushfire
- waste
- contamination.

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 receivers, are as follows:

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

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.

1 INTRODUCTION

1.1 Overview

Samsung C&T Renewable Energy Australia Pty Ltd (SREA) is proposing to construct, operate and decommission a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/1000-megawatt hours storage BESS) (the project).

It would occupy an area of approximately 420 hectares in the local government areas of Goulburn Mulwaree Council and the Queanbeyan-Palerang Regional Council, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales. The project in its regional context is shown in Figure 1-1.

The project has an estimated development cost exceeding $30 million and is therefore classified as State significant development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Approval would be required from the Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

This scoping report supports an application to the Secretary of the NSW Department of Planning, Housing and Infrastructure (DPHI) for Secretary's Environmental Assessment Requirements (SEARs), which would guide the preparation of an environmental impact statement (EIS) to support the development application under Part 4 Division 4.7 of the EP&A Act. It has been prepared in accordance with the following:

- *State Significant Development Guidelines – preparing a scoping repor*t (DPIE 2022a) (Scoping Report Guideline)
- *Renewable Energy Planning Framework* (DPHI 2024)
- *Large Scale Solar Energy Guideline (*DPHI 2024a)
- *Large-Scale Solar Energy Guideline*, and *Technical Supplement for Landscape Character and Visual Impact Assessment* (DPHI 2024b).

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 that the project is a controlled action under Section 75 of the EPBC Act, the project would require assessment and approval under the EPBC Act. This is expected to be under the bilateral agreement between the Australian DCCEEW and DPHI.

1.2 The Applicant

SREA is a wholly owned company of Samsung C&T Corporation, Korea, and company details are provided in Table 1-1. SREA began operations in Australia in 2022, and has solar and storage project interests across New South Wales, Victoria, and Queensland.

Over the past two decades, Samsung C&T Corporation has completed several renewable projects worldwide, including the world's largest (at the time) wind and solar generation cluster in Ontario, Canada.

Table 1-1 Applicant details

Item	Detail
The Applicant	Samsung C&T Renewable Energy Australia Pty Ltd (SREA)
ABN	74 661 046 331
Address	Suite 8.04, Level 8, 227 Elizabeth Street, Sydney, 2000

1.3 Objectives

The project is aligned with Australian and New South Wales Government objectives to transition to renewable energy supported by appropriate storage and transmission infrastructure, which would reduce Australia's reliance on fossil fuels for electricity generation and assist in reducing greenhouse gas (GHG) emissions.

The objectives of the project are to:

- provide a source of renewable energy to support New South Wales and national energy requirements and assist in reducing GHG emissions
- provide lower cost electricity for the needs of future Australian generations
- collaborate with communities to establish long-term relationships and provide meaningful local contributions
- provide employment and education opportunities where possible during all project phases
- engage with First Nations Australians to enhance social and economic outcomes
- ensure project information is available and accessible to community members
- achieve a high level of quality, safety and environmental standards
- avoid, minimise, and mitigate adverse impacts on the environment and community during construction and operation.

1.4 Site information

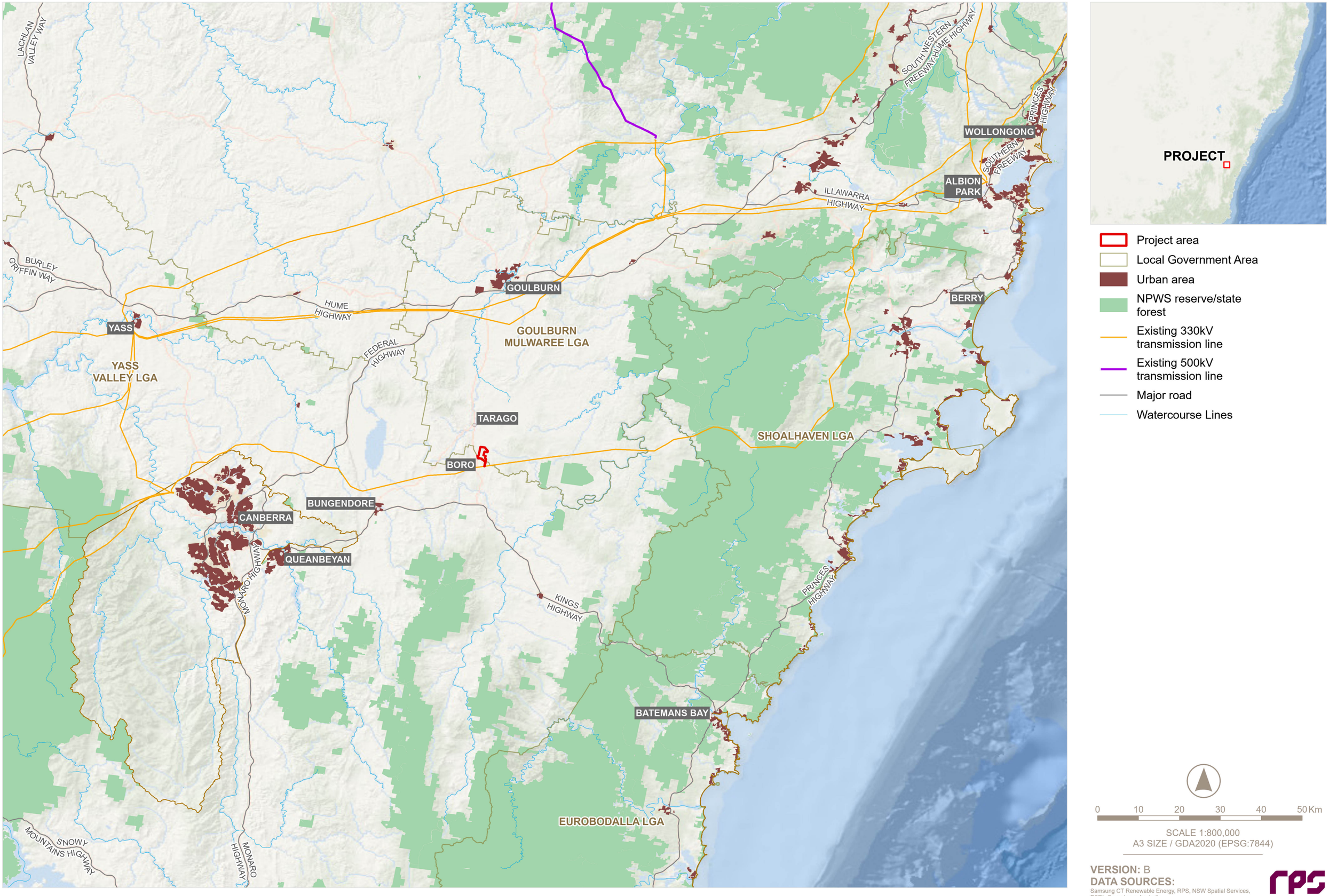
The project would occupy up to 420 hectares of privately owned and crown land located off Boro Road, Boro. It would be accessed via Braidwood Road from the north, and Goulburn Road from the south.

The project area is primarily cleared and is currently or has historically been used for agricultural purposes, with scattered vegetation and some low-gradient hills. Boro Creek, Chain of Ponds Creek and several other drainage lines are located within the project area. It is surrounded primarily by agricultural land in all directions.

The project would interact with, or directly affect the lots and easements listed in Table 1-2.

Table 1-2 Lot / DP within the project area

Lot	DP	Ownership	Level of impact
Lot 2	DP1026850	Private	Directly impacted by solar array and ancillary infrastructure.
Lot 2	DP711124	Private	Partially impacted for site access via Braidwood Road.
Lot 128	DP754867	Crown	May be impacted for site access via Braidwood Road.
Lot 7302	DP1140943	Crown	Partially impacted for site access via Braidwood Road.
Lot 4	DP1256948	Private	Easement for transmission infrastructure



VERSION: B

DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 1-1: REGIONAL CONTEXT

1.5 Project background

1.5.1 Background

SREA has been investigating the potential to develop a renewable energy project in the area since 2023. Site selection has considered availability of connection to the National Electricity Market (NEM), environmental and social constraints, landowner willingness to participate, commercial viability, and local land use objectives.

Ongoing refinement of the project and consideration to the above would continue through the development of the EIS.

1.5.2 Strategies to avoid or minimise impacts

Avoiding and minimising potential environmental and social impacts has been a key consideration through the project's development from site selection to development and refinement of the preliminary solar farm layout, which is discussed in more detail in Section 2.5.3. Strategies implemented to date have included the following:

- selection of a site which has large lots with slopes suitable for solar arrays without the need for substantial earthworks
- site selection focused on land that is not classified as either biophysical strategic agricultural land (BSAL) or as Class 1, 2 or 3 under the Land and Soil Capability Assessment Scheme (OEH 2012). Land within the project site is currently or has historically been used for grazing and is compatible with large-scale solar energy generation, with the potential to continue the existing agricultural land use through 'solar-grazing' as a form of agrisolar
- avoidance of areas of potential high biodiversity value through site selection and design of the preliminary layout, including stands of vegetation and watercourses where possible. Where there is a need for vehicle crossings of waterways these would be sited to minimise impacts to the form and function of waterways and to reduce disturbance to riparian vegetation
- minimising the need for transmission infrastructure and associated visual and social impacts, by siting the project close to the existing TransGrid 330-kilovolt overhead transmission line approximately one kilometre south of the project area.

The principles of avoiding and minimising environmental and social impacts will continue to be a key consideration as the project develops through the EIS in consultation with DPHI, DCCEEW, and other stakeholders, including Goulburn Mulwaree Council and Queanbeyan-Palerang Regional Council.

Targeted management commitments will be developed based on the final project layout to minimise potential residual impacts to an acceptable level where they cannot be avoided. This would include commitments to:

- incorporate buffers around important heritage items and implement salvage programs in consultation with Aboriginal stakeholders
- apply buffers around waterways and commitments to best-practice design and rehabilitation where water way crossings are required
- minimise impacts on agricultural land by providing the opportunity for continued sheep grazing through solar-grazing as a form of agrisolar, and creating a dual land use with the co-existence of agriculture and solar energy generation
- avoid areas with important biodiversity features
- introduce soil resource and rehabilitation objectives at decommissioning based on the findings of an agricultural impact assessment as part of the EIS.

1.6 Related development

In accordance with the Scoping Report Guideline, 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.

There is no additional development related to the project. All works associated with construction, operation and decommissioning of the project, including connection to the NEM, would be assessed under this development application.

2 STRATEGIC CONTEXT

2.1 Alignment with policy and strategic goals

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

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

Plan, policy or strategy	Description	Project alignment
International context		
United Nations Framework Convention on Climate Change Conference of the Parties (COP29) – Baku 2024	COP29 was the 29th climate change COP held in Baku, Azerbaijan in late 2024. A key outcome of COP29 was the Baku Climate Unity Pact which introduced: a new global climate finance goal which aims to mobilises and allocate funds to finance climate change actions in developing nations.	The project would contribute to meeting Australia's commitments through the generation of renewable solar energy to improve energy security and across the pacific region and contribute to the global clean energy transition.
United Nations Framework Convention on Climate Change Conference of the Parties (COP28) – Dubai 2023	COP28 was the 28th climate change COP held in Dubai in late 2023. A key outcome of COP28 was the conclusion of the first 'global stocktake' of the world's efforts to address climate change under the Paris Agreement. COP28 showed that global progress was too slow across all areas of climate action. In response, countries responded with a call on governments to speed up renewable energy transition to accelerate climate action by 2030 (UNFCC 2023).	The project would contribute to meeting Australia's commitments through the generation of renewable solar energy and subsequent annual reduction in greenhouse gas emissions.
United Nations Framework Convention on Climate Change, Conference of the 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 per cent below 2005 levels by 2030.	The project would contribute to meeting Australia's commitments under the Paris Agreement through reducing annual GHG emissions.
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 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 would remain at 33,000 GWh until the scheme ends in 2030.	The project would generate up to approximately 400 GWh of electricity annually, which would 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 reduction targets under the Paris Agreement.	The project would align with the Climate Change Act's objectives for GHG emission reduction through generating renewable energy that can be used as a source for clean energy to Australia's electricity supply.

Plan, policy or strategy	Description	Project alignment
	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.	
Integrated System Plan 2024	The Integrated System Plan 2024 (ISP) is published every two years and shows where new transmission, generation and storage is needed across the National Electricity Market (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 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.

Plan, policy or strategy	Description	Project alignment
New South Wales 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 five 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 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.	The project would assist in meeting New South Wales energy generation and storage requirements, and in meeting the New South Wales energy generation and storage requirements, and the GHG emissions reduction targets set by the New South Wales Government.
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 low costs 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 contribute to the overall increase to the energy capacity of New South Wales.
New South Wales 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 gigawatts of new renewable electricity generation and 2 gigawatts of long-duration storage	The project would be consistent with the objectives of the Electricity Infrastructure Roadmap and would supply renewable energy to the NEM and support the growth of low-emission generation capacity in New South Wales.
Renewable Energy Planning Framework (DPIE 2024)	The *Renewable Energy Planning Framework* (DPIE 2024) was released in 2024 to support faster and more consistent decision making and provide greater certainty for the energy industry and communities affected by proposed developments. The framework outlines guidelines about how the impacts of renewable energy projects and transmission will be assessed and managed, and by providing transparency	The project has been and would continue to be developed, and potential impacts assessed in accordance with the requirements of the framework and all associated guidelines.

Plan, policy or strategy	Description	Project alignment
	and clarity about where and how development occurs. It also contains guidance on benefit-sharing with communities and private agreements with landowners.	
Large-Scale Solar Energy Guideline (DPE 2022)	The *Large-Scale Solar Energy Guideline* (DPE 2022) provides guidance to the community, industry, applicants, and regulators on the planning framework for the assessment of large-scale solar projects and identifies the key planning considerations relevant to solar energy development in New South Wales.	Site selection and impact assessment considerations detailed in the guideline have been, and would continue to be, used to inform the project and would 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 2021). 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, there is no mapped areas of SSAL within the project area. Should the SSAL map come into force and a 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.
Regional and local planning context		
South East and Tablelands Regional Plan 2036 (DPE 2017)	The intent of the *South East and Tablelands Regional Plan 2036* (DPE 2017) is to guide the NSW Government's land use planning priorities and decisions in the South East and Tablelands region to 2036. The plan sets regional planning priorities and strategic goals and provides a framework for regional and local planning decisions. One of the primary goals of the plan is to continue to develop the region as a renewable energy hub. There are already several renewable energy projects in the region, including the Snowy Mountains Hydro Electric Scheme. The region is leading responses to the challenges of climate change, natural hazards and sustainable water supplies for urban use.	The project would align with Goal 1 and Direction 6 in creating the region as a hub for renewable energy development. The project would also align with Goal 2 and Direction 14 to protect environmental assets.
Draft South East and Tablelands Regional Plan 2041 (DPE 2022)	The Draft South East and Tablelands Regional Plan 2041 provides further emphasis on economic and biodiversity objectives, with including a plan for a net zero region by 2050.	The project would align with objective eight and aim for net zero by 2050 through transitioning from non-renewable electricity generating sources and providing a reduction in greenhouse gases.

Plan, policy or strategy	Description	Project alignment
Goulburn Mulwaree Local Strategic Planning Statement 2020	The *Goulburn Mulwaree Local Strategic Planning Statement* (Goulburn Mulwaree Regional Council 2020) sets the framework for the region's economic, social and environmental land use needs over the next 20 years. Renewable energy and extractive industries are growing sectors in Goulburn Mulwaree, however, ideally should not compete for land identified as being of prime crop and pasture potential. Areas of higher crop and pasture potential in the region tend to be lower lying areas surrounding water courses.	*Planning Priority 5: Primary Industry* and *Planning Priority 7: Sustainability* promote renewable energy projects for the region. They refer to the co-location of renewable energy projects to maximise infrastructure associated with grid connection, including corridors and easements. As part of the project, the easement identified in the southern portion of the project area would be utilised for connection to the NEM. Both Planning Priorities are derived from Direction 6 in the South East and Tablelands Regional Plan 2036.
Queanbeyan-Palerang Local Strategic Planning Statement 2020	The Queanbeyan-Palerang Local Strategic Planning Statement (Queanbeyan-Palerang Regional Council 2020) sets the framework for the region's economic, social and environmental land use needs over the next 20 years. The statement also contains planning outcomes for rural areas, which contain deliverables that development should adhere to, of which, renewable energy technologies are encouraged where they do not unreasonably impact on neighbouring land uses.	The project directly relates to Planning Priority 7 – *We actively promote and implement sound resource conservation and good environmental practice,* in which there would be a provision for sites for renewable energy sources and waste recycling in the region. The project also relates to the planning outcomes for rural areas, where there would be an emphasis on community and stakeholder engagement throughout all stages of the project's lifecycle in order to not unreasonably impact on neighbouring land uses.

2.2 Site setting and features

2.2.1 Regional context

The project is approximately 20 kilometres north-east of Bungendore, and approximately 40 kilometres south of Goulburn, in the Goulburn Mulwaree LGA and Queanbeyan-Palerang Regional LGA (refer Figure 1-1).

The Goulburn Mulwaree LGA and Queanbeyan-Palerang Regional LGA cover approximately 8500 square kilometres of the South East and Tablelands region of New South Wales. The region contains coastal, alpine, tablelands and slope landscapes, and includes Kosciusko National Park, which is the state's largest national park. The South East and Tablelands region has a population of approximately 290,772 (Invest Regional NSW 2024).

The largest cities close to the project are Goulburn and Queanbeyan, with populations of 81,771 and 64,793 (ABS, 2021a/b) respectively. Major employment across the region excluding agriculture includes government administration, Defence, hospitals, computer system design and related services, and primary education.

There are several renewable energy developments within 50 kilometres of the project, which are proposed or in various stages of development, as well as other infrastructure and mining projects. These are summarised in Table 2-2 and shown in Figure 2-3.

Table 2-2 Nearby renewable developments and major projects

Project	Development type	Status[1]
Capital Solar Farm (MP10_0121)	Solar Farm	Approved – operational
Capital Wind Farm (MP05_0179)	Wind Farm	Approved – operational
Capital Wind Farm: Stage 2 (MP10_0135)	Wind Farm	Approved – operational
Blind Creek Solar Farm (SSD-13166280)	Solar Farm	Approved – construction
Gundary Solar Farm (SSD-48225958)	Solar Farm	Proposed
Merino Solar Farm (SSD-59155459)	Solar Farm	Proposed

Project	Development type	Status[1]
Woodlawn Advanced Energy Recovery Centre (SSD-21184278)	Energy recovery (biomass)	Proposed
Woodlawn Mine (MP07_0143)	Mine	Approved – operational
Woodlawn Bioreactor (DA31-02-99)	Bioreactor	Approved - operational
Woodlawn Wind Farm (DA250-10-2004)	Wind Farm	Approved – operational
Bungendore Sand Quarry Extension (SSD-8992)	Mining	Withdrawn
New High School in Bungendore (SSD-14394209)	Educational establishment	Withdrawn
Jupiter Wind Farm (SSD-6277)	Wind Farm	Withdrawn

1 a 'proposed' status includes either awaiting SEARs, SEARs issued, prepare EIS, EIS exhibition or response to submission phase.
Source: https://www.planningportal.nsw.gov.au/major-projects

2.2.2 Local context

The project is located within the locality of Boro, which has a population of approximately 97 people (ABS 2021c). The locality of Boro is bounded to the west by Mount Fairy and a ridgeline that spans from Mulloon to Tarago along Braidwood Road. Sunset Mountain and the Nadgigomar Nature Reserve are to the east, with Lake Bathurst to the north.

Main roads in the area include Goulburn Road / Braidwood Road, the Kings Highway (B52), and Mayfield Road. Main rivers and creeks within the locality drain into the Shoalhaven River, Lake George or the Wollondilly River.

Since colonisation, the local area around the project has been extensively cleared and used for farming and agriculture practises due to its relatively flat topography. There was a brief period of mining activity in the region, where gold, silver, copper, lead and zinc were mined.

The project area covers approximately 420 hectares of privately owned and crown land zoned partly RU1 Primary Production under *Queanbeyan-Palerang Regional Local Environment Plan 2022,* and partly C3 Environmental Management under *Goulburn Mulwaree Local Environment Plan 2009* (refer Figure 2-2).

There are two associated residences in the project area, and 110 non-associated residences within four kilometres of the project area (refer Figure 2-1). Associated and non-associated residences are discussed further in Section 6.

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

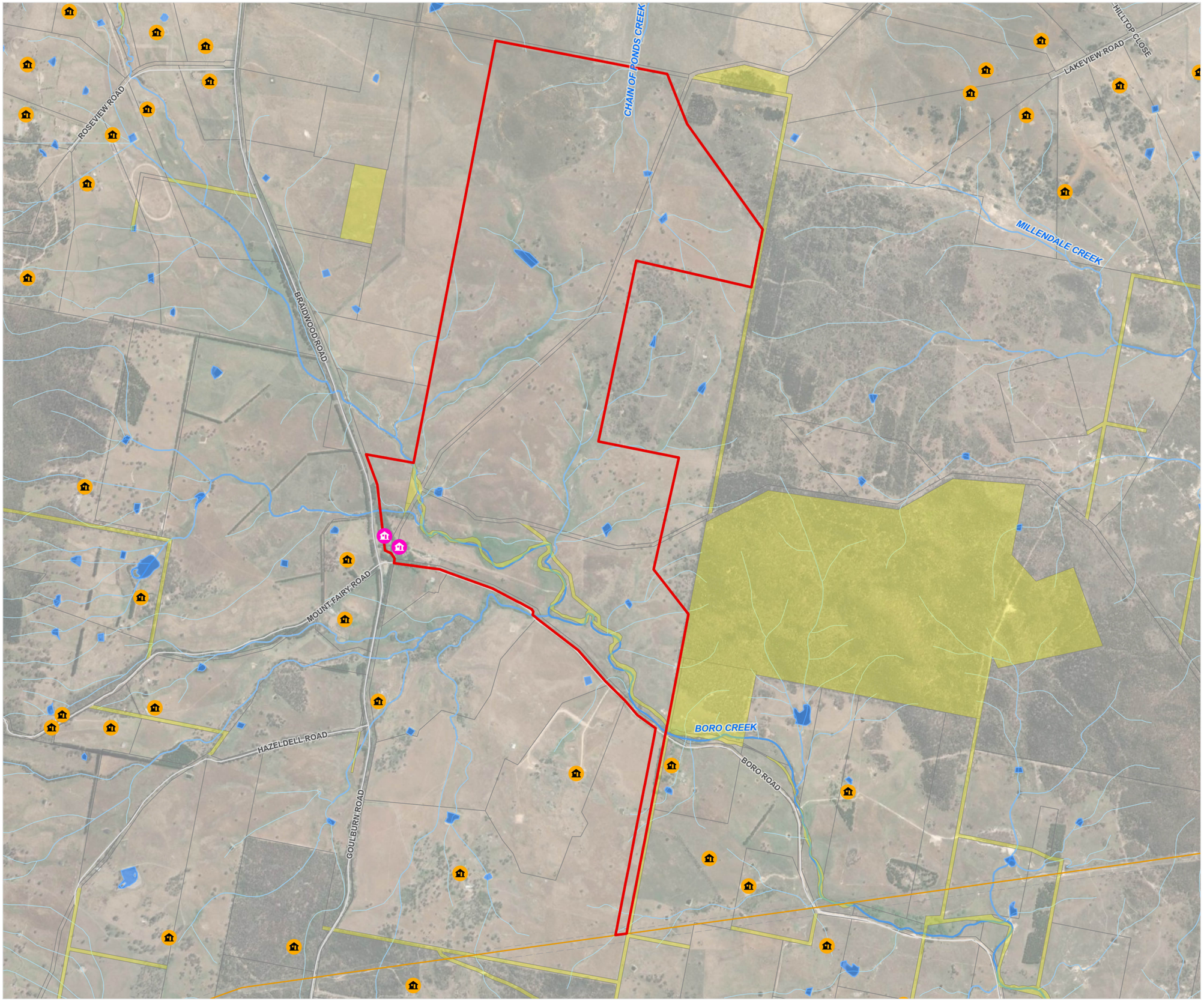
2.2.3 Key features of the project area

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

Table 2-3 Key natural and built features of the project area setting

Aspect	Detail
LGA	The project area is in the Goulburn Mulwaree LGA and Queanbeyan–Palerang Regional LGA (refer Figure 1-1).
Land zoning	The project area is zoned partly RU1 Primary Production under the *Queanbeyan–Palerang Regional Local Environment Plan 2022* and partly C3 Environmental Management under the *Goulburn Mulwaree Council Local Environment Plan 2009*.
Nearby townships	The project is approximately five kilometres from Tarago, approximately 40 kilometres south of Goulburn, approximately 20 kilometres north-east of Bungendore, and 30 kilometres north-west of Braidwood.
Landscape	The landform across the project area is generally flat with some scattered slopes through the middle, and steeper terrain in the north-western corner. Mount Fairy is located to the west. Ephemeral and permanent watercourses cross the project area with Boro Creek, Chain of Ponds Creek, and several associated drainage lines mapped as key fish habitat. Watercourses are discussed further in Section 6.10.
Land use	Cattle and sheep grazing is the dominant agricultural activity within the project area.

Aspect	Detail
Site history	The project area is located within the traditional lands of the Ngunnawal people. The earliest occupation site in the region has been dated to 21,000 years ago with the majority of occupation sites dated to 3,000 to 5,000 years ago (Australian Museum Business Services 2012). Aboriginal heritage is discussed further in Section 6.6. The region was colonised around 1798 with grazing in the area reaching its peak during the 1820s and Goulburn the main centre (Australian Museum Business Services 2012). The project area and surrounds has continued to be used for intensive agricultural activities, including grazing of sheep and cattle since the 1920's. Historic heritage is discussed further in Section 6.7.
Land ownership	The project area incorporates two landowners.
Residences	There are two residences within the project area and 110 residences within four kilometres of the project area.
Site access	Site access will be via Braidwood Road to the west and Boro Road to the south.
Mineral/mining title	There is one exploration licence which wholly covers the project area (Licence Number EL8945). The licence was granted to Tarago Exploration Pty Ltd. Early engagement with licence holder determined no exploration activities are proposed in the area in 2025, the project area is not in their area of interest. Further engagement would be completed for the EIS.
Topography and geology	Undulating topography ranging from approximately 670 metres Australian Height Datum (AHD) to 750 metres AHD. Geology of the project area includes Quaternary age unconsolidated colluvium and Devonian aged plutonic rocks. Land resources are discussed further in Section 6.9.
Climate	The closest Bureau of Meteorology weather station to the project is 30 kilometres south at Braidwood Racecourse. Annual mean rainfall at Braidwood is 688.3 millimetres. The project area is in the Shoalhaven River catchment.
Vegetation	Native vegetation within the project area is sporadic, characteristic of a historically modified landscape.
National Parks and Conservation Areas	There are no designated national parks and/or conservation areas within the project area. The Nadgigomar Nature Reserve which includes Sunset Mountain is located 12 kilometres east.
Recreation	Recreational areas within 10 kilometres of the project include a HipCamp property at Silver Lane (approximately three kilometres south), the Tarago Area Women's Shed (approximately five kilometres north) and Pandora Equestrian Centre (approximately five kilometres north-east).
Nearby infrastructure	TransGrid 330 kV overhead transmission line is located around 1.2 kilometres south of the project area.
Planning context	The project area is not within any land identified as: • biophysical strategic agricultural land (BSAL) • travelling stock reserve(s). The project area is identified as containing or being constrained by: • bushfire prone land • Crown land.



Project area
Cadastre
Crown Land
Water body
Existing 330kV transmission line
Roads
Associated dwelling
Non-associated dwelling

Strahler Stream Order

1
2
3
4
5

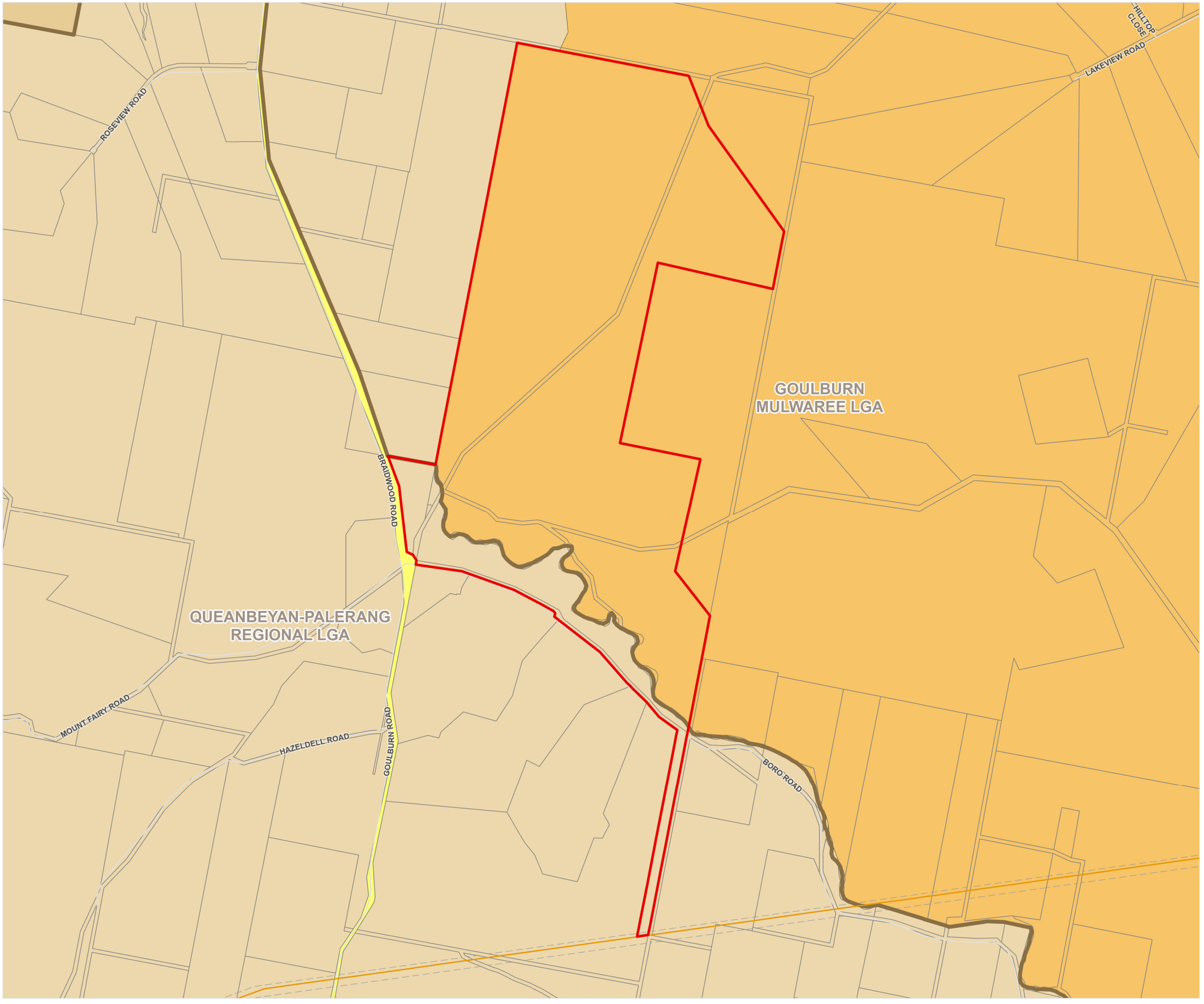
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VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 2-1: LOCAL CONTEXT



- Project area
- Local Government area
- Cadastre
- Existing 330kV transmission line
- Roads

Land Zoning

- C3 - Environmental Management
- RU1 - Primary Production
- RU2 - Rural Landscape
- SP2 - Infrastructure

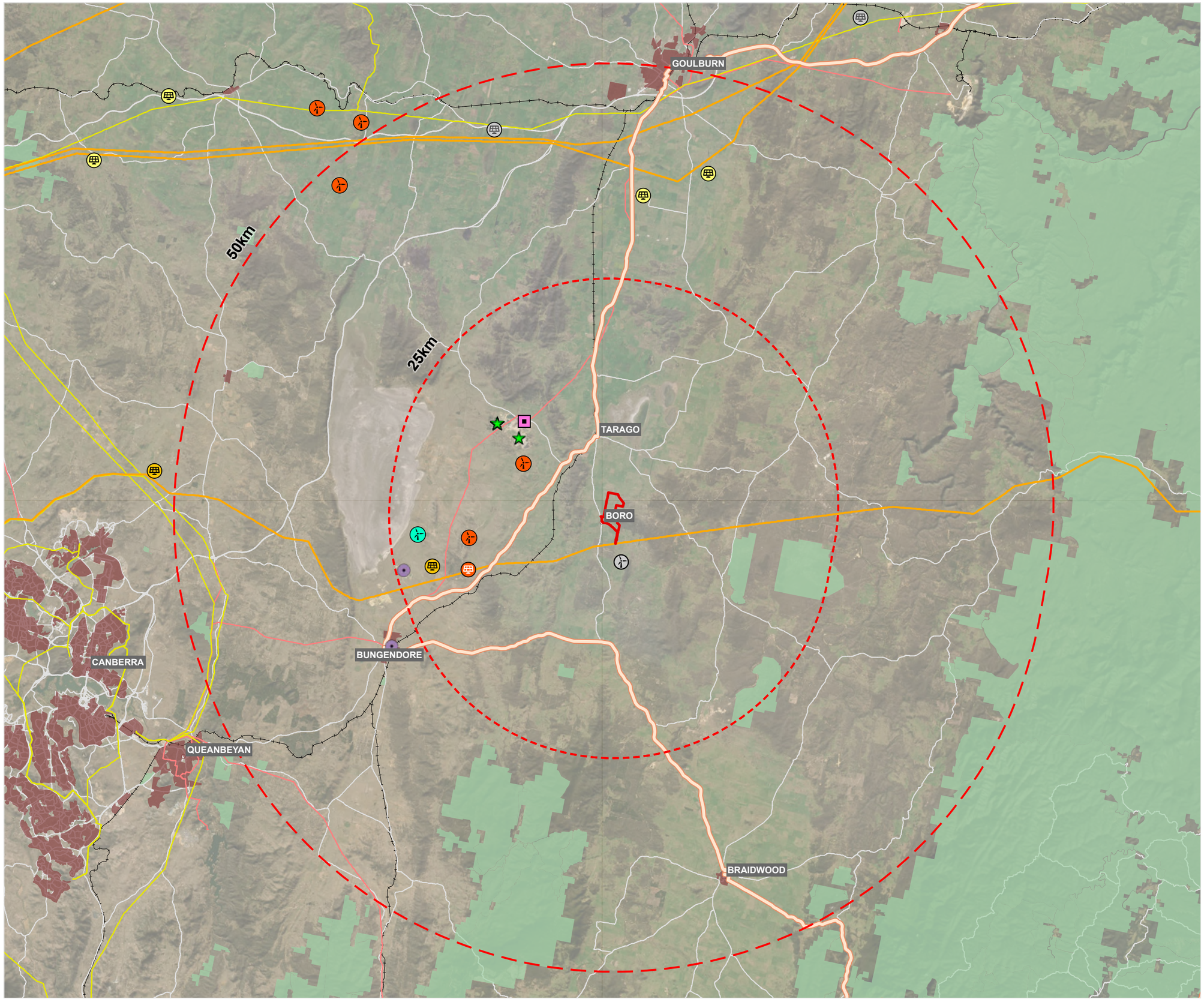
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FIGURE 2-2: LAND ZONING



Project area
25km Buffer
50km Buffer
NPWS reserve/state forest
Urban area
Tourist route
Roads
Railway
330kV Transmission Line
132kV Transmission Line
66kV Transmission Line

Renewable projects

Solar farm - Operational
Solar farm - Approved
Solar farm - In Planning
Solar farm - Withdrawn
Wind farm - Approved
Wind farm - Operational
Wind farm - Withdrawn

Major Projects

Operational
Withdrawn
Proposed

0 10 20 Km

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A3 SIZE / GDA2020 (EPSG:7855)

VERSION: C
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 2-3: SURROUNDING RENEWABLE ENERGY DEVELOPMENT

2.2.4 Key risks and hazards

Renewable energy developments by their nature are generally located in rural areas and typically result in changes to landscape character. They have the potential to cause environmental and social impacts during construction, operation, and decommissioning.

Key risk areas that will require more detailed assessment through the EIS to address potential impacts associated with the solar farm and BESS include landscape character and visual impacts, biodiversity, heritage, traffic and transport, noise and vibration, hazards and bushfire, and social impacts.

Key potential risk areas and proposed further detailed assessment through the EIS are discussed in detail in Chapter 6.

2.3 Cumulative impacts

The project would be assessed in accordance with the requirements of the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022c). The EIS and its associated technical studies would consider other planned future projects that are anticipated or reasonably foreseeable in the local area, and assess potential cumulative impacts.

Assessment of cumulative impacts will include consideration of the specific impacts of the project on the existing environment in the area of the project (referred to as the baseline condition) as well as assessing the impacts of the project in combination with the impacts of other relevant future projects.

Nearby renewable energy developments and other major projects are summarised in Table 2-2 and shown in Figure 2-3. Further discussion of these nearby projects in the context of potential cumulative impacts is provided in Section 13.

2.4 Agreements with other parties

There are two 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 SREA based on potential impacts.

- Associated residences – a residence on privately-owned land in respect of which the owner has reached an agreement with SREA in relation to the development and management of impacts
- Non-associated residence – a residence on privately-owned land in respect of which the owner has not reached an agreement with SREA in relation to the management of impacts associated with the development.

There are two associated residences within the project area. Other non-associated residences surrounding the project area are shown in Figure 2-1.

SREA may seek to enter into agreements with nearby neighbours based on the finding of the EIS assessments where relevant impact criteria cannot be met at non-associated dwellings.

2.5 Alternatives

2.5.1 No project

The do-nothing scenario would involve not constructing the project. It would involve no activity within the project area and therefore would have the least local environmental and social impact.

The do-nothing scenario would not deliver a low-cost, renewable energy option 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.

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

2.5.2 Alternative sources of energy

The alternative to using solar energy is the continued use of fossil fuels, including coal and natural gas. These energy sources contribute to the harmful effects of climate change and greenhouse gas emissions. Section 2.1 outlines the commitment by Australia and New South Wales in reducing greenhouse gas emissions and the targets set for increasing the generation of renewable energy.

Considering the abundance and reliability of solar energy and the stability provided by a BESS, combined with the sparse population in the area, and proximity to existing transmission and the NEM, the use of solar energy is justified.

The project has a capacity of up to 400 megawatts, adding significant amounts of renewable energy supply and the stability of a BESS over a 35-year period.

2.5.3 Alternative sites and layout refinement

2.5.3.1 Alternative sites

SREA has been investigating potential renewable energy projects in the region since around 2023 and has undertaken preliminary investigations and consulted with landholders and key stakeholders as part of the feasibility assessment and site due diligence.

Three potential sites have been considered from the perspective of technical feasibility, and potential or perceived impacts on the local community and the environment. The three options are similar in terms of terrain and constructability; and all provide comparable solar generation opportunity, transport access, and proximity to the NEM.

The selection of the preferred site was influenced by the opportunity to avoid and minimise impacts to high biodiversity values, including areas of EPBC Act listed threatened ecological communities, known Aboriginal cultural heritage constraints, and to minimise impacts to surrounding non-associated dwellings.

2.5.3.2 Layout refinements

A preliminary solar farm layout focused on maximising the potential solar 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 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. Preliminary locations of project infrastructure have been refined to avoid areas of high value vegetation where possible, and access tracks would utilise existing farm access tracks 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 has progressively been groundtruthed as part of the scoping report biodiversity assessment.

The design revisions are by nature an iterative process based on information from environmental assessment, landholder feedback and broader community consultation; and the design refinement process would be ongoing as further information becomes available through the EIS. Ongoing refinement would focus on the following key principles:

- avoiding potential environmental and social impacts as a priority
- minimising potential impacts that can't be 'designed out' whilst maximising solar energy production and the viability of the project
- incorporating feasible and reasonable management measures into construction, operation and decommissioning to appropriately manage potential residual impacts.

2.6 Project justification

2.6.1 Solar farm benefits

The key environmental benefit of solar energy generation is a contribution to New South Wales and Australian GHG reduction targets to address the increasing impacts of climate change. Solar energy will play a critical part in Australia's transition to renewable energy in preparation for the closure of four of the five remaining coal-fired generators in New South Wales by 2035.

Australian renewable energy supplied 39.4% of Australia's total electricity in 2023, with solar power the largest contributor to renewable energy generation in Australia accounting for 45 per cent of all renewable generation and 15 per cent of total electricity generation in Australia in the period 2022-2023. The cumulative large-scale solar capacity in Australia has increased from 6.5 gigawatts in 2022 to 8.2 gigawatts in 2023 (Clean Energy Council 2024).

Additionally, solar farms can generally be developed whilst minimising impacts to existing agriculture by providing the opportunity for continued sheep grazing through solar-grazing as a form of agrisolar, and creating a dual land use with the co-existence of agriculture and solar energy generation

2.6.2 Project specific benefits

The expected benefits of the project include:

- supplying up to 400 megawatts of renewable energy to the NEM, supporting fulfillment of the current obligations under Australian and state government renewable energy targets
- providing for cleaner reliable electricity generation, assisting with meeting the current load demand while reducing GHG emissions and the impacts of climate change
- providing opportunity for regional investment in the New South Wales renewable energy sector.

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

- providing up to150 employment opportunities during peak construction, and approximately 15 ongoing jobs during operation
- direct investment in the Southern Tablelands region
- opportunities for local contractors and businesses during construction, operation, and decommissioning
- diversified income stream for rural landholders
- opportunities for the development of new skilled labour in the region within the growing renewable energy industry.

Construction, operation and decommissioning 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 *Large-Scale Solar Energy Guideline* (DPE, 2022) details the importance of appropriate site selection to avoid or minimise potential environmental and social impacts at the outset of development. The project area is considered suitable for development for the following reasons:

- it is in a high solar radiation area as consistent with the Global Solar Atlas (2024), and provides a strong solar generation opportunity
- it is close to an existing transmission line, minimising the need for extensive additional infrastructure to connect to the NEM
- it is reasonably flat and relatively unconstrained from a constructability perspective
- it is easily accessed during construction, operation, and decommissioning from Braidwood Road to the west and Boro Road to the south

- it provides an opportunity to avoid and minimise impacts to high biodiversity values, including areas of EPBC Act listed threatened ecological communities, known Aboriginal cultural heritage constraints, and minimise impacts to surrounding non-associated dwellings.

3 THE PROJECT

3.1 Project overview

The project would involve the construction, operation, and decommissioning of a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/1000-megawatt hours storage BESS) (the project).

The solar farm would be inter-connected via a series of underground cables connecting the photovoltaic (PV) arrays to a central substation, which would then transform the electricity to 330 kilovolts for dispatch to an existing TransGrid 330 kV overhead transmission line located to the south of the project.

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

- a solar farm with PV modules mounted on single-axis tracking systems plus associated power conversion units (PCUs), a cable network and internal access tracks
- a BESS with a capacity of up to 250 megawatts/ 1000-megawatt hours storage
- electrical infrastructure including:
  - a central substation with a step-up facility
  - underground and some overhead electrical reticulation connecting the PV arrays to the central substation
  - a new 330-kilovolt switching station and connection to an existing TransGrid 330-kilovolt overhead transmission line.
- permanent on-site ancillary infrastructure:
  - operation and maintenance facility
  - internal access road network, with access and egress points from and to public roads
  - utility and amenity services.
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas
  - potential construction workforce accommodation on site.
- potential upgrades to the surrounding road network for the expected traffic volumes and oversize and/or overmass vehicles (OSOM) during construction, and maintenance during operation if required
- site access:
  - via Braidwood Road to the west and Boro Road to the south
  - transport route from Port Botany to Braidwood Road and Boro Road would be via Botany Road, Bunnerong Road, Gardeners Road, M8 Motorway, M5 Motorway and the Hume Highway
  - transport route from Port Kembla to Braidwood Road and Boro Road would be via Five Islands Road, Springhill Road, Masters Road, Princess Highway, Picton Road and the Hume Highway.
- land tenure
  - the project area comprises three lots of privately owned and two lots of crown land leased by SREA for the project.

Geotechnical investigations would be required during detailed design to determine the suitability and availability of the material on site for use, and the depth of bedrock. The magnitude and location of these additional ancillary activities would be determined following further detailed site investigations and would be identified and assessed in the EIS.

Apart from any potential road upgrades, project infrastructure would be contained within the project area, which has been sized to allow for flexibility during design and in response to the emerging findings of the EIS.

The project area and associated disturbance footprint being investigated as part of the scoping phase is a conservative area for early assessment purposes and may be reduced based on final project layout, in consideration of the outcomes of technical and environmental assessments completed for the EIS.

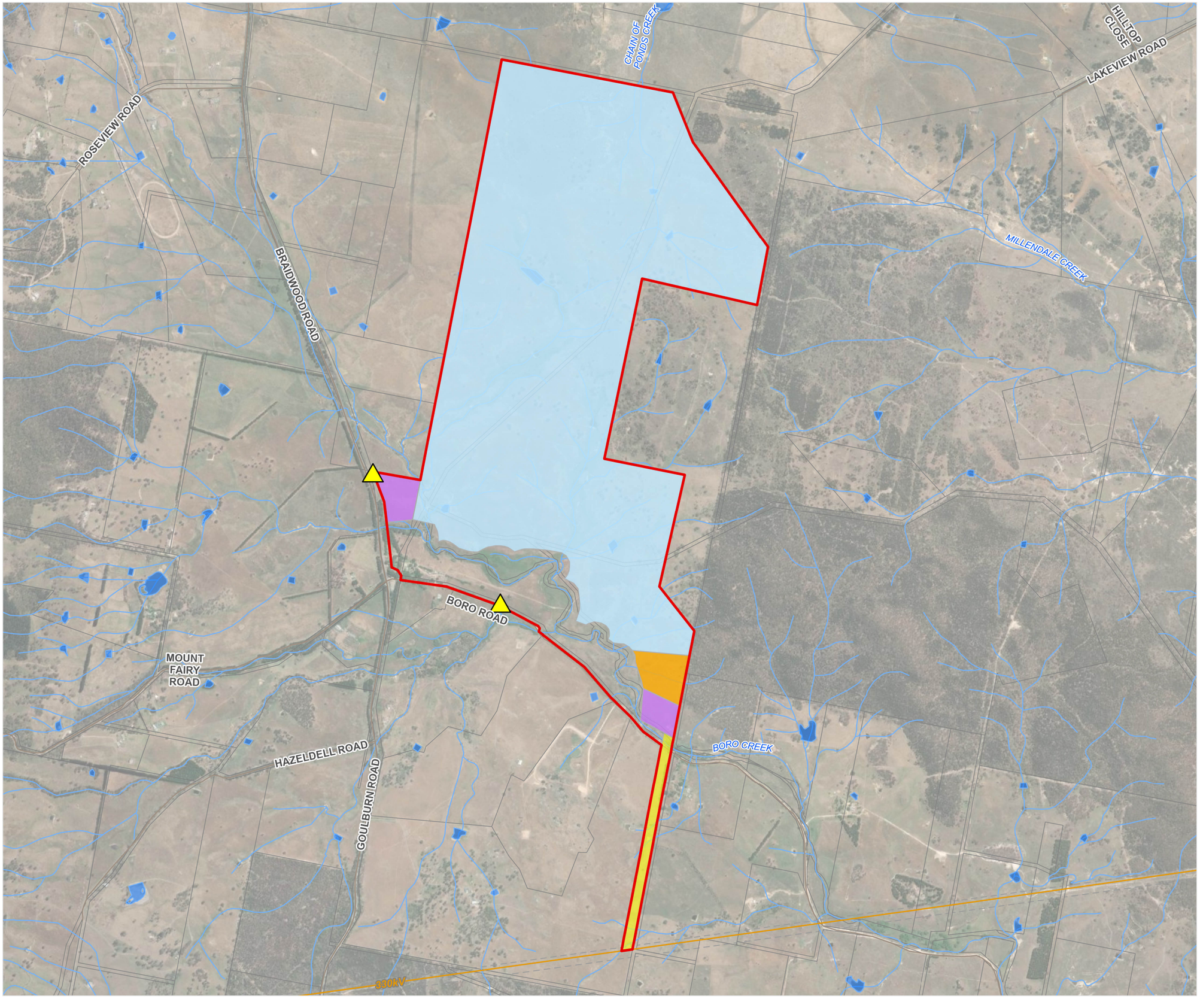
At the end of its practical life, the project would be decommissioned, and the site returned to its pre-existing land use suitable for agricultural activities in consultation with the landholder at that time. Continuing the solar farm beyond the consent related to this project would necessitate the preparation of a new development application.

Preliminary project components and specifications are outlined in Table 3-1 and further details provided in Section 3.3, and the current indicative layout for the project is provided in Figure 3-1.

Table 3-1 Preliminary 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	420 ha	-
Disturbance area	The proposed disturbance area associated with the project footprint based on current indicative layout, which would be subject to further refinement as the project progresses	360 ha	-
Generating capacity	400 MW	-	-
Solar photovoltaic (PV) panels			
Estimated number of PV panels	Panels mounted on single-axis tracking systems	-	272,726
Maximum generation capacity (MWdc)	150 MWac at PoC / 180MWdc	-	-
PCU	Convert generated electricity form direct current (DC) to alternating current (AC) for distribution to the NEM. The PCUs comprise three main components including inverters, medium voltage transformers and switchgear	2150x5260x1020 mm	Approximately 109 units to be confirmed during detailed design
Estimated height of panels when horizontal (metres)	2.35 metres	-	-
Distance to ground at maximum tilt (to lower edge) (metres)	0.5 metres	-	-
Estimated height (to higher edge) when at max tilt (metres)	5 metres	-	-
Rotational axis elevation	1.9 to 2.6 metres	-	-
Electrical infrastructure			
Substation	Central substation with a step-up facility and switching yard to transform energy for dispatch to an existing TransGrid 330 kV overhead transmission line	Approximately 200 by 150 metres	One
Battery energy storage system	BESS with capacity of 250 megawatts/1000MWh storage	Approximately 200 by 260 metres	-
Electrical reticulation network	Underground (wherever possible) and some overhead (either 33 kV, or 132 kV) electrical reticulation network connecting the PV arrays to the central substation	-	Around 30,000m of 33 kV cable
NEM connection	A high-voltage overhead transmission line (330 kV) connecting to TransGrid's 330 kV overhead transmission line	Approximately 1.2 km in length.	-

Project component	Details	Approximate dimensions	Quantity
Permanent on-site ancillary infrastructure			
Operation and maintenance facility	A control room and areas for maintenance and storage facilities which, incorporate staff amenities, workshop, telecommunications facilities, car parking and security fencing which would operate 24-hours per day, 7-days per week	Approximately 25 by 50 metres	One
Internal road network	Internal engineered gravel road network with roadside drainage	Up to 10m wide	Up to 12,500 metres of new internal roads will be required.
Potential public road upgrades			
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	-	To be confirmed
Temporary construction ancillary infrastructure			
Site compounds	Includes construction laydown and storage areas (equipment, stockpiles, and materials storage)	Approximately 150 by 100 metres	One
Potential workforce accommodation	The need for temporary workforce accommodation would be confirmed during the EIS	To be confirmed	To be confirmed
Temporary utility services	Infrastructure for the storage of potable water for workforce and concrete production. Electricity demand at site compound and ancillary locations anticipated to be supplied from local reticulated network connection.	-	-
Personnel			
Construction on-site workforce	Approximately 150 FTE at peak construction periods	-	-
Operations workforce (attending site on an ad-hoc basis)	Approximately 6 FTE	-	-



- Project area
- Indicative BESS, switching station and substation
- Indicative construction compound and O&M facility
- Proposed transmission easement
- Solar array
- Proposed site access
- Existing 330 kV transmission line

0 0.5 1 Km

SCALE 1:20,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 3-1: PRELIMINARY PROJECT LAYOUT

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 420 hectares. Lot and DP details for the project area are provided in Table 1-2.

3.1.2 Survey boundary

A 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 which provides a buffer around access tracks and PV arrays would be applied to these assessments. This corridor ensures the EIS would 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 methodology 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 disturbing work and vegetation clearing associated with construction and operation of the project. All permanent and temporary project components would be located within the disturbance footprint.

Based on the indicative layout presented in Figure 3.1 the project would require a disturbance footprint of approximately 360 hectares.

3.1.4 Associated and non-associated residences

There are two categories of private property and dwellings affected by the project, with their classification dependant on whether or not they have entered into an agreement with SREA based on potential impacts.

- Associated residences – a residence on privately-owned land in respect of which the owner has reached an agreement with SREA in relation to the development and management of impacts.
- Non-associated residence – a residence on privately-owned land in respect of which the owner has not reached an agreement with SREA in relation to the management of impacts from the development.

Privately owned land within the project area is subject to access licence agreements with the associated property owners (landholder agreements) and SREA allowing the option to lease the land for construction, operation, and decommissioning of the project. The residences within the project area are all classified as associated residences. Other non-associated landholders surrounding the project area are shown in Figure 2.1.

SREA is undertaking ongoing engagement with surrounding non-associated residences potentially affected by the project and may seek to enter into benefit sharing agreements based on the finding of the EIS where relevant impact criteria cannot be met. These properties would become associated if agreements are put in place.

3.2 Project phases and timing

Construction works would commence as soon as practicable following project approval and secondary construction environmental approvals, and at this stage it is estimated to commence in 2027.

The project is intended to be constructed in one stage. An overview of the overarching project phases and timing is provided in Table 3-2.

Layout confirmation and detailed design of electrical reticulation, and other ancillary infrastructure, and any required site investigations required to inform the design e.g., geotechnical investigations, detailed survey, and hydrology, would be undertaken during the planning and approvals phase.

Table 3-2 Project phase

Project phase	Status and timing estimate
Site selection	Completed in 2024
Project feasibility	Completed in 2024
Planning and approvals	In progress, estimated completion in late 2026/early 2027
Construction and commissioning	Commencing in 2027 for a period of up to 24 months
Operation and maintenance	Planned to commence operations in 2028 with an estimated operational life of 30 years
Decommissioning	At the end of its operational life

3.3 Project components

3.3.1 Solar panels

The project would utilise PV solar panels with an installed generating capacity of up to 150 megawatts. Preliminary investigations indicate around 272,726 PV modules would be installed for the project, though the exact number and final configuration would not be determined until the detailed design stage.

The PV solar panels would be mounted to steel structures and utilise single axis tracking systems, with relatively little soil disturbance required. The rows of PV panels would be aligned in a north-south direction, allowing the panels to rotate from east to west during the day, tracking the sun's movement.

The PV panels would be connected to PCUs using underground cables and/or above ground cables to convert the DC electricity generated by the PV modules into AC form, which is compatible with the NEM.

3.3.2 Electrical infrastructure

Electrical infrastructure required for the project would include the following:

- substation and step-up facility – to transform electricity generated by the solar arrays into a higher voltage for dispatch to the NEM
- a centralised large-scale BESS – with a capacity of 250 megawatts/1000 megawatt-hours storage, and synchronous condenser to maintain voltage stability and system strength
- underground electrical reticulation – up to 33 kilovolts to connect the solar panels to the substation
- overhead transmission line and step-up facility connecting the solar farm to the existing TransGrid 330-kilovolt overhead transmission line
- control cables and earthing – to monitor energy output
- PCUs containing inverters, DC-AC switchgear, transformer, and safety and protection systems to ensure efficient energy output from the project.

3.3.3 Battery energy storage system

The project would include a BESS close to the substation, with a capacity of 250 megawatts/1000 megawatt-hours storage, and synchronous condenser to maintain voltage stability and system strength to the NEM.

The final location of the BESS would be determined during EIS development and would consider:

- environmental (including noise and visual) constraints
- building and safety requirements (e.g., distances to residences, and asset protection zones)
- accessibility (existing roads and access tracks)
- constructability and earthworks.

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

Table 3-3 BESS components

BESS component	Description
Battery modules	Individual units (likely to be lithium-ion) 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 DC electricity stored in the batteries, to AC for dispatch to the NEM
Power conversion system (PCS)	Manages the flow of electricity between the batteries, inverters and the NEM to optimise performance based on demand and supply
Synchronous condenser	To stabilise and strengthen the power system to support operation of the BESS
Energy management system (EMS)	Software that controls and optimises the operation of the BESS, including charging and discharging based on demand in the NEM
Cooling system	System that regulates and optimises the operating temperatures of the BESS to ensure efficiency and safety
Foundations	Foundations are expected to be concrete depending on the findings of geotechnical investigations at detailed design

3.3.4 Other permanent ancillary infrastructure

Other ancillary infrastructure necessary for the operation of the project is described in Table 3-4.

Table 3-4 Permanent ancillary infrastructure

Permanent ancillary infrastructure	Description
Internal roads and drainage	Internal access roads would be established across the solar farm to facilitate construction and would be maintained for the operation, repowering and/or decommissioning of the project. The internal access tracks are likely to comprise an engineered gravel road up to seven metres wide (pavement width) to allow transport of OSOM vehicles and emergency response vehicles.
Operation and maintenance facility	A permanent operation and maintenance facility would include lay down areas, site operations facilities and services buildings, workshop, storage, parking, and other facilities for operations staff including amenities and telecommunications facilities. The indicative location of the operation and maintenance facility is shown in Figure 3.1 and is expected to cover a footprint of approximately 25 metres by 50 metres.
Local road and intersection upgrades	Access to the site during construction and operation would be via the existing road network. Primary access would be via the via Boro Road to the south, and Braidwood Road to the west. Subject to detailed transport route assessment and swept path analysis during the EIS, some upgrades to local roads and intersections are expected to be required to facilitate site access for construction and 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).

Permanent ancillary infrastructure	Description
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 onsite 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 would be classified and disposed to an approved facility (landfill or recycling).

3.4 Transport and access

The solar panel components and other large components such as the electrical plant would be manufactured domestically and overseas, and transported to site in sections.

The final transport routes, will be confirmed by the preferred logistics contractor based on the origin of the solar farm components. However, it is expected that some components would be delivered by ship to either Port Botany and/or Port Kembla prior to transportation to site by road.

The expected delivery route from Port Botany to the solar farm site would be approximately 250 kilometres, and would likely comprise the following (shown in Figure 3-2):

- M5 Motorway
- Hume Highway.

The expected delivery route from Port Kembla to the solar farm site would be approximately 225 kilometres, and would likely comprise the following (shown in Figure 3-2):

- Five Islands Road
- Princess Highway
- M1 Motorway
- Picton Road
- Hume Highway.

Primary access to the site during construction would be via Braidwood Road to the west, and Boro Road to the south.

A preliminary assessment of the proposed site access routes via adjacent local roads, suggests some upgrades to local roads and intersections are expected to be required to facilitate site access for construction and OSOM vehicles.

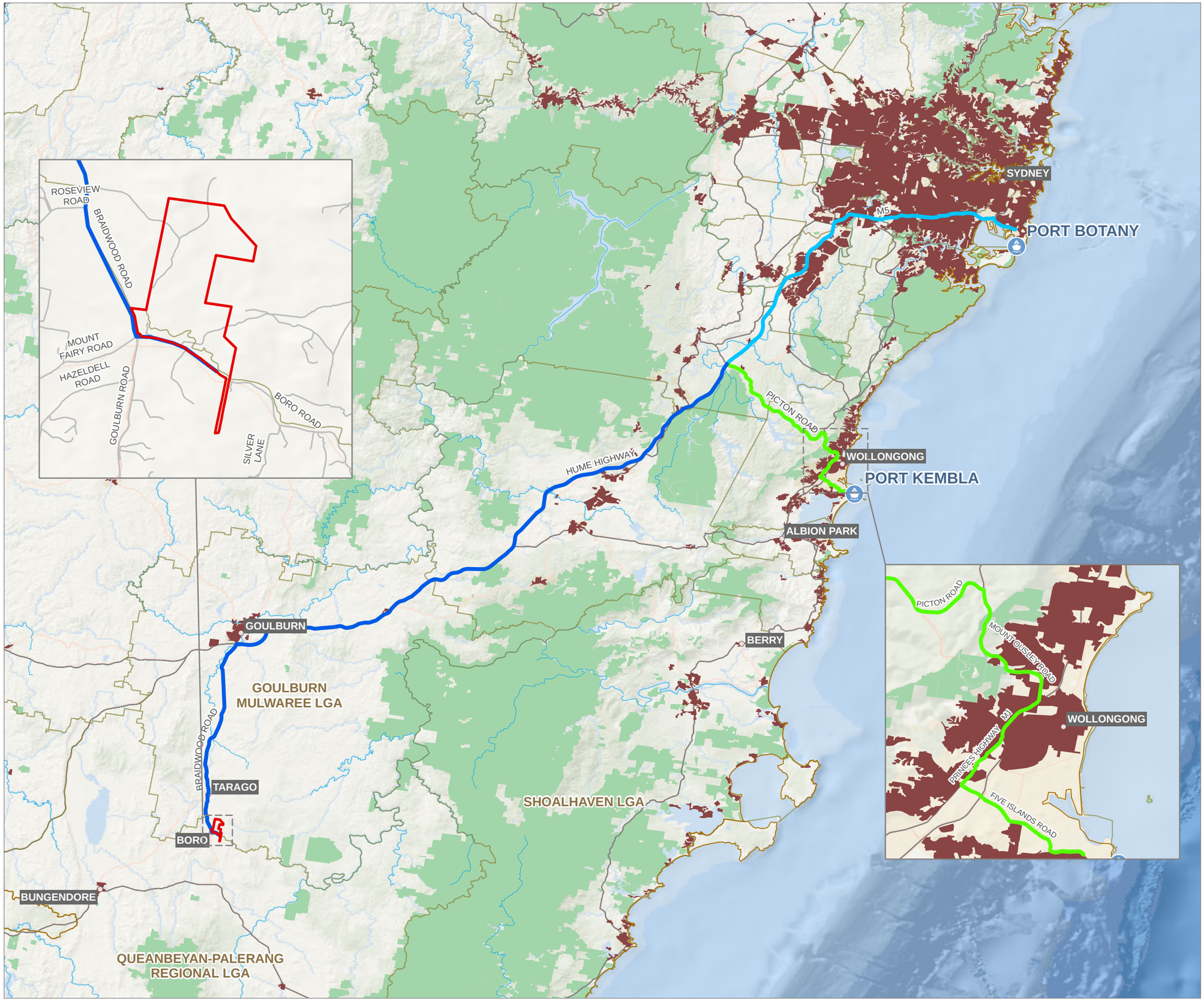


FIGURE 3-2: PROJECT TRANSPORT ROUTE OPTIONS

3.5 Construction

The project is intended to be constructed in a single stage, delivered in the indicative phases outlined in Table 3-5 which are typical for construction of a large-scale solar farm. The order of activities is indicative, and subject to change dependent on the final construction staging and methodology.

Table 3-5 Indicative construction works

Construction activity	Details
Phase 1 – detailed design and site investigations	• Detailed design, including the layout confirmation, and design of electrical reticulation and supporting ancillary infrastructure • Detailed investigations (e.g., geotechnical investigations) would also be undertaken during this phase to inform design and site preparations
Phase 2 – site preparation and temporary construction facilities	• Pre-construction activities such as site preparation, utility adjustments, erection of site fencing and workers compounds and accommodation as required • Upgrades to public roads where required to facilitate construction
Phase 3 – main construction works	• Onsite civil works including internal access tracks • Solar array and BESS construction • Electrical reticulation and ancillary infrastructure
Phase 4 – commissioning	• Activities to be undertaken prior to operation such as testing of solar arrays and BESS, and energising the substation

3.5.1 Site offices and compounds

Site offices and compounds would 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 cover a footprint of 150 metres by 100 metres, which 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.

A footprint of approximately 25 metres by 50 metres would be retained for use as the permanent 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.

Smaller satellite construction facilities would also be required in other locations throughout the solar farm 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 would be considered as part of the EIS in consultation with local councils, to address workforce accommodation during construction and would include options to use available rental, motel and other accommodation in surrounding townships, regional centres and the consideration of temporary facilities either onsite or offsite.

There are currently housing shortages in the region and the accommodation strategy will be developed with consideration of available housing stock. Potential cumulative impacts on existing accommodation, public infrastructure, and essential and town services would be considered in the EIS as part of the social and economic impact assessments.

If a purpose-built workforce accommodation facility is required, it would include rooms and amenities for the expected peak workforce, and supporting facilities such as car parking, and a dining hall. The location would be determined and assessed the EIS.

3.5.3 Upgrades to public roads

As discussed in Section 3.4 a preliminary assessment has identified no major road upgrades are required to support the project.

Confirmation of any proposed intersection upgrades to facilitate site access from Boro Road and Braidwood Road would be provided in the EIS. Further details on traffic and access are provided in Section 6.4.

3.5.4 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 access for construction activities and delivery of major components.

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

The access tracks would likely comprise an engineered gravel road up to seven metres wide (subject to detailed design), with drainage structures, cut and fill batters, and sediment and erosion controls as required, extending beyond the seven-metre engineered road surface. Fencing, gates, and cattle grids would also be included where required.

3.5.5 Solar panels

Preparation for construction of the PV solar panel arrays would include civil works for final landform levels, drainage and foundations and the installation of steel piles, PV mounting systems, solar panels and inverters, transformers and switchgear for PCUs.

3.5.6 Electrical reticulation

Generally, the underground electrical reticulation from the PV arrays to the substation would be co-located with 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.

3.5.7 Overhead transmission lines

Generally, the following indicative activities are required for the construction of overhead transmission lines:

- 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 generally be easily accessible from the ground and construction could be undertaken using ground-based equipment.

SREA are also investigating the option of placing all or part of the transmission line underground, this would be confirmed during the design development process and the preferred option for transmission line infrastructure would be detailed and assessed in the EIS.

3.5.8 Other electrical infrastructure

Other electrical infrastructure including the substation and the BESS would be constructed together and would be co-located in the same compound.

The substation would be designed and constructed in accordance with TransGrid 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 engineered gravel and stone material.

3.5.9 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 for construction from outside the project area
- sourcing of water for construction (this may include offsite or onsite water sourcing including the construction of bores and/or dams)
- subdivision and boundary adjustments relating to lease agreements, were required for project infrastructure such as the substation and BESS
- visual screening.

3.5.10 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) (ICNG) are as follows:

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

Out of hours work would also be required on limited occasions such as when transporting large components including transformers to site, using OSOM vehicles under police escort, or to facilitate large concrete pours and curing cycles that can't be undertaken during the extended working hours.

Some staff arrival/departure movements and emergency response may also be required from time to time outside standard daytime construction hours.

The timing of construction would be dependent on development consent however it is expected to commence in 2027 and would run for a period of approximately 24 months.

Expected workforce

The project would likely require up to 150 workers during peak construction, subject to detailed design, construction methodology and scheduling.

SREA would 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 some non-local construction staff due to specialist skill requirements.

3.6 Operation

The project would operate 24-hours per day, seven days per week with the operations and maintenance team typically attending site on an ad hoc basis during standard working hours, unless responding to an alarm, fault, or undertaking major maintenance works.

Ongoing monitoring and maintenance would be required, including cleaning and maintenance of the solar panels, associated infrastructure, vegetation, and internal access tracks.

Approximately 6 full-time employees would be required to operate and maintain the solar farm and BESS, and regular light vehicle access would 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 up to 30 years before any major replacements or refurbishments would be required. 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 would 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 at an approved waste management facility.

It would be expected that any underground cabling below 1000 millimetres 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 Restrictions or covenants over the land

There are no known restrictions or covenants that apply to the project area.

A proposed transmission corridor up to 1.2 kilometres long would run south from the project, to connect into the existing TransGrid 330-kilovolt transmission line. The proposed transmission corridor is shown in Figure 3-1.

Ongoing consultation would be undertaken with TransGrid to confirm connection requirements during the EIS phase.

3.9 Environmental management

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

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 *State Significant Development Guidelines – preparing a scoping report* (DPIE 2022a) and *State Significant Development - Preparing an Environmental Impact Statement Appendix B to the State Significant Development Guidelines* (DPIE 2022c), 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 would 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 *State Environmental Planning Policy (Planning Systems) 2021*	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 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 include *State Environmental Planning Policy (Planning Systems) 2021* (the Planning Systems SEPP), and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (the T&I 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 solar 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.

Approval	Requirement
Permissibility	
State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP)	Under Section 2.36 (1) of the T&I SEPP, 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. The project area is partly zoned RU1 Primary Production under the *Queanbeyan–Palerang Regional Local Environment Plan 2022*, which is a prescribed non-residential zone, and the Project is permissible with consent within this zone. The project area is also partly zoned C3 Environmental Management under the *Goulburn Mulwaree Council Local Environment Plan 2009*. Land zoned C3 Environmental Management is not a prescribed non-residential zone under the T&I SEPP, and subsequently the project is not a permissible land use within this zone and the project would rely on Clause 4.38 of the EP&A Act, 'Consent for State Significant Development', which provides that: *(3) Development consent may be granted despite the development being partly prohibited by an environmental planning instrument.*
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 environmental protection licence under Part 3 of the New South Wales *Protection of the Environment Operations Act 1997* (POEO Act)	Chapter 3, Section 48 of the POEO Act requires an environment protection licence (EPL) to undertake scheduled activities at any premises. As the solar generation works required for this project do not fall under the definition of 'electricity generation', an EPL would not be required for the project.
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 Transport for New South Wales or local council, depending upon the classification of the road. An approval for works in relation to public roads would be required for the project where public road network upgrades are identified as a direct result of the project.
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 (MinView 2023) indicates there is an exploration licence which wholly covers the project area (Licence Number EL8945). The licence was granted to Tarago Exploration Pty Ltd on 17 March 2015 and is due to expire on 7 March 2027. Early engagement with licence holder determined no exploration activities are proposed in the area in 2025, the project area is not in their area of interest. Further engagement would be completed for the EIS.
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 would, 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 Australian Government. The project would be referred to the Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) based on potential impacts to the MNES listed below: • nationally threatened species and ecological communities • 26 migratory species • one threatened ecological community.
Native Title Act 1993	The *Native Title Act 1993* recognises and protects native title rights in Australia. There are no current Native Title claims affecting the project area.
Heavy Vehicle National Law	Approvals would be required for the transport of project infrastructure by OSOM vehicles. The requirements for such OSOM transport would 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 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	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) would not be required pursuant to Section 4.41 of the EP&A Act. The project may require work on 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.
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 heritage objects/sites would 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 NSW Rural Fire Service *Planning for Bushfire Protection 2019* 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 EP&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 would be considered in the EIS.
Section 4.15 of the EP&A Act	Pursuant to Section 4.15 of the EP&A Act, the consent authority must consider the following relevant matters for consideration: • relevant environmental planning instruments for the project including: – State Environmental Planning Policy (Biodiversity and Conservation) 2021 – 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

Approval	Requirement
	• the suitability of the site for the development • the public interest. The above would 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 would be prepared as part of the EIS.
Roads Act 1993 (Roads Act)	Consent under Section 138 of the Roads Act may be required for any works within designated road corridors, including proposed transmission line or road upgrades required to facilitate construction. 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 LLS Act regulates the management of vegetation on rural land. There are different land categories for clearing on rural land including: • Category 1 – 'Exempt land' which will not be subject to clearing approval • Category 2 – 'Regulated Land' on which clearing of native vegetation may be carried out with or without approval in accordance with an 'allowable activity' or 'code' under the LLS Act • 'Excluded Land' – Land not categorised in the Regulatory Maps and to which the LLS Act does not apply. A land category assessment would be prepared and areas that are confirmed as Category 1 land or excluded land would be excluded from assessment (and subsequently offset in NSW) under the Biodiversity Assessment Method (BAM) in consultation with relevant regulators. Biodiversity is further discussed in Section 6.3.
Mandatory considerations – Environmental planning instruments	
State Environmental Planning Policy (Resilience and Hazards) 2021 – Section 3.7	The EIS would 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	Chapter 4 of the Resilience and Hazards SEPP provides a state-wide planning approach to the remediation of contaminated land. Under Section 4.6(1) of the Resilience and Hazards SEPP, a consent authority is required to consider whether a proposed development site is contaminated before granting consent. The EIS would consider the potential for the project to impact on contaminated land.
South East and Tablelands Regional Plan 2041 (draft)	The plan has set a vision to be recognised as a region of collaboration and innovation, demonstrated through increased investment in tourism, renewable energy generation, sustainable agriculture and smart manufacturing by 2040. The project is consistent with this vision as it seeks to enable electricity generation from renewable sources, which will contribute to a net zero region by 2050.
Goulburn Mulwaree Local Strategic Planning Statement 2020	The planning statement includes several planning priorities relevant to the generating electricity from renewable sources, and the project is consistent with these planning priorities.
Goulburn Mulwaree Local Environmental Plan 2009	Part of the project area is within land zoned RU1 Primary Production under the *Goulburn Mulwaree Local Environmental Plan 2009*. The EIS would consider the relevant objectives and land uses for RU1 zoned land under the *Goulburn Mulwaree Local Environmental Plan 2009*. The project includes subdivision of the land to create a lot for the project transmission corridor and create a residue lot. Subdivision is permissible within the RU1 Primary Production zones pursuant to clause 2.6 and is subject to satisfying the applicable minimum lot size (MLS) in clause 4.2. The applicable MLS in the RU1 zone is 40 hectares. The proposed subdivision lots are expected to have areas of 40.01 and 86.46 hectares hence satisfy the minimum lot size requirements.

Approval	Requirement
Queanbeyan-Palerang Regional Local Environmental Plan 2022	Part of the project area is located on land zoned C3 Environmental Management under *Queanbeyan-Palerang Regional Local Environmental Plan 2022*. The objectives of this land use zoning are: • To protect, manage and restore areas with special ecological, scientific, cultural or aesthetic values • To provide for a limited range of development that does not have an adverse effect on those values • To facilitate the management of water catchment areas, environmentally sensitive land and areas of high conservation value. The EIS would demonstrate how the project intends to satisfy the land use objectives of the C3 Environmental Management zone.
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 projects and are not a relevant consideration for the project.

5 COMMUNITY AND STAKEHOLDER ENGAGEMENT

SREA recognises individual communities are both diverse and unique. Across our renewable energy portfolio, we work closely with local communities to deliver projects that leave positive long-term impact in the regions we operate.

While solar farms can provide clean renewable energy, valuable community investment, economic diversity and local jobs, they often receive a mixed response from the community. A proactive and well executed approach to community and stakeholder engagement is essential to building and maintaining positive community sentiment towards the project, gathering local support and leaving a positive impact.

The DPHI have engagement guidelines for State Significant Developments specifically, *Undertaking Engagement Guidelines for State Significant projects* (DPHI 2021). These guidelines have informed SREA's approach to engagement to ensure DPHI expectations are addressed from the earliest possible stages in the project life cycle.

5.1 Introduction

SREA is committed to best practice community and stakeholder engagement through transparent and open communication for all.

The communication and engagement objectives for the project are to:

- foster trust between the community and the project team
- identify key stakeholders and provide opportunities and mechanisms for meaningful engagement with the community and stakeholders
- ensure that stakeholders and the community receive timely and relevant information about the project and the opportunity to provide feedback
- address stakeholder concerns and integrate community and stakeholder feedback into the project planning and design as far as possible
- understand and mitigate the potential social impacts and opportunities related to the project
- comply with all statutory and regulatory requirements for community engagement.

SREA has commenced early engagement, and a comprehensive engagement program is planned to:

- inform the development of the project and preparation of the EIS
- ensure interested stakeholders and local community are aware of the project and understand the potential impacts and benefits, prior to exhibition of the EIS.

5.1.1 Community and stakeholder engagement plan

Community and stakeholder engagement will be carried out by RPS in accordance with the community and stakeholder engagement plan (CSEP) developed in October 2024.

This CSEP is a live document and will be reviewed and updated at key project milestones to ensure that it continues to meet project and legislative requirements and delivers on communications and engagement outcomes. It will deliver effective engagement that is accessible and inclusive for those potentially impacted or interested in the project, and identifies how feedback will be considered.

The key objectives of the plan are to:

- ensure that stakeholders impacted by the project receive timely and relevant information about the project and the opportunity to provide feedback
- identify stakeholders with a potential interest in in the project and ensure that they are given the opportunity to participate in communication and engagement activities
- ensure that communication and engagement activities supporting the project are accurately documented

- provide a clear point of contact for interested stakeholder to submit any enquiries, complaints or suggestions
- minimise disruption and negative impacts for neighbours and other impacted stakeholders
- establish communications procedure and protocols for the project and ensure they are followed
- ensure the project meets planning approval requirements for community and stakeholder engagement and support efforts to secure approvals from decision-makers promptly.

SREA's approach to engagement is informed by the regulatory requirements and engagement guidelines, including:

- Scoping Report Guideline
- *Large-Scale Solar Energy Guideline* (DPHI 2024a)
- *Undertaking Engagement Guidelines for State Significant projects* (DPHI 2024e)
- *Community Participation Plan* (DPHI 2024f)
- *Social Impact Assessment Guideline for State Significant projects* (DPE 2023a)

5.2 Community and stakeholder consultation

The key stakeholders identified from the stakeholder mapping analysis for the project are outlined in Table 5-1.

Table 5-1 Initial stakeholder identification

Stakeholder group	Stakeholder	Geographical extent of interest
Neighbouring landholders	Neighbours and landowners with addresses adjacent to the Site	Local
First nations	Pejar Local Aboriginal Land Council (LALC)	Local / regional
	Batemans Bay LALC	
	Native Title Services	
	The Office of the Registrar	
	Native Title Tribunal	
	Heritage NSW	
Communities within the social locality	Tarago	Regional
	Lower Boro	
	Boro	
	Mount Fairy	
Local council	Goulburn Mulwaree Council	Regional
	Queanbeyan-Palerang Regional Council	
Community interest groups and community services	Tarago and District Progress Association Inc (TADPAI)	Regional
	The Goulburn Group	
	Communities Against the Tarago Incinerator (CATTI)	
	Rural Fire Services (Tarago, Mount Fairy, Lower Boro)	
Media	Tarago Times Regional Independent	Regional
Environmental groups	The Mulloon Institute	Regional
	Goulburn Mulwaree Landcare Landscapes	

Stakeholder group	Stakeholder	Geographical extent of interest
Industry and local business	Regional Independent	Regional
	Goulburn Post	
	Tarago Times	
	Woodlawn Mine (regarding exploration licence number EL8945)	
Government – State	Mrs Wendy Margaret Tuckerman MP, NSW Member for Goulburn	Regional
	Crown Lands	
	Department of Finance, Services, and Innovation – Telco Authority	
	Department of Planning, Housing and Infrastructure (DPHI) including Conservation Programs, Heritage & Regulation Division (CPHR), Energy Corporation and Water Group.	
	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	
	Department of Primary Industries – Agriculture and Fisheries (DPI)	
	Environment Protection Authority (EPA)	
	Fire and Rescue NSW	
	Heritage NSW	
	NSW Rural Fire Service	
	Regional NSW – Mining, Exploration and Geoscience (MEG)	
	Transport for NSW (Transport)	
	TransGrid	
	Essential Energy	
Government - Federal	Hon Kristy McBain MP, Federal Member for Eden-Monaro	Federal
	Department of Climate Change, Energy, the Environment and Water	
	Australian Energy Market Operator	

5.3 Engagement tools and activities

Early engagement has focused on understanding the needs and opinions of the community, and Table 5-2 outlines the range of communication tools and activities to be implemented across all stages of the project.

Table 5-2 Communications and engagement tools

Tool / Activity	Description and purpose
Project website	Project website: https://www.borosolarfarm.com/ Project webpage providing general information about the project and providing feedback mechanisms.
Project email	Project email: borosolarfarm@samsung.com 24-hour feedback line to allow for communication with the project team and collect feedback.
Project phone number	Project hotline: 1800 607 484 24-hour feedback line used to triage enquiries, answer simple project questions and allow for communication with the project team in case of a more complex enquiry.
Stakeholder database	Ensure that enquiries and all communication and engagement supporting the project are accurately documented. Support the project team to keep interested community members and stakeholders updated on project progress.
Project briefings	Regular information exchanges on the project status and its potential impacts to give key stakeholders opportunities for feedback, information seeking and collaboration. These briefings will take place at every key project milestone and as needed.

Tool / Activity	Description and purpose
Community information sessions	Community information sessions, including drop-in events and pop-ups, used to raise awareness of the project and give the community the opportunity to provide feedback, ask questions and share their concerns / sentiment regarding renewables and the project. Events supported by visual materials describing the project, its benefits, the planning process and anticipated timeframes.
Introductory letters	Letters delivered to near neighbours to the site to introduce the project, share project information and arrange meetings / briefings regarding the project.
Letterbox drop - Newsletter	Newsletter introducing the project, its benefits, the planning process and anticipated timeframes. Distributed to the local community to raise awareness of the project and direct community toward further information or opportunities for providing feedback. Provide a plain English summary of technical information.
Advertising	Advertisements in local papers to raise awareness of the project and promote community engagement events.
Project maps	Targeted mapping to identify and support conversations about property features and/or upcoming works.
Surveys and feedback forms	Online and physical surveys / feedback forms to collect feedback and sentiments regarding the project from key stakeholders and the wider community.
FAQs	Regularly updated list of frequently asked questions and responses.

5.4 Engagement conducted

Engagement commenced in November 2024, and SREA has undertaken a comprehensive early community and stakeholder engagement program including stakeholder meetings, newsletters, website development, an online survey and community drop-in sessions. All activities have been aimed at raising awareness about the project, sharing project information, and seeking early feedback:

- meetings with Goulburn Mulwaree Council, Queanbeyan-Palerang Council and Pejar LALC
- meetings with the Batemans Bay LALC, the local RFS brigades, and five community / environmental organisations
- newsletters to a total 395 addresses and advertised in four print runs across three publications
- two community information events with a combined total 28 attendees
- responses to enquiries from ten community members.

Key engagement activities are outlined in Table 5-3.

Table 5-3 Communications and engagement timeline

Timing	Activity	Stakeholder group	Outcome
Mid-November 2024	Introductory letters sent to Goulburn Mulwaree and Queanbeyan-Palerang Councils	Councils	
Late November 2024	Project email and hotline established	Community	
	Introductory letters distributed to near neighbours with a request to arrange an initial meeting	Neighbouring landowners	Letters delivered to nine properties resulting in three project briefing sessions with neighbouring landowners
	Letterbox drop to nearby community	Nearby community	Newsletter distributed to 395 addresses within 10 kilometres of the project site, resulting in enquiries from seven community members and two neighbours
	Advertising for first community information event begins	Community	Print advertising in the Goulburn Times and the Regional Independent
Early December 2024	Introductory meeting with the Goulburn Mulwaree Council	Council	
	Introductory meetings with impacted neighbours	Neighbouring landowners	
	Community information event: Pop-up at Southern Harvest Farmers Market in Bungendore	Community	12 attendees including one neighbouring landowner
January 2025	Introductory letters sent to key stakeholders and community groups including the Pejar and Batemans Bay LALCs, RFS, Goulburn Group, TADPAI, CATTI and Mulloon Institute	Key stakeholders and community groups	Points of contact established with key stakeholders and community groups
	Introductory meeting with the Queanbeyan-Palerang Council	Council	
	Introductory meeting with the Pejar LALC	Key stakeholder	
	Advertising for second community information event begins	Community	Print advertising in the Tarago Times and the Regional Independent
	Project website launched	All stakeholders	
	Community feedback survey opened	All stakeholders	5 responses to the survey
February 2025	Community information event: Drop-in event at Tarago Town Hall	Community	16 attendees including six members of the Goulburn Group

5.4.1 Examples of project communications collateral

Newsletter



SAMSUNG C&T
RENEWABLE ENERGY AUSTRALIA

Boro Solar Farm

Samsung C&T Renewable Energy Australia Pty Ltd (SREA) is proposing a solar farm and battery energy storage system (BESS) to help provide sustainable and secure energy to the people of NSW.

The Boro Solar Farm is proposed for around five kilometres south of Tarago and would generate approximately 300-megawatts (MW) of renewable energy, including a 150MW/600MWh capacity BESS.

Producing enough energy to power up to 52,111 households a day, this project would deliver reliable, low-cost energy to help move NSW towards a more sustainable future.

Why solar?

The Southern Tablelands region receives a reliable, high volume of solar energy that can be converted into low-cost, renewable, clean electricity and fed into the power network.

Solar panels convert this energy in a relatively condensed area with little vertical height, minimising visual impacts on the local landscape.

Why here?

The proposed location for the project is near existing overhead transmission lines and road networks, minimising the additional infrastructure needed to connect the energy produced to the power network.

Located 40 kilometres south of Goulburn and 45 kilometres east of Canberra, the project will be accessible to local workforces and will provide benefits to the local economy.

What is a BESS?

A battery energy storage system (BESS) is a large-scale battery. It stores electricity generated from renewable sources such as solar and wind, balancing supply and demand to ensure stable and reliable power supply.

Solar energy is only generated during the day and can't be used at night, unless the electricity is stored. A BESS can store excess energy produced during the day and then release the energy when it is needed.

Adding BESS to renewable developments like Boro Solar Farm will help keep our electricity supply stable as we continue to integrate renewable sources into our energy system.

SAMSUNG C&T
RENEWABLE ENERGY AUSTRALIA

Have your say

We want to hear from you.

We understand that this project affects your community and are committed to taking all voices into account as we progress.

We're hosting a pop-up session before the end of the year to hear your thoughts and answer your questions.

Please join us at the Southern Harvest Markets in Bungendore to find out more about the project and meet our team.

When Saturday 7 December 2024
9am – 12pm

Where Village Square,
23 Malbon St, Bungendore

Find out more

Call 1800 607 484

Email borosolarfarm@samsung.com

Post 8.04, Level 8,
227 Elizabeth Street,
Sydney NSW 2000

We'll be hosting additional pop-ups in Tarago in the new year. Details to come but we hope to see you then.

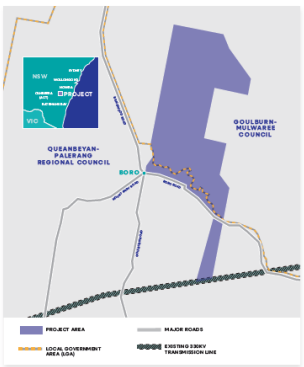
Scan the code to learn more.

What is the planning process?

We are currently in the early planning stage for the project and will follow the State Significant Development pathway for planning approval.

To ensure we can deliver the best outcome, we are keen to collect feedback from the local community to understand the impacts this project may have. The outcomes of this early consultation will be included in the Scoping Report and help shape how we approach the project.

- **Late 2024** Prepare Scoping report
- **Early 2025** Submit Scoping Report and request the requirements to be addressed in the Environmental Impact Statement (known as SEARs)
- **Mid-late 2025** Prepare EIS
- **Early 2026** Submit and Exhibit EIS
- **Early-Mid 2026** Prepare Submissions Report
- **Mid 2026** Lodge Submissions Report
- **Mid-Late 2026** Determination
- **2027-2028** Construction (if approved)
- **2029** Operation





What will we consider during the planning process?

We're currently investigating the potential impacts of the project. We'll include our findings and the feedback we receive in the Scoping Report, and later an Environmental Impact Statement. **We'll consider...**

- Landscape and visual impacts
- Noise and vibration
- Biodiversity
- Transport and access
- Aboriginal heritage
- Historic heritage
- Community and stakeholder engagement
- Socio-economic impacts
- Land resources
- Water resources
- Hazards and risk eg: bushfire, EMF, biosecurity, dangerous goods
- Other environmental issues
- Cumulative impacts



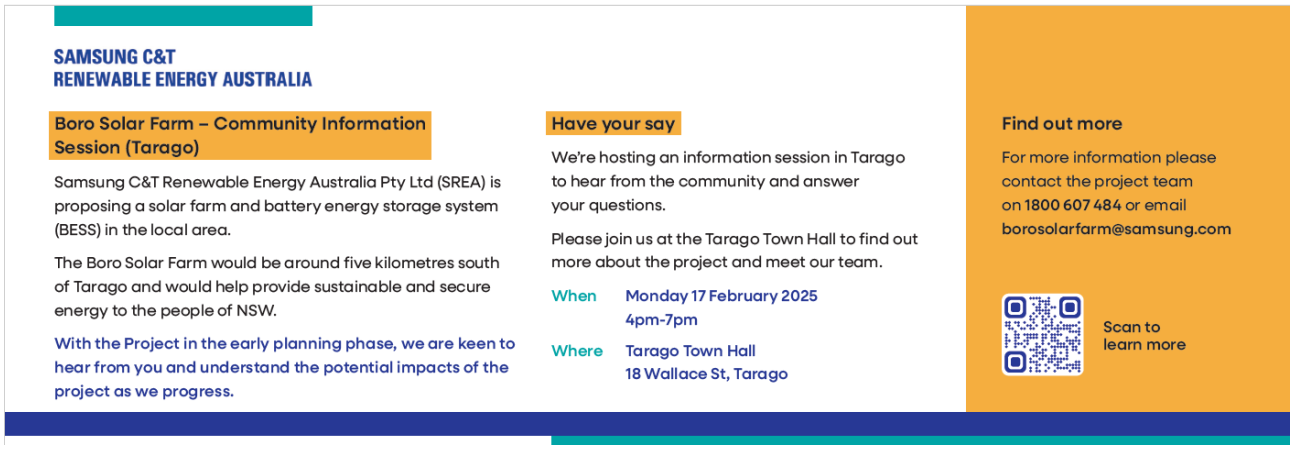
Who is Samsung?

Samsung is a global leader in innovative technology and sustainability.

Samsung C&T Renewable Energy Australia (SREA) has recently entered into the Australian renewable energy market, having successfully delivered similar renewable energy projects across Europe, Korea, Canada and the United States of America since 2007. We are developing solar, BESS and hybrid (solar and BESS) projects across NSW, VIC and QLD.

We recognise that individual communities are diverse and unique and we are committed to open engagement that can help us leave positive long-term impact in the regions we operate.

Advertisement for Regional Independent



5.5 What we heard

A summary of the feedback received from the engagement undertaken to date is provided in Table 5-4.

Table 5-4 Outcomes of engagement

Stakeholder group / type	Key theme / issue raised during consultation
Adjacent landowners and landowners within 4 km	**Concerns:** • Visual impacts (interest in undergrounding connection to transmission infrastructure) • Impacts to property values • Construction and operation impacts (noise and traffic) • Potential for increased fire risk.
Local community (community feedback survey)	• Four out of five responses thought the project wouldn't have a positive impact on the community • Interest in potential community benefits. **Concerns** • Fire hazards and traffic during construction • Other environmental impacts • Property values.
Wider community (community information sessions)	• General support for renewable energy • General acknowledgement and appreciation for early engagement • Interested in seeing co-use of land for agricultural purposes (e.g., solar-grazing). **Concerns:** • Fire hazards from both the solar farm and BESS • Visual impacts from both transmission lines and solar panels (including the potential glint and glare) • Lifestyle impacts as a result of both construction and operation • Existing electricity network issues have led to blackouts for much of the community • concerns that community benefits may not be impactful or tangible for the impacted parts of the community • Community engagement by previous proposed developments has been poor and caused stress in the community • Early issues with the website and survey.

Stakeholder group / type	Key theme / issue raised during consultation
Special interest groups (Goulburn Group)	• Supportive of the project and the proactive consultation approach • Request for tangible and impactful community benefits • Fire risk will be a significant concern from the community • Use of local resources and businesses is important, including training for local people • Supportive of co-use of the land for agricultural purposes and co-design with landowners • Interested in project design and approaches to impact mitigation.
Goulburn Mulwaree Council	• There is widespread community opposition to local waste to energy project and concerns regarding impacts to good agricultural land • Comprehensive reporting prior to and during construction is important • Interested in entering into a VPA to manage community benefits funds • Council noted it hasn't heard any negative feedback from the community regarding the project. **Concerns:** • Workers should be sourced from Goulburn and Queanbeyan • Workforce accommodation plans should consider: – Very low housing availability nearby – Lack of water and sewer in Tarago • Fire risk is a common concern in the LGA.
Queanbeyan-Palerang Council	• Council is strongly supportive of renewable projects • Workforce accommodation: there are minimal accommodation options in the region and council is seeking innovative approaches to address accommodating project workforce • Benefits to consider include: – road upgrades (through TfNSW) – micro-grid that would allow local families to sell/share their electricity with each other.
First Nations Stakeholders: Pejar LALC	• Provided details on Reconciliation Action Plans (RAPs) • Provided background on registered artifacts and cultural heritage sites but clarified that much work had already been undertaken in the area • Identified cultural heritage officers to be involved in fieldwork.

5.6 Aboriginal engagement

The project sits on the border of the Pejar and Batemans Bay Local Aboriginal Land Councils (LALC) and the traditional lands of the Ngunnawal and Gundungurra people. SREA has contacted the impacted LALCs, Native Title Services, The Office of the Registrar, and the National Native Title Tribunal; and has commenced the process to establish registered Aboriginal parties for the project and undertake consultation in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (DECCW 2010).

The EIS would be accompanied by an Aboriginal cultural heritage assessment report undertaken in consultation with registered Aboriginal parties.

Additional engagement has been undertaken with the Pejar and Batemans Bay LALCs seeking feedback. An introductory meeting with Pejar LALC was held in January 2025 and outcomes included:

- provided details on Reconciliation Action Plans (RAPs)
- provided background on registered artifacts and cultural heritage sites but clarified that much work had already been undertaken in the area
- identified cultural heritage officers to be involved in fieldwork.

Response has not yet been received from Batemans Bay LALC

5.7 Summary of key feedback themes

Feedback – key themes and questions	Landholders (adjacent)	Landowners (within 4km)	Local community	Wider community	Special interest groups	Local government	First Nations
Social							
There will be no benefit to the local community	■	■					
Project will impact property values	■						
Opportunities for employment			■	■	■	■	
Impact of housing in the area						■	
Land use							
Land use should remain for agricultural purposes	■						
Supportive of transition to renewable energy			■	■	■	■	
Visual impacts							
Enjoy the current vista/ rural lifestyle	■	■					
Glint and glare from panels	■	■	■				
Would like to understand the actual visual impact of the panels	■	■					
Would like to understand the impact of the transmission infrastructure	■						
Heritage							
Aboriginal sites in the area – important flora in this area	■		■				■
Bushfire							
Will the project pose a bushfire risk?	■	■	■	■	■	■	
What fire prevention and mitigation processes will be put in place for fires or sparks that might arise from the solar farm and inflamed by high winds	■	■	■	■	■	■	
Will you consult both RFS units operating in the area?	■	■	■	■	■		
Access and Traffic							
Issues around quality of Boro Road	■	■	■	■	■		
Safety issues around the bus stop near road entrance	■	■	■	■	■		
General concerns about impacts associated with project traffic	■	■	■	■	■		

5.8 Revised consultation approach, based on feedback to date

The CSEP outlines the engagement approach for the project across three key phases, early engagement to inform the scoping report, engagement to inform the preparation of the EIS, and engagement around the public display of the EIS.

Performance improvement for ongoing consultation and engagement is embedded in SREA's engagement principles, and following initial engagement activities, some revisions have been made to the engagement preparation that will be delivered during the EIS preparation:

- communicate project updates including engagement sessions through social media, council newsletters and the Progress Association
- prioritise in-person information sessions in the local area (Tarago), not surrounding areas
- ensure the website is kept up to date with technical information.

SREA will continue to provide project information on the website (www.borosolarfarm.com.au) and opportunity to provide feedback in multiple ways via:

- online survey
- project email address and phone number
- in-person information sessions.

5.9 Ongoing community and stakeholder engagement

SREA will continue to engage and consult with the community and key stakeholders proactively throughout the preparation of the EIS. This will include ongoing consultation with community and stakeholders identified in Table 5-1.

The key engagement objectives and activities are outlined in Table 5-5 below. This plan will be updated at key project milestones to ensure that it continues to meet project and legislative requirements and delivers on communications and engagement outcomes.

The DPHI will place the EIS on public exhibition for a minimum of 30 days (as per Section 5.8 of the EP&A Act). During the exhibition period, government agencies, project stakeholders and the community will be able to review the EIS and will have an opportunity to make a written submission to the DPHI for consideration in its assessment of the project.

Newsletters will be delivered, and advertisements will be placed in the local newspapers to advise of the public exhibition, where the EIS can be viewed, and details on community engagement activities.

Table 5-5 Upcoming and ongoing communications and engagement activity

project Phase	Objectives	Activities
Development of scoping report **(current phase)**	• Build relationships with key stakeholders and community to obtain support • Deliver early engagement with key stakeholders and community to raise awareness, gather initial feedback, identify key concerns • Provide an early avenue for feedback to be considered by project team	• Ongoing meetings and briefings with key stakeholders and community groups (formal and informal), including: – Goulburn Mulwaree Council and Queanbeyan-Palerang Regional Council Councillors and technical teams – Rural Fire Service (Tarago, Mount Fairy, Lower Boro) – Batemans Bay LALC – Goulburn Mulwaree Landcare Landscapes – TADPAI • Website and email updates including notification of formal submission of scoping report • Record feedback in stakeholder database to ensure it can be used to inform project design • Ongoing monitoring of community feedback survey • Ongoing monitoring and responses to enquiries through project email and hotline

project Phase	Objectives	Activities
SEARs issued	• Engage the community in the EIS process • Deliver public engagement, ensure outreach effective for each stakeholder group • Provide an avenue for feedback to be considered by project team • Provide engaging and informative content that promotes the project drivers and benefits	• Council and key stakeholder briefings on the issued SEARs, approach to EIS development and at key project milestones • Updates and notifications at key project milestones (website and email) • Community consultation events and focus groups to collect feedback and input into project and community benefits design • Community surveys • Record feedback in stakeholder database to ensure it can be used to inform project design
EIS exhibition	• Prepare for DA submission, ensure community concerns are reflected in the final proposal • Publicly exhibit DA to obtain feedback from general public • Communicate outcomes of the EIS process and manage objections during exhibition	• Council and key stakeholder briefings at key project milestones and regarding completed EIS outcomes • Updates and notifications at key project milestones (website and email) • Advertising of EIS exhibition and for community information events • Community information events to display completed EIS and invite feedback • Community feedback survey • Record feedback in stakeholder database to ensure it can be used to inform project design

6 ASSESSMENT OF IMPACTS

6.1 Aspect categorisation

In accordance with the Scoping Report Guideline, the scale of impact, nature of impact, sensitivity of the receiving environment and whether the project is likely to generate cumulative impacts has been evaluated in the scoping summary table in Appendix A. The scoping summary table groups the matters requiring further assessment in the EIS by the level of assessment required.

Definitions for levels of assessment and the level of assessment proposed for each matter is summarised in Table 6-1. The assessment matters are grouped into the broad categories identified in the Scoping Report Guideline.

Table 6-1 Proposed level of assessment

Level of assessment	Definition	Assessment matter
Detailed	The project may result in significant impacts on the matter, including cumulative impacts. The assessment of the impacts of the project on the matter would require detailed studies and investigations to be carried out by technical specialists.	• Landscape and visual • Biodiversity • Traffic and access • Social and economic • Aboriginal heritage
Standard	The project is unlikely to result in significant impacts on the matter, including cumulative impacts. While the assessment of the impacts of the project on the matter would involve technical specialists, these impacts are likely to be well understood, relatively easy to predict using standard methods and capable of being mitigated to comply with relevant standards or performance measures.	• Historic heritage • Noise and vibration • Land resources • Water resources • Glint and glare • Hazards and risk • Bushfire • Waste • Contamination
Matters requiring no further assessment	The project would have no impact on the matter, or the impacts of the project on the matter will be so small that they are not worth considering.	• Access – Port, airport and rail • Amenity – odour • Amenity – air quality • Facilities • Greenhouse gas • Coastal hazards, Land movement, Dam safety

The following sections present the findings of the preliminary assessment and provide the proposed assessment approach for each matter to be included in the EIS. Preliminary technical studies have been carried out for landscape and visual, noise and vibration, biodiversity, traffic and access, heritage, social and bushfire to ensure the aspects of the project area and surrounds are taken into consideration early in the planning and design of the project.

6.2 Landscape and visual

A preliminary visual impact assessment (PVIA) has been prepared in accordance with the *Large-Scale Solar Energy Guideline* (DPE 2024a) and supporting *Technical Supplement – Landscape and Visual Impact Assessment* (DPHI 2024b) (Technical Supplement). The PVIA is provided as Appendix C.

6.2.1 Existing environment

The region contains coastal, alpine, tablelands and slope landscapes, and includes Kosciusko National Park, which is the State's largest national park.

The landform across the project area has been extensively cleared and used for farming and agriculture practises. The area is relatively flat, with some scattered slopes through the middle, and steeper terrain in

the north-western corner, with the ridgelines of Mount Fairy approximately two kilometres to the west. Elevation ranges from approximately 680 metres to 750 metres AHD.

There are two perennial watercourses within the project area, Boro Creek and Chain of Ponds Creek; and there is an extensive network of ephemeral drainage lines associated with these creeks within the project area.

There are two associated receivers (i.e. PV94 and PV95) within the project area and 108 non- associated receivers within four kilometres of the project boundary.

6.2.2 Preliminary assessment

The preliminary scoping assessment has included the following steps:

- review of the baseline landscape character
- determine the extents of the study area
- use preliminary assessment tools to:
  - undertake viewshed mapping to eliminate the need to assess viewpoints that would have no line of sight to the project
  - calculate the distance of each of the identified viewpoints from the nearest point to the project area
  - determine the relative height difference between the project and each viewpoint
  - plot each viewpoint on the preliminary assessment tool (table) using the vertical magnitude tool.
  - measure the worst-case scenario horizontal field of view
- identify potentially affected public viewpoints and private receivers that require further assessment in the EIS and to focus consultation with landowners and the local community
- map of the results of the scoping analysis.

Study area

In accordance with Section 4 of the Technical Supplement, two visual impact assessment study areas have been identified as follows:

- 2.5 kilometres from the project area for public roads
- 4 kilometres from the project area for private receivers and public viewpoints.

The following public roads have been identified within 2.5 kilometres of the project area:

- Boro Road
- Braidwood / Goulburn Road
- Mount Fairy Road
- Hazeldell Road
- Lakeview Road
- Hilltop Close.

A total of 14 representative public viewpoints have been selected for roads identified within 2.5 kilometres to assess the potential visibility of the project (refer Figure 6-1).

Viewshed mapping

A viewshed map identifies all areas from which the project may be viewed. Viewshed mapping has been completed using geographical information systems (GIS) that account for topography and line of sight between all viewpoints and the project.

The purpose of the viewshed mapping is to eliminate the need to assess viewpoints that are not within the line of sight to the project. It is noted viewshed mapping only accounts for topography and does not consider intervening elements such as buildings and vegetation and therefore represents a worst-case and unlikely scenario.

The viewshed mapping uses a maximum panel height of five metres, eye height of 1.8 metres from ground level and a receptor height of five metres to generate the zone of theoretical visibility (ZTV) determined by the viewshed mapping.

The viewshed mapping demonstrates the areas from which the project is potentially visible, based on the underlying topography of the landscape. The natural undulations limit visibility from public viewpoints and non-associated residences located beyond 2.5 kilometres of the project.

Within the 4 kilometres scoping area, the preliminary visual assessment identified:

- 107 non-associated residences
- 14 public viewpoints.

Of the identified non-associated residences and public viewpoints, based on the current project area, it was found that:

- due to the topography, the project area was not visible to 42 non-associated residences and two public viewpoints.
- 18 non-associated residences and two public viewpoints had very low visual magnitude ratings and would not require further assessment
- an established stand of trees located immediately west of PV03 would limit views towards the proposed transmission line easement. As noted in Section 3.5.7, SREA is also investigation an underground transmission line connection, that would reduce the potential for visual impacts
- Seven non-associated residences and five public viewpoints which have a very high visual magnitude rating
- 47 non-associated residences and 10 public viewpoints had low visual magnitude ratings or higher, and would require further assessment to determine actual visual impacts
- two associated residences would not require further assessment.

A summary of those receivers that have a line of site to the project and which will require further detailed assessment in the EIS is provided in Table 6-2. This includes all non-associated residences with a visual magnitude rating of low, moderate, high and very high.

A reverse viewshed map has been developed to highlight visibility of the project area from nearby viewpoints (refer Figure 6-3).

Based on the reverse viewshed mapping the northwestern extent of the project area would be visible to the highest number of non-associated residences. There is limited visibility to the project area from non-associated residences to the northeast of the project area.

Table 6-2 Non-associated residences and public viewpoints that require further assessment in the EIS

ID	Receiver type	Distance from project (metres)	Within viewshed of project area	Detailed assessment required
PV01	Non-associated residence	377	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV03	Non-associated residence	65	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV04	Non-associated residence	1073	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV05	Non-associated residence	1081	Within viewshed - project potentially visible	Preliminary high visual magnitude rating

ID	Receiver type	Distance from project (metres)	Within viewshed of project area	Detailed assessment required
PV07	Non-associated residence	1065	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV08	Non-associated residence	1034	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV15	Non-associated residence	2019	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV18	Non-associated residence	1553	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV19	Non-associated residence	211	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV20	Non-associated residence	754	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV21	Non-associated residence	405	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV22	Non-associated residence	1350	Within viewshed - project potentially visible	Preliminary high visual magnitude rating
PV24	Non-associated residence	1132	Within viewshed - project potentially visible	Preliminary high visual magnitude rating
PV25	Non-associated residence	1123	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV26	Non-associated residence	1303	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV27	Non-associated residence	1852	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV28	Non-associated residence	1772	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV43	Non-associated residence	1537	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV44	Non-associated residence	1513	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV45	Non-associated residence	1967	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV54	Non-associated residence	2137	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV55	Non-associated residence	3150	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV57	Non-associated residence	1849	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV58	Non-associated residence	2735	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV61	Non-associated residence	1540	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV63	Non-associated residence	1815	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV65	Non-associated residence	2303	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV66	Non-associated residence	1785	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV67	Non-associated residence	1944	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating

ID	Receiver type	Distance from project (metres)	Within viewshed of project area	Detailed assessment required
PV68	Non-associated residence	2029	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV69	Non-associated residence	2427	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV70	Non-associated residence	2071	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV71	Non-associated residence	2644	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV88	Non-associated residence	1828	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV89	Non-associated residence	1563	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV90	Non-associated residence	1491	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV91	Non-associated residence	1657	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV92	Non-associated residence	1351	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PV93	Non-associated residence	754	Within viewshed - project potentially visible	Preliminary high visual magnitude rating
PV100	Non-associated residence	892	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PV105	Non-associated residence	2191	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PV106	Non-associated residences	2372	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PB01	Public viewpoint (road)	78	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PB02	Public viewpoint (road)	841	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PB03	Public viewpoint (road)	1360	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PB05	Public viewpoint (road)	889	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PB06	Public viewpoint (road)	1654	Within viewshed - project potentially visible	Preliminary moderate visual magnitude rating
PB08	Public viewpoint (road)	8	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PB09	Public viewpoint (road)	975	Within viewshed - project potentially visible	Preliminary very high visual magnitude rating
PB11	Public viewpoint (road)	1100	Within viewshed - project potentially visible	Preliminary high visual magnitude rating
PB12	Public viewpoint (road)	2500	Within viewshed - project potentially visible	Preliminary low visual magnitude rating
PB14	Public viewpoint (road)	1780	Within viewshed - project potentially visible	Preliminary low visual magnitude rating

Potential cumulative visual impacts

Five operational, and two proposed renewable energy projects are located within 25 kilometres of the project area, the closest being Capital Wind Farm. Additionally, there are two proposed solar farm projects located within 25 to 50 kilometres of the project.

Given the distance, it would be expected that intervening elements such as existing vegetation, built form, and weather conditions would obscure visibility. As the project is not on a designated tourist route and all other large-scale renewable projects are located more than 10 km from the project, the potential for perceived cumulative impacts is limited.

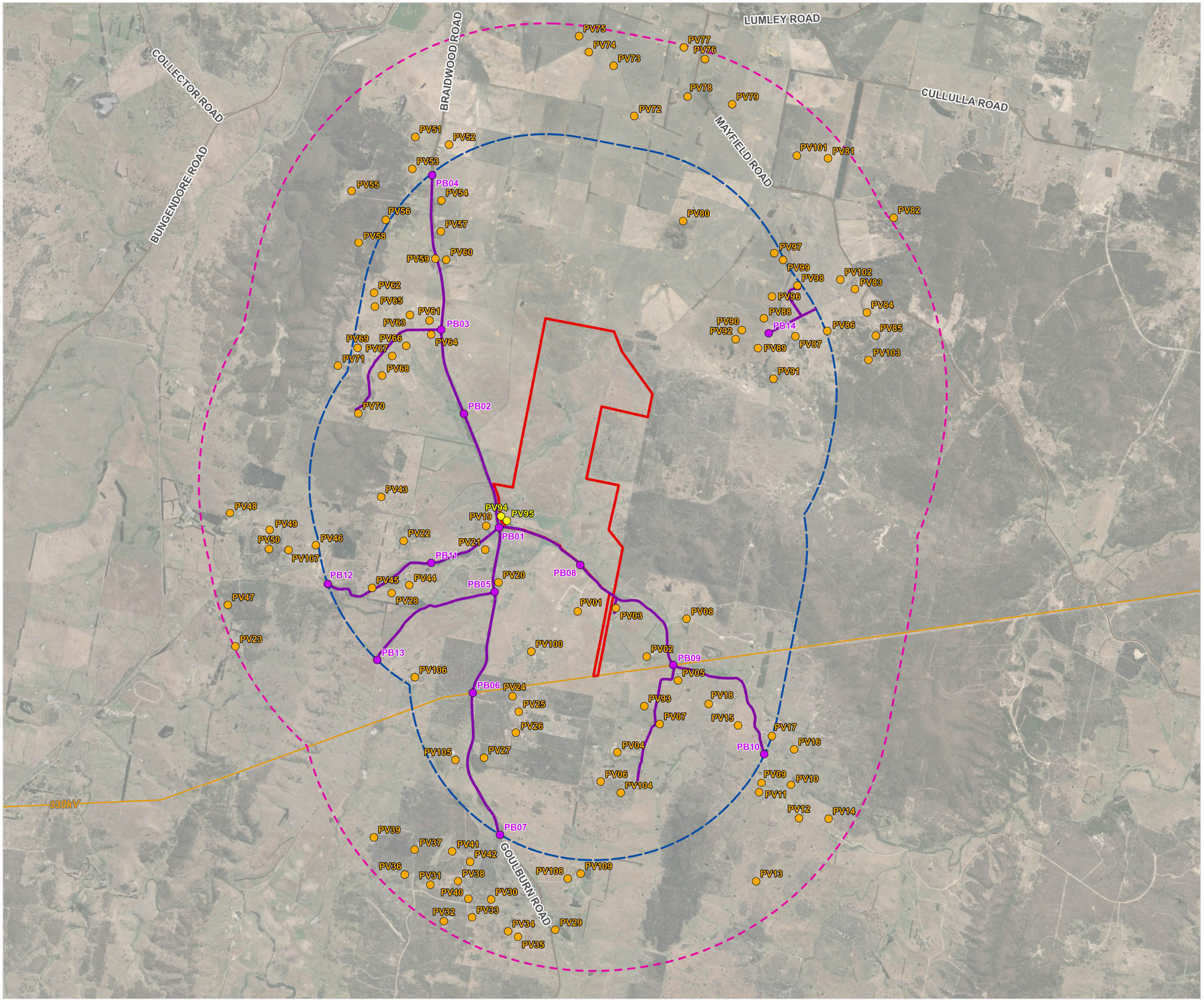
The EIS will consider the cumulative visual impacts of the project and renewable projects in proximity to the project

6.2.3 EIS assessment approach

A landscape and visual impact assessment (LVIA) will be prepared in accordance with *the Large-Scale Solar Energy Guideline* (DPE 2024a) and Technical Supplement and issued SEARs and will include:

- visit to area surrounding the project location to confirm identified receivers are residences and not uninhabited farm structures
- simple assessment of potential visual magnitude based on updated project parameters to confirm the results of the scoping stage report
- modelling of views from non-associated residences and public viewpoints where the simple assessment indicates moderate or higher visual impacts
- detailed site investigations undertaken from non-associated residences and public viewpoints within the identified study areas with potentially moderate or higher visual impacts identified by the 3D modelling
- preparation of photomontages to illustrate the potential magnitude impact of the project
- a full assessment of the landscape character and visual impact resulting from proposed infrastructure
- a review of cumulative impacts of surrounding renewable energy projects
- development of mitigation strategies in response to the landscape character and visual assessment, as well as community consultation, to maximise the integration of the project into the surrounding landscape and mitigate identified visual impacts to an acceptable level as described by the Technical Supplement.

The LVIA will also include a private receivers and public viewpoints verification process to ensure there are no new private receivers and public viewpoints (i.e. new picnic areas, newly constructed houses and/or approved development applications for a residential property) which will need to be considered in this assessment.



- Project area
- Road
- Existing 330 kV transmission line
- Associated residence
- Non-associated residence
- Public viewpoint
- Receptor road (with 2.5km offset)
- 2.5km offset
- 4km offset

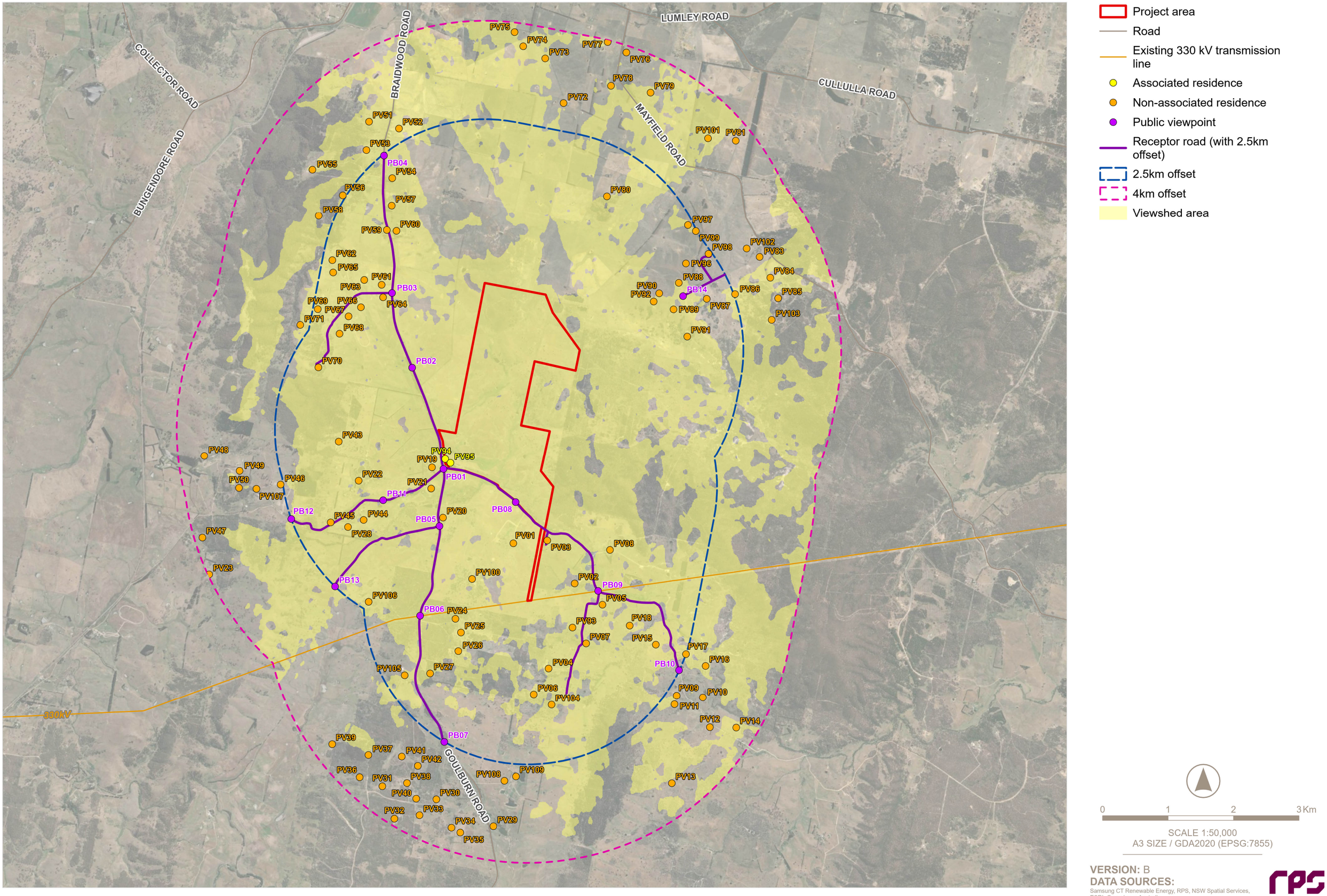
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SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 6-1: VISUAL SCOPING STUDY AREA



- Project area
- Road
- Existing 330 kV transmission line
- Associated residence
- Non-associated residence
- Public viewpoint
- Receptor road (with 2.5km offset)
- 2.5km offset
- 4km offset
- Viewshed area

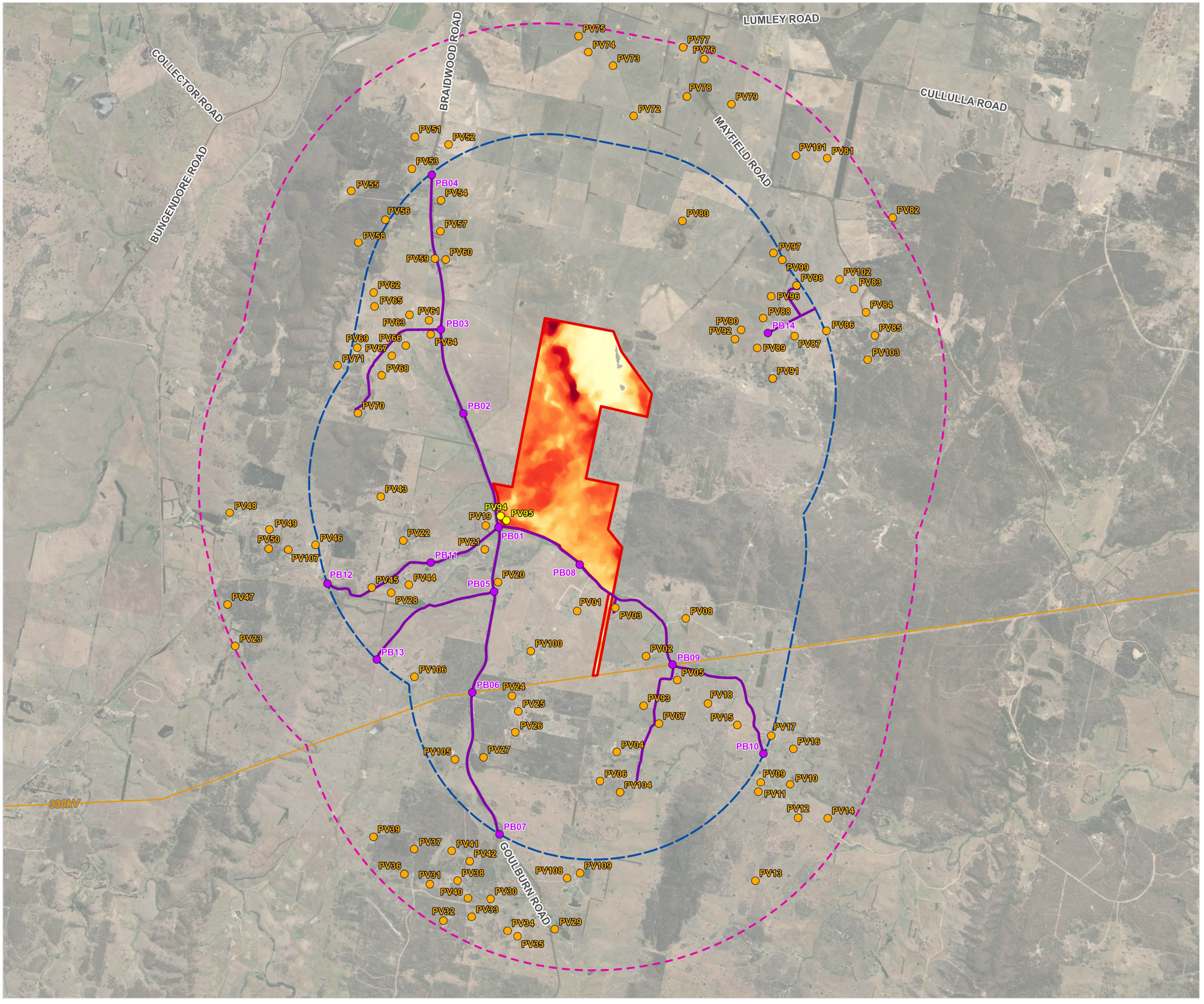
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SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 6-2: VIEWSHED MAP WITH IDENTIFIED RECEPTORS



Project area
Road
Existing 330 kV transmission line
Associated residence
Non-associated residence
Public viewpoint
Receptor road (with 2.5km offset)
2.5km offset
4km offset

Zone of Theoretical Visual Influence

Maximum

Minimum

0 1 2 3 Km

SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 6-3: REVERSE VIEWSHED MAP WITH IDENTIFIED RECEPTORS

6.3 Biodiversity

A preliminary biodiversity constraints assessment has been undertaken and is included in Appendix D. This provides initial biodiversity advice on the project area based on desktop reviews and biodiversity field assessments completed in November and December 2024. A summary of the key background information, preliminary assessment and EIS assessment approach is provided below.

6.3.1 Existing environment

Landscape context

An overview of the landscape context relevant to the project area is outlined in Table 6-3.

Table 6-3 Landscape context summary

Feature	Description
Interim Biogeographic Regionalisation for Australia (IBRA)	The project area lies within the Bungonia subregion of the Southeastern Highlands IBRA bioregion. The South Eastern Highlands IBRA bioregion is bounded by the Australian Alps and South Western Slopes bioregions to the south and west. The bioregion includes most of the Australian Capital Territory and extends south into Victoria.
New South Wales Mitchell Landscapes	The project area intersects with two Mitchell landscapes: • Gundary Plains • Lake George Complex.
Karst, caves, crevices, cliffs, rocks and other geological features of significance	No cliffs or caves are present within the project area. There is minimal exposed surface rock.
Biodiversity Values	Biodiversity Values exist along Boro Creek and Chain of Ponds Creek (refer Figure 6-4).
Areas of Outstanding Biodiversity Value (AOBV)	No registered AOBVs occur within the project area or surrounds.
Connectivity	Main areas of biodiversity connectivity include: • existing tracks and paddocks that intersect areas of intact habitats and provide corridors to the surrounding bushland. Although previously impacted by agricultural practices these areas are still likely to facilitates the movement of resident fauna through the surrounding landscape. • scattered paddock trees, enabling mobile species (e.g., birds, bats, mammals) to disperse throughout the landscape • large area of bushland (approximately 2,000 ha) directly to the east of the project area • Nadigigomar Nature Reserve approximately 12 kilometres east of the project area, which covers an area of 5,596 hectares.
Land category	Land categories identified from the draft native vegetation regulatory (NVR) map include: • Category 1 exempt land – located within areas in the valleys that exhibit existing disturbance for grazing. Areas mapped within the southern extent of the project area • Category 2 regulated land – where a biodiversity assessment is required for any activity requiring clearing of native vegetation. Category 2 land can be vulnerable regulated land, sensitive regulated land, or vulnerable and sensitive regulated land. Areas mapped within the southern extent of the project area • Excluded land – where the two land categories described above does not apply. Areas mapped on the northern extent of the project area.
Wetlands, Key Fish Habitat and littoral rainforest	• No wetlands • Closest wetland is Lake Bathurst located approximately six kilometres north • A number of farm dams are scattered located in the north of the project area • Key Fish Habitat mapped along Boro Creek and Chain of Ponds Creek (refer Figure 6-4) • No coastal wetlands, littoral rainforests, or their proximity areas, are mapped within or adjacent to the project area.

Plant community types

The vegetation within the project area is comprised of six plant community types (PCTs) which includes cleared/exotic vegetation as outlined in Table 6-4 and shown in Figure 6-5.

At this preliminary stage, 26.54 hectares of native vegetation has been mapped within the project area, with the remaining 380.87 hectares mapped as cleared exotic dominant vegetation.

Table 6-4 Plant community types within the project area

PCT	Description	Condition	Total (ha)
0	Cleared	Exotic-dominant	380.87
3744	Palerang Hills Peppermint Dry Shrub Forest	Low, moderate and good	22.37
3338	Goulburn Tableland Frost Hollow Grassy Woodland	Poor to moderate	3.06
3746	Southern Tableland Snow Gum-Candlebark Shrub Forest	Moderate	0.13
3747	Southern Tableland Western Hills Scribbly Gum Forest	Moderate	0.81
3932	Central and Southern Tableland Swamp Meadow Complex	Moderate	0.17
Total			**407.41**

Threatened ecological communities

Two of the mapped PCTs are associated with two BC Act-listed threatened ecological communities (TECs) and one EPBC Act listed TEC (refer Table 6-5 and Figure 6-5).

Table 6-5 TECs with the potential to occur within the project area

PCT	BC Act Listing	EPBC Act Listing
3338	Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions Critically Endangered Ecological Community (CEEC)	Not Listed
3932	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions Endangered Ecological Community (EEC)	Temperate Highland Peat Swamps on Sandstone EEC[1].

[1] EEC unlikely to conform to the EPBC listing for Temperate Highland Peat Swamps on Sandstone as the project area does not contain poorly drained flats in the headwaters of streams as per the justification of the listing.

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

Database searches identified 95 threatened and/or migratory species as having the potential to occur within a five-kilometre radius of the project area under BC Act and/or the EPBC Act.

Results from the field-validated likelihood of occurrence assessment identified one fauna species known to occur in the project area, and one that has a high likelihood of occurrence. A further 55 species have a moderate or greater likelihood of occurrence within the project area. These species are listed in Table 6-6, along with recent occurrences in the locality (i.e., historical records within the last ten years).

The incidental fauna surveys completed as part of this preliminary biodiversity assessment report confirmed the presence the Flame Robin (*Petroica phoenicea*) within the project area.

No further assessment would be required for those species that are unlikely to occur in the project area or where the area is considered unsuitable habitat.

An initial assessment using the Biodiversity Assessment Method Calculator (BAM-C) and based on PCTs mapped in the project area, identified a total of 26 candidate species credits and 27 ecosystem credit species as potentially requiring further consideration and ground truthing. These species are identified in Table 6-6.

Candidate species are threatened species whose likelihood of occurrence cannot be reliably predicted based on vegetation surrogates and/or landscape features present. Targeted surveys and/or an expert report will be completed for the EIS to confirm the presence/absence of these species.

Ecosystem credit species are threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or species which have a low probability of detection using targeted surveys.

No targeted surveys are required for ecosystem credit species, and any impacts will be offset via ecosystem credits yielded from vegetation surveys completed for the EIS. Appendix D provides the preliminary list of candidate threatened species and the required month of survey to achieve compliance with the BAM.

Table 6-6 Threatened and migratory species with recent records in the locality

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Recent records	Candidate Species	Ecosystem credit species
Flora							
Bossiaea bombayensis	Bombay Bossiaea	CE	0	Moderate	0	Yes	-
Bossiaea oligosperma	Few-seeded Bossiaea	V	V	Moderate	0	Yes	-
Caladenia tessellata	Thick Lip Spider Orchid	V	V	Moderate	0	-	-
Callitris oblonga	Pygmy Cypress Pine	V	V	Moderate	0	Yes	-
Calotis glandulosa	Mauve Burr-daisy	V	V	Moderate	0	-	-
Commersonia prostrata	Dwarf Kerrawang	E	E	Moderate	0	Yes	-
Diuris aequalis	Buttercup Doubletail	E	E	Moderate	6	Yes	-
Dodonaea procumbens	Creeping Hop-bush	V	V	Moderate		-	-
Eucalyptus aggregata	Black Gum	V	V	Moderate	0	Yes	-
Eucalyptus recurva	Mongarlowe Mallee	CE	CE	Moderate	0	Yes	-
Genoplesium superbum	Superb Midge Orchid	E	-	Moderate		Yes	-
Grevillea renwickiana	Nerriga Grevillea	E	0	Moderate	0	-	-
Lepidium aschersonii	Spiny Peppercress	V	V	Moderate	0	-	-
Lepidium hyssopifolium	Aromatic Peppercress	E	E	Moderate	0	-	-
Lysimachia vulgaris var. *davurica*	Yellow Loosestrife	E	-	Moderate	0	-	-
Pomaderris cotoneaster	Cotoneaster Pomaderris	E	E	Moderate	0	Yes	-
Pomaderris pallida	Pale Pomaderris	V	V	Moderate	0	-	-
Prasophyllum petilum	Tarengo Leek Orchid	E	E	Moderate	0	-	-
Swainsona recta	Small Purple-pea	E	E	Moderate	0	-	-
Thesium australe	Austral Toadflax	V	V	Moderate	0	-	-
Acacia bynoeana	Byone's Wattle	E	-	-	-	Yes	-
Baloskian longpipes	Dense Cord-rush	V	V		-	Yes	-
Dillwynia glaucula	Michelago Parrot-pea	E	-	-	-	Yes	-
Eucalyptus macarthurii	Paddys River Box, Camden Woollybutt	E	E	-	-	Yes	-
Grevillea renwickiana	Nerriga Grevillea	E	-	-	-	Yes	-
Leucochrysum albicans subsp. *tricolor*	Hoary Sunray	E	E	-	-	Yes	-
Pomaderris delicata	Delicate Pomaderris	CE	CE	-	-	Yes	-
Pultenaea pedunculata	Matted Bush-pea	E		-	-	Yes	-
Thesium australe	Austral Toadflax	V	V	-	-	Yes	-

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Recent records	Candidate Species	Ecosystem credit species
Fauna							
Aphelocephala leucopsis	Southern Whiteface	V	V	Moderate	1	-	-
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	Moderate	0	Yes	-
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	Moderate	0	-	Yes
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	Moderate	3	Yes	Yes
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	High	28	Yes	Yes
Chthonicola sagittata	Speckled Warbler	V	-	Moderate	0	-	Yes
Circus assimilis	Spotted Harrier	V	-	Moderate	0	-	Yes
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	Moderate	0	-	Yes
Daphoenositta chrysoptera	Varied Sittella	V	-	Moderate	1	-	Yes
Delma impar	Striped Legless Lizard	V	V	Moderate	0	Yes	-
Epthianura albifrons	White-fronted Chat	V	-	Moderate	2	-	Yes
Falco subniger	Black Falcon	V	-	Moderate	1	-	Yes
Glossopsitta pusilla	Little Lorikeet	V	-	Moderate	0	-	Yes
Hieraaetus morphnoides	Little Eagle	V	-	Moderate	0	Yes	Yes
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	V	Moderate	0	Yes	-
Keyacris scurra	Key's Matchstick Grasshopper	E	E	Moderate	0	-	-
Lathamus discolor	Swift Parrot	E	CE, MAR	Moderate	0	Yes	Yes
Litoria aurea	Green and Golden Bell Frog	E	V	Moderate	0	Yes	-
Litoria booroolongensis	Booroolong Frog	E	E	Moderate	0	Yes	-
Litoria castanea	Yellow-spotted Tree Frog	CE	CE	Moderate	0	-	-
Litoria watsoni	Watson's Tree Frog	E	E	-	-	Yes	-
Pseudophryne australis	Red-crowned Toadlet	V	-	-	-	Yes	-
Lysimachia vulgaris var. *davurica*	Yellow Loosestrife	E	-	-	-	Yes	-
Petalura gigantea	Giant Dragonfly	E	-			Yes	
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Moderate	0	-	Yes
Myotis macropus	Southern Myotis	V	-	Moderate	0	Yes	-
Neophema chrysostoma	Blue-winged parrot	-	MAR	Moderate	0	-	-
Ninox connivens	Barking Owl	V	-	Moderate	0	Yes	-
Ninox strenua	Powerful Owl	V	-	Moderate	1	Yes	-
Petroica boodang	Scarlet Robin	V	-	Moderate	3	-	Yes

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Recent records	Candidate Species	Ecosystem credit species
Petroica phoenicea	**Flame Robin**	**V**	**-**	**Known**	**2**	-	Yes
Phascogale tapoatafa	Brush-tailed Phascogale	V	-	Moderate	0	-	-
Phascolarctos cinereus	Koala	E	E	Moderate	2	Yes	-
Polytelis swainsonii	Superb Parrot	E	E	Moderate	0	-	-
Rostratula australis	Australian Painted Snipe	V	V	Moderate	0	-	-
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	-	-	Yes	Yes
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	E	E, MAR	Moderate	0	-	-
Stagonopleura guttata	Diamond Firetail	V	-	Moderate	0	-	-
Tyto novaehollandiae	Masked Owl	V	V	Moderate	2	Yes	-
Varanus rosenbergi	Rosenberg's Goanna	V	-	Moderate	0	-	-
Cercartetus nanus	Eastern Pygmy-possum	V	-	-	-	Yes	-
Petaurus norfolcensis	Squirrel Glider	V	-			Yes	
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	-	-	Yes	-
Haliaeetus leucogaster	White-bellied Sea-eagle	V	-	-	-	Yes	Yes
Botaurus poiciloptilus	Australasian Bittern	E	E	-	-	-	Yes
Chthonicola sagittata	Speckled Warbler	V	-	-	-	-	-
Dasyurus maculatus	Spotted-tailed Quoll	V	E	-	-	-	Yes
Hirundapus caudacutus	White-throated Needletail	V	V,M, MAR	-	-	-	Yes
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	-	-	-	-	Yes
Petroica rodinogaster	Pink Robin	V	-			Yes	-
Phascolgale tapoatafa	Brush-tailed Phascogale	V	-			Yes	
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	-	-	Yes	Yes
Oxyura australis	Blue-billed Duck	V	-	-	-	-	Yes
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-	-	-	-	Yes
Stagonopleura guttata	Diamond Firetail	V	-	-	-	-	Yes
Stictonetta naevosa	Freckled Duck	V	-	-	-	-	Yes
Grantiella picta	Painted Honeyeater	V	V				Yes

V = Vulnerable, E = Endangered, CE = Critically Endangered, MAR = Marine, M = Migratory, - = Not Listed, bold text = field validated.

Aquatic habitats

Riparian vegetation along Boro Creek and Chain of Ponds Creek located in the south and north of the project area is consistent with key fish habitat for the purpose of the *Fisheries Management Act 1994*. These creeks are likely to be used by native frogs, reptiles, and water birds and support a consistent flow and supply of water for local fauna, including birds, amphibians and reptiles.

It is considered highly unlikely that any of these would provide habitat for threatened fish species, however a more comprehensive, site-based analysis of waterways will be completed during the EIS.

Groundwater dependant ecosystems

Groundwater dependant ecosystems (GDE) rely on the presence of groundwater to function and sustain resident assemblages of species, populations, and ecological communities. The level of groundwater dependence of vegetation communities in the project area has been identified using the GDE Atlas (BoM 2017).

The project contains some areas that have been mapped as potential for containing both aquatic and terrestrial GDEs. GDEs would therefore be subject to further assessment in the EIS.

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).

One TEC mapped as occurring in the project area is regarded as SAII candidate communities under the BC Act:

- Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (CEEC)

A total of 26 threatened fauna species and 18 threatened flora species have been identified as candidate species for the biodiversity assessment, and of these the following are listed entities at risk of SAII:

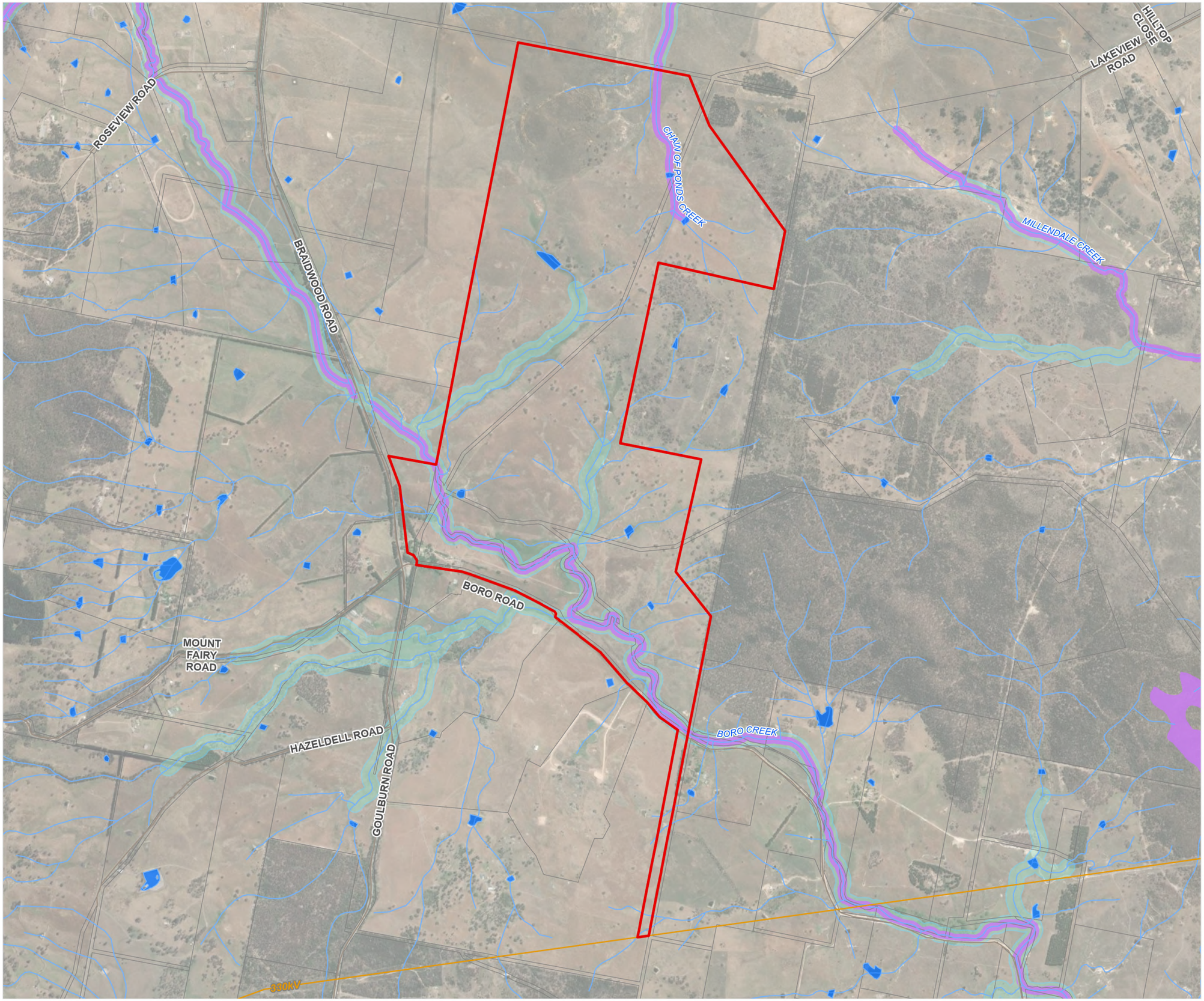
- Large-eared Pied Bat (*Chalinolobus dwyeri)*
- Giant Dragonfly (*Petalura gigantea)*
- Yellow Loosestrife (*Lysimachia vulgaris* var*. davurica)*
- Bombay Bossiaea (*Bossiaea bombayensis)*
- Mongarlowe Mallee (*Eucalyptus recurve)*
- Superb Midge Orchid (*Genoplesium superbum)*
- Nerriga Grevillea (*Grevillea renwickiana)*
- Delicate Pomaderris (*Pomaderris delicata)*.

Matters of National environmental significance

The EPBC Act provides protection of the environment from actions likely to significantly impact on matters of National environmental significance (MNES) or the environment of Commonwealth land. A search of the Commonwealth PMST within a ten-kilometre radius of the project area was undertaken, and the search results are summarised in Table 6-7.

Table 6-7 Matters of National environmental significance assessment

Aspect	Description
Any impact on a World Heritage property?	There are no World Heritage properties within the project area or a 10-kilometre radius.
Any impact on a National Heritage place?	There are no National Heritage places within the project area or a 10-kilometre radius.
Any impact on a wetland of international importance?	There are no RAMSAR wetlands within the project area or a 10-kilometre radius.
Any impact on a listed threatened community?	One EPBC Act listed TEC is associated with the PCTs of the project area (i.e., Temperate Highland Peat Swamps on Sandstone – EEC, associated with PCT 3932).
Any impact on listed threatened and migratory species?	A total of 26 threatened and migratory species listed under the EPBC Act have habitats which may occur within the locality.
Any impact to a Nationally Important Wetland?	Lake Bathurst is a Nationally Important Wetland. It is located approximately six kilometres north of the project and is not expected to be impacted.
Any impact on a Commonwealth marine area?	There are no Commonwealth marine areas within the project area or a 10-kilometre radius.
Any impact on the Great Barrier Reef Marine Park?	The project would not have a significant adverse effect on the Great Barrier Reef Marine Park as this area is not within the region.
Does the proposal involve a nuclear action (including uranium mining)?	The project does not involve a nuclear action or uranium mining.
Does the proposal involve development of coal seam gas and/or large coal mine that has the potential to impact on water resources?	The project does not involve a coal seam gas or coal mine development.
Additionally, any impact (direct or indirect) on Commonwealth land?	The project area is not located upon any Commonwealth land.



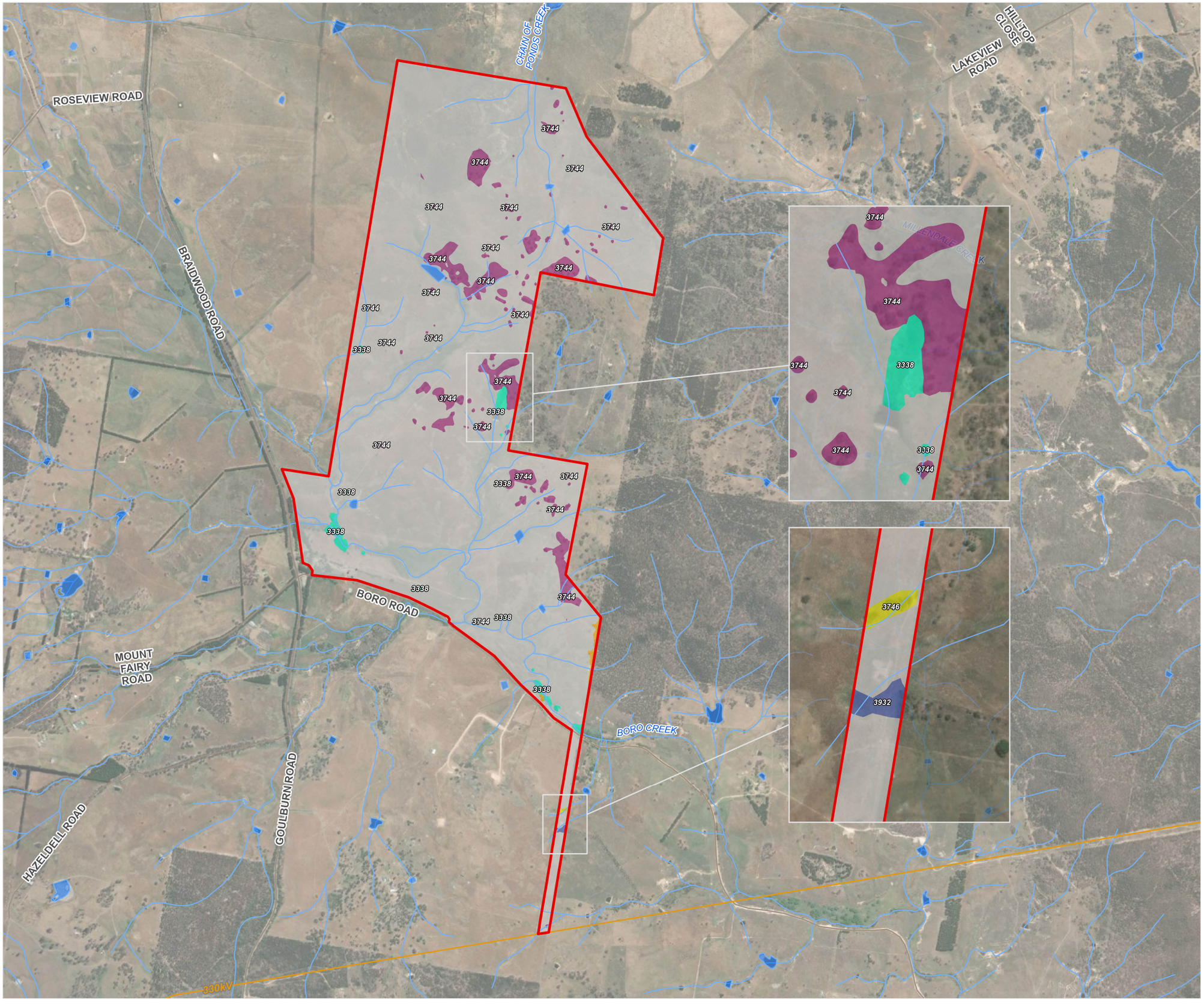
Project area
Road
Existing 330 kV transmission line
Watercourses
Water body
Key Fish Habitat - Southern Rivers
Biodiversity values

0 0.5 1Km

SCALE 1:20,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 6-4: KEY FISH HABITAT AND BIODIVERSITY VALUES



Project area
Road
Watercourses
Existing 330 kV transmission line
Water body

Plant Community Types

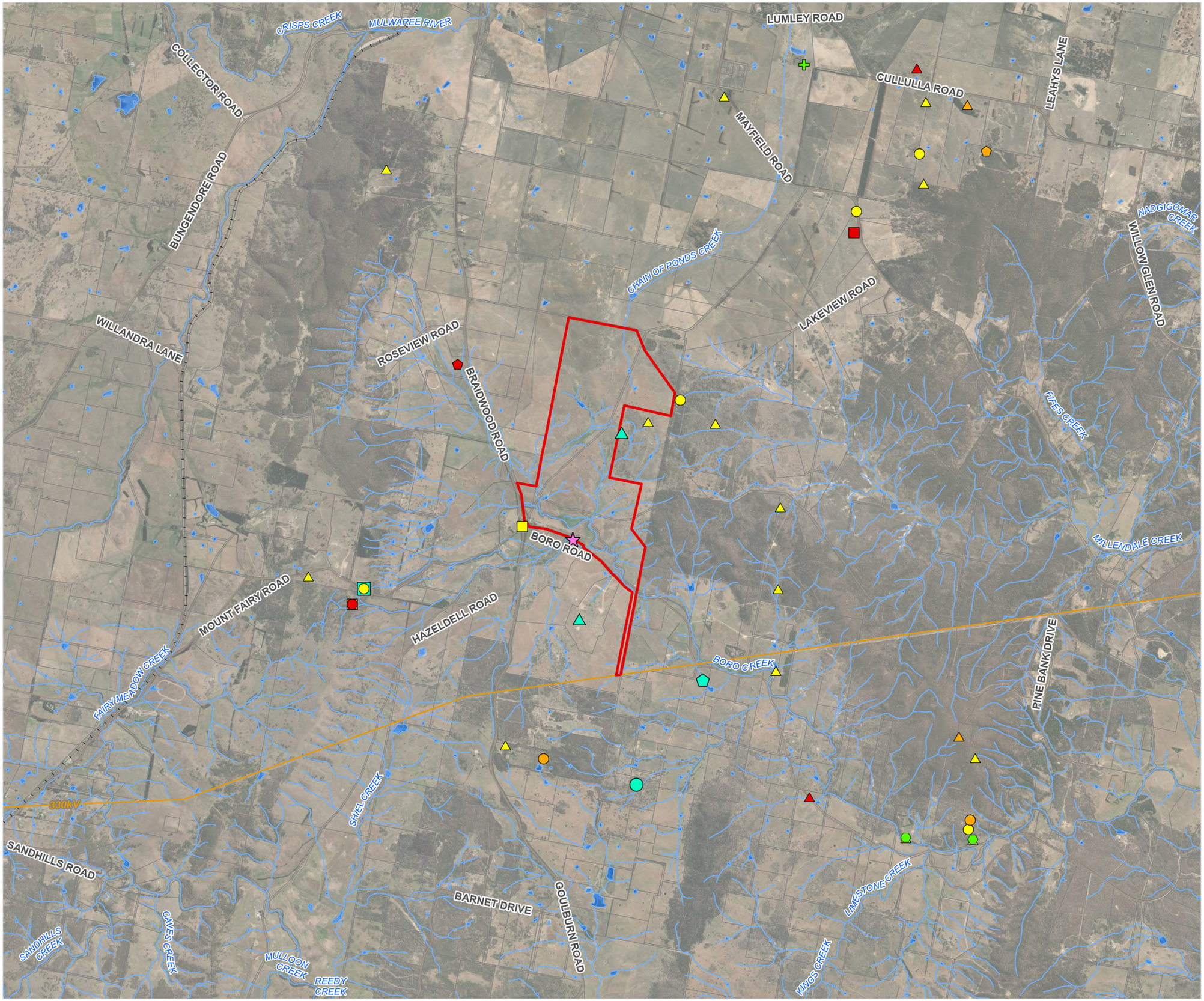
3338 - Goulburn Tableland Frost Hollow Grassy Woodland
3744 - Palerang Hills Peppermint Dry Shrub Forest
3746 - Southern Tableland Snow Gum-Candlebark Shrub Forest
3747 - Southern Tableland Western Hills Scribbly Gum Forest
3932 - Central and Southern Tableland Swamp Meadow Complex
0 - Not classified

0 0.5 1 1.5 Km

SCALE 1:25,000
A3 SIZE / WGS 1984 (EPSG:3857)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 6-5: PLANT COMMUNITY TYPES IN THE PROJECT AREA



- Project area
- Road
- Railway
- Existing 330 kV transmission line
- Watercourses
- Cadastre

RPS field verified records

- Flame Robin

Bionet flora records

- *Diuris aequalis*
- *Eucalyptus aggregata*

Bionet fauna records

- Black Falcon
- Brown Treecreeper (eastern subspecies)
- Diamond Firetail
- Dusky Woodswallow
- Flame Robin
- Gang-gang Cockatoo
- Koala
- Red-necked Stint
- Rosenberg's Goanna
- Scarlet Robin
- South-eastern Glossy Black-Cockatoo
- South-eastern Hooded Robin
- Speckled Warbler
- Superb Parrot
- White-fronted Chat
- White-throated Needletail

0 1 2 3 Km

SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 6-6: THREATENED SPECIES FLORA AND FAUNA

6.3.2 Preliminary assessment

During the project's lifecycle, there is the potential for direct, indirect and prescribed impacts to occur. Potential impacts are summarised in Table 6-8.

Prescribed biodiversity impacts are impacts on biodiversity values in addition to, or instead of, impacts from clearing vegetation and/or loss of habitat.

Table 6-8 Potential impacts resulting from the project

Impact type	Potential impact	Details
Direct	Removal of native vegetation, potentially impacting a TEC	• Clearing of vegetation, flora species and habitat within the project disturbance footprint would be required for the project and 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 habitat.
	Fauna mortality from collisions with vehicles during clearing of areas for development, workforce travel to site and maintenance activities	• Collisions with vehicles and machinery may occur during construction and operation of the project.
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, excavation and the diversion of surface water, including installation of structures and hard surfaces may affect groundwater quality.
	Soil disturbance	• Soil erosion, sedimentation, and disturbance of potentially contaminated soils during clearing for construction, excavation and spoil management activities can lead to changes in water quality.
	Spread of infection/disease	• Soil transportation on contaminated footwear, vehicles and machinery. Earthworks and surface water runoff may increase the risk of spreading.
	Spread of invasive species and weeds	• New environmental conditions or edge effects may facilitate the spread of invasive species and weeds • Use of inappropriate species in landscaping and revegetation, accidental dispersal of weed seeds and plant material and altered fire regimes may facilitate the spread of invasive species and weeds.
	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 and increased burns for hazard reduction to protect assets, particularly within asset protection zones.

Impact type	Potential impact	Details
	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 will introduce barriers to fauna movement as a result of: • direct mortality as a result of collisions with vehicles or new structures • displacement due to clearing for the development • introduction of linear barriers such as fences 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 • increased noise levels from increased traffic during construction.
	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 • • 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.
	Reduction in connectivity through the loss of stepping stone habitat	• Reduction in habitat connectivity and edge effects.
	Death of species individuals from vehicle strike	• Increased vehicle movement during construction and operation may increase risk of vehicle strike.

6.3.3 EIS assessment approach

Biodiversity development assessment report

In accordance with Section 7.9 of the BC Act, biodiversity impacts will be assessed through a biodiversity development assessment report (BDAR) prepared by an accredited person under the BC Act, and in accordance with the *Biodiversity Assessment Methodology 2020* (BAM 2020) (DPIE 2020b).

The targeted and seasonal surveys that will inform the BDAR have commenced and will be delivered as part of the EIS.

Where the project is likely to impact habitat for a threatened species (identified through the preparation of a species polygon), and / or native vegetation with a vegetation integrity score greater than 17, the project will require biodiversity offsets. The BDAR will calculate the number and type of credits required in accordance with the BAM. These biodiversity offsets would be secured through the establishment of a biodiversity stewardship agreement to generate the credits.

Impacts to SAII candidate species will be considered in accordance with Section 9.1 of the BAM, allowing the Minister of Planning to decide whether the project is likely to result in an SAII.

EPBC Act referral

Due to the potential presence of MNES within the project area, the project is 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 that the project is a controlled action under Section 75 of the EPBC Act, the project would require assessment and approval under the EPBC Act. This is expected to be under the bilateral agreement between the Australian DCCEEW and DPHI.

6.4 Transport and access

A preliminary traffic impact assessment has been undertaken and is included in Appendix E. The assessment identified potential impacts related to construction traffic, site access, and transportation of large project components that would be assessed in the EIS.

6.4.1 Existing environment

The project area is located approximately 70 kilometres from Canberra, and an overview of the surrounding road network is shown on Figure 2-1.

As discussed in Section 3.4, the project would be accessed via Braidwood Road and Boro Road (refer Figure 3-1). Braidwood Road, located along the western boundary of the project area is classified as a state road, and is a B-double approved route. It connects with the state highway network (Hume Motorway) at Goulburn, about 40 kilometres north of the project area.

Boro Road, located in the southern section of the project area is a local road which extends approximately 13 kilometres south-east from the intersection of Braidwood Road, Goulburn Road and Mount Fairy Road, and terminates in Mayfield. Boro Road is unsealed with a varying carriageway width between 5.5 metres and 7.5 metres, accommodating traffic in both directions (refer Figure 6-8).



Figure 6-7 Braidwood Road (left) and Boro Road (right)

There are no general public transport services, formal walking or cycling facilities close to the project area, that are likely to be impacted by the project, however TfNSW operates a school bus service along Braidwood Road and Goulburn Road, and there is an unmarked/informal pick-up and drop-off at the intersection with Boro Road and Mount Fairy Road. Three school bus services use this stop in the morning between 7.45am and 8.50am, and in the afternoon between 3.25pm and 4.10pm.

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

The final transport routes will be confirmed by the preferred logistics contractor based on the origin of the solar farm components. However, it is expected that some components would be delivered by ship to either

Port Botany and/or Port Kembla prior to transportation to site by road, and the expected transport routes from these ports are provided in Figure 3-2. Distances from these ports are provided in Table 6-9.

Table 6-9 Potential port options and distance to project area

Port	City and State	Approx. distance from project area (by road) (km)
Port Kembla	Wollongong, NSW	210
Port Botany	Sydney, NSW	240

6.4.2 Preliminary assessment

Construction

Primary access to the site during construction would be via Braidwood Road to the west, and Boro Road to the south.

New internal access tracks would be required to support construction activities and to support required maintenance work throughout operation and for the decommissioning phase of the project.

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 transformers.

Most of the vehicle movements are expected to be light vehicles used by construction workers and materials to, from, and throughout the project area.

The project may require upgrades to roads along the transport route to facilitate the movement of over size-overmass vehicles during construction. 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 and will be confirmed and assessed in detail in the EIS.

Intersection upgrades may be required at proposed site access locations on Braidwood Road and Boro Road to provide safe sight distance and safe access to and from the project area.

Early consultation undertaken with TfNSW in April 2025 has identified a number of aspects related to these proposed access points which would be considered in detail, and a strategic level of design would be developed in consultation with TfNSW and Council to allow the expected upgrades to be fully assessed in the EIS.

Operation

During operation, vehicle movements are expected to be less frequent and primarily comprising light vehicle movement associated with ongoing access, monitoring and general maintenance of project infrastructure and land.

Access to existing properties would not be impacted by operation of the project.

Decommissioning

Decommissioning of the project would result in increased volumes of traffic of light vehicles used to transport workers and materials, as well as heavy vehicles and the use of OSOM vehicles to transport decommissioned components and other equipment.

Traffic volumes for decommissioning are expected to be similar to, or less than those estimated for construction.

6.4.3 EIS assessment approach

A traffic and transport impact assessment (TTIA) (including a transport route assessment) would be prepared as part of the EIS, to consider potential transportation routes for construction traffic and potential impacts of the size, loads and volumes of vehicles on the road network.

The TTIA would be prepared in accordance with the guidelines outlined in Appendix A, and will include:

- assessment of haulage routes, access points, swept paths, sight distances and turn treatments 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-specific and cumulative traffic impacts during construction, operation, and decommissioning, including:
  - road network condition, capacity, and performance
  - intersection performance
  - road safety including interaction with school bus and any other informal services
  - identification of mitigation and management measures as required.
- identification of any road upgrades and intersection improvements required and associated vegetation clearing, and disturbance works
- consideration of the use of shuttle buses to transport the workforce to and from the project area to minimise traffic movements into and out of the project area
- consideration of alternative site access arrangements to the proposed four-way Boro Road/Mount Fairy Road/Braidwood Road intersection to minimise constraints associated with the existing vegetation, intersection sight distance and road geometry.

6.5 Social and economic

6.5.1 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) of the study area, and to identify potentially affected communities and key stakeholders.

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

The project area is located between the townships of Tarago and Boro within the Goulburn Mulwaree and Queanbeyan-Palerang Regional LGAs. Bungendore is approximately 20 kilometres southwest of the project area, with Goulburn located approximately 40 kilometres to the northwest. These townships and surrounding communities have been identified as potential areas of interest due to their proximity and potential for direct impacts.

The Goulburn Mulwaree and Queanbeyan-Palerang Regional LGAs form part of the broader South East and Tablelands region, which covers diverse landscapes, including coastal, alpine, tablelands, and slopes. The region is home to approximately 290,772 residents and includes major urban centres such as Goulburn and Queanbeyan, with populations of 81,771 and 64,793, respectively (ABS, 2021). Key industries in the region include government administration, Defence, healthcare, education, and technology services, which may influence workforce and economic dynamics related to the project.

The region may experience some direct and indirect impacts, mostly related to workforce accommodation, local procurement opportunities, and employment. Communities within Boro, Tarago and Bungendore have been identified for inclusion in the SIA study area due to their geographic and social connection to the project area. key locations within the SIA study area are outlined in Table 6-10, and the social characteristic and demographic profile of the area based on currently available data, is summarised in Table 6-11

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

Area	Location	ABS category
Study Area	Boro	Boro Suburb Code
	Tarago	Tarago Suburb Code
	Bungendore	Bungendore Suburb Code
Region	Goulburn Mulwaree LGA	Goulburn Mulwaree LGA
	Queanbeyan-Palerang Regional LGA	Queanbeyan-Palerang Regional LGA
State	New South Wales	New South Wales

Table 6-11 Demographic profile

Aspect (2021)	Boro	Tarago	Bungendore	Goulburn Mulwaree LGA	Queanbeyan-Palerang Regional LGA	New South Wales
Population	97	426	4,745	32,032	63,302	8,097,163
Median Age	40	42	39	42	38	396
Age Profile (%)						
0-14 years	19.0	18.5	20.1	18.2	19.5	18.5
15-24 years	10.0	9.8	10.5	11.0	11.5	12.1
25-44 years	26.0	25.0	27.0	24.5	26.0	27.0
45-64 years	29.0	30.0	28.0	28.5	27.0	25.5
65+ years	16.0	16.7	14.4	17.8	16.0	16.9
Speaks a Language Other Than English at Home (%)	4.0	3.5	5.0	6.5	10.0	29.5
Top Three Languages Spoken at Home (Other Than English)	French German Italian	Italian German Spanish	German Italian French	Mandarin Italian Greek	Mandarin Nepali Punjabi	Mandarin Arabic Cantonese
Proportion with a Long-Term Health Condition (%)	34.0	33.0	35.0	38.0	36.0	40.0
Proportion Needing Assistance with Core Activities (%)	5.8	6.0	5.5	6.5	5.0	5.4
Household Type (%)						
Family	73.0	72.0	75.0	70.0	72.0	71.0
Lone Person	24.0	25.0	22.0	26.0	24.0	24.0
Group	3.0	3.0	3.0	4.0	4.0	5.0
Average Number of People per Household	2.5	2.5	2.6	2.4	2.5	2.6
Tenure Type (%)						
Own Outright	38.0	40.0	35.0	38.0	35.0	32.0
Own with a Mortgage	42.0	40.0	45.0	40.0	42.0	35.0
Rent	18.0	18.0	18.0	20.0	22.0	31.0
Other	2.0	2.0	2.0	2.0	1.0	2.0
Median Rent (Weekly)	$330	$320	$350	$300	$350	$420
Median Mortgage Repayments (Monthly)	$1,700	$1,600	$1,800	$1,500	$1,800	$1,993
Median Household Income (Weekly)	$1,900	$1,800	$2,000	$1,600	$2,000	$1,829

Aspect (2021)	Boro	Tarago	Bungendore	Goulburn Mulwaree LGA	Queanbeyan-Palerang Regional LGA	New South Wales
Top Industry of Employment	Construction	Agriculture, Forestry and Fishing	Public Administration and Safety	Health Care and Social Assistance	Public Administration and Safety	Health Care and Social Assistance
Unemployment Rate (%)	3.8	3.5	4.0	5.0	4.5	6.0

References (source: *2021 Australia, Census All persons QuickStats | Australian Bureau of Statistics*):
Australian Bureau of Statistics. (2021). Bungendore, Census All persons QuickStats.
Australian Bureau of Statistics. (2021). Goulburn Mulwaree, Census All persons QuickStats.
Australian Bureau of Statistics. (2021). Queanbeyan-Palerang Regional, Census All persons QuickStats.
Australian Bureau of Statistics. (2021). Australia, Census All persons QuickStats.

6.5.2 Preliminary assessment

A preliminary assessment of the potential social impacts (positive and negative) has been undertaken to inform the scope of the detailed SIA to be undertaken for the EIS with a focus on the following:

- 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
- shape the engagement activities that will inform the SIA.

A summary of the identified impacts is provided in Table 6-12. More detailed information is provided in the SIA scoping worksheet which is included as Appendix F.

Table 6-12 Summary of preliminary impact assessment

	Category	Description
Potential impacts		
1	Access	Construction may cause temporary traffic disruptions due to increased vehicle movements and traffic management, affecting local travel, access to services, and daily routines.
2	Access	Temporary roadworks on Braidwood Road, and Boro Road may disrupt local travel routes, affecting connectivity between Mayfield, Boro, Tarago, and Manar.
3	Access	Increased pressure on community infrastructure and services such as schools, childcare and medical services due to an influx of the construction workforce.
4	Community	The project could impact social cohesion if locals disagree on whether to support the project, or if some feel the benefits are unequally distributed amongst the community.
5	Community	The project, alongside other nearby developments, may cumulatively alter the area's visual character and landscape, potentially affecting the community's sense of place, identity, and connection to the local environment.
6	Health and wellbeing	Increased traffic could increase the road safety risk for local drivers and pedestrians.
7	Health and wellbeing	Noise from the construction site could affect the physical and mental health of nearby residents.
8	Community	An influx of non-local construction workers may temporarily alter the population profile of nearby towns, influencing local demographics, housing demand, and community dynamics.
9	Surroundings	The visual impact of solar panels altering the local landscape.
10	Livelihoods	Potential impacts on housing availability, rental affordability, and accommodation capacity, affecting residents' economic stability and access to housing.
11	Health and wellbeing	Uncertainty and perceived impacts, such as loss of amenity or electromagnetic fields, may cause stress for residents and affect their sense of wellbeing.
12	Health and wellbeing	Increased bushfire risk from solar and BESS infrastructure may raise safety concerns and anxiety among residents in fire-prone areas.
13	Health and wellbeing	Dust from construction traffic on unsealed roads may affect local air quality during construction.

	Category	Description
Potential benefits		
1	Livelihoods	Influx of non-local construction workers may boost local business activity, including cafes, shops, and accommodation.
2	Livelihoods	The project could create employment opportunities for local construction workers and those in related fields.
3	Livelihoods	The project could create local employment opportunities for its ongoing operation and maintenance.
4	Livelihoods	Procurement of materials from local businesses can support the regional economy, strengthen local supply chains, and create flow-on benefits for employment and community wellbeing.
5	Livelihoods	Upskilling the local workforce through vocational training schemes could enhance long-term employment opportunities and strengthen local capacity.

6.5.3 EIS assessment approach

A SIA will be prepared to align with industry best practice, including 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 three broad stages:

Establishing a socio-economic baseline

Develop 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 and place characteristics, including:

- defining 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.

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, traffic, economic, environmental, and cultural heritage impact studies
- 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.

Cumulative assessment

- consider combined incremental and cumulative impacts and address identified likely combined impacts including:
  - interaction with other renewable energy projects or developments in the area
  - long-term changes to the local economy or demographics due to increased renewable energy activity.

6.6 Aboriginal heritage

A preliminary Aboriginal heritage assessment has been undertaken and is provided in Appendix G.

6.6.1 Existing environment

The project is located across the boundary of the Pejar and Batemans Bay LALCs and on the traditional lands of the Ngunawal people who have lived in the region for around 5000 years, and within Murray Country (Tindale 1974).

The project area has sensitive landforms and landscape features that may indicate the presence of Aboriginal objects in accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010). Gentle slopes adjacent to creek or streams are considered sensitive for evidence of Aboriginal occupation.

Previously recorded Aboriginal sites within the Goulburn Mulwaree LGA generally occur in the vicinity of watercourses, in elevated areas, and in areas with suitable geology or mature vegetation.

In 1986, Koettig and Lance completed archaeological investigations within Goulburn Mulwaree Regional LGA which indicated artefact scatters were the most common type of Aboriginal site in the region, occurring on gentle, well-drained lower slopes within 100 metres of water.

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was completed in November 2024 and found no identified sites present within the project area.

A broader map search of the AHIMS database found four recorded Aboriginal sites within ten kilometres of the project area, with the closest located one kilometre north-west of the project area. There are approximately 250 artefacts associated with the cluster of sites to the north-west, which are all associated with drainage depressions and/or sloping landforms.

A summary of the extensive search results is provided in Table 6-13, and locations of the previously recorded AHIMS sites are shown in Figure 6-8.

The project area partially overlaps the project area for the formerly proposed Jupiter Wind Farm, of which the planning application has been withdrawn.

The Aboriginal archaeological assessment completed for Jupiter Wind Farm identified one Aboriginal heritage site (JWF1) located close to the current project area boundary (refer Figure 6-8). As the Aboriginal heritage site was not recorded on AHIMS, the location of JWF1 is approximate based on the previous assessment.

Table 6-13 Identified AHIMS sites within 10 kilometres of the project area

Site ID	Site name	Site features	Approximate distance from project area
57-3-0253	Chain of Ponds CK IF 1	Isolated find	3.7 kilometres north-east
57-3-0410	Tarago Survey Unit 1/Locale 1 T SU1/L1	Artefact	1 kilometre north-west
57-3-0411	Tarago Survey Unit 2/Locale 1 T SU2/L1	Artefact	1.2 kilometres north-west
57-3-0412	Tarago Survey Unit 3/Locale 1 T SU3/L1	Artefact	1.5 kilometres north-west

There are no native title claims or determinations within the project area.

6.6.2 Preliminary assessment

Construction

Construction of the project would involve ground disturbance within the project area. Although no known Aboriginal heritage items have been identified in the project area, the presence of AHIMS sites in the broader locality and particularly along drainage depressions suggests that unknown Aboriginal heritage sites may be present within the project area.

Operation

During operation, activities would generally be limited to traversing the project area via established internal access tracks and additional ground disturbance is expected to be minimal. The risk of disturbing previously unidentified Aboriginal heritage sites is low.

Decommissioning

The potential impacts associated with decommissioning activities are expected to be similar to those estimated for construction and operation as the need for additional disturbance of the landform to facilitate removal of infrastructure and rehabilitation would be expected to be minimal.

6.6.3 EIS assessment approach

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

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

The ACHAR will be prepared in accordance with the guidelines and policies in Appendix A, and will include following steps:

- desktop review to develop a predictive model for the location of Aboriginal objects
- site survey with RAPs 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 and RAPs
- undertake test excavation if warranted based on the findings of the site survey
- determination of the significance of the Aboriginal objects and/or landforms identified during the site survey in consultation with the RAPs and Aboriginal community
- assessment of the impact to identified Aboriginal heritage values including both sites and cultural values
- development of mitigation measures to minimise impacts to Aboriginal cultural values
- an assessment of Aboriginal heritage along the transport route once determined.

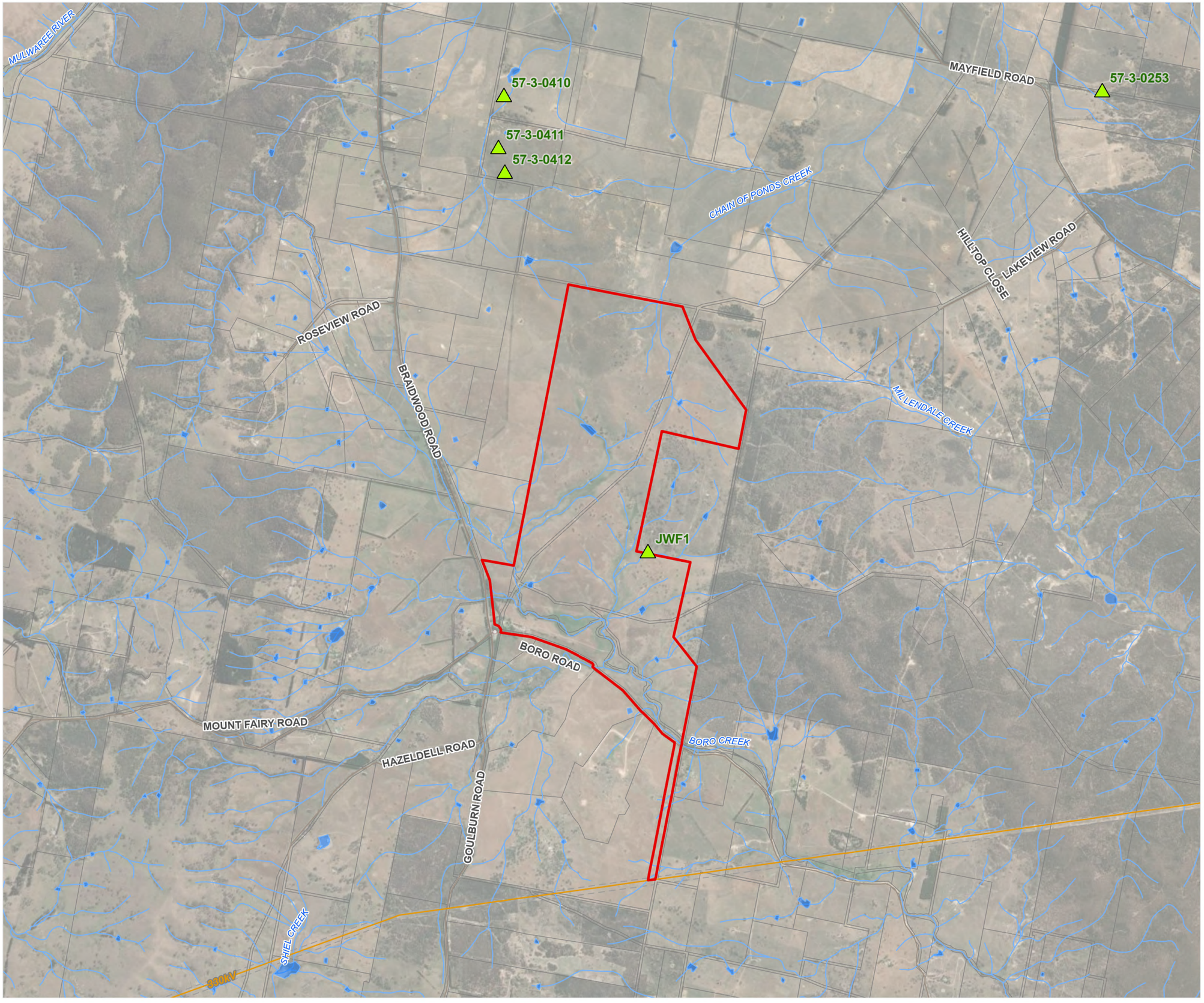


FIGURE 6-8: ABORIGINAL HERITAGE SURROUNDING THE PROJECT AREA

6.7 Historic heritage

6.7.1 Existing environment

Settlement of the Southeastern Highlands region began in the 1820s, following early exploratory expeditions by Hamilton Hume, Charles Throsby, James Meehan and John Oxley. Initial expeditions noted the agricultural potential of the area, and the area was subsequently settled for grazing.

The major regional centre of Goulburn was founded between 1829 and 1833. Goulburn and the surrounding towns including Braidwood and Bungendore, flourished during the gold rush of the 1850s (NSW NPWS 2003).

The nearest town to Boro is Tarago, approximately five kilometres to the north of the project area. Tarago is located along the Bombala Railway Line and has a historically significant railway station built in 1884 as well as the Loaded Dog Hotel. The hotel was built in 1848 and was a meeting place and 'safe house' for bushrangers in the surrounding area.

To identify any sites of potential historic heritage value that may have potential relevance to the project, desktop searches were carried out in the following heritage registers based on a ten-kilometre search radius:

- World Heritage List
- National Heritage List
- Commonwealth Heritage List
- State Heritage Register (SHR)
- heritage schedules from LEPs that apply to the project area.

No items registered on the World Heritage List, National Heritage List or Commonwealth Heritage List were identified within the search area.

Local and State listed heritage items identified within the search area are detailed in Table 6-14 and shown in Figure 6-9.

Table 6-14 Heritage items identified in proximity to the project area

Site name	Register	Item Id	Significance	Location
Tarago Railway Station	Goulburn Mulwaree LEP	I591	State	5.2 kilometres north-west
	State Heritage Register	01262	State	
	Register of the National Estate[1]	1133	Assumed national	
Currency Lass Hotel and outbuildings	Queanbeyan-Palerang LEP	I332	Local	5 kilometres south-west
Hylands Cemetery, including headstones adjacent to vault	Queanbeyan-Palerang LEP	I333	Local	5 kilometres south-west
Former cold store)	Queanbeyan-Palerang LEP	I334	Local	5 kilometres south-west
The Loaded Dog Hotel (formerly Lake Bathurst Hotel) and outbuildings (1848)	Goulburn Mulwaree LEP	I592	Local	5.2 kilometres north-west

1 The Register of the National Estate is a heritage register that listed natural and cultural heritage places in Australia, it was closed in 2007 and ceased being a statutory heritage list in 2012. It is used as an important archive of heritage information.

The project area partially overlaps the project area for the formerly proposed Jupiter Wind Farm (application has been withdrawn). The historic heritage assessment undertaken for Juniper Wind Farm identified an exhumed grave in the northern section of the project area and an abandoned mine shaft to the east of the project area as shown on Figure 6-9. These items do not have a formal heritage listing under the Heritage Act.

6.7.2 Preliminary assessment

Construction

Construction of the project would involve ground disturbance within the project area. Although no listed historic heritage items have been identified in the project area, previously unidentified historic heritage items have the potential to be encountered and there is one unassessed potential historical site in the project area that requires further assessment during the EIS.

Operation

Although there is potential to disturb previously unidentified historic heritage sites during operation, activities would generally be limited to traversing the project area via established internal access tracks and additional ground disturbance is expected to be minimal. The risk of disturbing previously unidentified historic heritage items is low.

Decommissioning

The potential impacts associated with decommissioning activities are expected to be similar to those estimated for construction and operation as the need for additional disturbance of the landform to facilitate removal of infrastructure and rehabilitation would be expected to be minimal.

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**.**

The historic heritage assessment will assess potential impacts to unlisted heritage items within the project area and would include a field survey of the project area to assess the historical archaeological potential within the project area.

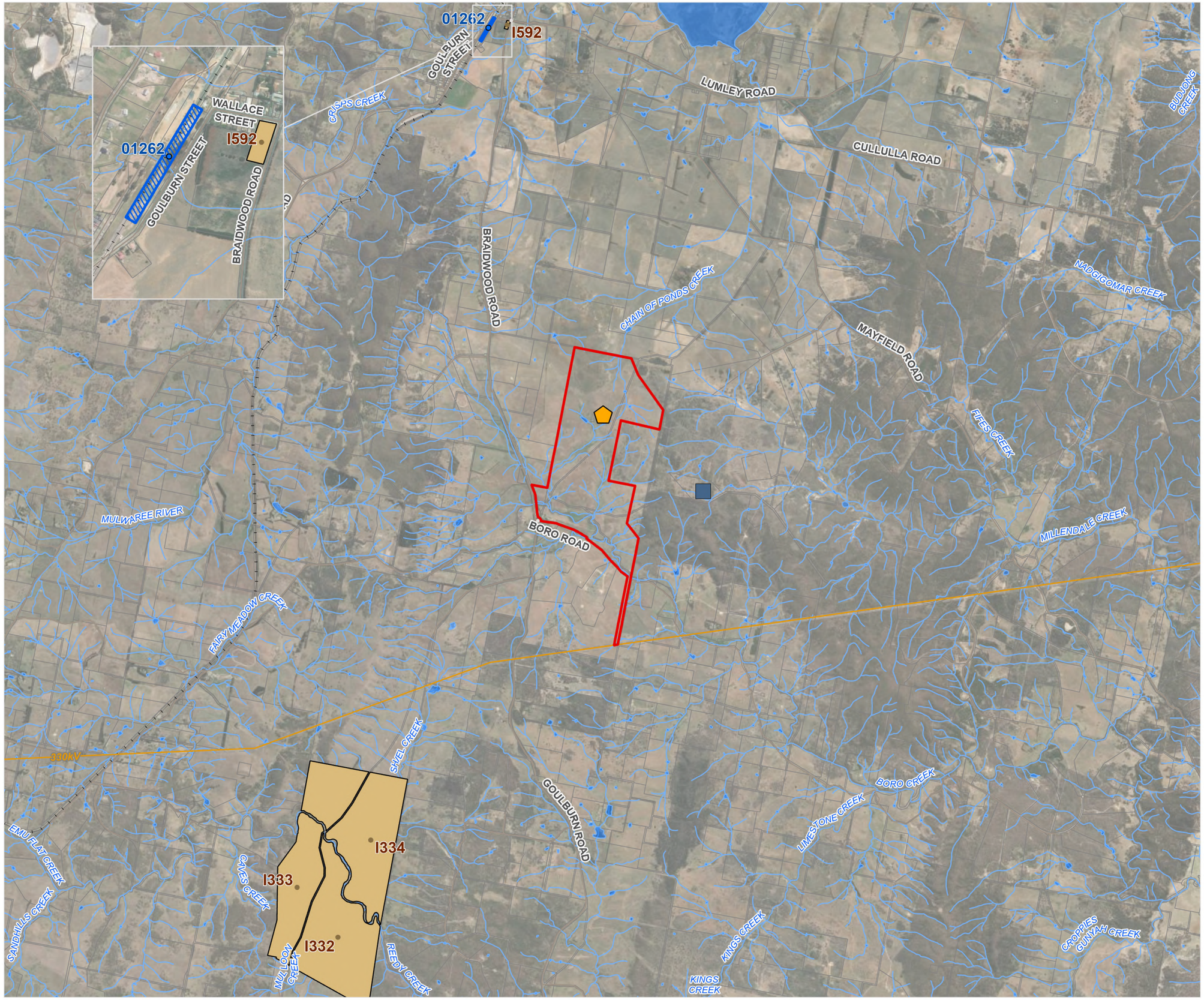


FIGURE 6-9: HISTORIC HERITAGE SURROUNDING THE PROJECT AREA

6.8 Noise and vibration

A preliminary noise impact assessment has been prepared to determine potential noise impacts from the project has included modelling and assessment based on applicable assessment standards and guidelines. The preliminary noise impact assessment is included in Appendix H.

The preliminary noise impact assessment considers the worst-case noise propagation conditions based on the indicative project disturbance footprint. A summary of the assessment is detailed below.

6.8.1 Existing environment

Sensitive receivers are located along Boro Road, Goulburn Road, Braidwood Road and Mount Fairy Road as shown in Figure 2-1. They are generally scattered around the lower hills and flatter areas along the local roads.

The existing noise environment at the closest noise sensitive receivers would be typical of a rural area, dominated by natural sounds, having little road traffic noise along Goulburn / Braidwood Road and generally characterised by low background noise levels.

No existing vibration generating activities occur close to of the project area.

Management levels and criteria

Construction is expected to occur during the recommended standard daytime hours outlined in the *Department of Energy and Climate Change (DECC) (now NSW DCCEEW) Interim Construction Noise Guideline 2009* (ICNG). Construction noise management levels for standard construction hours are presented in Table 6-15.

Table 6-15 Construction noise management levels

Receiver type and time of day	Daytime Rating Background Level (RBL) dB(A)	Noise affected management level dB(A) LAeq(15 min)	Highly noise affected management level dB(A) LAeq(15 min)
Rural residence – recommended standard hours[1]	35	45	75

[1] Monday to Friday 7 am to 6 pm; Saturday 8 am to 1 pm; No work on Sundays or public holidays

In accordance with the *Noise Policy for Industry* (NPI) (EPA 2017), the assessment of potential impacts associated with operational noise considers the intrusiveness of noise level and the amenity noise levels in determining achievable noise requirements (i.e. project noise trigger level (PNTL).

The project intrusiveness noise level (PINL) requires the energy average noise level over a 15-minute period (LAeq(15 min)) to not exceed the RBL by more than 5 dB(A).

Amenity criteria are based on the average noise level over the entire day, evening or night period and can be converted to a project amenity noise level (PANL) for assessment purposes.

The PNTL is the lower of the PINL and PANL and provides a benchmark, that if exceeded, would indicate a potential noise impact has occurred and trigger a management response (EPA 2017).

Project noise trigger levels as per the NSW NPI are provided in Table 6-16.

Table 6-16 Project noise trigger levels as per the NSW NPI

Receiver	Period	Adopted RBL[1]	PINL dB(A) $L_{A\ eq\ (15\ min)}$ (RBL + 5 dB(A)	NPI ANL dB(A) $L_{A\ eq\ (15\ min)}$	Project ANL dB(A) LA $^{eq\ (15\ min)}$	PNTL dB(A) $LA_{eq\ (15\ min)2}$	Sleep disturbance L_{Amax}
Rural residence	Day[3]	35	40	40	50	53	-
	Evening	30	35	35	45	48	-
	Night	30	35	35	40	42	45[4]

[1] - Minimum RBL adopted.

[2] - Includes a +3 dB adjustment to the amenity period level to convert to a 15-minute assessment period as per Section 2.2 of the NPI.

[3] - Day - the period from 7 am to 6 pm Monday to Saturday or 8 am to 6 pm on Sundays and public holidays; Evening – the period from 6 pm to 10 pm; Night - the remaining periods.

[4] - LAmax 52dB or the RBL plus 15dBA, whichever is the greater

The *NSW Road Noise Policy* (RNP) (DECCW 2011) sets out noise criteria applicable to different road classifications for the purpose of quantifying traffic noise impacts.

In accordance with the RNP, the preliminary noise impact assessment has adopted the 'local road' category for Boro Road and the 'sub-arterial road' category for Braidwood Road. Table 6-17 provides the road traffic noise assessment criteria for road categories relevant to the daytime period for the project.

Table 6-17 Residential road traffic noise criteria as per the RNP

Road category	Type of development	Assessment criteria dB(A) Day (7 am – 10 pm)
Freeway/arterial/ sub-arterial road	Existing residences affected by additional traffic on existing freeways/sub-arterial/roads generated by land use developments	60 dB LAeq(15hr)
Local road	Existing residences affected by additional traffic on existing local roads generated by land use developments	55 dB LAeq(1hr)

6.8.2 Preliminary assessment

Methodology

A computer model was developed to quantify project noise emissions to neighbouring receivers using DGMR noise modelling software (iNoise, Version 2024) The model incorporated a three-dimensional digital terrain map and relevant topographic information in the modelling process. Additionally, the model used relevant noise source data, ground type and atmospheric information to predict noise levels at the nearest potentially affected receivers.

The model calculation method used to predict noise levels was in accordance with *ISO 9613:1 Acoustics - Attenuation of sound during propagation outdoors. Part 1: Calculation of the absorption of sound by the atmosphere* and *ISO 9613-2 Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation* including corrections for meteorological conditions.

Construction

Construction activities are likely to be progressive across the project area and would occur at several locations simultaneously. Noise emissions were modelled for the following construction scenarios (including decommissioning):

- general construction activities (i.e. fencing, minor earthworks, clearing, utility adjustments erection of site fencing and workers compounds and accommodation) and decommissioning activities
- transmission line connection (assumes connection could be above or below ground)
- trenching and earthworks
- piling

- assembly (i.e. of solar panels and BESS installation)
- on site vehicle movements / transport.

To represent the worst-case (and unlikely) scenario, noise modelling was undertaken assuming all construction scenarios were occurring simultaneously, and the calculated noise level would therefore represent the highest (LAeq(15min)) noise level that could be expected at that receiver during construction.

The modelling results demonstrated predicted noise levels are expected to be below the noise management levels provided in Table 6-15 at all receivers during all construction scenarios; with the exception of the transmission line connection works, which would occur within approximately 400 metres of receiver R08.

Noise levels at receiver R08 are predicted to exceed the construction noise management level by up to 12 dBA during construction of the transmission line (this assumes overhead transmission lines are installed – both overhead and underground are being considered). Construction woks would proceed in a linear manner along the transmission corridor and any potential impacts would be temporary in nature. As noted in Section 3.5.7, SREA is also investigation an underground transmission line connection, that would be expected to reduce these noise impacts.

The *Construction Noise and Vibration Strategy* (TfNSW 2020) sets a safe working distance of 50 metres for a pile driver, and 100 metres for a vibratory roller to meet the residential human response criteria for continuous vibration.

As the nearest receivers are greater than 100 metres from the project area, human exposure to vibration is anticipated to be minimal, and vibration impacts are not expected during construction of the project.

Operation

Operational noise predictions were modelled for a typical worst-case operational scenario over a 15-minute assessment period based on the sound power levels in Table 6-18 obtained from manufacturer data for similar equipment.

The predicted noise levels outlined in Table 6-18, show that the dominant noise source during operation is expected to be the BESS comprising the battery and inverters.

This preliminary assessment will be revised for the EIS once more information is known about the likely equipment that is proposed to be installed.

Table 6-18 Operational equipment sound power levels

Noise source / item	Total predicted noise level (Lw dB(A))
PV panel tracking motor	79
PV panel tracking motor reset	86
Power conversion unit	102
BESS (battery unit and inverters)	109
Substation	95

Noise levels were predicted at a height of 1.5 metres above ground level during worst case noise enhancing meteorological conditions. The predicted noise levels demonstrate operational noise is expected to satisfy the PNTLs provided in Table 6-16 at all receivers as shown in Figure 6-10.

Predicted noise levels for night-time operations are not likely to exceed the maximum noise trigger levels of 40 dB LAeq (15min) (refer Figure 6-10) and there are not expected to be any sources of operational noise that would lead to sleep disturbance.

Road traffic noise assessment

Road traffic noise has been calculated using an offset distance of 25 metres to represent the closest receivers along the transport route.

During construction, traffic generated by the project would include employee/subcontractor and delivery vehicles. The traffic volume over a typical day for standard construction hours is expected to be up to eight heavy vehicle movements per hour (semi-trailers or B-doubles) and 40 light commercial vehicle movements for worker transport per day.

Predicted noise levels from project related construction traffic are presented in Table 6-19. The results show that the calculated noise levels as LAeq(1hr) for local roads, and LAeq(15hr) for arterial/sub arterial roads align with RNP (DECCW, 2011) categories and assessment periods.

Results demonstrate that project construction traffic noise levels is likely to with the relevant RNP criteria at all receivers along the proposed transportation route

Table 6-19 Predicted construction road traffic noise levels

Road type	Offset distance to receiver	Predicted noise level	RNP Road Traffic Noise Criteria	Compliance achieved
Arterial, Sub Arterial and Collector Roads				
Braidwood Road	15 metres	48dB LAeq(15hr)	60dB LAeq(15hr)	Yes
		50dB LAeq(9hr)	55dB LAeq(9hr)	Yes
Local road				
Boro Road	15 metres	47dB LAeq(1hr)	55dB LAeq(1hr)	Yes
		50dB LAeq(1hr)	50dB LAeq(1hr)	Yes

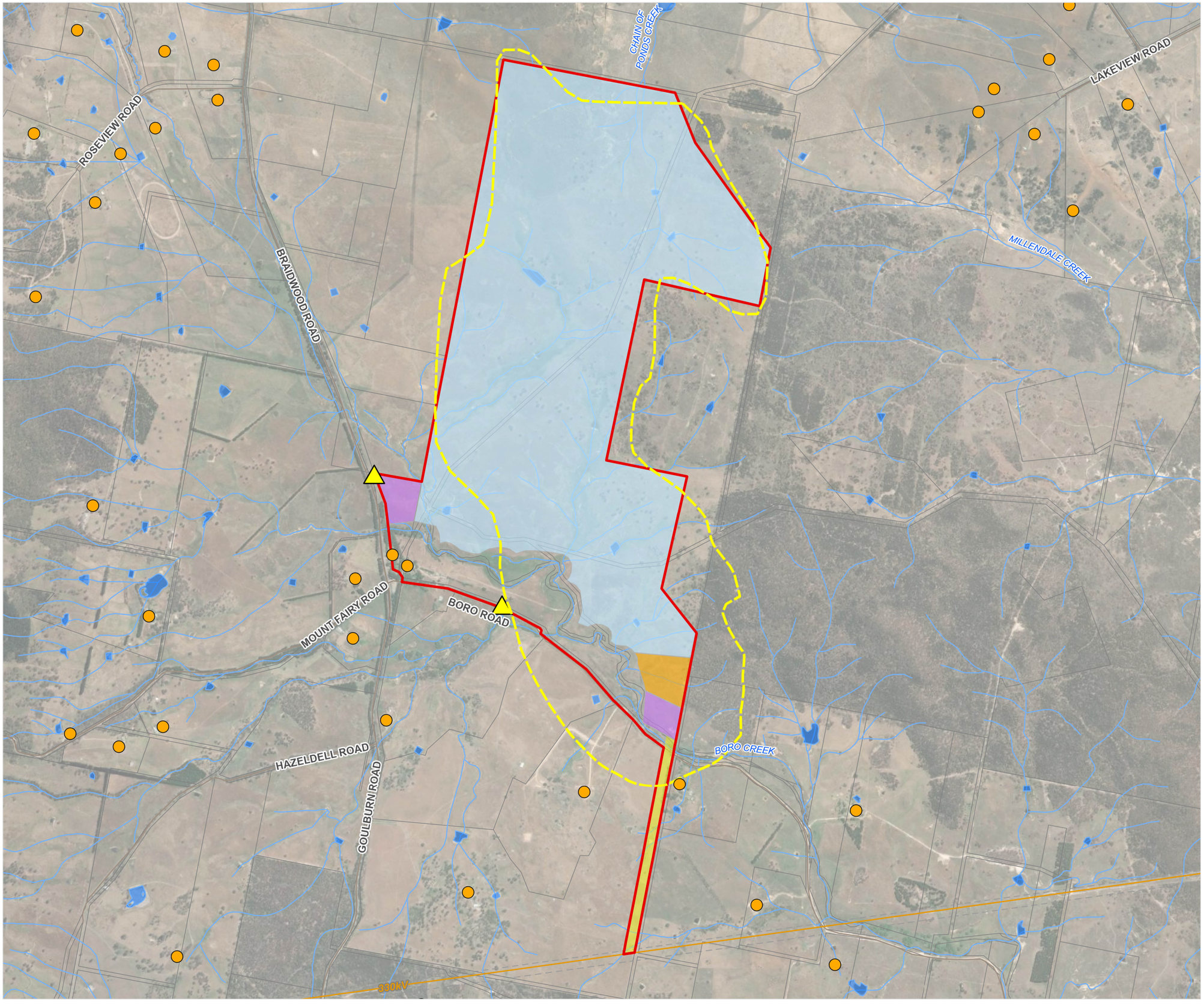
6.8.3 EIS assessment approach

A detailed noise impact assessment will be prepared for inclusion in the EIS according to the guidelines outlined in Appendix A.

The EIS will incorporate the following information to assist in considering 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 solar farm, BESS units 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
- assessment of cumulative impacts considerate of other projects in the area.

The project will be refined as part of the ongoing design process to seek to minimise noise impacts at all non-associated receivers. Potential modifications to the project layout or agreements with landowners are options that will be further considered in the EIS process to ensure that compliance with relevant criteria at all residences is maintained.



- Project area
- Indicative BESS, switching station and substation
- Indicative construction compound and O&M facility
- Proposed transmission easement
- Solar array
- Proposed site access
- Road
- Existing 330 kV transmission line
- Watercourses
- Water body
- Private receivers
- 35db(A) noise contour

0 0.5 1 Km

SCALE 1:20,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

A TETRA TECH COMPANY

FIGURE 6-10: NOISE CONTOURS AROUND THE PROJECT INFRASTRUCTURE AND RESIDENCE

6.9 Land resources

6.9.1 Existing environment

A review of publicly available geology and land mapping of the project area is summarised in Table 6-20.

Table 6-20 Land and soil characteristics of the project area

Feature	Description
Geology	The geology of the project area is primarily mapped as Devonian age granites and Quaternary unconsolidated colluvium, with patches of Ordovician sandstones throughout the north-eastern portion of the project area.
Soil	*Soil Stability* Australian soil classification maps for the project area show the site has the following soil types: • Kurosols (KU) – located across the south-western portion of the project area • Kurosols - natric (Kun) – located across the north-eastern portion of the project area • Dermosols (DE) – located across Boro Creek • Kandosols (KA) – located across Chain of Ponds Creek and the western portion of the project area *Soil Chemistry* Available mapping resources do not identify any soil chemistry issues relevant to the project area. The data provides no indication of salinity, Acid Sulfate Soils or naturally occurring asbestos presence or risk.
Land capability and agricultural value	A search of the Soil and Land Capability Mapping (DPIE 2021a) identified two predominant land and soil capability (LSC) classes within the project area: • 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 across the northern and central portion 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 through the centre and southern portions of the project area. No LSC Classes 1-3 are present in the project area as shown on Figure 6-11. There are no identified areas in the project area or surrounding area mapped as Biophysical Strategic Agricultural Land for management under the Strategic Regional Land Use Policy.
Contamination	A search of the NSW EPA Contaminated Land Register and the EPA Public Register for listed Environment Protection Licence (EPL) sites identified no contaminated sites recorded within or near the project area. Contaminated land planning guidelines (i.e. *Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land* (DUAP 1998)) identify activities with the potential to cause contamination. Agricultural/horticultural activities are listed as an activity which potentially causes contamination. Agricultural/horticultural activities have occurred on and in the vicinity of the project area and as a result there is the potential for previously unidentified agriculturally derived contaminants to be present within the project area.

6.9.2 Preliminary assessment

Construction

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

- degradation and loss of topsoil
- compaction of soil through vehicle movement
- disturbance and form changes affecting natural surface drainage
- erosion and sedimentation from vegetation clearing and earthworks, potentially leading to off-site impacts (e.g. eutrophication of downstream waters)

- increased dust generation/emissions.

Operation

Once the project is operational, it is unlikely there would be further impacts to soils or agricultural productivity.

Maintenance vehicles would use existing permanent access roads, limiting disturbance to new areas.

6.9.3 EIS assessment approach

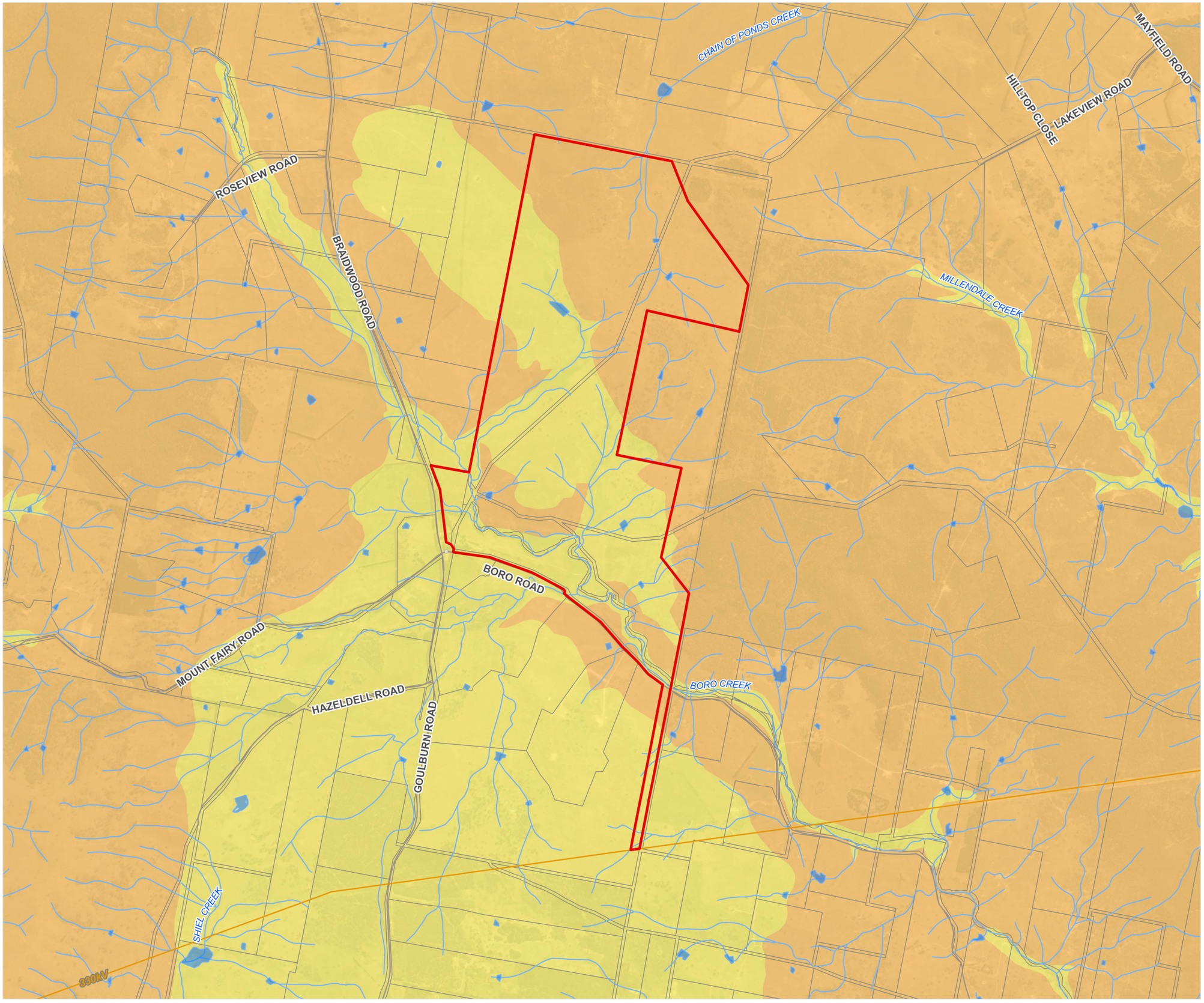
The Large-Scale Solar Energy Guideline outlines the process for assessing impacts on agricultural land and includes a flow chart to determine the level of assessment required for the EIS.

As the project is located upon and next to rural zoned land and does not contain LSC classes 1 to 4 or any areas of BSAL, a level 1 basic assessment is required which includes:

- LSC mapping and the results of any site verification completed to confirm land capability
- consultation with neighbouring landholders to identify potential project impacts (if any) on immediately adjacent land
- a description of project impacts (if any) on immediately adjacent land
- a description of the consultation undertaken
- consideration of measures to reduce impacts on neighbouring agricultural land.

The agricultural impact assessment will consider the requirements and guidelines outlined in Appendix A.

The EIS will also include a preliminary site investigation (PSI) into potential contamination across the project area, in accordance with Clause 4.6 of the *State Environmental Planning Policy (Resilience and Hazards) 2021.* This requires a consent authority take into consideration whether the land is contaminated in determining development applications.



Project area
Road
Existing 330 kV transmission line
Watercourses
Water body
Cadastre

Land and Soil Capability
5 - Severe limitations
6 - Very severe limitations

0 0.5 1 1.5 Km

SCALE 1:25,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 6-11: LSC CLASSES WITHIN THE PROJECT AREA

6.10 Water resources

6.10.1 Existing environment

Hydrology

The project is located within the Shoalhaven River catchment. Boro Creek, Chain of Ponds Creek and several associated drainage lines exist within the project area, as shown in Figure 6-12. Boro Creek flows into the Shoalhaven River, which is approximately 22 kilometres downstream. Chain of Ponds Creek flows northward into Lake Bathurst approximately six kilometres downstream.

The closest Bureau of Meteorology weather station to the project is 30 kilometres south at Braidwood Racecourse. Annual mean rainfall at Braidwood is 688.3 millimetres (BOM 2024).

'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 two streams with different orders join, the resulting stream has the same order as the highest order of the two joining streams (DPE 2022).

The Strahler stream order for the watercourses within the project area are listed below:

- Boro Creek (perennial) – 5
- Chain of Ponds Creek (intermittent) – 4.

The project area is located within the Sydney Drinking Water Catchment.

Flooding

A search of the New South Wales Planning Portal Spatial Viewer, Goulburn Mulwaree Council website, and the Queanbeyan-Palerang Council website did not provide any information on flood prone land within or adjacent to the project area. A review of the SES Flood portal found there were no available flood studies complete within or close to the project area.

Given the project's flat topography and proximity to Boro Creek, it is likely that some areas of the project area would be located on or in proximity to flood prone areas. This will be verified as part of the EIS.

Groundwater

A preliminary search of the WaterNSW Real-Time Data database has indicated there are no groundwater bores within the project area.

Registered bores within five kilometres of the project area are summarised in Table 6-21.

Table 6-21 Nearby groundwater bores

Bore	Location from project area boundary (closest point)	Purpose	Drill depth and water level
GW401198	Approximately 100 metres to the south	Private for domestic/stock use	68 metres / water level unknown
GW108731	Approximately 900 metres to the south	Private for domestic/stock use/ irrigation	72 metres / water level unknown
GW105266	Approximately 400 metres to the south	Private for domestic use	60 metres / water level unknown
GW008884	Approximately 2.5 kilometres east	Private general use bore	48.8 metres / water level unknown
GW100955	Approximately 1.2 kilometres east	Private for domestic/stock use	102.2 metres / water level unknown

Water sharing plans

Water sharing plans that apply to the project are shown in Table 6-22. The EIS would include an assessment of any anticipated groundwater take and consideration of water licensing requirements under relevant water sharing plans.

Table 6-22 Water sharing plans and water sources

Water type	Water sharing plan	Water source
Surface water	Water Sharing Plan for the *Greater Metropolitan Region Unregulated River Water Sources 2011*.	Shoalhaven River; Illawarra Rivers; Southern Sydney Rivers; Northern Sydney Rivers; Upper Nepean and Upstream Warragamba; and the Hawkesbury and Lower Nepean Rivers water source.
Groundwater	Water Sharing Plan for the *Greater Metropolitan Region Groundwater Sources 2011*.	Greater Metropolitan Region Groundwater Sources.

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
- 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
- potential runoff during routine cleaning of solar panels or emergency response.

6.10.3 EIS assessment approach

The EIS will consider potential impacts on both the surface water catchment and groundwater resources and assess the issues of flooding, erosion and sediment control, water quality, water users, water sourcing and licencing, and identifying setbacks for impact avoidance, as well as suitable management and mitigation measures.

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

- 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

  - post development flood behaviour, 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
- an assessment of the likely impacts on surface water resources, including local waterbodies
- identification of any works within 40 metres of the high bank of any waterfront land, and an assessment of the impacts and required mitigation
- a discussion of construction erosion and sediment control measures to ensure impacts during excavation, road works, and transport of machinery 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 relevant guidelines outlined in Appendix A.



Project area
Road
Existing 330 kV transmission line
Railway
Water body

Strahler Stream Order

1st Order Stream
2nd Order Stream
3rd Order Stream
4th Order Stream
5th Order Stream
6th Order Stream

0 0.5 1 Km

SCALE 1:20,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

FIGURE 6-12: WATERCOURSES WITHIN THE PROJECT AREA

6.11 Glint and glare

6.11.1 Existing environment

Solar PV panels can produce glint (a momentary flash of bright light) and glare (a continuous source of bright light) which can affect people and then land uses, including pilots, air traffic controllers, residents, road users and rail operators.

There are no aviation facilities and/or railway infrastructure within five kilometres of the project.

6.11.2 Preliminary assessment

There is potential for glint and glare impacts associated with the project, particularly along public roads such as Braidwood Road and Boro Road, as well as from viewpoints along other local roads located to the west (Mount Fairy Road) and south (Goulburn Road). However, these impacts are likely to be mitigated by the significant roadside vegetation present, which provides a natural screen, reducing the visibility of the project area from public viewpoints.

The PV panels would be mounted on a single-axis tracking system, which lowers the potential for glint and glare impacts compared to fixed-tilt systems. The tracking system allows the panels to follow the sun's path, optimizing the angle of solar absorption and reducing the likelihood of reflecting sunlight. In addition, the PV panels are designed with anti-reflective coatings, further minimizing reflectivity and glare.

6.11.3 EIS assessment approach

A glint and glare impact assessment will be undertaken during the EIS stage to identify, evaluate, and mitigate potential impacts of reflected sunlight from the PV panels. This assessment will be undertaken using the Solar Glare Hazard Analysis Tool (SGHAT) developed by Sandia National Laboratories. The SGHAT is used to evaluate glare resulting from solar farms at different receivers based on proximity, orientation and specifications of the PV module. This tool is recognised by the Australian Government Civil Aviation Safety Authority (CASA) with reference to potential glint and glare impacts to aviation operations.

6.12 Hazards and risk

6.12.1 Preliminary hazard analysis

Preliminary assessment

A preliminary hazard assessment (PHA) is required where a project is a potentially hazardous or offensive development under the Resilience and Hazards SEPP (formerly SEPP33). 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, and does include solar 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.

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.

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.

EIS assessment approach

A PHA will be undertaken to evaluate 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 Resilience and Hazards SEPP.

The installation and operation of the BESS would be assessed as per the guidelines stated in Appendix A.

6.12.2 Bushfire

A preliminary bushfire assessment was completed for the project and is provided in Appendix I.

Existing environment

The Bushfire Prone Land map contains three categories to classify the risk of developing on the land (New South Wales Rural Fire Service 2015):

- Vegetation Category 1 has the highest risk for bushfire and has the highest combustibility and likelihood of forming fully developed fire with heavy ember production
- Vegetation Category 2 has a lower bushfire risk than Category 1 and Category 3 and a lower combustibility and/or limited potential fire size due to the vegetation area shape and size and land geography
- Vegetation Category 3 has medium bushfire risk vegetation which is higher in risk than Category 2 but lower than Category 1. Vegetation in this category generally consists of grassland, semi-arid woodlands, alpine complex and arid shrublands.

A review of the New South Wales Rural Fire Service Bushfire Prone Land map shows the project area is located on Vegetation Category 3 land (refer Figure 6-13).

Land classified as Vegetation Category 1 (highest risk for bushfire) is located to the east of the project area.

A review of the bushfire history in the area has identified the landscape is prone to bushfires. The largest bushfire occurred in 2017, to the south-west of the project area in Mount Fairy.

Preliminary assessment

Bushfire risk can be considered in terms of environmental factors that increase the risk of fire (fuel quantity and type, topography and weather patterns), as well as specific activities (such as hot works and construction activities) or infrastructure components that exacerbate combustion or ignition risks (such as transmission lines and other electrical components once operational).

As part of maintenance works during operation, encroaching vegetation would be managed to maintain the asset protection zones and reduce potential bushfire fuel load and ignition source.

EIS assessment approach

The EIS will include a bushfire risk assessment and 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 the New South Wales Rural Fire Service *'Planning for Bushfire Protection'* (New South Wales Rural Fire Service 2019) and other guidelines outlined in Appendix A.

The bushfire risk assessment and mitigation strategies will consider the following factors:

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

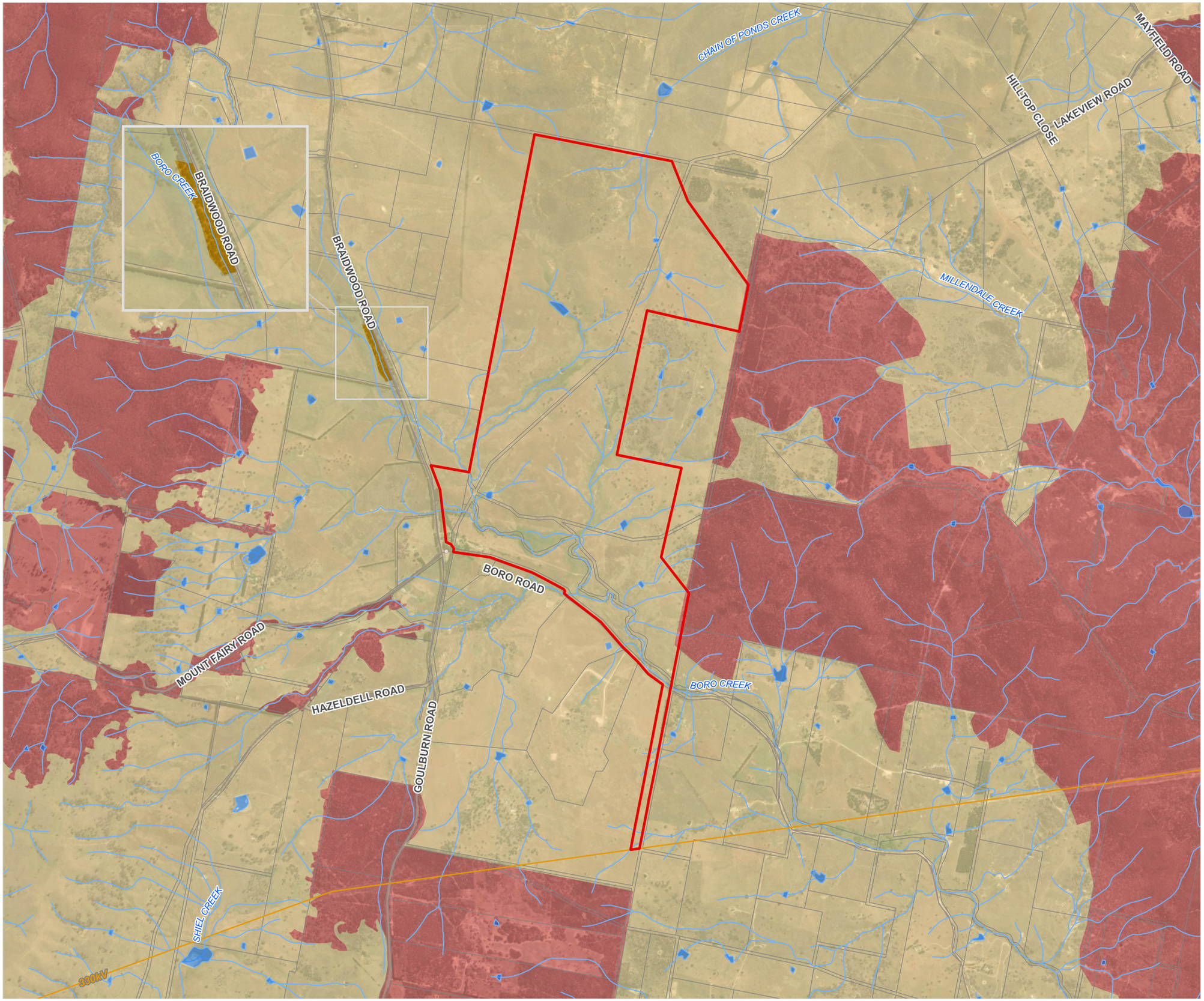


FIGURE 6-13: BUSHFIRE PRONE LAND CATEGORIES WITHIN THE PROJECT AREA

6.12.3 Electromagnetic field

Existing environment

Electromagnetic fields (EMFs) are part of the natural environment. Electrical fields are present in the atmosphere's ionospheric currents and lightning, while static magnetic fields are created by earth's magnetic core.

EMFs 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). Electrical fields and magnetic fields are independent of one another and, in combination, cause energy to be transferred along electrical wires.

There is an existing TransGrid overhead transmission line located approximately 1.2 kilometres south of the project area that the project would connect to.

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 (e.g. x-rays) 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

The EIS will include an EMF assessment prepared to consider potential impacts and risks to human health associated with the EMF generated by the substations, transmission lines and associated electrical infrastructure. The EMF assessment will:

- identify and model the sources of EMF such as underground cables and overhead line conductors
- identify any existing sources of EMF exposure
- calculate EMF levels and assess the exposure risk they pose to human health.

The assessment 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.

6.12.4 Biosecurity

Existing environment

Most of the land in the vicinity of the project is used for livestock grazing with limited land used for cropping.

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.

Within NSW, 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 several pests which are currently not found in the South East and Tablelands Region which if introduced, could threaten the potato and grape industries in the area. For example, the grapevine phylloxera, pale potato cyst nematode, the golden potato cyst nematode, and diseases including potato spindle tuber viroid, bacterial wilt, and 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 used 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
- biosecurity risks in the project area
- management and mitigation measures to minimise potential biosecurity risks.

6.12.5 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 or potentially workforce personnel may contact the materials.

During operation dangerous goods and hazardous materials would be stored in bunded areas within the operation and maintenance compound and it is unlikely there would be further impacts.

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.

6.13 Other environmental issues

The EIS would also address other issues summarised in Table 6-23. Detailed assessments are not proposed as these issues can be readily defined, assessed and mitigated using well recognised approaches. These matters would be appropriately assessed in the EIS and in accordance with the relevant guidelines in Appendix A.

Table 6-23 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 NSW guidelines. Air quality issues relating to operation would be minimal and likely only relate to the operation of maintenance vehicles, staff light vehicles and the occasional heavy vehicles required for deliveries. This will also be considered in the qualitative assessment.

Issue	Comment
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.
Decommissioning and rehabilitation	The EIS will consider potential impacts arising from decommissioning and rehabilitation activities, particularly on the final landform and compatibility with existing land uses.
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 during construction, operation and decommission phases of the project. The EIS will consider strategies to ensure resources are used effectively, waste generation is reduced and the general principles of waste management (i.e. reuse, recycle and safe disposal) are implemented appropriately.

6.14 Cumulative impacts

6.14.1 Existing environment

As discussed in Section 2.2.1, there are a number of approved and proposed renewable energy projects located in close proximity to the project area.

Table 2-2 and Figure 2-3 identify renewable energy projects within 50 kilometres of the project area, categorised as either being in operation, approved or in the feasibility and/or planning stage of development. It is anticipated there would be additional potential future renewable energy projects that are not publicly known at the time of preparing this report.

6.14.2 Preliminary assessment

Due to the multiple renewable energy generation 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.

The identified nearby renewable energy projects have the potential to generate cumulative impacts during both construction and operation. Cumulative impacts across the key environmental matters would be considered separately for 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.

6.14.3 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 will be assessed in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022c). The guidelines provide a framework for assessing and managing project-level cumulative impacts using six key steps which are shown in Figure 6-14.

The assessment of cumulative impacts focuses on the project's interactions with other nearby projects and where construction and /or operational timeframes are likely to be concurrent, or where operational impacts of two 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, both incremental assessment and cumulative assessment would be undertaken.

Incremental types are standard practice for all project-level environmental impact assessments, whereas cumulative types are 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 2022c) is provided in Table 6-24.

A cumulative impacts worksheet is provided in Appendix J 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 2022c).

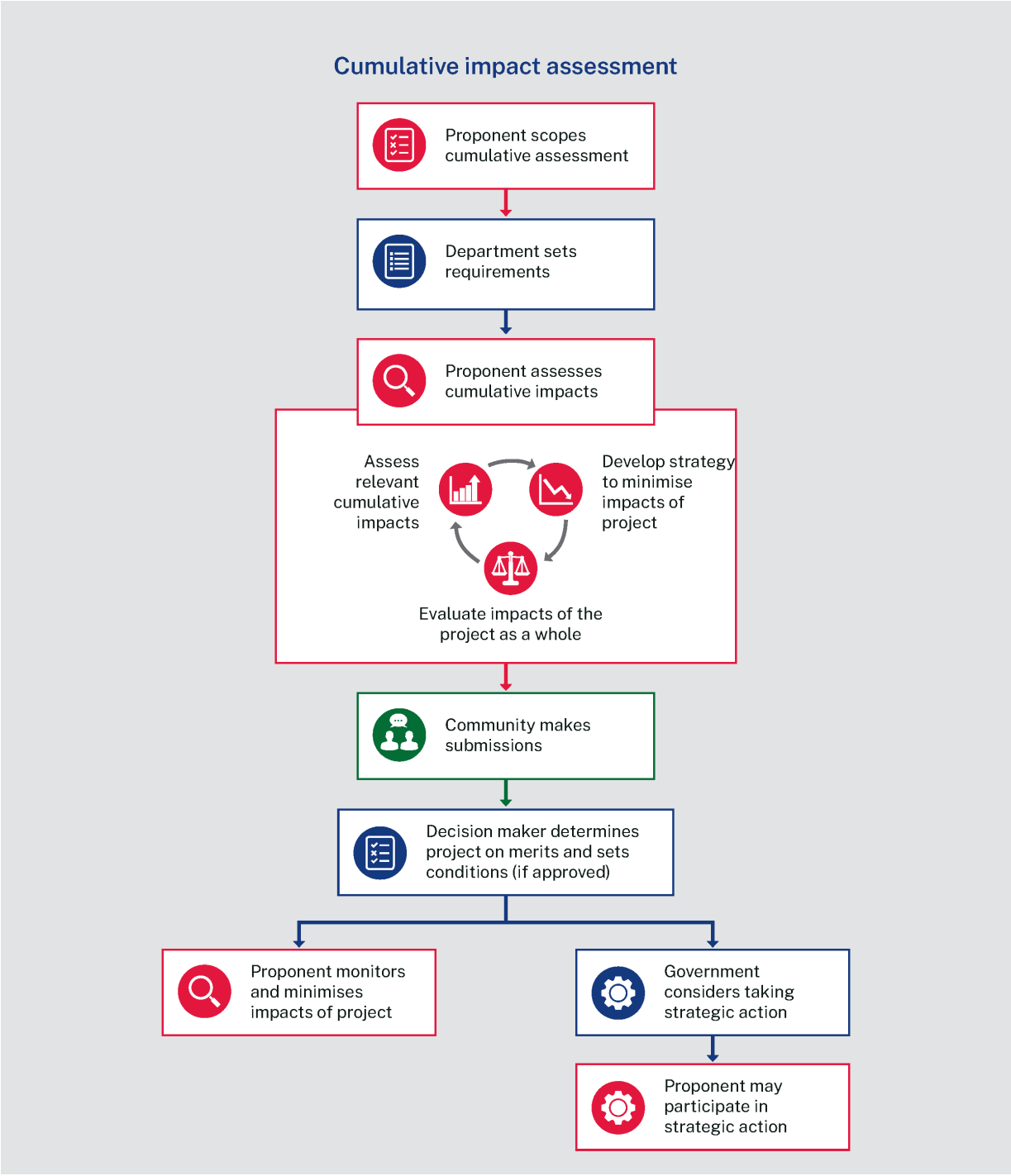


Figure 6-14 Key steps in cumulative impact assessment (DPIE 2022)

Table 6-24 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-kilometre buffer has been 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-kilometre buffer may vary depending on the characteristics of the relevant projects confirmed at that time.
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 several proposed, approved or operational renewable energy projects located close to the project area as shown in Figure 2-3. 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 would be undertaken in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE 2022) 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 managed the key uncertainties.

6.15 Estimated development cost

The EIS would be supported by an estimated development cost report (EDC) prepared by an Australian Institute of Quantity Surveyors (AIQS) Certified Quantity Surveyor or Royal Institution of Chartered Surveyors (RICS) Chartered Quantity Surveyor; in accordance with *Planning Circular PS 21-020: Calculation of Capital Investment Value* (or latest version) (DPHI 2021).

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

The EDC report would be dated within 30 days of EIS submission.

6.16 Matters requiring no further assessment

Matters requiring no further assessment, and the associated justification are identified in Table 6-25. These matters have been identified in accordance with the SSD Guidelines. Justification has been provided to detail why no further assessment is required.

Table 6-25 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.

Matter	Justification
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 for construction, and 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

SREA is proposing to construct, operate and decommission the 400-megawatt development including a 150MW solar farm and 250MW/1000MWh battery energy storage system (BESS).

The project is in the local government areas of Goulburn Mulwaree Council and the Queanbeyan-Palerang Regional Council, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales

The project would generate around 400-megawatts of renewable energy and would contribute directly to NSW Government's target to reduce GHG emissions and provide secure and reliable energy into the NEM. It 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 would undergo a more detailed technical assessment during preparation of the EIS and include the following:

- Landscape and visual
- Biodiversity
- Transport and access
- Socio-economic
- Aboriginal heritage
- Historic heritage
- Noise and vibration
- Land resources
- Water resources
- Glint and glare
- Hazards and risk
- Bushfire
- Waste
- Contamination
- Cumulative

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:

- Electromagnetic fields
- Air quality
- Climate change
- Property and land use
- Waste and resource use.

As part of preparation of the EIS, further assessment would be carried out in conjunction with the refinement of the project layout with a focus on avoidance and minimisation of impacts on the environment and local communities, where reasonable and feasible.

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	• *Large Scale Solar Energy Guideline* (DPHI, 2024a) • *Technical Supplement - Landscape and Visual Impact Assessment, Large Scale Solar Energy Guideline* (DPHI, 2024b) • *Transmission Guideline* (DPHI, 2024c) • *Technical Supplement - Landscape and Visual Impact Assessment, Transmission Guideline* (DPHI, 2024d)	Section 6.2
Detailed	**Biodiversity**	High	Direct Indirect Cumulative	Sensitive (flora, fauna and ecological values)	Likely	Yes	General	• *Surveying Threatened Plants and their Habitats: NSW Survey Guide for the Biodiversity Assessment Method (*DPIE, 2020a) • Biodiversity Assessment Method (BAM) (DPIE, 2020b) • *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)	Section 6.3

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	**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* (Austroads various) • *Austroads Guides to Traffic Management* (various) • *Australian Standard AS 2890 Parts 1 and 2* • *Australian Code for Dangerous Goods Transport* (NTC, 2024)	Section 6.4
Detailed	**Socio-economic**	Moderate	Direct Indirect Cumulative Perceived	Sensitive	Likely	Yes	Specific	• *Social Impact Assessment Guideline for State Significant Projects* (DPE 2023a) • *Undertaking Engagement Guidelines for State Significant Projects* (DPHI, 2024e)	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) • *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010a) • *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (DECCW, 2010b).	Section 6.6

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	Historic heritage	Moderate	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
Detailed	Noise and vibration	Moderate	Direct Cumulative Perceived	Sensitive (receptors)	Likely	Yes	General	• *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* (DECC, 2006)	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*	Section 6.9

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
								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)	
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) • *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)	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
Standard	**Glint and glare**	Low	Direct Perceived	Sensitive	Likely	No	General	• *Large-Scale Solar Energy Guideline (DPE 2024a)*	Section 6.11
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 6.12.1
Detailed	**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 6.12.2
Standard	**Hazards and risk - EMF**	Low	Direct Perceived	Sensitive	Likely	No	General	• *Electromagnetic Fields Management Handbook* (Energy Networks Australia, 2016)	Section 6.12.3
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 6.13
Standard	**Climate change**	Low	Direct Indirect	Sensitive (lifestyle disturbance)	Likely	No	General	• *National Greenhouse Accounts Factors (Australian Government, 2022)* • *NSW Climate Change Policy Framework* (OEH, 2016)	Section 6.13

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
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 6.13
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 6.13

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, 2021).
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, 2021).
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, 2021)

Appendix B Scoping report guidelines and 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.	Section 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.	Section 1.3 Section 1.4 Figure 1-1
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.	Section 1.5

Requirement	Where addressed in the Scoping Report
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).	Section 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. 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.	Section 2
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	Section 3.1 Figure 3-1 Section 3.2 Section 3.3 Section 3.4 Section 3.5 Section 3.6 Section 3.7
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.	Section 2.5.3
Identify any restrictions or covenants that apply to the land.	Section 3.8
Include a high-level analysis of feasible alternatives considered and rejected, including the consequences of not carrying out the development.	Section 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).	Section 4
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.	Section 4
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	Section 5.4 Section 5.8

Requirement	Where addressed in the Scoping Report
• 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.	
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).	Section 5.2
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	Appendix F
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.	Section 5.9
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.	Section 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	Section 6

Requirement	Where addressed in the Scoping Report
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.	
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

MAKING COMPLEX EASY

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BORO SOLAR FARM

Preliminary Visual Impact Assessment



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Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
V0	Final	T Connor	L Montesin / J Williamson	T Connor	23 June 2025

Approval for issue

Timothy Connor  23 June 2025

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TERMS AND ACRONYMS

Term / acronym	Description
Applicant	Samsung C&T Renewable Energy Australia 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.
Cumulative Impacts	The result of the incremental impact of the proposal when added to other past, current and known likely future activity
Digital Elevation Model	A representation of the bare ground (bare earth) topographic surface of the Earth excluding trees, buildings, and any other surface objects (U.S. Geological Survey 2024).
Digital Surface Model	A representation of the topographic surface of the Earth including trees, buildings, and any other surface objects.
Dwelling	A dwelling has the same meaning as the Standard Instrument – Local Environmental Plan (a room or suite of rooms occupied or used as a separate domicile).
Goulburn Mulwaree LGA	Local Government Area (LGA) the Project area is part of.
Landscape	A holistic area comprised of its various parts including landform, vegetation, buildings, villages, towns, cities and infrastructure.
Magnitude	The apparent size of an energy project in the landscape or when viewed from a given viewpoint. Magnitude is influenced by factors including: • the apparent size of a Project decreases significantly as the distance from the viewer increases • the apparent size of a Project increases with the physical scale and dimensions and the number of changes to the landscape that would be visible, although these factors are less discernible as distance from the viewer increases.
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.
Private receiver	A privately owned or used viewpoint type
Project	Construction, operation, and decommissioning of a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/ 1000-megawatt hours storage BESS).
Project area	The indicative development area for the project located on the land to be leased by SREA from the landowner.
Public viewpoint	A publicly owned or used viewpoint type
RPS	The author of this Preliminary Visual Impact Assessment.
Queanbeyan-Palerang LGA	Local Government Area (LGA) the Project area is part of.
Rural dwelling	A dwelling that is located within a rural zoned area (RU1, RU2, RU3, RU4 and RU6), large lot residential zoned area (R5), or environmental or conservation area zone (C2, C3 and C4).
SREA	Samsung C&T Renewable Energy Australia Pty Ltd.
Scenic amenity	A measure of the relative contribution of each place to the collective appreciation of the landscape.
Sensitivity	The capacity of a landscape or viewpoint to absorb the impacts from a proposed land use change and/or built form. The following examples are provided in the Technical Supplement for Landscape and Visual Impact Assessment • a pristine natural environment is likely to be more sensitive to change than an industrial area • a view from a residence is also likely to be more sensitive to change than from a local road where views are more intermittent and less frequent.
Values	Any aspect of landscape or views that people consider to be important. Landscape and visual values may be reflected in local, state or federal planning regulations, other published documents or be established through community consultation and engagement, or as professionally assessed
View	The sight of a landscape or scene.
Viewpoint	The specific location of a view, typically used for assessment purposes.

Term / acronym	Description
Visual catchment	The Australian Institute of Landscape Architects describes visual catchment as “Areas visible from a combination of locations within a defined setting (may be modelled or field-validated).
Visual impact	The impact on views from private and public places. It is determined by considering the visual magnitude sensitivity

Abbreviation	Title
AR	Associated residence
BESS	Battery energy storage system
DCP	Development Control Plan
DEM	Digital Elevation Model
DHPI	NSW Department of Planning, Housing and Infrastructure
DSM	Digital Surface Model
EIS	Environmental Impact Statement
LEP	Local environment plan
LGA	Local government area
NEM	National energy market
NAR	Non-associated residence
O&M	Operation and maintenance
SEARs	Secretary's environmental assessment requirements
SSD	State significant development
ZTV	Zone of theoretical visibility

1 INTRODUCTION

1.1 Introduction

Samsung C&T Renewable Energy Australia Pty Ltd (SREA) is proposing to construct, operate and decommission a large-scale solar farm and battery energy storage system (BESS) with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/ 1000-megawatt hours storage BESS) (the project).

The project would occupy an area of up to 420 hectares in the local government areas of Goulburn Mulwaree Council and the Queanbeyan-Palerang Regional Council, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales. The project location is shown in Figure 1-1.

RPS has been commissioned to prepare a preliminary visual impact assessment (PVIA) for the proposed Boro Solar Farm. The PVIA will form part of the scoping report seeking the Secretary's Environmental Assessment Requirements (SEARs) in order to prepare an Environmental Impact Statement (EIS).

The PVIA for the project has been prepared in accordance with the following documents:

- *Large-scale Solar Energy Guideline* (DPIE 2024a) (Solar Guideline)
- *Technical Supplement for Landscape Character and Visual Impact Assessment: Large-Scale Solar Energy Guideline* (DPIE 2024b) (Technical Supplement).

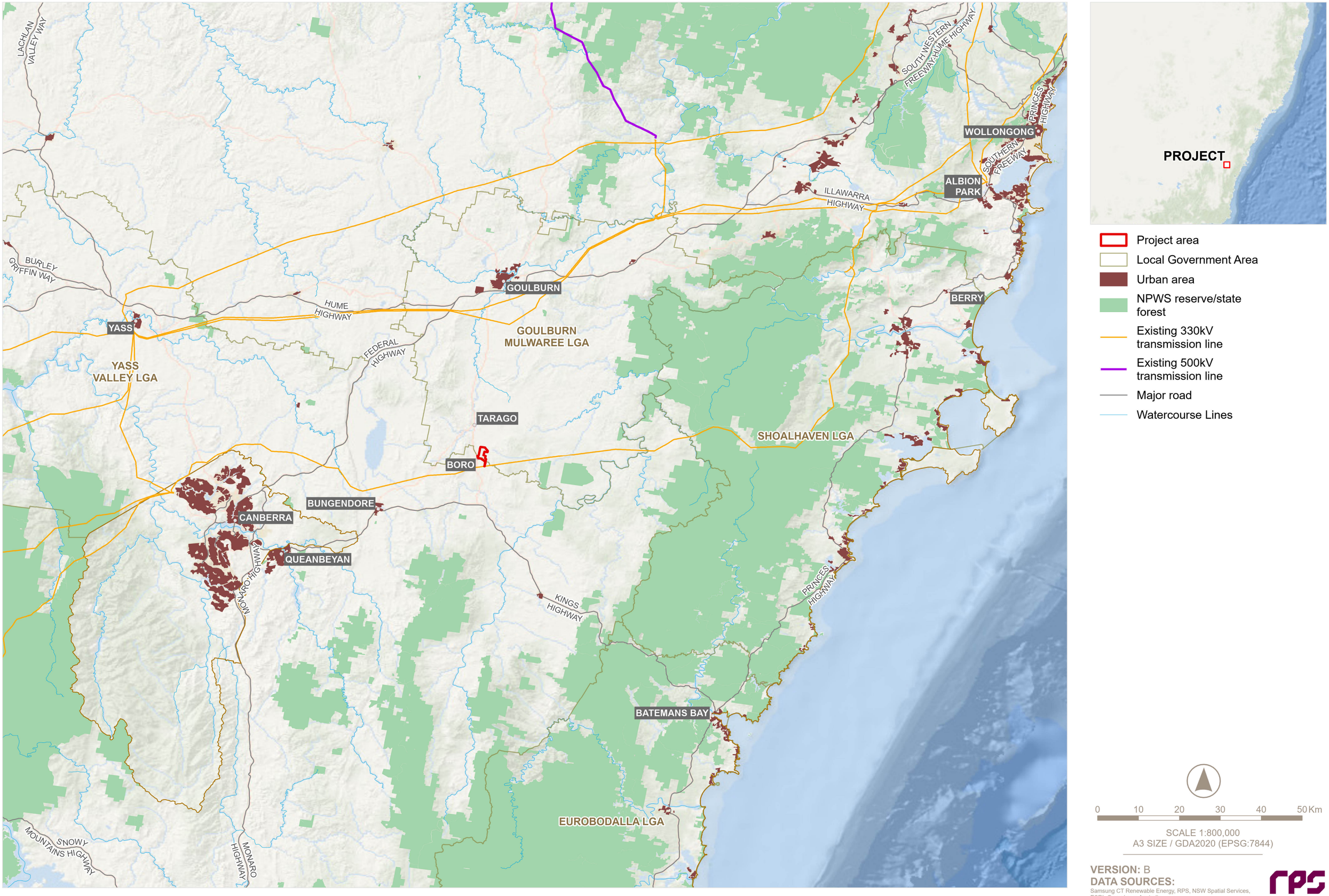
1.2 Professional experience

The Technical Supplement states: 'professional assessment skills are critical to an effective visual impact assessment. The applicant is expected to engage relevant professionals (for example, landscape architects, architects, environmental planners, geographers, or other visual assessment specialists) with demonstrated experience and capabilities'.

RPS has a team who specialise in landscape architecture, urban design and landscape and visual impact assessment. This team has extensive experience undertaking landscape and visual impact assessments for large-scale infrastructure and renewable energy projects.

Recent experience in visual assessments for renewable energy projects of a similar scale include:

- Finley Solar Farm (NSW)
- Northern Tablelands Wind Farm (NSW)
- Woolooga Solar Farm and BESS (Southeast Queensland)
- Spinifex Offshore Wind Farm (Victoria)
- Banksia Solar Farm (Southeast Queensland)
- Collinsville North Solar Project Stages 2,3,4 (North Queensland)
- Pioneer BESS (North Queensland)
- Ross River Solar Farm (North Queensland).



VERSION: B

DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 1-1: REGIONAL CONTEXT

2 THE PROJECT

2.1 Project overview

The project would involve the construction, operation, and decommissioning of a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/ 1000-megawatt hours storage BESS) (the project).

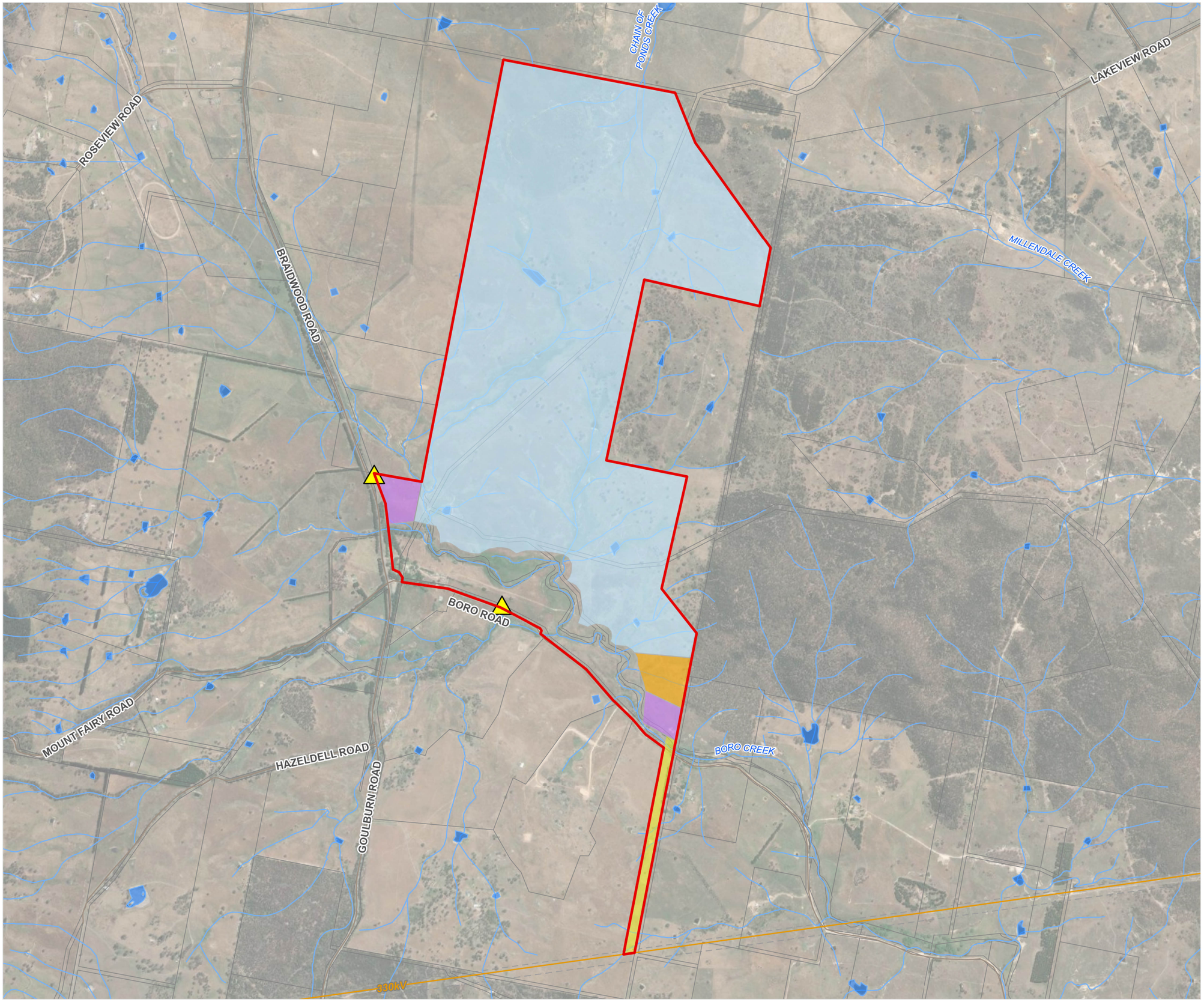
The project is intended to be constructed in a single stage, and would include the following key components:

- a solar farm with PV modules mounted on single-axis tracking systems plus associated power conversion units (PCUs), a cable network and internal access tracks
- a BESS with a capacity of up to 250 megawatts/ 1000-megawatt hours storage
- electrical infrastructure including:
  - a central substation with a step-up facility
  - underground and some overhead electrical reticulation connecting the PV arrays to the central substation
  - a new 330-kilovolt switching station and connection to TransGrid 330-kilovolt overhead transmission line.
- permanent on-site ancillary infrastructure:
  - operation and maintenance facility
  - internal access road network, with access and egress points from and to public roads
  - utility and amenity services.
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas
  - potential construction workforce accommodation on site.
- potential upgrades to the surrounding road network for the expected traffic volumes and oversize and/or overmass vehicles (OSOM) during construction, and maintenance during operation if required
- site access:
  - via Braidwood Road to the west and Boro Road to the south
  - transport route from Port Botany to Braidwood Road and Boro Road would be via Botany Road, Bunnerong Road, Gardeners Road, M8 Motorway, M5 Motorway and the Hume Highway
  - transport route from Port Kembla to Braidwood Road and Boro Road would be via Five Islands Road, Springhill Road, Masters Road, Princess Highway, Picton Road and the Hume Highway.

The project would occur on a portion of a 420-hectare site, with Boro Creek running across the southern section of the project area and Chain of Ponds Creek located in the north.

The final layout and project details, including BESS design, solar panel configuration and other infrastructure would be finalised after detailed assessment are completed for the EIS.

The preliminary project layout is shown in Figure 2-1.



- Project area
- Indicative BESS, switching station and substation
- Indicative construction compound and O&M facility
- Proposed transmission easement
- Solar array
- Proposed site access
- Road
- Existing 330 kV transmission line
- Watercourses
- Water body

0 0.5 1 Km

SCALE 1:20,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
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FIGURE 2-1: PRELIMINARY PROJECT LAYOUT

3 METHODOLOGY

3.1 NSW Renewable Energy Planning Framework

The NSW Government has developed the Renewable Energy Planning Framework to support the transition to renewable energy, support legislated net zero targets and secure an affordable supply of electricity for the people of NSW. The framework shown in Figure 3-1 provides a suite of policies to guide the planning and assessment process for renewable energy development and infrastructure.

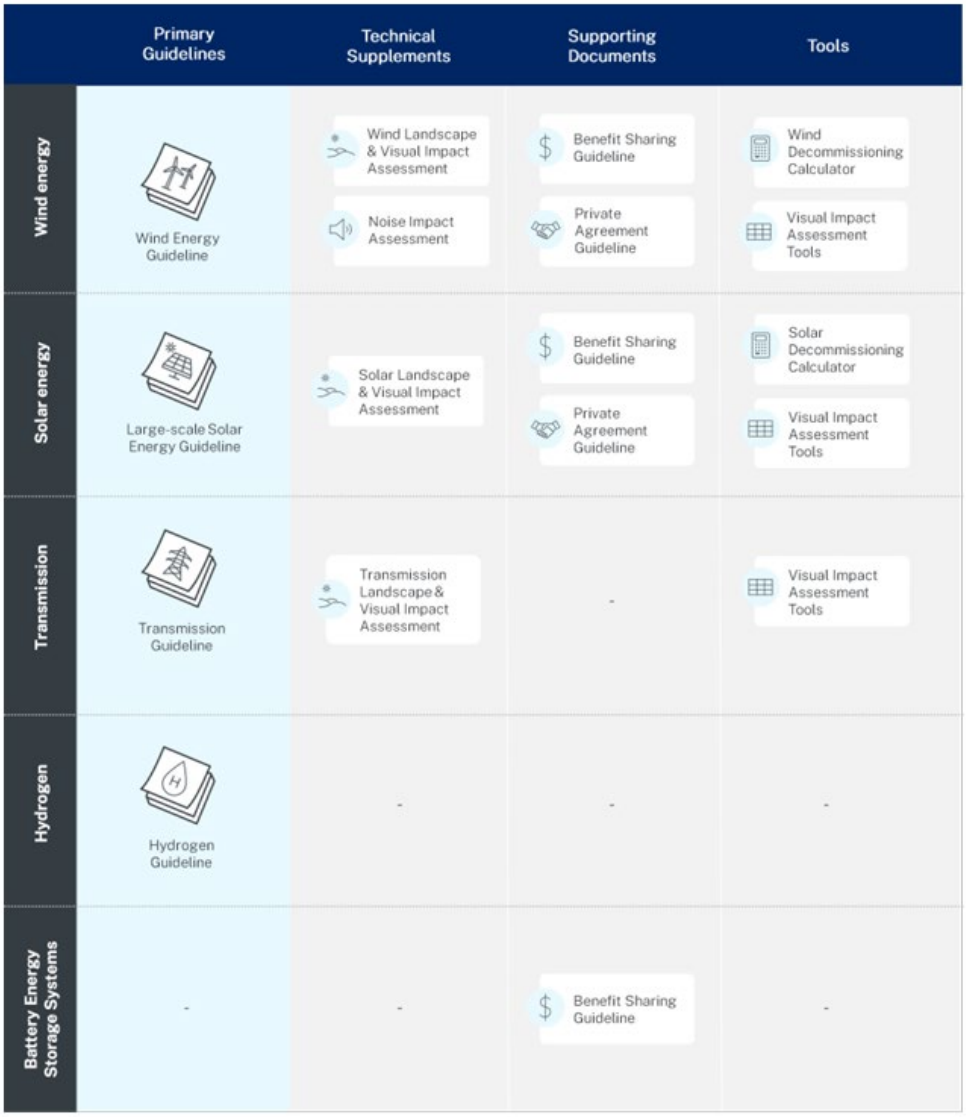


Figure 3-1 Framework documents (Overview of the Renewable Energy Planning Framework, DPHI)

3.2 Methodology overview

This scoping assessment for potential visual impacts has been prepared in accordance with the requirements of the Technical Supplement.

In accordance with the NSW Renewable Energy Planning Framework, applicants are required to undertake an assessment that is proportionate to the likely impacts on each viewpoint and receiver.

The preliminary scoping assessment, consists of the following steps:

- review of the baseline landscape character

- determine the extents of the study area
- use preliminary assessment tools to:
  - undertake viewshed mapping to eliminate the need to assess viewpoints that would have no line of sight to the project
  - calculate the distance of each of the identified viewpoints from the nearest point to the project area
  - determine the relative height difference between the project and each viewpoint
  - plot each viewpoint on the preliminary assessment tool (table) using the vertical magnitude tool.
  - measure the worst-case scenario horizontal field of view
- identify potentially affected public viewpoints and private receivers that require further assessment in the EIS and to focus consultation with landowners and the local community
- map of the results of the scoping analysis.

A high-level overview of methodology for each of the steps in the scoping assessment is provided below.

3.2.1 Baseline landscape character

Section 2.1 of the Technical Supplement outlines attributes of a site that might influence landscape character. The existing landscape character of the project area and surrounds has been analysed to gain an understand the sensitivities associated with the landscape. The baseline analysis uses desktop information and an initial field assessment to describe the high-level landscape character of the project area. The results of the baseline review are provided in Section 4.

3.2.2 Study area

Under Section 4 of the Technical Supplement two visual study areas are identified:

- 2.5 kilometres from the proposed development for public roads
- four kilometres from the proposed development for other private receivers and public viewpoints.

This report uses the project area to determine the extent of the study area of the project.

3.2.3 Viewshed mapping

To identify areas from which the project could be visible, viewshed mapping has been undertaken using the following inputs:

- maximum height of the proposed solar array
- location of the solar arrays within the project area
- digital elevation model (DEM) within the extent of the study area.

3.2.4 Identification of potentially affected public viewpoints and private receivers

Under Section 4 of the Technical Supplement, the scoping report must include a visual impact analysis that identifies public viewpoints and private receivers within the two visual study areas that require assessment in the EIS.

All private receivers were initially identified using GIS software and later ground-truthed to confirm the accuracy of the GIS data.

Potentially affected public viewpoints and private receivers have been identified for the project in accordance with the guidance provided in Table 2 of the Technical Supplement, which has been adapted in Table 3-1.

Public viewpoints and private receivers within the two visual study areas for the project are provided in Section 5.3.3.

Table 3-1 Viewpoint examples adapted from Table 2 Technical Supplement

Viewpoint type	Viewpoint examples
Private receiver	• private recreation areas and sporting fields (land zoned RE2) • dwellings in rural areas (zoned RU1, RU2, RU3, RU4 and RU6), large lot residential areas (zoned R5) and environmental or conservation areas (zoned C2, C3 and C4) Tourist and visitor accommodation (bed and-breakfasts, motels and hotels) and places of worship • dwellings in residential and rural villages (zoned R1, R2, R3, R4 and RU5) • historic rural homesteads/residences on the national, state or local heritage list.
Public viewpoint	• state highways, freeways and classified main roads • cemeteries, memorial parks • tourist roads and scenic drives. • significant entry ways to regional towns and cities • tourist uses in tourist areas (zoned SP3) • publicly accessible green and open spaces, including picnic areas, parks, public recreation areas and lookouts • town centres and central business districts.

4 LANDSCAPE CHARACTER

As discussed in Section 1.1, the project is approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales in the local government areas of Goulburn Mulwaree Council and the Queanbeyan-Palerang Regional Council (refer Figure 2-1).

The Goulburn Mulwaree LGA and Queanbeyan-Palerang Regional LGA cover approximately 8500 square kilometres of the South East and Tablelands region of New South Wales. The region contains coastal, alpine, tablelands and slope landscapes, and includes Kosciusko National Park, which is the State's largest national park.

The project is located within the locality of Boro which has been extensively cleared and used for farming and agriculture practises due to its relatively flat topography.

The landform across the project area is generally flat with some scattered slopes through the middle, and steeper terrain in the north-western corner. Mount Fairy is located to the west. Ephemeral and permanent watercourses cross the project area with Boro Creek, Chain of Ponds Creek, and several associated drainage lines.

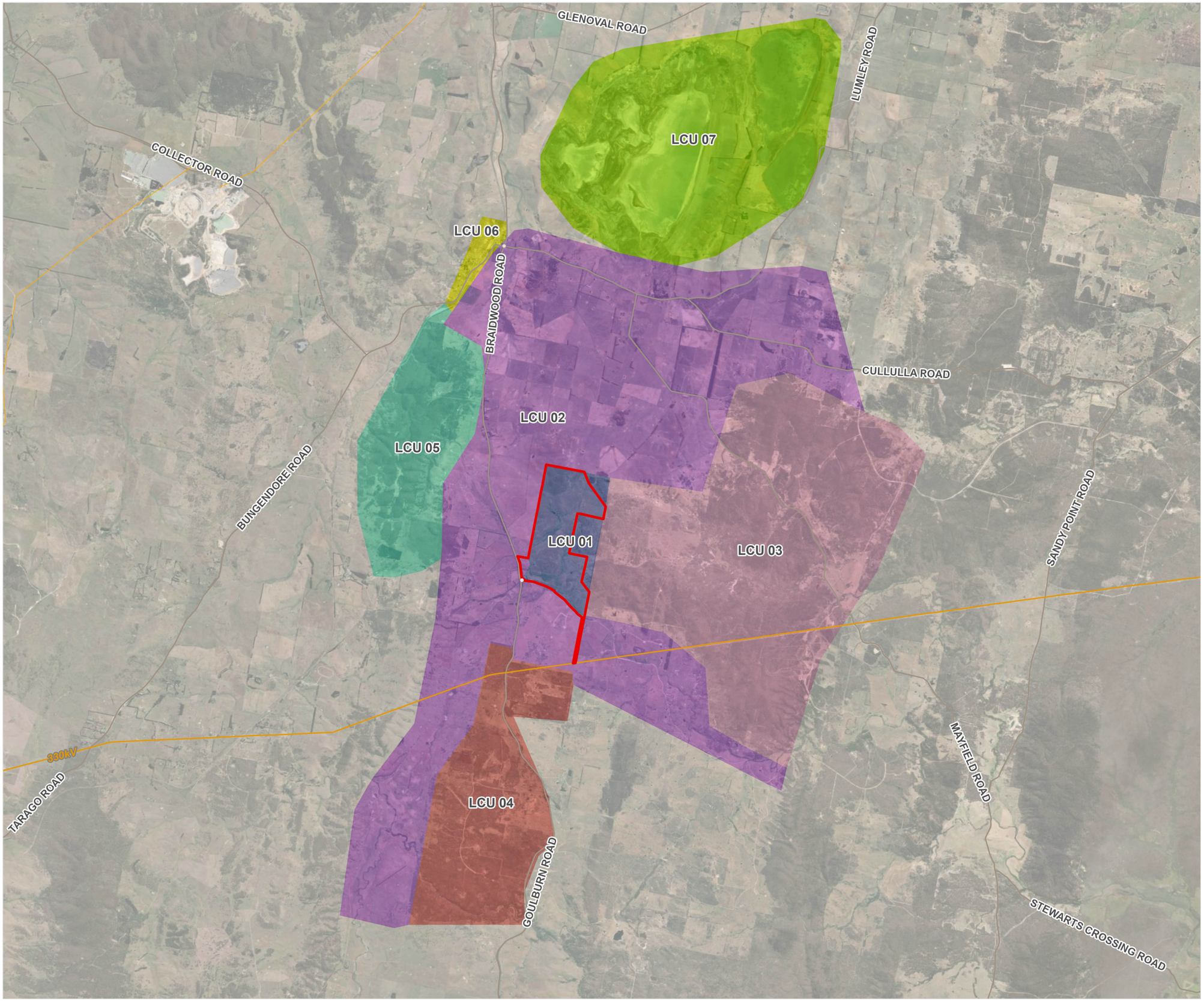
4.1 Baseline landscape character

The baseline landscape character of the study area has been analysed in accordance with Section 2 of the Technical Supplement to establish the landscape character and its sensitivity.

The study area and surrounds has been divided into different landscape character zones (LCZ) based on common distinguishing visual characteristics of vegetation, water bodies, landforms and land use.

The baseline analysis has identified seven LCZs as shown in Figure 4-1. which form the basis of the landscape character assessments and will be assessed in detail in the EIS:

- **LCZ 01** - Open rural grazing land
- **LCZ 02** - Gently undulating grazing crop lands
- **LCZ 03** - Forested areas east of site
- **LCZ 04** - Forested areas south of site
- **LCZ 05** - Forested ranges and ridgelines west of site
- **LCZ 06** - Tarago township
- **LCZ 07** - Lake Bathurst and surrounding floodplain.



Project area
Road
Existing 330 kV transmission line

Landscape character unit

- LCU 01,Site
- LCU 02,Slighly rolling grazing/ crop lands
- LCU 03,Forested areas east of the site
- LCU 04,Forested areas south of the site
- LCU 05,Forested Ranges/ Ridges line west of the site
- LCU 06,Tarago township
- LCU 07,Lake Bathurst and surrounding flood plain

0 2 4 Km

SCALE 1:90,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 4-1: LANDSCAPE CHARACTER ZONE (LCZ) MAP

Table 4-1 Baseline landscape character

LCZ	Description
LCZ 01 – Open rural grazing land 	• open, rural grazing land with dams scattered throughout. • vegetation predominantly low-lying grasses with sparsely scattered shrubs and few trees. • topography is generally flat in the south, rising to the north.
LCZ 02 – Slightly rolling grazing crop lands 	• gently undulating open, rural grazing land with dams scattered throughout. • vegetation predominantly low-lying grasses with sparsely scattered shrubs and few trees. • topography is undulating rising to the east.
LCZ 03 – Forested areas east of project area 	• forested areas on large lot homesteads, accessed by dirt track roads. • vegetation is generally dense with clearings for residential dwellings, dams and light aircraft landing strips throughout. • topography is undulating and rises to a peak and falling away to the south.

LCZ	Description
LCZ 04 – Forested areas south of project area 	• forested areas. • vegetation is generally dense with some clearings for dams. • topography is undulating with some steep forested ridges.
LCZ 05 – Forested ranges and ridgelines west of the project area 	• steep ridges, gulleys and forested areas. • vegetation is generally dense with some cleared areas for rural dwellings and farm buildings and areas of formal agricultural plantings on eastern facing ridges. • topography is undulating with some steep ridges.
LCZ 06 – Tarago township 	• small township with a main street, low density housing, light industry and large sporting oval. • vegetation consists of formal tree planting along Braidwood Street and Lumley Road providing canopy cover and screening. • topography is undulating with some steep forested ridges.
LCZ 07– Lake Bathurst and surrounding floodplain 	• large waterbody surrounded by rural farmland on floodplain. • vegetation is sparse with tree planting along lot boundaries. • topography is generally flat.

5 PRELIMINARY VISUAL AMENITY ASSESSMENT

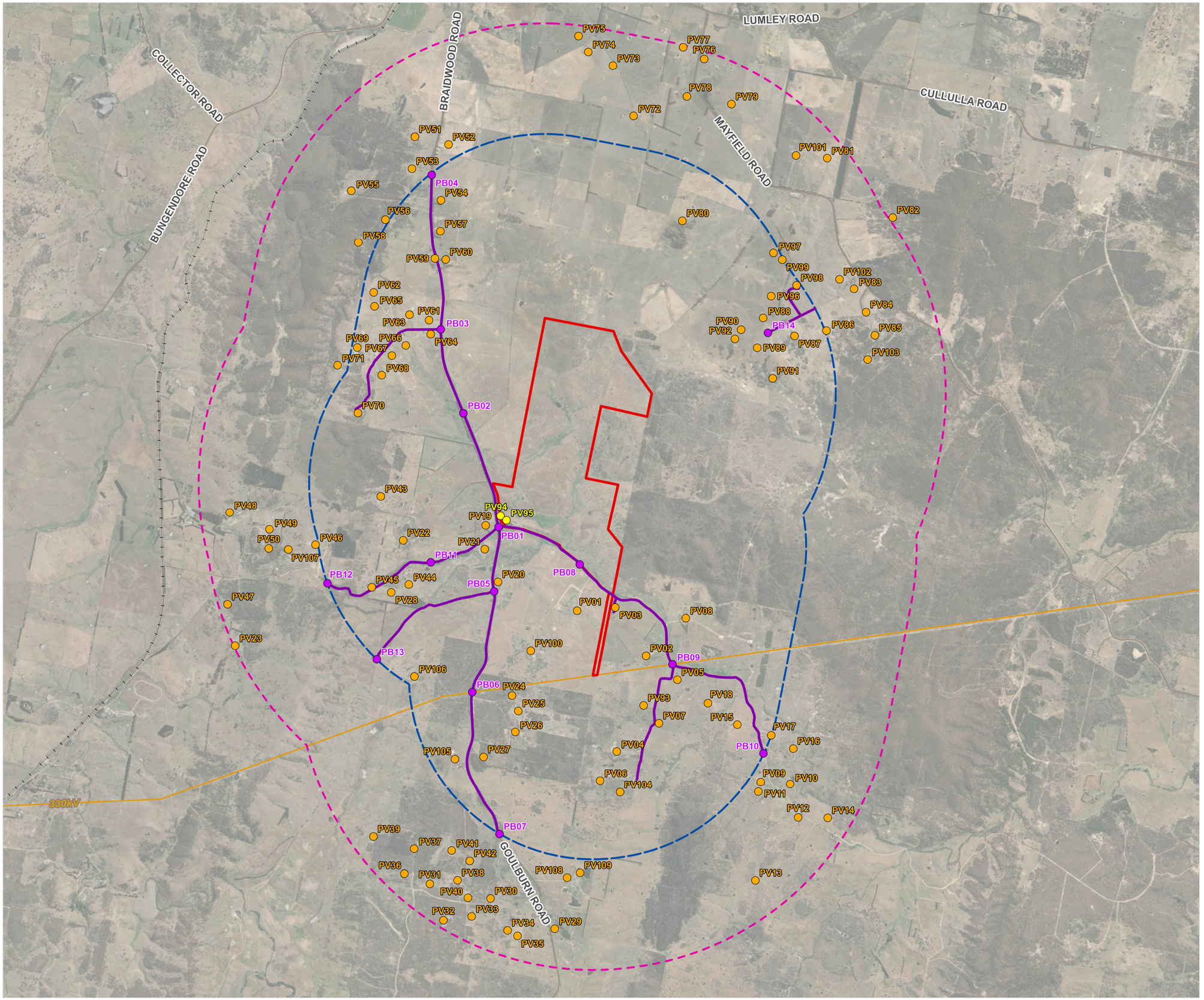
5.1 Viewpoint selection

As stated in the Technical Supplement, private receivers (associated and non-associated residences) and public viewpoints (picnic areas, lookouts, recreation areas) are assessed to within four kilometres of the project, and road and rail viewpoints were assessed within 2.5 kilometres of the project.

A total of 14 public viewpoint locations have been selected for roads identified within the 2.5-kilometre study area. There are no cemeteries, memorial parks, tourist roads and scenic drives, picnic areas, parks, public recreation areas and lookouts and tourist areas within 2.5 kilometres of the project. All representative public viewpoint are along sealed and unsealed roads.

No public viewpoints, (picnic areas, lookouts, recreation areas), were identified between 2.5 kilometres and four kilometres from the project.

A total of 107 non-associated residences and two associated residences have been identified within four kilometres of the project area (refer Figure 5-1).



Project area
Road
Existing 330 kV transmission line
Associated residence
Non-associated residence
Public viewpoint
Receptor road (with 2.5km offset)
2.5km offset
4km offset

0 1 2 3 Km

SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

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FIGURE 5-1: STUDY AREA

5.2 Viewshed mapping

A viewshed map identifies all areas from which the project may be viewed. Viewshed mapping has been completed using geographical information systems (GIS) that account for topography and line of sight between all viewpoints and the project. Viewshed mapping for the project is provided as Figure 5-2.

The purpose of the viewshed mapping is to eliminate the need to assess viewpoints that are not within the line of sight to the project. It is noted viewshed mapping only accounts for topography and does not consider intervening elements such as buildings and vegetation and therefore represents a worst-case and unlikely scenario.

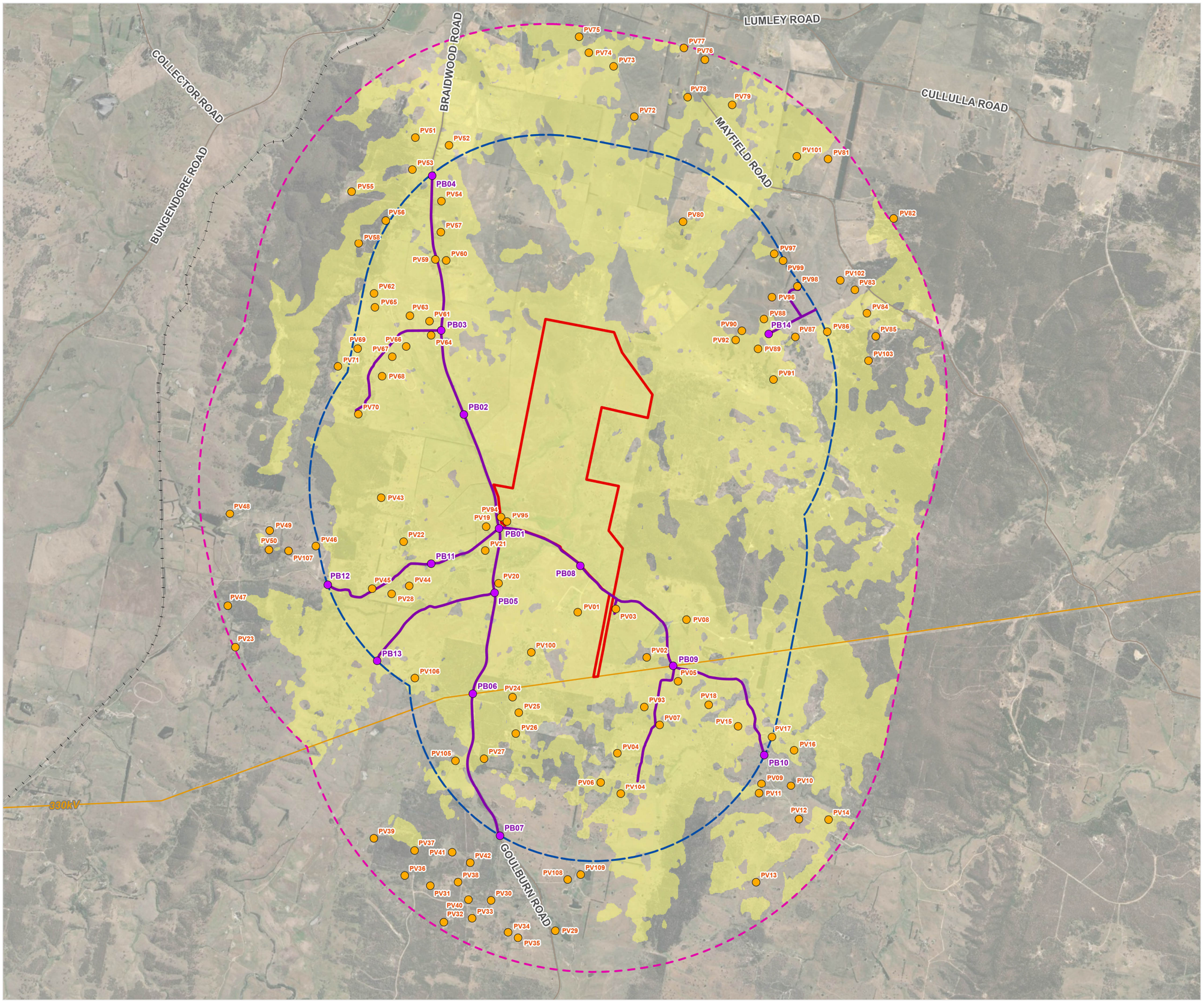
The viewshed mapping is based on a maximum panel height of five metres. Table 5-1 lists the configurations that were used to generate the zone of theoretical visibility (ZTV) determined by the viewshed mapping.

Table 5-1 Configuration for generation of the viewshed map

Item	Configuration
Software	ArcGIS Pro 3.3
Base Topographical Data	Geoscience Australia 3 second DEM
ZTV Base Point Frequency	Each corner/vertex of the provided solar array design.
Eye Height	1.8 metres from ground level as determined by the DEM
Receptor Height	5 metres from ground level as determined by the DEM

A total of two associated and 107 non-associated residences have been identified within the four-kilometre study area, 42 of the non-associated residences are outside of the theoretical view line of the project and have no direct line of sight to the project area.

A total of 14 public viewpoints are identified within the 2.5-kilometre study area. Two of these public viewpoints are outside of the theoretical view line of the project. Boro Road and Braidwood Road are the public roads with the greatest visibility of the project area.



Project area
Road
Existing 330 kV transmission line
Receptor road (with 2.5km offset)
2.5km offset
4km offset
Viewshed area

0 1 2 3 Km

SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

A TETRA TECH COMPANY

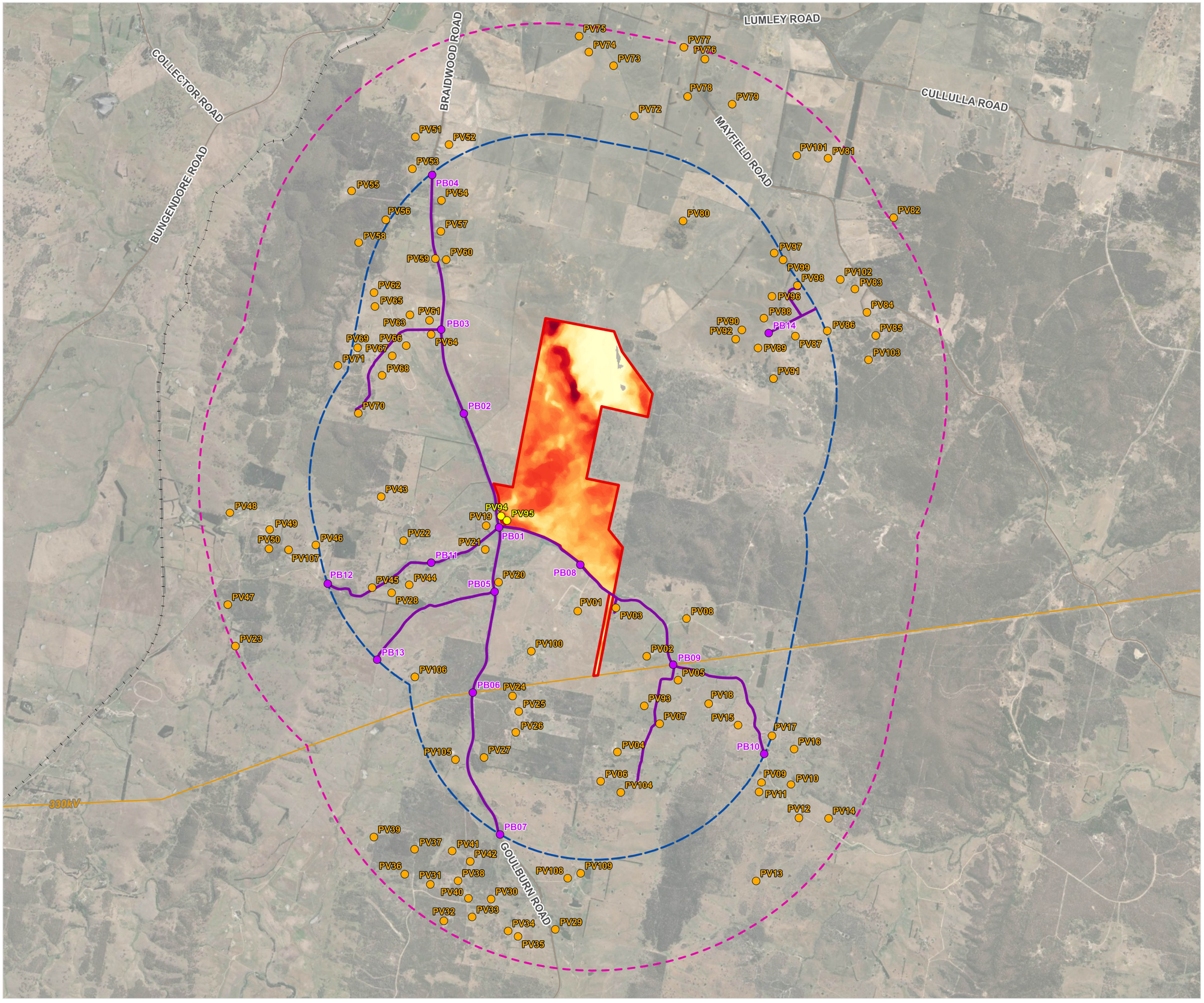
FIGURE 5-2: VIEWSHED MAP WITH IDENTIFIED RECEPTORS

5.2.1 Reverse viewshed mapping

The Technical Supplement states: *'Applicants should also consider undertaking a reverse viewshed analysis. This can be a useful tool to refine project design to reduce any significant impact. It can also be used to communicate the visibility of certain parts of the project and aid consultation with the community. This analysis should be used to highlight parts of the project that can be seen from the greatest number of viewpoints'.*

Figure 5-3 represents a reverse viewshed map that considers the 14 public viewpoints and 107 non-associated residences identified within the four-kilometre offset of the project area. This figure shows the parts of the project that are potentially visible from the public viewpoints and non-associated residences This assessment represents a worst-case (and unlikely) scenario, where intervening elements in the landscape, for example vegetation and structures, are not considered by the viewshed mapping.

Based on the reverse viewshed mapping the northwestern extent of the project area would be visible to the highest number of non-associated residences. There is limited visibility to the project area from non-associated residences to the northeast of the project area.



Project area
Road
Existing 330 kV transmission line
Associated residence
Non-associated residence
Public viewpoint
Receptor road (with 2.5km offset)
2.5km offset
4km offset

ZTVI

Maximum

Minimum

0 1 2 3 Km

SCALE 1:50,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: B
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

A TETRA TECH COMPANY

FIGURE 5-3: REVERSE VIEWSHED MAP WITH IDENTIFIED RECEPTORS

5.3 Simple assessment

The simple assessment is a basic assessment of visual impacts, using tools within the Technical Supplement, and, using worst case scenarios for the:

- visibility of the project from private receivers
- visual sensitivity of public viewpoints and private receivers.

Those public viewpoints and private receivers not eliminated using the simple assessment shall be further assessed for visual impacts at the EIS phase of the approval process.

5.3.1 Methodology

The requirement for further assessment at the EIS phase is calculated by evaluating the vertical and horizontal fields of view to establish a theoretical worst-case scenario of the visual field, without accounting for mitigating factors such as vegetation, and existing structures such as houses.

The vertical field of view is calculated as stated in the Technical Supplement and shown in Figure 5-4. The elevation of each viewpoint (AHD in metres plus 1.8m viewing height) is determined using GIS software. The relative height difference (RHD) in metres between each viewpoint and the project is calculated by taking the highest point of the project including panels (749.5m AHD) and the lowest point of the project (669.4 AHD).

For this Project:

- Highest point of the development including panels =**749.5m AHD**
- Lowest point of the development = **669.4 AHD.**

The RHD calculation is influenced by the relationship to the development high and low points. The RHD is then plotted against the receiver distance (m) to find the vertical magnitude (number of cells) following figure illustrates the method for calculating relative height difference.

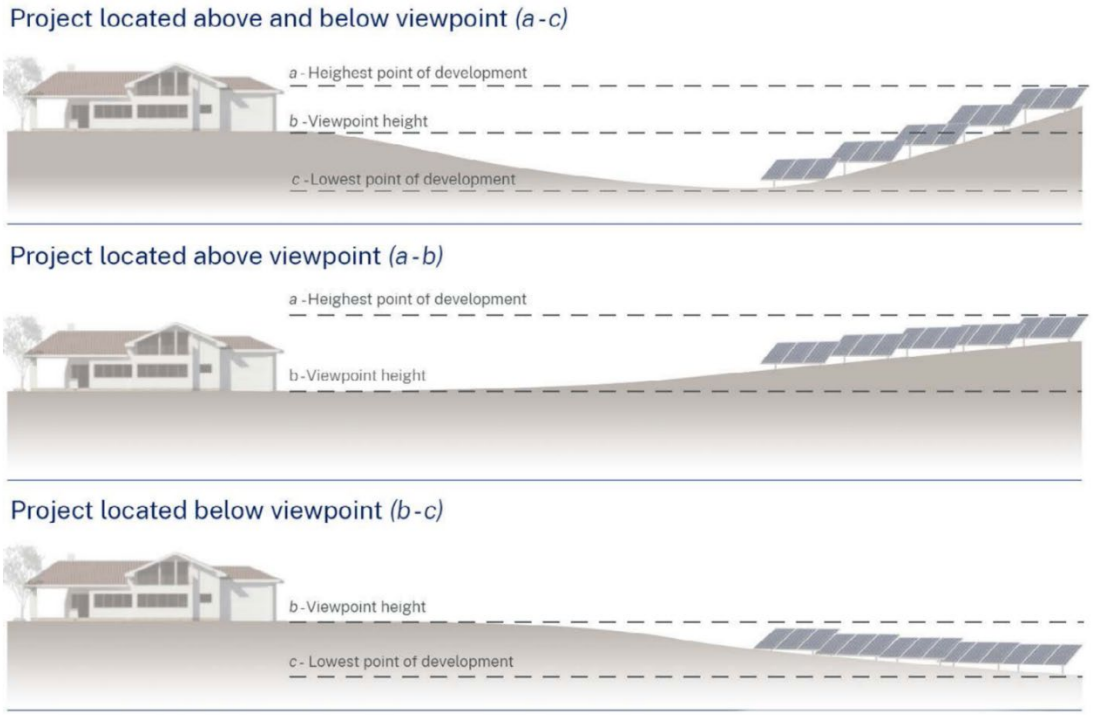


Figure 5-4 Vertical field of view calculation

Figure 5-5 illustrates the calculation of the vertical magnitude (number of cells) based on the relative height difference and the distance to the closes point of the project area.

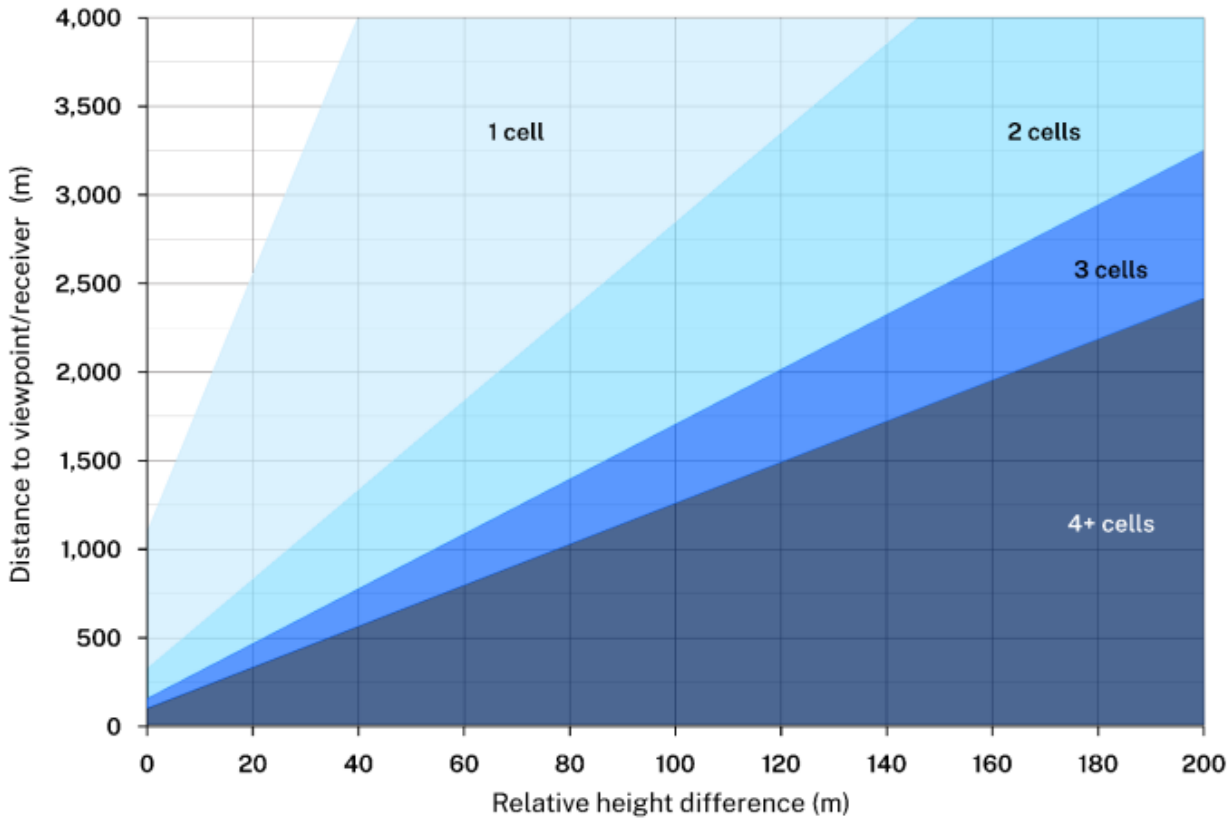


Figure 5-5 Potential vertical magnitude calculation

The horizontal field of view was calculated according to the Technical Supplement using trigonometric calculations based on the coordinates of each public viewpoint, private receiver, and the project area perimeter. For every 10 degrees of horizontal field of view, the project occupies one horizontal cell in the view.

5.3.2 Visual magnitude thresholds

The preliminary calculation of visual magnitude is:

The vertical magnitude (cells) X the horizontal magnitude (cells)

The preliminary calculation of visual magnitude is then reviewed against the magnitude thresholds described in Table 1 of the Technical Supplement – refer Table 5-2 below:

Table 5-2 Visual magnitude ratings thresholds (adapted from Technical Supplement)

Number of occupied cells	Visual magnitude rating
1 to 7 occupied cells	Preliminary very low visual magnitude rating
8 to 14 occupied cells	Preliminary low visual magnitude rating
15 to 25 occupied cells	Preliminary moderate visual magnitude rating
26 to 36 occupied cells	Preliminary high visual magnitude rating
37 or greater occupied cells	Preliminary very high visual magnitude rating

5.3.3 Simple assessment results

The results of the visual impact analysis provide a preliminary evaluation of the potential magnitude ratings associated with the project. A further assessment will be conducted during the EIS phase with updated project parameters.

The findings summarised in Table 5-3 outline the magnitude ratings for public viewpoints non-associated residences based on the currently known project parameters.

Table 5-3 Preliminary assessment of potential visual amenity impacts

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV01	Non-associated residence	377	691	Within viewshed - project potentially visible	81	4 cells	23 cells	92 cells	Preliminary very high visual magnitude rating
PV02	Non-associated residence	602	670	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV03	Non-associated residence	65	674	Within viewshed - project potentially visible	81	4 cells	18 cells	72 cells	Preliminary very high visual magnitude rating
PV04	Non-associated residence	1073	703	Within viewshed - project potentially visible	81	3 cells	4 cells	12 cells	Preliminary low visual magnitude rating
PV05	Non-associated residence	1081	666	Within viewshed - project potentially visible	84	3 cells	9 cells	27 cells	Preliminary high visual magnitude rating
PV06	Non-associated residence	1431	713	Within viewshed - project potentially visible	81	2 cells	3 cells	6 cells	Preliminary very low visual magnitude rating
PV07	Non-associated residence	1065	679	Within viewshed - project potentially visible	81	3 cells	6 cells	18 cells	Preliminary moderate visual magnitude rating
PV08	Non-associated residence	1034	675	Within viewshed - project potentially visible	81	4 cells	12 cells	48 cells	Preliminary very high visual magnitude rating
PV09	Non-associated residence	2656	663	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV10	Non-associated residence	3012	649	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV11	Non-associated residence	2704	663	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV12	Non-associated residence	3348	646	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV13	Non-associated residence	3525	698	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV14	Non-associated residence	3687	651	Within viewshed - project potentially visible	99	1 cell	4 cells	4 cells	Preliminary very low visual magnitude rating
PV15	Non-associated residence	2019	669	Within viewshed - project potentially visible	81	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV16	Non-associated residence	2845	661	Within viewshed - project potentially visible	89	1 cell	5 cells	5 cells	Preliminary very low visual magnitude rating

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV17	Non-associated residence	2502	665	Within viewshed - project potentially visible	85	1 cell	6 cells	6 cells	Preliminary very low visual magnitude rating
PV18	Non-associated residence	1553	668	Within viewshed - project potentially visible	83	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PV19	Non-associated residence	211	694	Within viewshed - project potentially visible	81	4 cells	14 cells	56 cells	Preliminary very high visual magnitude rating
PV20	Non-associated residence	754	691	Within viewshed - project potentially visible	81	4 cells	14 cells	56 cells	Preliminary very high visual magnitude rating
PV21	Non-associated residence	405	693	Within viewshed - project potentially visible	81	4 cells	14 cells	56 cells	Preliminary very high visual magnitude rating
PV22	Non-associated residence	1350	712	Within viewshed - project potentially visible	81	3 cells	10 cells	30 cells	Preliminary high visual magnitude rating
PV23	Non-associated residence	3983	809	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV24	Non-associated residence	1132	729	Within viewshed - project potentially visible	81	3 cells	9 cells	27 cells	Preliminary high visual magnitude rating
PV25	Non-associated residence	1123	742	Within viewshed - project potentially visible	81	3 cells	8 cells	24 cells	Preliminary moderate visual magnitude rating
PV26	Non-associated residence	1303	749	Within viewshed - project potentially visible	81	3 cells	7 cells	21 cells	Preliminary moderate visual magnitude rating
PV27	Non-associated residence	1852	760	Within viewshed - project potentially visible	91	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV28	Non-associated residence	1772	724	Within viewshed - project potentially visible	81	2 cells	9 cells	18 cells	Preliminary moderate visual magnitude rating
PV29	Non-associated residence	3481	700	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV30	Non-associated residence	3336	734	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV31	Non-associated residence	3596	732	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV32	Non-associated residence	3899	735	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV33	Non-associated residence	3665	744	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV34	Non-associated residence	3653	717	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV35	Non-associated residence	3684	710	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV36	Non-associated residence	3719	732	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV37	Non-associated residence	3384	765	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV38	Non-associated residence	3337	751	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV39	Non-associated residence	3700	722	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV40	Non-associated residence	3466	740	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV41	Non-associated residence	3057	742	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV42	Non-associated residence	3026	746	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV43	Non-associated residence	1537	722	Within viewshed - project potentially visible	81	2 cells	9 cells	18 cells	Preliminary moderate visual magnitude rating
PV44	Non-associated residence	1513	713	Within viewshed - project potentially visible	81	2 cells	9 cells	18 cells	Preliminary moderate visual magnitude rating
PV45	Non-associated residence	1967	733	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV46	Non-associated residence	2537	801	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV47	Non-associated residence	3878	782	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV48	Non-associated residence	3602	772	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV49	Non-associated residence	3105	796	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV50	Non-associated residence	3174	814	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV51	Non-associated residence	3032	733	Within viewshed - project potentially visible	81	1 cell	4 cells	4 cells	Preliminary very low visual magnitude rating
PV52	Non-associated residence	2699	700	Within viewshed - project potentially visible	81	1 cell	4 cells	4 cells	Preliminary very low visual magnitude rating
PV53	Non-associated residence	2719	726	Within viewshed - project potentially visible	81	1 cell	4 cells	4 cells	Preliminary very low visual magnitude rating
PV54	Non-associated residence	2137	709	Within viewshed - project potentially visible	81	2 cells	5 cells	10 cells	Preliminary low visual magnitude rating
PV55	Non-associated residence	3150	786	Within viewshed - project potentially visible	117	2 cells	4 cells	8 cells	Preliminary low visual magnitude rating
PV56	Non-associated residence	2549	758	Within viewshed - project potentially visible	89	2 cells	5 cells	10 cells	Preliminary low visual magnitude rating
PV57	Non-associated residence	1849	706	Within viewshed - project potentially visible	81	2 cells	5 cells	10 cells	Preliminary low visual magnitude rating
PV58	Non-associated residence	2735	788	Within viewshed - project potentially visible	119	2 cells	5 cells	10 cells	Preliminary low visual magnitude rating
PV59	Non-associated residence	1699	720	Within viewshed - project potentially visible	81	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV60	Non-associated residence	1564	714	Within viewshed - project potentially visible	81	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV61	Non-associated residence	1540	713	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV62	Non-associated residence	2350	749	Within viewshed - project potentially visible	81	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV63	Non-associated residence	1815	717	Within viewshed - project potentially visible	81	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PV64	Non-associated residence	1482	709	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV65	Non-associated residence	2303	742	Within viewshed - project potentially visible	81	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV66	Non-associated residence	1785	711	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV67	Non-associated residence	1944	711	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV68	Non-associated residence	2029	725	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV69	Non-associated residence	2427	754	Within viewshed - project potentially visible	85	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PV70	Non-associated residence	2071	776	Within viewshed - project potentially visible	107	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV71	Non-associated residence	2644	800	Within viewshed - project potentially visible	132	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PV72	Non-associated residence	2927	698	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV73	Non-associated residence	3543	702	Within viewshed - project potentially visible	81	1 cell	3 cells	3 cells	Preliminary very low visual magnitude rating
PV74	Non-associated residence	3663	716	Within viewshed - project potentially visible	81	1 cell	3 cells	3 cells	Preliminary very low visual magnitude rating
PV75	Non-associated residence	3858	718	Within viewshed - project potentially visible	81	1 cell	3 cells	3 cells	Preliminary very low visual magnitude rating
PV76	Non-associated residence	3900	684	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV77	Non-associated residence	3974	688	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV78	Non-associated residence	3345	696	Within viewshed - project potentially visible	81	1 cell	3 cells	3 cells	Preliminary very low visual magnitude rating
PV79	Non-associated residence	3479	687	Within viewshed - project potentially visible	81	1 cell	3 cells	3 cells	Preliminary very low visual magnitude rating
PV80	Non-associated residence	1773	702	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV81	Non-associated residence	3739	684	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV82	Non-associated residence	4056	725	Within viewshed - project potentially visible	81	1 cell	5 cells	5 cells	Preliminary very low visual magnitude rating
PV83	Non-associated residence	3094	703	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV84	Non-associated residence	3115	705	Within viewshed - project potentially visible	81	1 cell	6 cells	6 cells	Preliminary very low visual magnitude rating

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV85	Non-associated residence	3134	717	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV86	Non-associated residence	2523	703	Within viewshed - project potentially visible	81	1 cell	6 cells	6 cells	Preliminary very low visual magnitude rating
PV87	Non-associated residence	2093	703	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV88	Non-associated residence	1828	737	Within viewshed - project potentially visible	81	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PV89	Non-associated residence	1563	724	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV90	Non-associated residence	1491	742	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV91	Non-associated residence	1657	690	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PV92	Non-associated residence	1351	740	Within viewshed - project potentially visible	81	3 cells	8 cells	24 cells	Preliminary moderate visual magnitude rating
PV93	Non-associated residence	754	683	Within viewshed - project potentially visible	81	4 cells	7 cells	28 cells	Preliminary high visual magnitude rating
PV94	Associated residence	690	0	Within viewshed - project potentially visible	81	4 cells	21 cells	84 cells	Preliminary very high visual magnitude rating
PV95	Associated residence	689	0	Within viewshed - project potentially visible	81	4 cells	32 cells	128 cells	Preliminary very high visual magnitude rating
PV96	Non-associated residence	2089	721	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV97	Non-associated residence	2420	717	Within viewshed - project potentially visible	81	1 cell	6 cells	6 cells	Preliminary very low visual magnitude rating
PV98	Non-associated residence	2455	700	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV99	Non-associated residence	2491	723	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV100	Non-associated residence	892	707	Within viewshed - project potentially visible	81	4 cells	13 cells	52 cells	Preliminary very high visual magnitude rating
PV101	Non-associated residence	3446	684	Within viewshed - project potentially visible	81	1 cell	4 cells	4 cells	Preliminary very low visual magnitude rating

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PV102	Non-associated residence	2984	696	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV103	Non-associated residence	2970	742	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV104	Non-associated residence	1624	708	Within viewshed - project potentially visible	81	2 cells	3 cells	6 cells	Preliminary very low visual magnitude rating
PV105	Non-associated residence	2191	753	Within viewshed - project potentially visible	84	2 cells	6 cells	12 cells	Preliminary low visual magnitude rating
PV106	Non-associated residence	2372	742	Within viewshed - project potentially visible	81	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PV107	Non-associated residence	2912	810	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV108	Non-associated residence	2772	705	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PV109	Non-associated residence	2688	710	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PB01	Public viewpoint (road)	78	692	Within viewshed - project potentially visible	81	4 cells	16 cells	64 cells	Preliminary very high visual magnitude rating
PB02	Public viewpoint (road)	841	696	Within viewshed - project potentially visible	81	4 cells	13 cells	52 cells	Preliminary very high visual magnitude rating
PB03	Public viewpoint (road)	1360	710	Within viewshed - project potentially visible	81	3 cells	8 cells	24 cells	Preliminary moderate visual magnitude rating
PB04	Public viewpoint (road)	2482	707	Within viewshed - project potentially visible	81	1 cell	4 cells	4 cells	Preliminary very low visual magnitude rating
PB05	Public viewpoint (road)	889	697	Within viewshed - project potentially visible	81	4 cells	14 cells	56 cells	Preliminary very high visual magnitude rating
PB06	Public viewpoint (road)	1654	734	Within viewshed - project potentially visible	81	2 cells	8 cells	16 cells	Preliminary moderate visual magnitude rating
PB07	Public viewpoint (road)	2502	731	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PB08	Public viewpoint (road)	8	674	Within viewshed - project potentially visible	81	4 cells	24 cells	96 cells	Preliminary very high visual magnitude rating

#	Receiver type	Distance to project area (m)	Elevation (AHD)	Within viewshed of project area	Relative height difference (m)	Vertical magnitude (1° cells)	Horizontal magnitude (10° cells)	Cells potentially visible	Preliminary magnitude rating
PB09	Public viewpoint (road)	975	661	Within viewshed - project potentially visible	89	4 cells	10 cells	40 cells	Preliminary very high visual magnitude rating
PB10	Public viewpoint (road)	2496	658	Not within viewshed	N/A	N/A	N/A	N/A	Project area not visible due to topography
PB11	Public viewpoint (road)	1100	703	Within viewshed - project potentially visible	81	3 cells	11 cells	33 cells	Preliminary high visual magnitude rating
PB12	Public viewpoint (road)	2500	803	Within viewshed - project potentially visible	134	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating
PB13	Public viewpoint (road)	2499	736	Within viewshed - project potentially visible	81	1 cell	7 cells	7 cells	Preliminary very low visual magnitude rating
PB14	Public viewpoint (road)	1780	724	Within viewshed - project potentially visible	81	2 cells	7 cells	14 cells	Preliminary low visual magnitude rating

Table 5-4 provides a summary of the preliminary magnitude ratings identified using the simple assessment tool with the Technical Supplement on the project area:

Table 5-4 Summary of preliminary magnitude ratings

Type	Preliminary very high visual magnitude rating	Preliminary high visual magnitude rating	Preliminary moderate visual magnitude rating	Preliminary low visual magnitude rating	Preliminary very low visual magnitude rating	Project area not visible due to topography
Private receiver – Non-associated residence	7	4	17	19	18	42
Private receiver - associated residence	2	0	0	0	0	0
Public viewpoint - Road	5	1	2	2	2	2

6 CUMULATIVE VISUAL IMPACT

6.1 Overview of potential cumulative impacts

In accordance with the Cumulative Impact Assessment Guidelines (DPIE, 2022), *the area selected to assess relevant cumulative impacts from other developments should not be unnecessarily large or include areas where the cumulative impacts are likely to be negligible, relative to the baseline condition of the relevant Project.*

The occurrence of large-scale projects within a region has the potential to alter the perception of the overall landscape character irrespective of being viewed in a single viewshed as these projects could become part of the existing landscape.

It is important to determine whether the effect of multiple projects and other major infrastructure within the region would combine to become the dominant visual element, altering the perception of the general landscape character. Figure 6-1 shows other large-scale projects that are currently proposed, operating, or under construction in the region.

6.2 Nearby large-scale projects

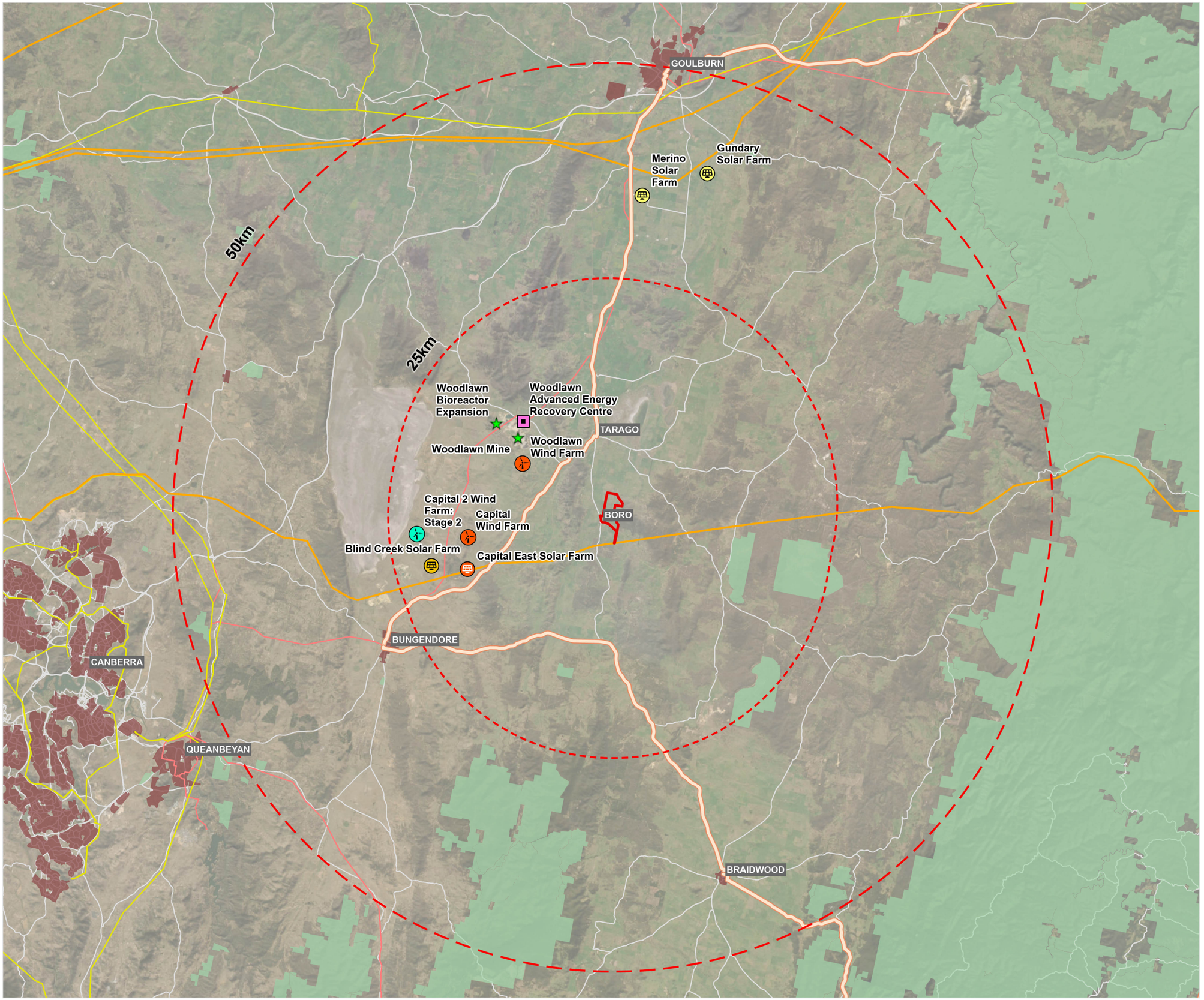
Large-scale projects within 50 kilometres of the project area are shown in Table 6-1.

Table 6-1 Nearby major projects

Project	Development type	Current status	Distance to the project area
Capital East Solar Farm (MP10_0121)	Solar farm	Approved – operational	< 25 kilometres
Capital Wind Farm (MP05_0179)	Wind farm	Approved – operational	< 25 kilometres
Capital Wind Farm: Stage 2 (MP10_0135)	Wind farm	Approved – operational	< 25 kilometres
Blind Creek Solar Farm (SSD-13166280)	Solar farm	Approved – construction	< 25 kilometres
Gundary Solar Farm (SSD-48225958)	Solar farm	Proposed	>25 kilometres
Merino Solar Farm (SSD-59155459)	Solar farm	Proposed	>25 kilometres
Woodlawn Mine (MP07_0143)	Mine	Approved – operational	< 25 kilometres
Woodlawn Advanced Energy Recovery Centre (SSD-21184278)	Energy recovery (biomass)	Proposed	< 25 kilometres
Woodlawn Wind Farm (DA250-10-2004)	Wind farm	Approved – operational	< 25 kilometres

Four operational, and two proposed renewable energy projects are located within 25 kilometres of the project area. Additionally, there are two proposed solar farm projects located within 25 to 50 kilometres of the project.

Given the distance, it would be expected that intervening elements such as existing vegetation, built form, and weather conditions, would obscure visibility. As the project is not on a designated tourist route and all other large-scale renewable projects are located more than 10 km from the project, the potential for perceived cumulative impacts is limited.



- Project area
- 25km Buffer
- 50km Buffer
- NPWS reserve/state forest
- Urban area
- Tourist route
- Roads
- 330kV Transmission Line
- 132kV Transmission Line
- 66kV Transmission Line

Renewable projects

- Solar farm - Operational
- Solar farm - Approved
- Solar farm - In Planning
- Wind farm - Approved
- Wind farm - Operational

Major Projects

- Operational
- Proposed

0 10 20 Km

SCALE 1:350,000
A3 SIZE / GDA2020 (EPSG:7855)

VERSION: A
DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

A TETRA TECH COMPANY

FIGURE 6-1: SURROUNDING RENEWABLE ENERGY DEVELOPMENT

7 SUMMARY AND NEXT STEPS

7.1 Summary of findings

The viewshed mapping demonstrates the areas from which the project is potentially visible, based on the underlying topography of the landscape. The natural undulations limit visibility from public viewpoints and non-associated residences located beyond 2.5 kilometres of the project.

Within the 4 kilometres scoping area, the preliminary visual assessment identified:

- 107 non-associated residences
- 14 public viewpoints.

Of the identified non-associated residences and public viewpoints, based on the current project area, it was found that:

- due to the topography, the project area was not visible to 42 non-associated residences and two public viewpoints.
- 18 non-associated residences and two public viewpoints had very low visual magnitude ratings and would not require further assessment
- 47 non-associated residences and 10 public viewpoints had low visual magnitude ratings or higher, and would require further assessment to determine actual visual impacts
- two associated residences would not require further assessment.

7.2 Next steps

A landscape and visual impact assessment (LVIA) will be prepared in accordance with the Solar Guidelines, Technical Supplement, and issued SEARs. It will include:

- simple assessment of potential visual magnitude based on updated project parameters to confirm the results of the scoping stage report
- modelling of views from non-associated residences and public viewpoints where the simple assessment indicates moderate or higher visual impacts
- detailed site investigations undertaken from non-associated residences and public viewpoints within the identified study areas with potentially moderate or higher visual impacts identified by the 3D modelling
- preparation of photomontages to illustrate the potential magnitude impact of the project
- a full assessment of the landscape character and visual impact resulting from proposed infrastructure
- a review of cumulative impacts of surrounding renewable energy projects.

development of mitigation strategies in response to the landscape character and visual assessment, as well as community consultation, to maximise the integration of the project into the surrounding landscape and mitigate identified visual impacts to an acceptable level as described by the Technical Supplement.

8 REFERENCES

Australian Institute of Landscape Architects 2020. *Landscape and Visual Assessment AILA Guidance Note for Queensland*

DPHI 2024a *Large Scale Solar Energy Guideline - Guidance for State significant large scale solar energy development*

DPHI 2024b *Technical Supplement for Landscape Character and Visual Impact Assessment: Large-Scale Solar Energy Guideline*

U.S. Geological Survey 2024. W*hat is a digital elevation model (DEM)?* https://www.usgs.gov/faqs/what-digital-elevation-model-dem

Appendix D Preliminary biodiversity assessment

BORO SOLAR FARM - PRELIMINARY BIODIVERSITY ASSESSMENT REPORT

Samsung C&T Renewable Energy Australia



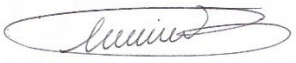
377175
18 June 2025

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Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
D1	Draft Preliminary Biodiversity Assessment Report	Jess Graham	Polina Irwin	Polina Irwin	13/12/2025
D2	Addressing internal comments	John Hembra	Polina Irwin	Polina Irwin	24/02/2025
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Final V0	Minor editorial changes	Lisa Montesin	Polina Irwin	Polina Irwin	18/06/2025

Approval for issue

Polina Irwin  18 June 2025

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EXECUTIVE SUMMARY

Overview

RPS AAP Consulting Pty Ltd have been commissioned by Samsung C&T Renewable Australia Pty Ltd (herein referred to as SREA or 'the Proponent') to prepare this preliminary biodiversity assessment report to inform the scoping report for the proposed Boro Solar Farm. The project is located within Lower Boro, New South Wales, approximately 61 km east of Canberra, Australian Capital Territory. It intersects with both the Goulburn Mulwaree and Queanbeyan-Palerang Regional Local Government Areas, in the South East and Tablelands Region of New South Wales.

The project involves construction, operation and decommissioning of a solar farm and battery energy storage system (BESS), associated infrastructure, and ancillary activities and would cover up to around 420 hectares (ha). It is intended to be constructed in a single stage and would include the following key components:

- A 150 megawatt solar farm with PV modules mounted on single axis tracking systems plus associated power conversion units (PCUs), a cable network and internal access tracks
- A BESS with a capacity of up to 250 megawatts/1000-megawatt hours storage
- Electrical infrastructure including:
  - A central substation with a step-up facility
  - Underground and some overhead electrical reticulation connecting the PV arrays to the central substation
  - A new 330-kilovolt switching station and connection to Transgrid's 330-kilovolt overhead transmission line
- Permanent on-site ancillary infrastructure:
  - Operation and maintenance facility
  - Internal access road network, with access and egress points from and to public roads
  - Utility and amenity services
- Temporary construction ancillary infrastructure:
  - Site compounds, laydown and storage areas
  - Potential construction workforce accommodation on site
- Potential upgrades to the surrounding road network for the expected traffic volumes and oversize and/or overmass vehicles (OSOM) during construction, and maintenance during operation as required
- Site access:
  - Via Braidwood Road to the west and Boro Road to the south
  - Transport route from Port Botany to Braidwood Road and Boro Road would be via the M5 Motorway and the Hume Highway
  - Or transport route from Port Kembla to Braidwood Road and Boro Road would be via Five Islands Road, Princess Highway, M1 Freeway, Picton Road and the Hume Highway
- Land tenure:
  - The project area is freehold land, comprising three lots of privately owned land (Lot 2 DP1026850, Lot 2 DP711124 and Lot 4 DP 1256948) and various crown land parcels which has been leased by SREA for the project.

This preliminary biodiversity assessment report provides an overview of the vegetation and biodiversity values recorded within the project area, and an assessment of those impacts. A detailed Biodiversity Development Assessment Report (BDAR), including targeted field surveys, will be completed during the EIS.

Vegetation

This assessment identified five plant community types (PCTs) within the project area:

- PCT 3338: Goulburn Tableland Frost Hollow Grassy Woodland
- PCT 3744: Palerang Hills Peppermint Dry Shrub Forest
- PCT 3746: Southern Tableland Snow Gum-Candlebark Shrub Forest
- PCT 3747: Southern Tableland Western Hills Scribbly Gum Forest and
- PCT 3932: Central and Southern Tableland Swamp Meadow Complex.

One Threatened Ecological Community (TEC) was found to conform to the vegetation on-site:

- PCT 3338: Goulburn Tableland Frost Hollow Grassy Woodland
  - Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions – a Critically Endangered Ecological Community (CEEC) under the *Biodiversity Conservation Act 2016*, (BC Act) and the *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act).

Threatened species

There are 27 ecosystem credit species, and 34 species credit species associated with these PCTs. Additional threatened species records exist within the locality, and these species will require survey to confirm potential presence within the project area.

Discussion

A total of 407.41 ha of vegetation occurs within the project area, dominated by cleared vegetation (380.87 ha). Approximately 3.06 ha of Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions occurs. Further field surveys are required to confirm the extent, condition and TEC association of the vegetation within the project area, and this will be done as part of the EIS through vegetation integrity plots in accordance with the *Biodiversity Assessment Method 2020* (BAM).

Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions is regarded as a 'serious and irreversible impact' (SAII) candidate community under the BC Act. An SAII is 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). An assessment of the SAII will be completed during the BDAR component of the EIS.

Clearing of native vegetation for the project may impact threatened species, including 35 threatened fauna and 20 threatened flora species considered to have a moderate or greater likelihood of occurring within the project area. The project may also 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, pathogens, and pest species.

Recommendations

Biodiversity values relevant to the project area include the following:

- Threatened ecological communities
- Remnant trees
- Native grasslands and rocky habitats
- Aquatic and riparian habitats.

Based on the current project area, the following recommendations are made to avoid and minimise impacts on biodiversity:

- Refine the project disturbance footprint to maximise avoidance of biodiversity values. The design development process should address identified constraints and the findings of future ecological surveys at EIS phase
- Prioritise existing cleared land and/or historically disturbed pasture for the project disturbance footprint.

Next steps

In accordance with Section 7.9 of the BC Act, the EIS for the project will be supported by a BDAR prepared in accordance with the BAM; to be prepared by an accredited person under the BC Act. Where the project would impact on occupied habitat for a threatened species (identified through the preparation of a species polygon), and/or native vegetation with a suitable Vegetation Integrity Score, the project will require biodiversity offsets. These offsets will be secured in line with a Biodiversity Offset Strategy prepared as part of the BDAR. Impacts to SAII candidate species/communities will be considered in accordance with Section 9.1 of the BAM, allowing the Minister of Planning to make a decision on whether the project is likely to result in an SAII.

As the project also has potential to impact MNES, an EPBC Act Referral will be lodged with Commonwealth DCCEEW. The project will likely utilise the bilateral agreement, therefore SEARs would be issued with supplementary environmental assessment requirements provided by Commonwealth DCCEEW if necessary.

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DEFINITIONS

Term	Definition
asl	above sea level
AOBV	Areas of Outstanding Biodiversity Value
BAM	*Biodiversity Assessment Method 2020*
BAM-C	BAM Calculator
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
BV Map	Biodiversity Values Map
CEEC	Critically Endangered Ecological Community
DCCEEW	Department of Climate Change, Energy, the Environment and Water (formerly DAWE)
DPE	NSW Department of Planning and Environment (formerly DPIE)
DPIE	NSW Department of Planning Industry and Environment
EEC	Endangered Ecological Community
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation for Australia
KTP	Key Threatening Process
LGA	Local Government Area
LLS Act	*Local Land Services Act 2013*
Locality	Land within 10 km of the project area
MNES	Matter of National Environmental Significance
NSW	New South Wales
PCT	Plant Community Type
project area	The indicative development area for the project located on privately own land as show in **Figure 1-1**
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State Significant Development
Threatened entities	State and Commonwealth listed threatened species or ecological communities
TSPD	Threatened Species Profile Database
WTCTGW	Werriwa Tablelands Cool Temperate Grassy Woodland

1 INTRODUCTION

RPS AAP Consulting Pty Ltd have been commissioned by Samsung C&T Renewable Australia Pty Ltd (herein referred to as SREA or 'the Proponent') to prepare this preliminary biodiversity assessment report to inform the scoping report for the proposed Boro Solar Farm. The project is located within Lower Boro, New South Wales, approximately 61 km east of Canberra, Australian Capital Territory. It intersects with both the Goulburn Mulwaree and Queanbeyan-Palerang Regional Local Government Areas, in the South East and Tablelands Region of New South Wales.

The project involves the construction, operation and decommissioning of a solar farm and battery energy storage system (BESS), associated infrastructure, and ancillary activities and would cover up to around 420 hectares (ha). It is intended to be constructed in a single stage and would include the following key components:

- A 150 megawatt solar farm with PV modules mounted on single-axis tracking systems plus associated power conversion units (PCUs), a cable network and internal access tracks
- A BESS with a capacity of up to 250 megawatts/1000-megawatt hours of storage
- Electrical infrastructure including:
  - A central substation with a step-up facility
  - Underground and some overhead electrical reticulation connecting the PV arrays to the central substation
  - A new 330-kilovolt switching station and connection to Transgrid's 330-kilovolt overhead transmission line
- Permanent on-site ancillary infrastructure:
  - Operation and maintenance facility
  - Internal access road network, with access and egress points from and to public roads
  - Utility and amenity services
- Temporary construction ancillary infrastructure:
  - Site compounds, laydown and storage areas
  - Potential construction workforce accommodation on site
- Potential upgrades to the surrounding road network for the expected traffic volumes and oversize and/or overmass vehicles (OSOM) during construction, and maintenance during operation as required
- Site access:
  - Via Braidwood Road to the west and Boro Road to the south
  - Transport route from Port Botany to Braidwood Road and Boro Road would be via the M5 Motorway and the Hume Highway
  - Or transport route from Port Kembla to Braidwood Road and Boro Road would be via Five Islands Road, Princess Highway, M1 Freeway, Picton Road and the Hume Highway
- Land tenure:
  - The project area is freehold land, comprising three lots of privately owned land (Lot 2 DP1026850, Lot 2 DP711124 and Lot 4 DP 1256948) and various crown land parcels which has been leased by SREA for the project.

Land cadastre and lot/DPs within the project area are provided in **Table 1-1** and shown in **Figure 1-1**.

Table 1-1 Land cadastre

Lot	DP
Lot 2	DP1026850
Lot 2	DP711124
Lot 4	DP1256948
Lot 128 (Crown Land)	DP754867
Lot 7302 (Crown Land)	DP1140943

The project would be valued in excess of $30 million and therefore classified as State Significant Development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP).

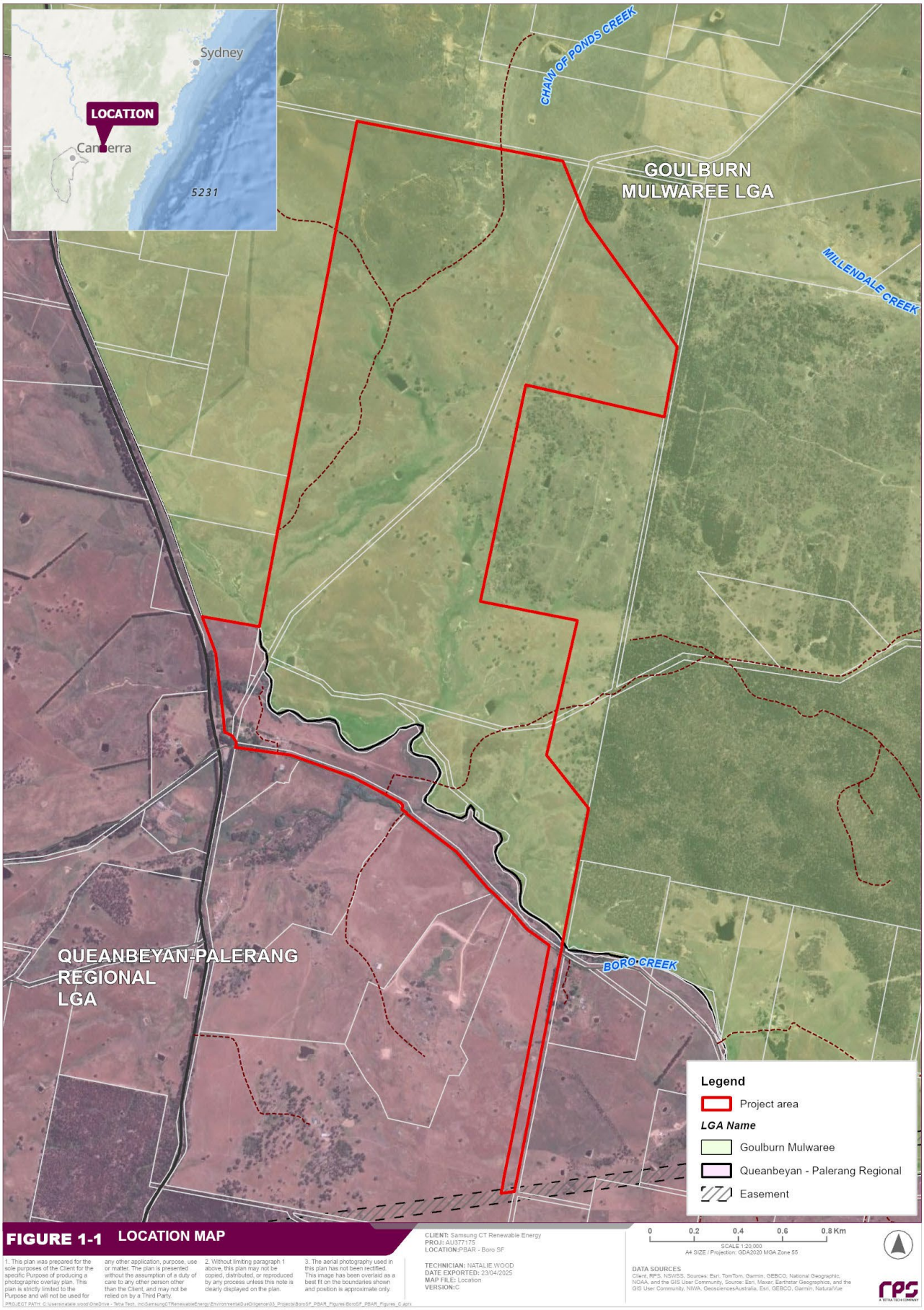
Approval would be required from the Minister for Planning and Public Spaces under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Project is also likely to require referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

1.1 Project area

The project area is shown in **Figure 1-1.** For this scoping study, the following terms are used in relation to the solar farm, BESS and transmission options:

- The project area – the indicative development area for the project as shown in **Figure 1-1**
- The biodiversity study area – being a 500 metres (m) buffer around the proposed solar panel locations, BESS, and indicative transmission route (noting that the biodiversity study area will be subject to change and will be centred around the final development footprint)
- The locality – being a 5 kilometres (m) buffer around the solar farm, BESS and indicative transmission route.


Sydney
LOCATION
Canberra
5231
CHAIN OF PONDS CREEK
GOULBURN MULWAREE LGA
MILLENDALE CREEK
QUEANBEYAN-PALERANG REGIONAL LGA
BORO CREEK
Legend
Project area
LGA Name
Goulburn Mulwaree
Queanbeyan - Palerang Regional
Easement
FIGURE 1-1 LOCATION MAP
CLIENT: Samsung CT Renewable Energy
PROJ: AU377175
LOCATION:PBAR - Boro SF
TECHNICIAN: NATALIE.WOOD
DATE EXPORTED: 23/04/2025
MAP FILE: Location
VERSION:C
0 0.2 0.4 0.6 0.8 Km
SCALE 1:20,000
A4 SIZE / Projection: GDA2020 MGA Zone 55
DATA SOURCES
Client, RPS, NSWSS, Sources: Esri, TomTom, Garmin, GEBCO, National Geographic, NOAA, and the GIS User Community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, NIWA, GeosciencesAustralia, Esri, GEBCO, Garmin, NaturalVue

1.2 Purpose

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

- Identify biodiversity constraints identified from a detailed desktop assessment
- Confirm the presence of some of these constraints through a rapid site inspection
- Provide advice to avoid and minimise impacts
- Provide advice on the request for Secretary's Environmental Assessment Requirements (SEARs).

1.3 Qualifications and licensing

1.3.1 Qualifications

Reporting was undertaken by Jess Graham (Bachelor of Zoology, Graduate Certificate in Environment Science; Accredited Assessor BAAS24053) and reviewed by Polina Irwin (Bachelor of Science; Accredited Assessor BAAS23014). Fieldwork was conducted by Jess Graham and John Hembra (Bachelor of Science; Accredited Assessor BAAS24047).

1.3.2 Licensing

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

- NSW National Parks and Wildlife Service Scientific Investigation Licence S100536 (Valid to 31 May 2025)
- Animal Research Authority (ARA) for Project No: 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 29 April 2025 to 21 March 2025 (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 potential impacts of the proposed development on MNES will be assessed under the 'Significant Impact Criteria' detailed in the EPBC Act Policy Statement 1.1 – *Significant Impact Guidelines: Matters of National Environmental Significance* (DoE 2013).

Where a proposed development is likely to have a significant impact on MNES, then the project should be referred to the Commonwealth 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 2.2.2.2**) and need approval under the EPBC Act, the Commonwealth has endorsed the BOS under the EPBC Act Condition-setting Policy. This means any New South Wales proponent who needs 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 state significant development (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 (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 will 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 GIS information will be used to populate the BAM Calculator (BAM-C) and outputs generated from the initial run will be included in an interim credit report from the BAM-C relating to the project disturbance footprint. This will identify the 'Ecosystem Credits' and the 'Species Credits' needed to be purchased for the project to cause 'no net loss', plus any other matters requiring consultation with New South Wales DCCEEW.

Ultimately, the field data and subsequent BAM credit calculations would inform the BDAR. Reporting is required to support the project development application in accordance with the BAM requirements, and must include the following:

- 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 of the New South Wales Department of Climate Change, Energy, the Environment and Water determines that the project is not likely to have a significant impact and issues 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. A BDAR will be prepared as part of the EIS in accordance with the BAM.

2.2.3 *Local Land Services Act 2013*

Under the *Local Land Services Act 2013* (LLS Act) all land in NSW is categorised into three broad types:

- Category 1 – Exempt land, where clearing of vegetation is unregulated (s60H LLS Act)
- Category 2 – Regulated land, where a biodiversity assessment is required for any activity requiring clearing of native vegetation. Category 2 land can be Vulnerable regulated land, Sensitive regulated land, or Vulnerable and sensitive regulated land (s60I LLS Act)
- Excluded land – where the LLS Act (and the two land categories described above) does not apply (s60A LLS Act).

The BAM does not assess biodiversity values for native vegetation and loss of habitat on Category 1 – Exempt land, other than the additional biodiversity impacts under clause 6.1 of the NSW *Biodiversity Regulation 2017* (BC Regulation). Category 1 and Category 2 land is mapped within the southern extent of the project area per the draft Native Vegetation Regulatory map, displayed in **Figure 2-1**.

The draft Native Vegetation Regulatory map does not create new regulatory requirements or place additional requirements on landholders. While the draft Native Vegetation Regulatory map is under review, land categories remain defined by the criteria in the legislation. Broadly, to be classified as Category 1, land would need to not contain woody vegetation, would need to be mapped as a Category 1 unit, and would also need to occur on rural land where the LLS act applies. Land will require assessment and mapping per the LLS Act in the BDAR.

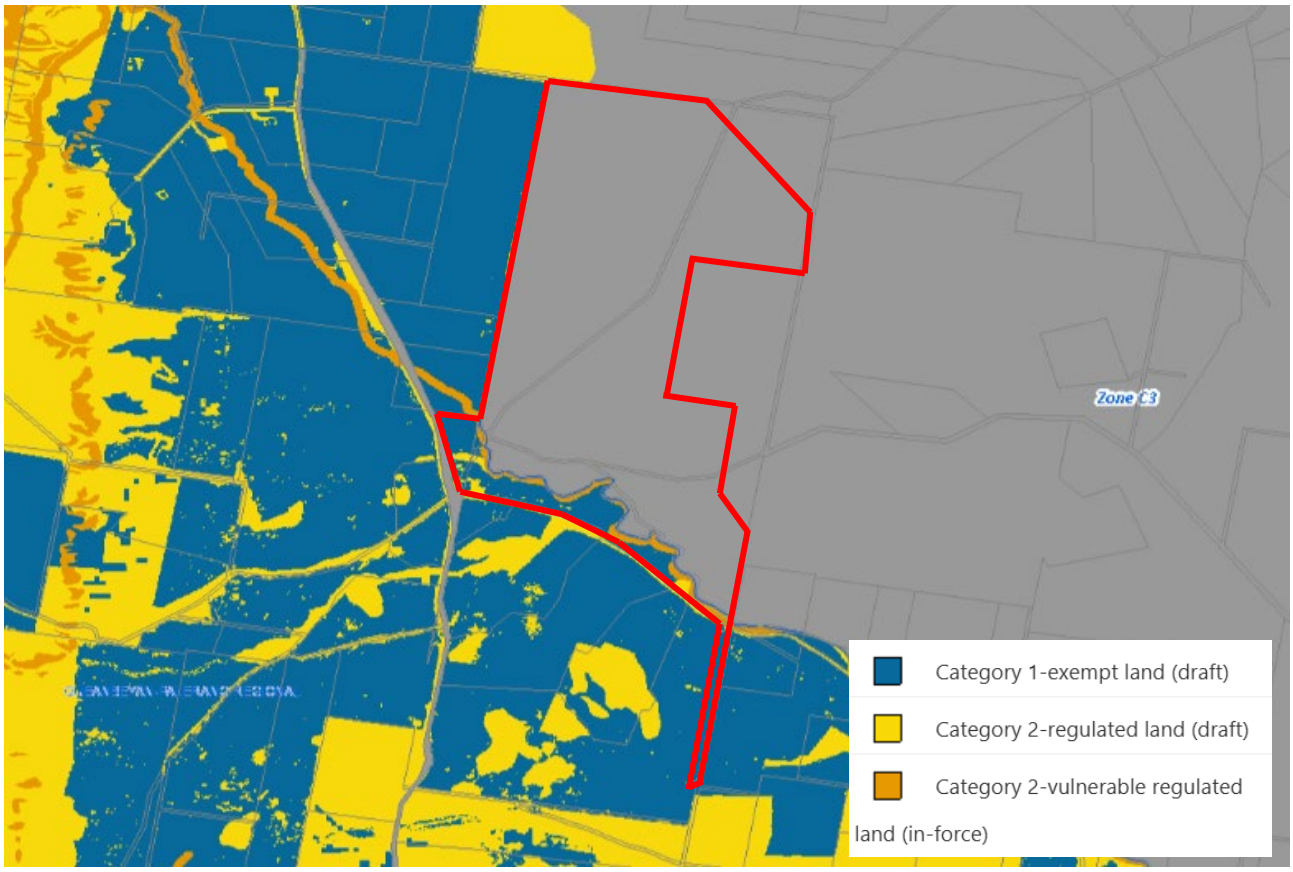


Figure 2-1 Draft Native Vegetation Regulatory map, project area shown in red

2.2.4 *Fisheries Management Act 1994*

The objects of the *Fisheries Management Act* (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 will be required as part of the BDAR, including identification of FM Act listed threatened entities, and impact assessments (7-part Tests) if necessary.

3 METHODOLOGY

3.1 Desktop research

3.1.1 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 5 km radius of the project area (i.e., locality) included:

- BAM Calculator species output (NSW DCCEEW 2025h)
- Flora and fauna records contained in the BioNet database (NSW DCCEEW 2025b)
- Vegetation plant community type (PCT) descriptions (NSW DCCEEW 2025c)
- Flora and fauna contained in the Commonwealth Protected Matters Search tool (DCCEEW 2025a).

3.1.2 Spatial datasets

Desktop analysis of vegetation cover including a review of the resources listed below:

- Mitchell Landscapes (NPWS 2002)
- IBRA region and subregion mapping (IBRA7; DCCEEW 2025b)
- NSW State Vegetation Type Map (NSW DCCEEW 2025d)
- Fisheries Spatial Data Portal (DPI 2025a)
- Recent aerial imagery of the project area.

3.1.3 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 ten 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 (TSPD; NSW DCCEEW 2023e)
- Habitat value and condition determined through the site inspection
- The results of targeted surveys (where performed)
- The effect of existing key threatening process (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 distribution for the species. 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 or fire). Potential for many recent records.	The project area contains suitable foraging and breeding resources for the species and occurs within known distribution for the species. 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.

3.2 Field survey

Field survey was undertaken on the 29th and 30th of July, the 6th and 7th of November, and the 4th of December 2025. The surveys considered the results of the desktop research and relevant survey guidelines specified in **Section 3.1**. Methods used included the following:

- Rapid data point (RDP) survey (**Section 3.2.1.1**)
- Fauna searches including habitat surveys (**Section 3.2.3**).

The following sections describe the survey techniques relevant to this investigation. Survey effort and locations are described in **Section 3.3.**

3.2.1 Vegetation

The classification and description of native vegetation was informed by the analysis of data recorded during the flora plot surveys: and flora plot data analysis, RDPs and tree canopy species mapping were used to determine the vegetation mapping.

3.2.1.1 Rapid data points (RDPs)

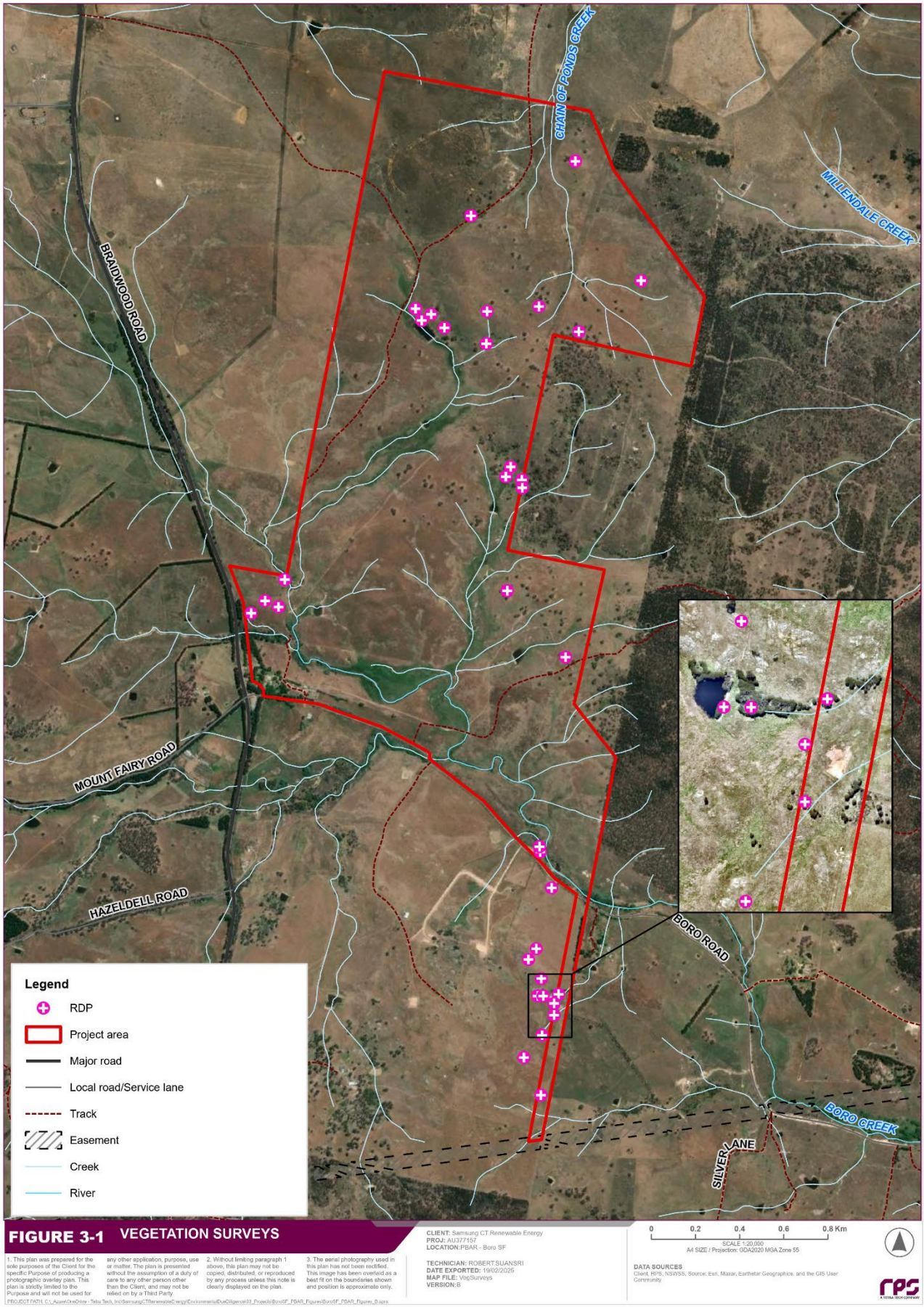
RDPs were collected at selected locations within the project area as well as opportunistically to aid vegetation boundary delineation, typing and condition analysis. Measures obtained represent a simplified dataset comparable to the BAM method.

Dominant vascular flora species were recorded to provide a high-level estimate of dominant trees, shrubs, grasses, and herb species within a 10-metre radius of the RDPs.

3.2.1.2 PCT identification

PCT identification was based on the results obtained from RDPs. A quantitative analysis of the survey data, matching outputs to PCTs in BioNet Vegetation Classification was performed. The following resources are also used in defining PCTs:

- PCT identification tool (BioNet Vegetation Classification application; DPE 2023c). This involved selecting known criteria such as general location, vegetation structure and/or dominant species present to identify the likely vegetation communities within the project area
- PCT Vegetation Maps (SVTM; DPE 2022b). Vegetation maps were used as a preliminary indicator of the PCTs that may occur within the project area.


CHAIN OF PONDS CREEK
MILLENDALE CREEK
BRAIDWOOD ROAD
MOUNT FAIRY ROAD
HAZELDELL ROAD
BORO ROAD
BORO CREEK
SILVER LANE
Legend
RDP
Project area
Major road
Local road/Service lane
Track
Easement
Creek
River
FIGURE 3-1 VEGETATION SURVEYS
CLIENT: Samsung CT Renewable Energy
PROJ: AU377157
LOCATION: PBAR - Boro SF
TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 19/02/2025
MAP FILE: VegSurveys
VERSION: B
0 0.2 0.4 0.6 0.8 Km
SCALE 1:20,000
A4 SIZE / Projection: GDA2020 MGA Zone 55
DATA SOURCES
Client, NSW, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

3.2.2 Threatened flora searches

Threatened species with a 'moderate or greater likelihood of occurrence' were surveyed for during the field assessment. This included opportunistic survey, through a random meander of the site. Threatened flora species were also included within RDPs.

No targeted threatened flora surveys were undertaken at this stage.

3.2.3 Fauna

3.2.3.1 Fauna habitat survey

The nature and extent of fauna habitats within the project area was assessed opportunistically, through a random meander of the project area.

Site 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 (if present; refer to **Section 4.4.1**).

Other indicators of fauna use of the site 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 throughout the project area.

3.2.3.1.1 Hollow-bearing trees

Hollow-bearing trees were mapped during the tree canopy species mapping described in **Section 3.2.1**. For each of these trees, the number and class of hollows 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: >20-50 cm (typically used by medium to large parrots, owls and large arboreal mammals)
- Class 4: >50 cm (typically used by owls and large arboreal mammals).

3.2.3.1.2 Non-specific surveys

Opportunistic sightings used secondary indications (scratches, scats, diggings, tracks etc.) and direct observation to record resident fauna. Observations 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*).

3.3 Weather and timing

Vegetation survey effort performed as part of this investigation is summarised in **Table 3-2**.

Table 3-2 Vegetation survey timing, effort and weather conditions (Braidwood Racecourse AWS: 069132; BOM 2025b)

Survey undertaken (e.g., method/targeted species)	Date	Temperature minimum (ºC)	Temperature maximum (ºC)	Rainfall (mm)
7-day lead up	24/07/2027	1.9	14.1	0.2
	25/07/2027	6.0	17.2	0.0
	26/07/2027	2.4	15.8	0.0
	27/07/2027	-4.0	14.7	0.0
	28/07/2027	1.7	9.3	0.2
	29/07/2025	1.0	9.6	0.0
	30/07/2025	-0.9	10.1	0.0
RDP's and observational fauna survey	31/07/2025	-0.4	9.9	0.0

3.4 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.

3.4.1 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 Biodiversity, Conservation and Science division of NSW DCCEEW, and/or the need to protect specific threatened species locations. For the purposes of this PBAR this information has been considered to have an accuracy of plus and/or minus one kilometre, however for some threatened species, records may be denatured by up to two kilometres.

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.

3.4.2 Preliminary surveys

Due to the preliminary nature the ecological surveys, the full extent of vegetation within the project area was not assessed. Further detailed ecological surveys may yield alternate results such as PCT classification and TEC association.

4 RESULTS

4.1 Desktop research

4.1.1 Landscape context

An overview of the landscape context relevant to the project area is outlined in **Table 4-1**.

Table 4-1 Landscape context of the project area

Feature	Description
Topography	The project area has an undulating topography with elevation ranging from 670 to 750m above sea level. There is a larger rise in gradient in the northwestern corner, with scattered hills/slopes through the middle of the project area. The areas near Boro Creek are generally flat.
Rivers, streams, estuaries and dams.	Boro Creek, Chain of Ponds Creek and several associated drainage lines exist within the project area as shown in **Figure 4-2**. These waterways are mapped as key fish habitat (KFH). There are ten dams within the project area (DPI 2025).
Soils	The project area intersects with four soil landscapes, including: • Duckfield Hut • Larbert • Morass • Lower Boro. Refer to **Section 4.1.1.3** for a description of each soil landscape.

4.1.1.1 IBRA region/subregion

The project area is located within the Bungonia subregion of the Southeastern Highlands IBRA bioregion, which has an area of approximately 8,749,155 hectares.

4.1.1.2 Mitchell landscapes

The project area occurs on two mapped Mitchell Landscape units (NPWS 2002):

- **Gundary Plains** – comprising wide open valleys with abandoned terraces and Quaternary lakebeds on lower Devonian siltstone, sandstone, andesite and quartz felspar porphyry. Soils are generally yellow, hard setting texture-contrast soils with distinct bleached A2 horizons.

  General elevation is around 75 m, and local relief is generally less than 30 m.

  Vegetation comprises grasslands of *Austrostipa* sp. (Spear Grass) and *Themeda triandra* (Kangaroo Grass) with small clumps of *Eucalyptus pauciflora* (Snow Gum) on rounded rocky hills and sandy lunettes of former lakes.

- **Lake Geroge Complex** – comprising closed drainage basins of Quaternary lakes and swamps set within block faulted ranges. Extensive Tertiary quartz gravel, sand, and mud overlies Silurian-Devonian gneissic granite and Silurian quartz sandstone and mudstone.

  General elevation is around 700 m, and local relief of lake beds is less than 50m. Rounded hills stand above the plain to about 900 m.

  Vegetation comprises wet tussock grasslands of *Austrostipa* sp. (Spear Grass) and *Poa* spp, with *Themeda triandra* (Kangaroo Grass) on lake margins, now extensively altered by exotics.

  Clumps of sparse *Eucalyptus pauciflora* (Snow Gums) occur on low hills and sandy lunettes, and *Phragmites australis* (Common Reed) is found around freshwater seepage areas on lake margins.

4.1.1.3 Soil landscapes

The project area occurs on four soil landscapes:

- **Duckfield Hut** – comprises undulating rises on Tertiary sediments of the Lake Bathurst Basin physiographic region.

  Local relief is between 9 to 30 metres, with elevation between 670 to 700 metres. There are occasional rock outcrops of crests. Seasonal waterlogging can occur.

  Vegetation comprises cleared woodland (frost pocket community) and grassland with *Eucalyptus pauciflora* (Snow Gum), *Acacia dealbata* (Silver Wattle) and *Themeda triandra* (Kangaroo Grass).

  Current land use includes cattle and sheep grazing on improved and some voluntary pastures, and occasional lucerne crops.

- **Larbert** – comprising flat to gently undulating alluvial floodplain and valley flats of the Braidwood Rises and Oallen Relict Rises physiographic regions. This landscape includes floodplains of the Shoalhaven River and Boro Creek.

  Local relief is generally less than 20 m, and usually less than 10 m, with elevation between 550 and 600 m. Flooding is frequent, and the soil type includes extensively cleared woodland, grassland and swamps.

  Remnant vegetation includes *Eucalyptus melliodora* (Yellow Box), *E. bridgesiana* (Apple Box), *E. pauciflora* (Snow Gum) and *E. viminalis* (Ribbon Gum).

  On sites which are regenerating after clearing, *Kunzea parvifolia* (Violet Kunzea) and *Melaleuca parvistaminea* are common.

  Current land use is dominated by grazing of cattle and sheep often on improved pastures and sand and gravel extraction.

- **Morass –** comprising undulating rises on Tertiary sediments of Lake Bathurst Basin physiographic region, to the south and east of Lake Bathurst and The Morass, and to the south of Willeroo.

  Local relief is between 9 to 30 m, with elevation between 670 to 700 m. Slopes are long (>300 m) and waning, with low inclination (3–10%). This landscape has extremely shallow (<50 cm) and well-drained Lithosols and shallow to moderately deep, well-drained Yellow Earths.

  Vegetation comprises cleared woodland (frost pocket community) and grassland with *Eucalyptus pauciflora* (Snow Gum), *Acacia dealbata* (Silver Wattle) and *Themeda triandra* (Kangaroo Grass).

  Current land use is cattle and sheep grazing on improved and some voluntary pastures, and occasional lucerne crops.

- **Lower Boro –** comprising undulating rises and low hills on granites of Braidwood Rises physiographic region.

  Local relief is between 10–90 m, with elevation between 600 to 860 m. The topography of this landscape is characterised by long (>300 m), waning, moderately (<20%) to gently (<10%) inclined slopes. There are a few rock outcrops as tors, and this landscape has a seasonal water logging.

  The vegetation is cleared woodland to open-forest (dry sclerophyll forest) with remnant *Eucalyptus dives* (Broad-leaved Peppermint), *E. pauciflora* (Snow Gum), *E. mannifera* (Brittle Gum), *E. rossii* (Scribbly Ggum) and *Acacia mearnsii* (Black Wattle) on mid and upper slopes.

  Eucalyptus melliodora (Yellow Box) occurs on lower slopes, whereas *Allocasuarina littoralis* (Black She-oak) and *Acacia falciformis* (Hickory Wattle) are found on crests and rocky knolls. *Banksia marginata* (Silver Banksia) and an assortment of shrubs and herbs occur on sandy soils developed in situ or from aeolian materials.

  Current land use includes beef and sheep production often on improved pastures.

4.1.1.4 Karst, caves, crevices, cliffs, rocks and other geological features of significance

The Southeastern Highlands Bioregion is part of the Lachlan fold belt that runs through the eastern states as a complex series of metamorphosed Ordovician to Devonian sandstones, shales and volcanic rocks intruded by numerous granite bodies. Extensive areas of thin Tertiary basalt flows over lake and river sediments.

No cliffs or caves are present within the project area, along with minimal exposed surface rock.

4.1.1.5 Biodiversity Values

The project area contains land mapped under the Biodiversity Values (BV) Map (NSW DCCEEW 2025f; **Figure 4-1**). 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 biodiversity values mapped within and surrounding the project area are included due to the presence of biodiverse riparian lands.

4.1.1.6 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 2025g):

- 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.

4.1.1.7 Connectivity

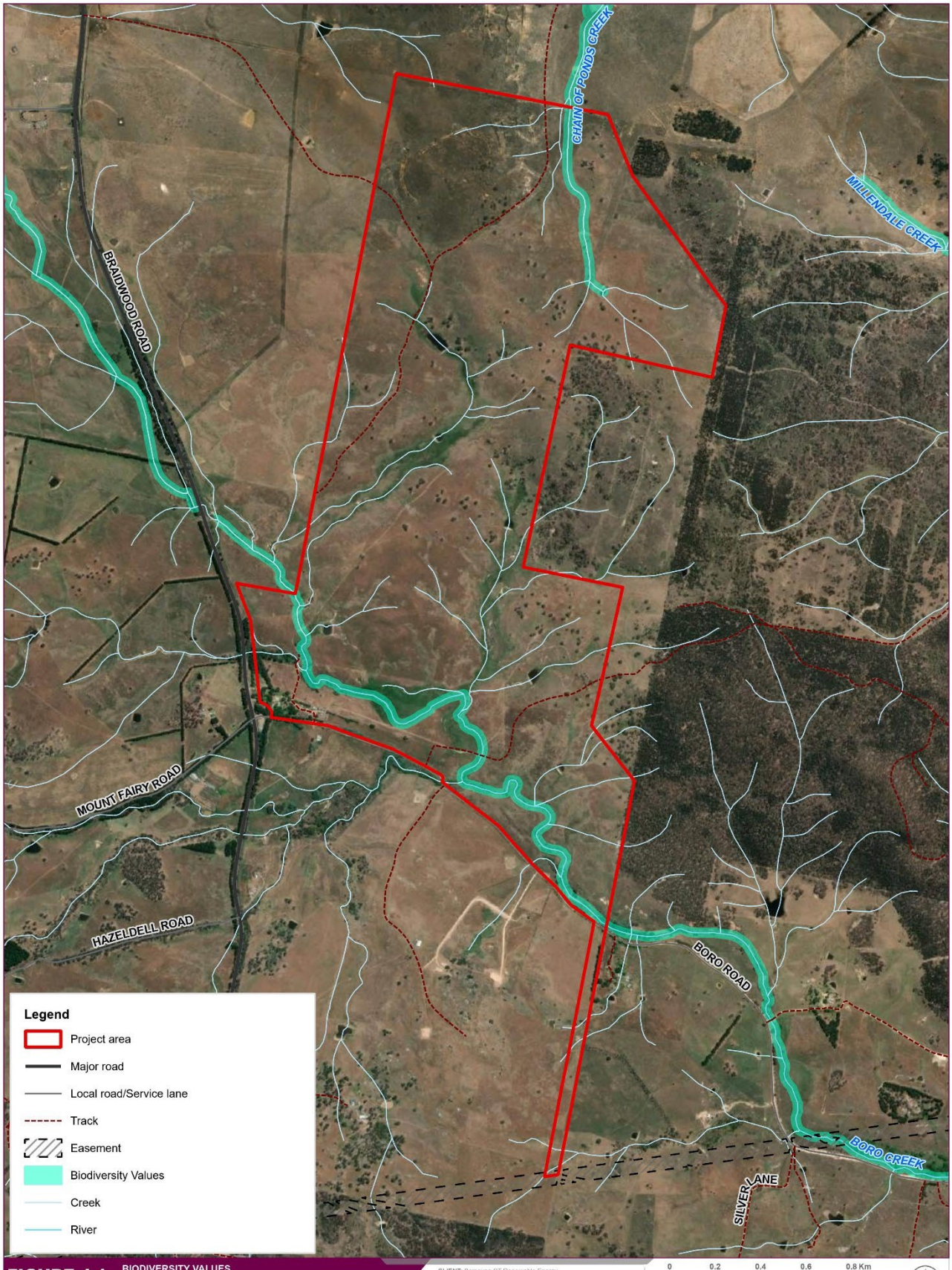
Fauna move through habitats to obtain food, shelter and breeding resources in response to seasonal resource availability and habitat conditions. Large tracts of habitat are generally required for successful dispersal away from natal areas or seasonal migrations. A large area of bushland (approximately 2000 hectares) occurs directly adjacent to the project area. Additionally, Nadigigomar Nature Reserve occurs approximately 12 kilometre east of the project area, which covers an area of 5596 hectares. This woodland would provide good habitat for fauna species.

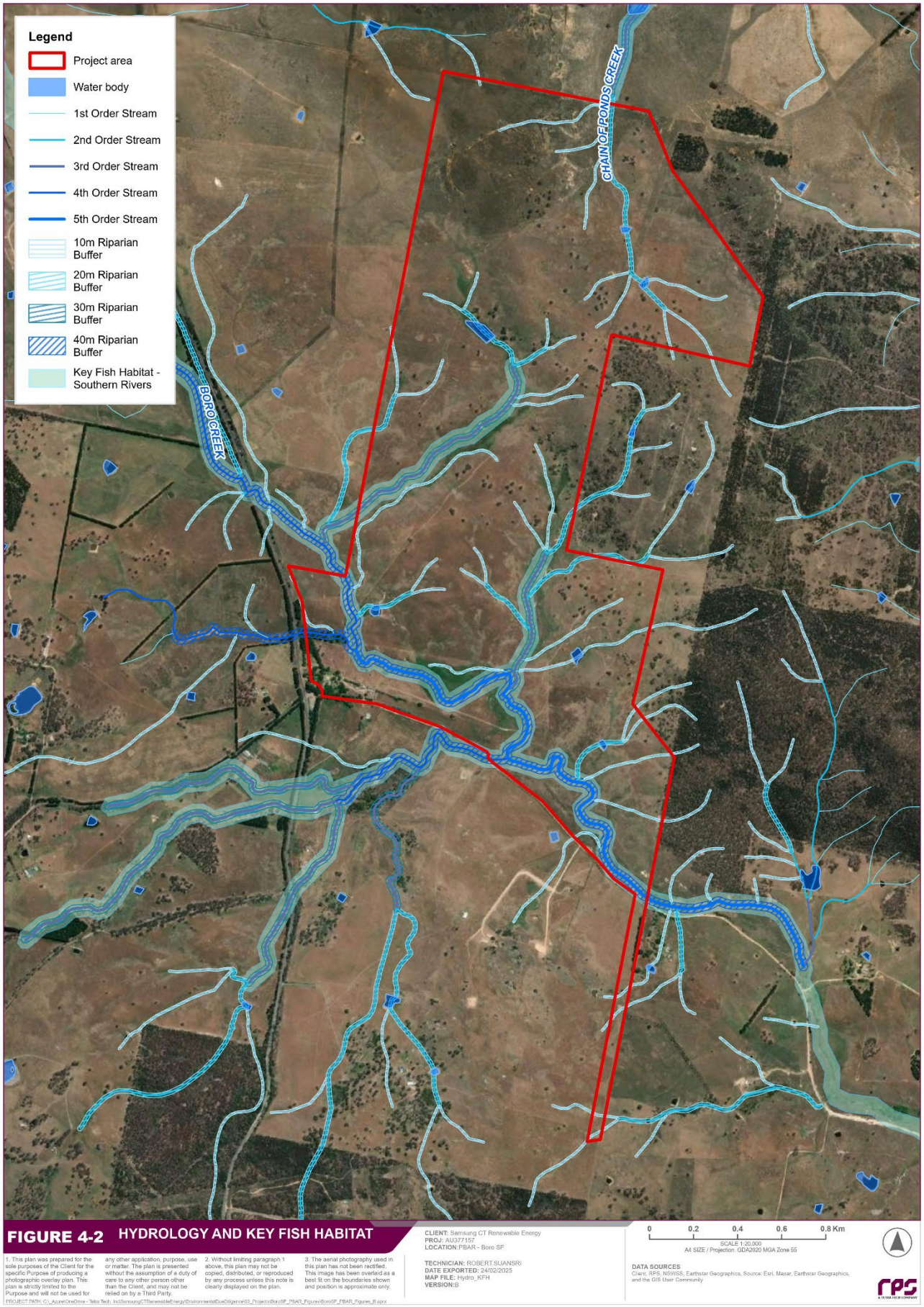
The project area consists of existing tracks and paddocks that intersect large areas of intact habitats providing vegetative corridors to the surrounding bushland. Whilst some of these areas have been previously impacted by land use practices such as agriculture, this has not severed connectivity across the project area. As a result, the project area likely facilitates the movement of resident fauna through the surrounding landscape.

4.1.1.8 Wetlands, Key Fish Habitat and littoral rainforest

No wetlands are mapped within the project area, although numerous dams provide habitat for a range of aquatic bird species which were observed utilising the dams during the field surveys. The closest wetland is Lake Bathurst located approximately six kilometres north of the project area. No Coastal Wetlands, Littoral Rainforests, or their proximity areas, are mapped within or adjacent to the project area.

There is Key Fish Habitat mapped within the project area (**Figure 4-2**), which includes Chain of Ponds Creek and Boro Creek.


CHAIN OF PONDS CREEK
MILLENDALE CREEK
BRAIDWOOD ROAD
MOUNT FAIRY ROAD
HAZELDELL ROAD
BORO ROAD
BORO CREEK
SILVER LANE
Legend
Project area
Major road
Local road/Service lane
Track
Easement
Biodiversity Values
Creek
River
FIGURE 4-1
BIODIVERSITY VALUES
CLIENT: Samsung CT Renewable Energy
PROJ: 604-OEENVSYD-377175
LOCATION:PBAR - Boro SF
TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 20/02/2025
MAP FILE: BiodiversityValues
VERSION:B
0 0.2 0.4 0.6 0.8 Km
SCALE 1:20,000
A4 SIZE / Projection: GDA2020 MGA Zone 55
DATA SOURCES
Client, RPS, NSWSS, Earthstar Geographics, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
rps


Legend
Project area
Water body
1st Order Stream
2nd Order Stream
3rd Order Stream
4th Order Stream
5th Order Stream
10m Riparian Buffer
20m Riparian Buffer
30m Riparian Buffer
40m Riparian Buffer
Key Fish Habitat - Southern Rivers
CHAIN OF PONDS CREEK
BORO CREEK
FIGURE 4-2 HYDROLOGY AND KEY FISH HABITAT
CLIENT: Samsung CT Renewable Energy
PROJ: AU377157
LOCATION: PBAR - Boro SF
TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 24/02/2025
MAP FILE: Hydro_KFH
VERSION: B
0 0.2 0.4 0.6 0.8 Km
SCALE 1:20,000
A4 SIZE / Projection: GDA2020 MGA Zone 55
DATA SOURCES
Client, RPS, NSWSS, Earthstar Geographics, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

4.2 Native vegetation

4.2.1 Plant Community Types

The majority of the project area intersects with historically cleared land comprised of pasture lands recently grazed, and rural residential lots (**Figure 4-3**). The outer boundary and pockets within the project area includes five Plant Community Types (PCTs). Refer to **Table 4-2** for area calculations of each PCT within the project area. Details on each PCT and justification of PCT choice is provided in **Table 4-3** to **Table 4-8** below.

Table 4-2 PCTs within the project area

PCT ID	PCT Name	Associated TEC	Total (ha)
0	Cleared	N/A	380.87
3744	Palerang Hills Peppermint Dry Shrub Forest	N/A	22.37
3338	Goulburn Tableland Frost Hollow Grassy Woodland	BC Act - Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions Critically Endangered Ecological Community (CEEC).	3.06
3746	Southern Tableland Snow Gum-Candlebark Shrub Forest	N/A	0.13
3747	Southern Tableland Western Hills Scribbly Gum Forest	N/A	0.81
3932	Central and Southern Tableland Swamp Meadow Complex	BC Act - Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions Endangered Ecological Community (EEC) and EPBC Act - Temperate Highland Peat Swamps on Sandstone (EEC).	0.17
TOTAL			**407.41**

Table 4-3 Vegetation community details for PCT 0 – Cleared

PCT 0	Vegetation community details
Photo	
Description	Exotic-dominant vegetation was common within the project area, particularly throughout the farmed and grassland areas. Exotic species commonly sighted within RDPs included *Holcus lanatus* (Yorkshire Fog), *Hypochaeris radicata* (Catsear) and *Trifolium repens* (White Clover). Some native grasses and forbs occurred; however, none were dominant. Some sections of this PCT may be considered native without a tree layer. Further field assessment will confirm this.
Condition	Exotic-dominant
RDP number	2, 3, 5, 6, 7, 8, 9, 53, additional 1, additional 2, additional 3, additional 4.
Justification	As exotic species dominated this vegetation zone, and only minor occurrences of native species occurred, this has been classified as Exotic-dominant vegetation.
Vegetation formation:	N/A
Associated TEC	N/A

Table 4-4 Vegetation community details for PCT 3744 – Palerang Hills Peppermint Dry Shrub Forest

PCT 3744	Vegetation Community Details
Photo	
PCT Description (NSW DCCEEW 2025c)	A mid-high to tall dry sclerophyll open forest of rolling low hills around Braidwood on the Southern Tablelands, from Boro south to Ballalaba and from Brushy Hill west to Butmaroo and The Sand Hills. This PCT occurs at elevations of generally 600 to 910 m asl, in locations receiving 700 to 960 mm mean annual rainfall, predominantly on shallow sandy soils derived from granitic and acid volcanic (ignimbrite) rocks, and sometimes on nearby quartz-rich sandstone and conglomerate substrates. A sparse to mid-dense tree canopy very frequently includes *Eucalyptus dives* and/or *Eucalyptus mannifera*, occasionally with *Eucalyptus rossii.* An occasional sparse small tree layer includes *Allocasuarina littoralis*, and a sparse to patchy shrub layer frequently includes scattered *Brachyloma daphnoides*, commonly with *Hibbertia obtusifolia*, *Persoonia linearis* and *Melichrus urceolatus*, with occasional *Acacia gunnii* or *Kunzea ericoides*. A sparse to mid-dense ground layer includes a mix of hardy tableland grasses, graminoids and forbs. These very frequently include *Goodenia hederacea, Microlaena stipoides, Gonocarpus tetragynus* and *Lomandra filiformis*, commonly with *Dianella revoluta, Lomandra longifolia, Hypericum gramineum* and *Hovea linearis*. Occasional species include *Aristida ramosa, Rytidosperma pallidum, Poa meionectes, Lepidosperma gunnii, Lomandra multiflora subsp. multiflora* and *Stylidium graminifolium*.
Condition	This PCT occurs in varying condition of low, moderate and good. Low condition patches were dominated by exotic grasses and forbs. Moderate patches had an intact canopy layer, native grasses and some exotic species present, while good patches had an intact canopy, shrub and ground layer.
Diagnostic species	*Eucalyptus dives*, *E. mannifera*, *E. rossii, Allocasuarina littoralis*, *Brachyloma daphnoides*, *Hibbertia obtusifolia*, *Persoonia linearis*, *Melichrus urceolatus*, *Acacia gunnii, Kunzea ericoides, Goodenia hederacea, Microlaena stipoides, Gonocarpus tetragynus, Lomandra filiformis*, *Dianella revoluta, Lomandra longifolia, Hypericum gramineum,* and *Hovea linearis*.
RDPs	44, 46, 49, 50, 51, 52, 54, 55, 56, 57, 58, 59, 61, 62, 65, 66.
Justification	The Bionet PCT filter tool was utilised, and data including the IBRA bioregion and subregion, and all species identified within each RDP were input, to determine possible PCTs. The vegetation within the project area contains dominant species diagnostic of PCT 3744 such as *Eucalyptus dives*, *E. mannifera* and *Allocasuarina littoralis* in the canopy layer*, Hibbertia obtusifolia* and *Persoonia linearis* in the shrub layer, and *Lomandra filiformis, Gonocarpus tetragynus,* and *Microlaena stipoides* in the shrub layer. Furthermore, the landscape attributes for the project area match those for PCT 3744 as described above. Previous vegetation mapping (NSW DCCEEW 2025d) identified vegetation within the project area as PCT 3643, which is inconsistent with field data. Correct identification of Eucalypt species present resulted in the classification of PCT 3744.

PCT 3744	Vegetation Community Details
	The species diversity is moderate across this vegetation zone, some exotic species are present, and some patches have a high exotic species cover, therefore is considered in low to good condition.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	70.77%
Associated TEC	No associated TECs.

Table 4-5 Vegetation community details for PCT 3338 – Goulburn Tableland Frost Hollow Grassy Woodland

PCT 3338	Vegetation Community Details
Photo	
PCT Description (NSW DCCEEW 2025c)	A mid-high to tall sclerophyll grassy woodland to open forest found on gentle lower slopes and broad valley floors of undulating tableland landscapes in north-east parts of the Southern Tablelands. The known distribution is from Queanbeyan east to Braidwood and Charleyong, and north to Laggan, Taralga and Uringalla Creek. This PCT occurs at elevations of 600 to 950 m asl, with means of 650 to 860 mm annual rainfall and 16 to 36 frost days annually. A sparse to mid-dense tree canopy very frequently includes *Eucalyptus pauciflora*, occasionally with *Eucalyptus rubida*. A distinct shrub layer is often absent, and the most common shrub species are occasional small sub-shrubs *Pimelea curviflora* and *Bossiaea prostrata*; with *Astroloma humifusum, Melichrus urceolatus,* or the taller *Acacia mearnsii* recorded rarely. The ground layer is characteristically grassy, almost always dominated by *Themeda triandra*, very frequently with other grasses *Microlaena stipoides* and *Poa sieberiana*, commonly with *Elymus scaber* and occasionally *Aristida ramosa, Poa meionectes, Dichelachne micrantha* or various *Rytidosperma* species (*Rytidosperma caespitosum, R. pilosum, R. racemosum* or *R. laeve*). The daisies *Chrysocephalum apiculatum, Leptorhynchos squamatus* and *Calocephalus citreus* are also common to occasional components of this community, along with a diverse suite of forbs that commonly include *Hypericum gramineum, Gonocarpus tetragynus, Hydrocotyle laxiflora, Lomandra filiformis* and *Tricoryne elatior,* and occasionally *Asperula conferta, Plantago varia, Scleranthus biflorus* or *Dichondra repens*.
Condition	Poor to moderate

PCT 3338	Vegetation Community Details
Diagnostic species	*Eucalyptus pauciflora*, *E. rubida*, *Pimelea curviflora, Bossiaea prostrata*, *Astroloma humifusum, Melichrus urceolatus, Acacia mearnsii, Themeda triandra*, *Microlaena stipoides, Poa sieberiana*, *Elymus scaber, Aristida ramosa, Poa meionectes, Dichelachne micrantha, Rytidosperma* species (*Rytidosperma caespitosum, R. pilosum, R. racemosum* or *R. laeve*), *Chrysocephalum apiculatum, Leptorhynchos squamatus*, *Calocephalus citreus, Hypericum gramineum, Gonocarpus tetragynus, Hydrocotyle laxiflora, Lomandra filiformis, Tricoryne elatior, Asperula conferta, Plantago varia, Scleranthus biflorus,* and *Dichondra repens*.
RDPs	60, 63
Justification	The Bionet PCT filter tool was utilised, and data including the IBRA bioregion and subregion, and all species identified within each RDP were input, to determine possible PCTs. The vegetation within the project area contains dominant species diagnostic of PCT 3338 such as *Eucalyptus pauciflora* in the canopy and *Microlaena stipoides, Themeda triandra* and *Poa sieberiana* in the ground layer. Furthermore, the landscape attributes for the project area match those for PCT 3338 as described above. Previous vegetation mapping (NSW DCCEEW 2025d) identified vegetation within the project area as PCT 3338 which is consistent with field data. The species diversity is moderate across this vegetation zone, and some exotic species are present. The patches are mostly absent of a shrub layer. Some patches are in worse condition that others, therefore is considered in poor to moderate condition.
Vegetation formation	Grassy Woodlands
Percent cleared	96.44%
Associated TEC	BC Act - Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (CEEC) (Critically Endangered Ecological Community).

Table 4-6 Vegetation community details for PCT 3746 – Southern Tableland Snow Gum-Candlebark Shrub Forest

PCT 3746	Vegetation Community Details
Photo	
PCT Description (NSW DCCEEW 2025c)	A mid-high to tall shrubby sclerophyll open forest to woodland restricted to intermittently damp flats along streams, and adjacent foot slopes, in north-east parts of the Southern Tablelands. This PCT is known from Nerriga west to Boro and south to Snowball, and from Mandemar south to Penrose and west to Brayton, with a northern outlier at Hartley. It occurs at elevations of 500-900 m asl with mean annual precipitation of 650-1050 mm, commonly on sandy-clay alluvium and colluvium derived from sandstone, rhyolite and granitoid substrates.

PCT 3746	Vegetation Community Details
	A sparse to mid-dense canopy very frequently includes *Eucalyptus pauciflora,* commonly with *Eucalyptus rubida* and occasionally *Eucalyptus viminalis.* The shrub stratum may be sparse to mid-dense and commonly includes *Kunzea parvifolia* and *Melichrus urceolatus,* occasionally *Brachyloma daphnoides, Leptospermum myrtifolium, Bossiaea buxifolia* or *Kunzea ericoides,* and rarely *Gompholobium minus, Aotus ericoides, Banksia marginata, Daviesia mimosoides* or *Pultenaea subspicata.* A mid-dense ground layer includes a diverse suite of grasses, graminoids, forbs and ferns, commonly including *Goodenia hederacea, Hypericum gramineum, Microlaena stipoides, Gonocarpus tetragynus, Themeda triandra, Lomandra longifolia, Hydrocotyle laxiflora, Poranthera microphylla, Pteridium esculentum* and *Stylidium graminifolium,* occasionally with *Aristida ramosa, Dianella revoluta, Lomandra filiformis, Senecio prenanthoides* or *Lomandra multiflora subsp. multiflora.* This community may be replaced by PCT 3347 on well-drained flats derived from more fertile substrates.
Condition	Moderate
Diagnostic species	*Eucalyptus pauciflora, E. rubida, E. viminalis, Kunzea parvifolia, Melichrus urceolatus, Brachyloma daphnoides, Leptospermum myrtifolium, Bossiaea buxifolia, Kunzea ericoides, Goodenia hederacea, Hypericum gramineum, Microlaena stipoides, Gonocarpus tetragynus, Themeda triandra, Lomandra longifolia, Hydrocotyle laxiflora, Poranthera microphylla, Pteridium esculentum,* and *Stylidium graminifolium.*
RDP number	66
Justification	The Bionet PCT filter tool was utilised, and data including the IBRA bioregion and subregion, and all species identified within each RDP were input, to determine possible PCTs. The vegetation within the project area contains dominant species diagnostic of PCT 3746 such as *Eucalyptus dives* in the canopy, and *Leptospermum myrtifolium* in the shrub layer and *Microlaena stipoides* in the ground layer. Furthermore, the landscape attributes for the project area match those for PCT 3746 as described above. Previous vegetation mapping (NSW DCCEEW 2025d) identified vegetation within the project area as PCT 3744 which is inconsistent with field data. Correct identification of Eucalypt species present resulted in the classification of PCT 3746. The species diversity is moderate across this vegetation zone, canopy layer is sparse, and some exotic species are present, therefore is considered in moderate condition.
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	74.69%
Associated TEC	No associated TECs.

Table 4-7 Vegetation community details for PCT 3747 – Southern Tableland Creekflat Ribbon Gum Forest

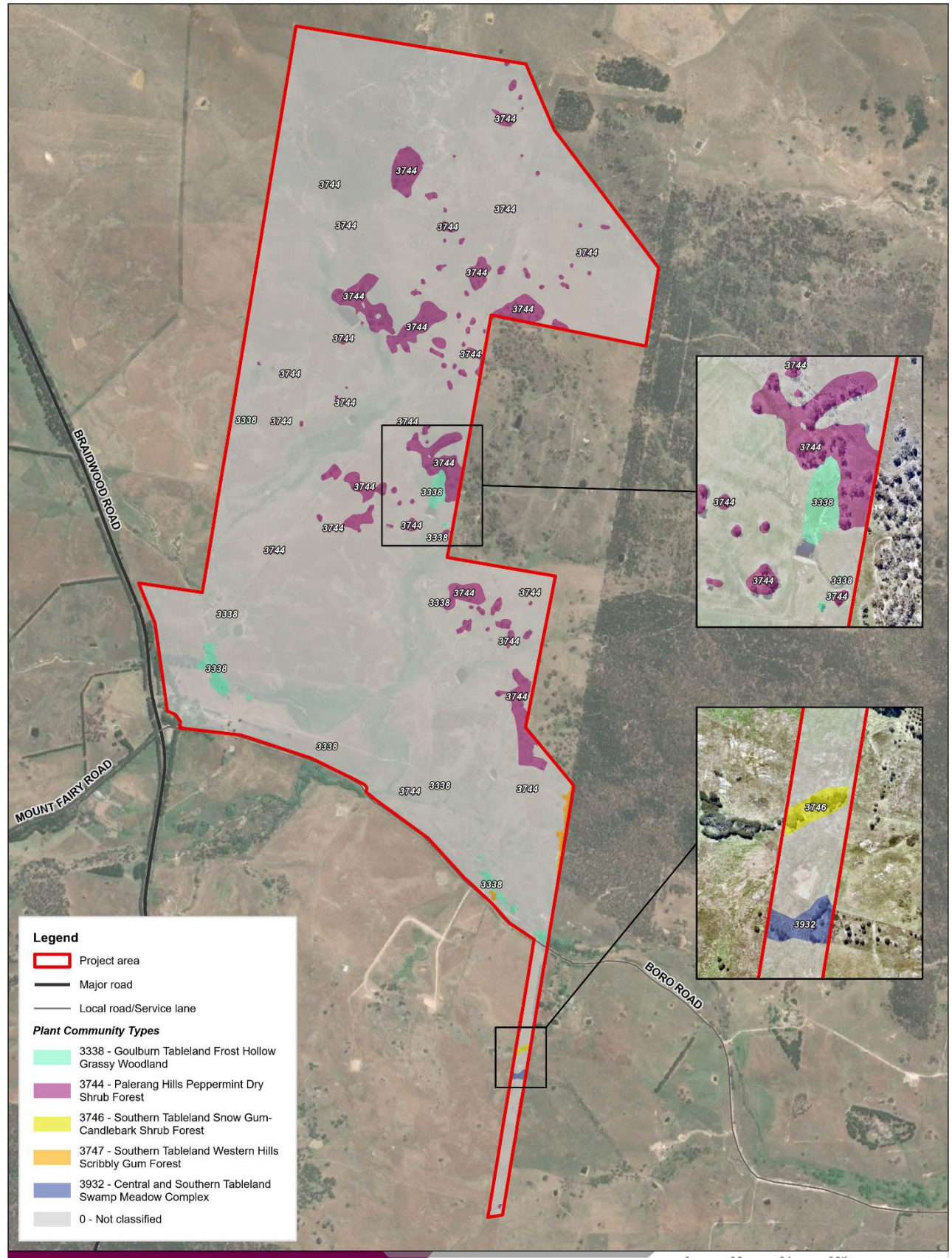
PCT 3747	Vegetation Community Details
Photo	
PCT Description (NSW DCCEEW 2025c)	A mid-high to tall dry shrubby sclerophyll open forest of slopes and crests of dry, rocky tableland hills and ranges, at moderate altitudes across the Central Tablelands and northern parts of the Southern Tablelands. This PCT is widely distributed from Mullions Range east to the slopes of Mount Vincent and to Windeyer and Rylstone in the north, south to Mundoonen Range, Bungonia, and Cuumbeun east of Queanbeyan in the south. It generally occurs at elevations of 500 to 1200 m asl and in locations receiving 600 to 920 mm mean annual rainfall, commonly on quartz-rich sedimentary, acid volcanic and granitoid substrates, with scattered occurrences in areas mapped as shales or mudstones. A sparse to mid-dense tree canopy very frequently includes *Eucalyptus macrorhyncha* and or *Eucalyptus rossii*, commonly with *Eucalyptus mannifera* and occasionally *Eucalyptus goniocalyx*. A sparse shrub layer very frequently includes *Hibbertia obtusifolia*, commonly with *Daviesia leptophylla* and *Brachyloma daphnoides* and occasionally *Acacia gunnii, Monotoca scoparia* or *Melichrus urceolatus.* The ground layer is sparse to mid-dense, and very frequently includes large tussocks of *Rytidosperma pallidum*, which dominates with a high cover, and *Lomandra filiformis, Poa sieberiana, Dianella revoluta, Gonocarpus tetragynus* and *Goodenia hederacea*. Also common is *Hovea linearis* (most records likely to be *Hovea heterophylla*), with *Lomandra multiflora subsp. multiflora* occasional. On lower slopes with increasing depth of accumulated soil, this community may grade into a variety of grassy open forest communities, such as PCT 3370 in relatively moist parts of its range or PCT 3372 in relatively dry parts.
Condition	Moderate
Diagnostic species	*Eucalyptus macrorhyncha, E. rossii*, *E. mannifera, E. goniocalyx, Hibbertia obtusifolia*, *Daviesia leptophylla, Brachyloma daphnoides, Acacia gunnii, Monotoca scoparia, Melichrus urceolatus, Rytidosperma pallidum*, *Lomandra filiformis, Poa sieberiana*, *Dianella revoluta, Gonocarpus tetragynus, Goodenia hederacea, Hovea linearis* and *Lomandra multiflora* subsp. *multiflora.*
RDP number	64
Justification	The Bionet PCT filter tool was utilised, and data including the IBRA bioregion and subregion, and all species identified within each RDP were input, to narrow down possible PCTs. The vegetation within the project area contains dominant species diagnostic of PCT 3747 such as *Eucalyptus macrorhyncha* in the canopy, and *Hibbertia obtusifolia* and *Poa sieberiana* in the ground layer. Furthermore, the landscape attributes for the project area match those for PCT 3747 as described above. Previous vegetation mapping (NSW DCCEEW 2025d) identified vegetation within the project area as PCT 3747 which is consistent with field data. The species diversity is moderate across this vegetation zone and some exotic species are present (with exotic grass cover high), therefore is considered in moderate condition.

PCT 3747	Vegetation Community Details
Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Percent cleared	65.05%
Associated TEC	No associated TECs.

Table 4-8 Vegetation community details for PCT 3932 – Central and Southern Tableland Swamp Meadow Complex

PCT 3932	Vegetation Community Details
Photo	
PCT Description (NSW DCCEEW 2025c)	A dense swampy forbland with scattered shrubs and fringing trees, sampled from permanently waterlogged fertile alluvial deposits on eastern parts of the South Eastern Highlands and high western parts of the Sydney Basin and South East Corner bioregions. Known locations are distributed from Burralow Swamp and the upper Coxs River south to Wingecarribee and Long Swamps on the southern highlands, and on the far southern escarpment rim from Yambulla west to Mila. It occurs across a broad elevation range of 300 to 1150 m asl, in locations receiving 700 to 1300 mm mean annual rainfall. This community is characterised by a dense ground layer of tall sedges, grasses and forbs, which is almost always dominated by *Carex gaudichaudiana* and includes *Machaerina rubiginosa*. Other common tall species include swampy grasses *Isachne globosa, Phragmites australis* and *Poa labillardierei var. labillardierei,* the large mat-rush *Lomandra longifolia,* sedges, and rushes such as *Juncus sarophorus, Eleocharis gracilis* and *Lepyrodia anarthria*, the water fern *Blechnum minus*, and tall forbs *Lycopus australis* and *Lythrum salicaria.* A range of smaller wetland forbs grow between and through these, commonly including *Hydrocotyle sibthorpioides, Geranium neglectum, Gratiola peruviana, Hypericum japonicum, Ranunculus inundatus* and *Stellaria angustifolia*. Shrubs are sparse to patchy and commonly include scattered *Leptospermum obovatum* or *Leptospermum juniperinum* or rarely *Leptospermum lanigerum*. Trees are generally absent, however may rarely include swamp margin species such as *Eucalyptus ovata, Eucalyptus aggregata* or *Eucalyptus macarthurii*, or species from adjacent drier footslopes.
Condition	Moderate
Diagnostic species	*Carex gaudichaudiana, Machaerina rubiginosa*, *Isachne globosa, Phragmites australis, Poa labillardierei* var*. labillardierei, Lomandra longifolia, Juncus sarophorus, Eleocharis gracilis, Lepyrodia anarthria*, *Blechnum minus*, *Lycopus australis, Lythrum salicaria, Hydrocotyle sibthorpioides, Geranium neglectum, Gratiola peruviana, Hypericum japonicum, Ranunculus inundates, Stellaria angustifolia, Leptospermum obovatum* and *Leptospermum juniperinum.*
RDPs	4

PCT 3932	Vegetation Community Details
Justification	The Bionet PCT filter tool was utilised, and data including the IBRA bioregion and subregion, and all species identified within each RDP were input, to determine possible PCTs. The vegetation within the project area contains dominant species diagnostic of PCT 3932 such as *Leptospermum* spp. and *Carex* spp. and the landscape attributes for the project area match those for PCT 3932 as described above. The species diversity is moderate across this vegetation zone, and some exotic species are present, therefore is considered in moderate condition.
Vegetation formation	Freshwater Wetlands
Percent cleared	67.69%
Associated TEC	BC Act - Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions EPBC Act - Temperate Highland Peat Swamps on Sandstone


BRAIDWOOD ROAD
MOUNT FAIRY ROAD
BORO ROAD
Legend
Project area
Major road
Local road/Service lane
Plant Community Types
3338 - Goulburn Tableland Frost Hollow Grassy Woodland
3744 - Palerang Hills Peppermint Dry Shrub Forest
3746 - Southern Tableland Snow Gum-Candlebark Shrub Forest
3747 - Southern Tableland Western Hills Scribbly Gum Forest
3932 - Central and Southern Tableland Swamp Meadow Complex
0 - Not classified
FIGURE 4-3 PLANT COMMUNITY TYPES
CLIENT: Samsung CT Renewable Energy
PROJ: AU377157
LOCATION: PBAR - Boro SF
TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 20/02/2025
MAP FILE: PCT
VERSION: B
0 0.2 0.4 0.6 Km
SCALE 1:22,500
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere
DATA SOURCES
Client, RPS, NSWSS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

4.2.2 Threatened ecological communities

A summary of the TECs present within the project area is outlined below in **Table 4-9**.

Table 4-9 Threatened Ecological Communities within the project area

TEC	Total (ha)
Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions	**3.06**

4.2.2.1 BC Act listed TECs

Two BC Act listed TECs are associated with the PCTs of the project area (**Figure 3-4**), including:

- Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (CEEC)
- Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, Southeast Corner, South Eastern Highlands and Australian Alps bioregions (EEC).

Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (CEEC)

Werriwa Tablelands Cool Temperate Grassy Woodland (WTCTGW) ranges in structure from woodland to low open woodland. It is characterised by a sparse to very sparse tree stratum dominated by *Eucalyptus pauciflora* (Snow Gum) either in monospecific stands or with *E. rubida* subsp*. rubida* (Candlebark) as a co-dominant. A number of other tree species have been recorded within the community, although infrequently and always as canopy subdominants. These include *E. viminalis* (Manna Gum)*, E. bridgesiana* (Apple Box)*, E. dives* (Broad-leaved Peppermint) and *E. melliodora* (Yellow Box).

Tree height and cover vary as a function of moisture availability, drainage and past land management. The tree stratum becomes shorter and sparser with declining moisture availability or increasing levels of soil waterlogging. Trees may be absent as a consequence of tree removal under pastoral management and grazing by domestic stock.

A continuous herbaceous ground stratum is usually present, although this may vary in composition and cover as a function of grazing pressure from wild herbivores (native and introduced) and domestic stock. The ground stratum contains a range of species including *Themeda triandra, Gonocarpus tetragynus* (Poverty Raspwort)*, Microlaena stipoides* (Weeping Grass), *Hypericum gramineum* (Small St. John's Wort)*, Poa sieberiana* (Snowgrass)*, Asperula conferta* (Common Woodruff)*, Lomandra filiformis* (Wattle Mat-rush)*, Elymus scaber* (Common Wheat Grass)*, Hydrocotyle laxiflora* (Stinking Pennywort Lax)*, Leptorhynchos squamatus* (Scaly buttons)*, Haloragis heterophylla* (Prickly Raspwort)*, Oxalis perennans* (Yellow Wood-sorrel)*, Schoenus apogon* (Common Bog-sedge)*, Tricoryne elatior* (Yellow Rush-lily)*, Plantago varia* (Variable Plantain)*, Acaena ovina* (Australian Sheep's Burr)*, Carex inversa* (Dwarf Sedge)*, Panicum effusum* (Hairy Panic)*, Calocephalus citreus* (Lemon Beauty-Heads), and *Chrysocephalum apiculatum* (Common Everlasting).

Species of sub-shrubs such as *Pimelea curviflora* (Curved Rice-flower)*, Astroloma humifusum* (Cranberry Heath) and *Hibbertia obtusifolia* (Hoary Guinea Flower) may be interspersed with herb species at some sites.

Sites regenerating following tree removal, or the cessation of stock grazing may support a shorter stratum of Eucalyptus species of variable density (NSW Threatened Species Scientific Committee, 2019).

Justification of presence of this TEC within the project area is described below in **Table 4-10**.

As surveys conducted for this assessment were preliminary in nature, the precautionary principle applies and PCT 3338 may conform to a derived form of the CEEC Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions. Formal assessment is required as part of future ecological surveys to confirm presence of this CEEC.

Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions is a community listed at risk of a serious and irreversible impact (SAII).

Table 4-10 Justification for presence of Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (CEEC) (NSW Environment & Heritage [2019])

Final determination paragraph	Description	Justification of vegetation with the project area
4.1	WTCTGW ranges in structure from woodland to low open woodland. It is characterised by a sparse to very sparse tree stratum dominated by *Eucalyptus pauciflora* (Snow Gum) either in monospecific stands or with *E. rubida* subsp. *rubida* (Candlebark) as a co-dominant. A number of other tree species have been recorded within the community, although infrequently and always as canopy subdominants. These include *E. viminalis* (Manna Gum), *E. bridgesiana* (Apple Box), *E. dives* (Broad-leaved Peppermint) and *E. melliodora* (Yellow Box). Trees may be absent as a consequence of tree removal under pastoral management and grazing by domestic stock. A continuous herbaceous ground stratum is usually present, although this may vary in composition and cover as a function of grazing pressure from wild herbivores (native and introduced) and domestic stock. The ground stratum contains a range of species including *Themeda triandra, Gonocarpus tetragynus* (Poverty Raspwort), *Microlaena stipoides* (Weeping Grass), *Hypericum gramineum* (Small St. John's Wort), *Poa sieberiana* (Snowgrass), *Asperula conferta* (Common Woodruff), *Lomandra filiformis* (Wattle Mat-rush), *Elymus scaber* (Common Wheat Grass), *Hydrocotyle laxiflora* (Stinking Pennywort Lax), *Leptorhynchos squamatus* (Scaly buttons), *Haloragis heterophylla* (Prickly Raspwort), *Oxalis perennans* (Yellow Wood-sorrel), *Schoenus apogon* (Common Bog-sedge), *Tricoryne elatior* (Yellow Rush-lily), *Plantago varia* (Variable Plantain), *Acaena ovina* (Australian Sheep's Burr), *Carex inversa* (Dwarf Sedge), *Panicum effusum* (Hairy Panic), *Calocephalus citreus* (Lemon Beauty-Heads) and *Chrysocephalum apiculatum* (Common Everlasting). Species of sub-shrubs such as *Pimelea curviflora* (Curved Rice-flower), *Astroloma humifusum* (Cranberry Heath) and *Hibbertia obtusifolia* (Hoary Guinea Flower) may be interspersed with herb species at some sites. Sites regenerating following tree removal, or the cessation of stock grazing may support a shorter stratum of Eucalyptus species of variable density.	The patch of PCT 3338 within the project area contains *Eucalyptus pauciflora* (Snow Gum), in addition to ground species *Themeda triandra, Microlaena stipoides, Poa sieberiana, Schoenus apogon* and *Panicum effusum.* Therefore, this PCT conforms to paragraph 4.1 of the listing.
4.2	The majority of records of WTCTGW occur in the Southern Tablelands of NSW on the eastern fall of the Great Dividing Range between Golspie in the north and Majors Creek in the south. The extent of its distribution largely coincides with the extent of the Werriwa Tablelands Physiographic Region, although the most northern records lie in the Bathurst Tablelands Region and the southern-most records lie in the Tinderry-Gourock Ranges Region. The community has been recorded as far to the east as Marulan and its eastern boundary corresponds approximately to the 750 mm average annual rainfall isohyet. The most northern record lies just to the north of the Great Dividing Range in the catchment of the Abercrombie River. Areas where the Community was most extensively distributed include the upper Wollondilly River catchment in the vicinity of Crookwell, Taralga and Laggan and astride the Great Dividing Range in the closed drainage basins of Lake George and the Breadalbane Plains. The most westerly records are located on the low hills surrounding the Ginninderra, Molonglo, Tuggeranong and Limestone Plains of the Australian Capital Territory. These western examples are discontinuous with the distribution of the community in the east as a consequence of a rain-shadow associated with the valleys of the Queanbeyan and Molonglo Rivers and Jerrabomberra and Woolshed Creeks. The ACT records are not included in the calculations of extent, occupancy and reduction.	The project area occurs in the Southeastern Highlands IBRA bioregion, east of the Great Dividing Range. Therefore, this PCT conforms to paragraph 4.2 of the listing.

Final determination paragraph	Description	Justification of vegetation with the project area
4.3	WTCTGW occurs on broad valley floors and gentle slopes and low rises of the moderately undulating Southern Tablelands of NSW. It has been commonly recorded on a wide variety of substrates including basalt, fine-grained sedimentary rocks, granite, acid volcanics and alluvium but rarely on steeper ridgelines on the tablelands. Records of Werriwa Tablelands Cool Temperate Grassy Woodland fall within a relatively narrow range of elevation (600–900 m asl), average annual maximum temperature (26–28ºC) and average annual rainfall (600-800 mm). These factors are among the primary determinants of both the energy-water relations underpinning the primary production of the Community and the physiological tolerances of its constituent members. The community may occur outside the ranges stated above where other factors such as wind, topographic exposure and soil texture counteract the effects of lower or higher rainfall or temperatures, thus creating micro-climatic niches of appropriate water supply and temperature for the members of the assemblage. The Community is likely to have been most extensive in areas where annual rainfall is in the upper half of the range. Such areas occur along the Great Dividing Range and at the northern and southern limits of its distribution where rainfall at the upper end of the range coincides with maximum temperatures at the lower end of the range. WTCTGW was likely to be less extensively distributed in areas where annual rainfall is in the lower half of the range, such the Wollondilly River valley in the vicinity of Goulburn, the region between Windellama and Bungonia and in the low hills of the northern ACT.	The project area occurs on gentle slopes and moderately undulating areas, within the Southeastern Highlands IBRA bioregion. It has an undulating topography with elevation ranging from 670 to 750 m asl. There is a larger rise in gradient in the northwestern corner, with scattered hills/slopes through the middle of the project area. This PCT conforms to paragraph 4.3 of the listing.
4.5	WTCTGW rarely occurs in areas receiving less than 600 mm of annual rainfall or where the soil experiences periods of waterlogging. In such areas within its altitude and temperature range, the community is replaced by either temperate montane grasslands or montane peatlands or swamps. Natural Temperate Grassland of the Southern Tablelands (NSW and ACT) is listed as a threatened ecological community under the Commonwealth EPBC Act 1999. Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and South East Corner and Australian Alps is listed as an endangered ecological community under the Act.	This CEEC occurs on Lower Boro, and Larbert/Duckfield Hut soil types within the project area, which all experience waterlogging. This PCT conforms to paragraph 4.5 of the listing.
4.6	In areas where their distributions overlap, WTCTGW can be distinguished from White Box Yellow Box Blakely's Red Gum Woodland by the dominant canopy species. WTCTGW is dominated by *Eucalyptus pauciflora* (with or without *E. rubida subsp. rubida*) while White Box Yellow Box Blakely's Red Gum Woodland is dominated by *E. melliodora, E. bridgesiana, E. rubida subsp. rubida* and *E. blakelyi.* Other plant species which have been recorded more frequently in plot samples of White Box Yellow Box Blakely's Red Gum Woodland include, in decreasing order of diagnostic power*, *Austrostipa scabra, Aristida ramosa, Rumex brownii, Cheilanthes sieberi subsp. sieberi, Geranium solanderi, Arthropodium minus* and *Einadia nutans*. Species recorded more frequently in WTCTGW include, in decreasing order of diagnostic power*, *Themeda triandra, Chrysocephalum apiculatum, Haloragis heterophylla, Schoenus apogon, Calocephalus citreus, Bossiaea prostrata, Plantago varia* and *Scleranthus biflorus*.	*Eucalyptus pauciflora, Themeda triandra* and *Schoenus apogon* are found in the project area, within patches of PCT 3338. Therefore, this PCT conforms to paragraph 4.6 of the listing.
4.7	WTCTGW is replaced by Yellow Box – Apple Box tall grassy woodland where rainfall falls below 650 mm in the rain-shadow valleys of the Murrumbidgee, Queanbeyan and Molonglo Rivers, and associated major drainage features. Yellow Box – Apple Box tall grassy woodland is most readily distinguished by its dominant tree species (*E. melliodora, E. bridgesiana* and *E. blakelyi*) as well as a suite of species that have been recorded more frequently than	This patch of PCT 3338 is absent of Eucalypt and other species associated with Yellow Box – Apple Box tall grassy woodland, and instead

Final determination paragraph	Description	Justification of vegetation with the project area
	in WTCTGW. These include, in decreasing order of diagnostic power*, *Austrostipa scabra, Acaena ovina, Convolvulus erubescens, Crassula sieberiana, Solenogyne dominii, Bothriochloa macra, Wahlenbergia communis, Melichrus urceolatus, Bulbine bulbosa, Sebaea ovata, Aristida ramosa, Daucus glochidiatus, Euchiton sphaericus, Pultenaea procumbens, Hydrocotyle laxiflora, Geranium solanderi, Cheilanthes sieberi subsp. sieberi* and *Hibbertia obtusifolia*. Species that have been recorded more frequently in WTCTGW include, in decreasing order of diagnostic power*, *Calocephalus citreus, Rytidosperma laeve, Microlaena stipoides, Scleranthus biflorus, Solenogyne gunnii, Poa labillardieri* and *Rytidosperma pilosum*.	contains *Microlaena stipoides.* Therefore, this PCT conforms to paragraph 4.7 of the listing.

* - species listed in sections 4.6 – 4.7 generally occur in more than one of the related communities. Diagnostic power is a measure of the extent to which the records of a species are concentrated in the target community.

4.2.2.1.1 Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, Southeast Corner, South Eastern Highlands and Australian Alps bioregions

Montane Peatlands and Swamps is the name given to the ecological community in the New England Tableland, NSW North Coast, Sydney Basin, Southeast Corner, South Eastern Highlands and Australian Alps bioregions, associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams. It occurs on undulating tablelands and plateaux, above 400 to 500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite.

Montane Peatlands and Swamps comprises a dense, open or sparse layer of shrubs with soft-leaved sedges, grasses and forbs. It is the only type of wetland that may contain more than trace amounts of Sphagnum spp., the hummock peat-forming mosses.

Small trees may be present as scattered emergents or absent. The community typically has an open to very sparse layer of shrubs, 1-5 m tall, (e.g., *Baeckea gunniana, B. utilis, Callistemon pityoides, Leptospermum juniperinum, L. lanigerum, L. myrtifolium, L. obovatum, L. polygalifolium*). Species of *Epacris* (e.g., *E. breviflora, E. microphylla, E. paludosa*) and *Hakea microcarpa* are also common shrubs.

In some peatlands and swamps, particularly those with a history of disturbance to vegetation, soils or hydrology, the shrub layer comprises dense thickets of Leptospermum species. In other peatlands and swamps with a history of grazing by domestic livestock, the shrub layer may be very sparse or absent (NSW Threatened Species Scientific Committee 2010). Justification of presence of this TEC within the project area is described below in **Table 4-11**.

Although PCT 3932 within the project area occurs in the correct IBRA bioregion and contains some species listed in the final determination, this TEC is limited to occurring on poorly drained flats in the headwaters of streams. No such hydrology occurs within the project area, therefore the vegetation within the project area is considered unlikely to conform to the state listing for Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, Southeast Corner, South Eastern Highlands and Australian Alps bioregions.

Table 4-11 Justification for presence of Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, Southeast Corner, South Eastern Highlands and Australian Alps bioregions EEC (NSW Threatened Species Scientific Committee [2009])

Final determination paragraph	Description	Justification of vegetation with the project area
1	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions is the name given to the plant community associated with accumulated peaty or organic-mineral sediments on poorly drained flats in the headwaters of streams.	The project area occurs at 670 to 750 metres asl and is within the South Eastern Highlands Bioregion. However, no poorly drained flats in the headwaters of streams occur.

Final determination paragraph	Description	Justification of vegetation with the project area
	It occurs on undulating tablelands and plateaus, above 400-500 m elevation, generally in catchments with basic volcanic or fine-grained sedimentary substrates or, occasionally, granite. Montane Peatlands and Swamps is characterised by the assemblage of species listed in paragraph 2 and comprises a dense, open or sparse layer of shrubs with soft-leaved sedges, grasses and forbs. It is the only type of wetland that may contain more than trace amounts of *Sphagnum* spp., the hummock peat-forming mosses. Small trees may be present as scattered emergents or absent from the community.	As such, PCT 3932 within the project area is highly unlikely to conform to paragraph 1 of the listing.
2	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions is characterised by following assemblage of species: *Acaena novae-zelandiae* *Arthropodium milleflorum* *Asperula gunnii* *Baeckea gunniana* *Baeckea utilis* *Baloskion australe* *Baloskion stenocoleum* *Baumea rubiginosa* *Blechnum nudum* *Blechnum penna-marina* *Brachyscome graminea* *Callistemon pityoides* *Carex appressa* *Carex fascicularis* *Carex gaudichaudiana* *Comesperma retusum* *Deyeuxia gunniana* *Deyeuxia quadriseta* *Drosera binata* *Drosera peltata* *Eleocharis acuta* *Eleocharis sphacelata* *Empodisma minus* *Epacris breviflora* *Epacris microphylla* *Epacris paludosa* *Epilobium billardierianum* *Epilobium gunnianum* *Eucalyptus ovata* *Eucalyptus pauciflora* *Eucalyptus stellulata* *Gahnia sieberiana* *Geranium neglectum* *Gleichenia dicarpa* *Gonocarpus micranthus* *Gratiola latifolia* *Gratiola peruviana* *Hakea microcarpa* *Hydrocotyle peduncularis* *Isotoma fluviatilis* *Juncus falcatus* *Juncus planifolius* *Juncus sarophorus* *Lagenifera stipitata* *Leptospermum juniperinum* *Leptospermum lanigerum* *Leptospermum myrtifolium* *Leptospermum obovatum* *Leptospermum polygalifolium* subsp. *polygalifolium* *Lepyrodia anarthria* *Lythrum salicaria* *Mitrasacme serpyllifolia* *Myriophyllum pedunculatum* *Myriophyllum propinquum* *Neopaxia australasica* *Oreomyrrhis ciliata* *Phragmites australis* *Poa costiniana* *Poa labillardieri* *Poa sieberiana* var. *sieberiana* *Prasophyllum canaliculatum* *Pratia pedunculata* *Prunella vulgaris* *Pteridium esculentum* *Ranunculus lappaceus* *Ranunculus pimpinellifolius* *Scaevola hookeri* *Schoenus apogon* *Scirpus polystachyus* *Sphagnum cristatum* *Sphagnum novo-zelandicum* *Spiranthes sinensis subsp. australis* *Stellaria pungens* *Stylidium graminifolium* *Utricularia dichotoma*	The following species occur within the project area: • *Gonocarpus micranthus* • *Carex appressa* • *Drosera* spp. • *Juncus planifolius* • *Leptospermum myrtifolium* • *Utricularia dichotoma* However, no poorly drained flats in the headwaters of streams occur per paragraph 1 of the listing.

Final determination paragraph	Description		Justification of vegetation with the project area
	Hypericum gramineum *Hypericum japonicum* *Hypoxis hygrometrica*	*Viola betonicifolia* *Viola caleyana* *Viola hederacea* *Wahlenbergia ceracea* *Xerochrysum palustre*	
4	Montane Peatlands and Swamps of the New England Tableland, NSW North Coast, Sydney Basin, South East Corner, South Eastern Highlands and Australian Alps bioregions typically has an open to very sparse layer of shrubs, 1-5 m tall, including species of *Baeckea, Callistemon* and *Leptospermum*. Species of *Epacris* and *Hakea microcarpa* are also common shrubs. In some peatlands and swamps, particularly those with a history of disturbance to vegetation, soils or hydrology, the shrub layer comprises dense thickets of Leptospermum species. In other peatlands and swamps with a history of grazing by domestic livestock, the shrub layer may be very sparse or absent. Montane Peatlands typically have a dense groundcover of sedges, grasses and forbs, except where a dense cover of tall shrubs casts deep shade. Soft-leaved species of *Carex* and *Poa* typically make up most of the groundcover biomass, while other common sedges include *Baloskion* spp.*, Baumea rubiginosa, Empodisma minus, Juncus spp.* and *Schoenus apogon.* Forbs growing amongst the sedges include *Drosera* spp., *Geranium neglectum, Gratiola* spp.*, Mitrasacme serpyllifolia, Ranunculus* spp. and *Viola* spp. Hummocks of Sphagnum moss may occur amongst other components of the ground layer. The continuity of the ground layer may be interrupted by erosion, trampling, partial clearing or earthworks. There may be considerable variation in soils and species composition between and within individual peatlands and swamps. Regionally, a number of species are confined to the northern or southern parts of the community's distribution. Locally, toward the margins of any particular peatland or swamp, the average water table depth typically declines, the mineral content of surface soils increases, and hydrophilic plant species are replaced by species that are less tolerant of waterlogged conditions.		Shrubs such as *Leptospermum* are present in the project area, however the shrub layer is sparse. The ground cover consists of *Carex* and *Juncus* spp. Forbs such as *Drosera* spp.*,* were present. However, no poorly drained flats in the headwaters of streams occur per paragraph 1 of the listing.

4.2.2.2 EPBC Act listed TECs

One EPBC Act listed TEC is has potential to be associated with the PCTs of the project area: Temperate Highland Peat Swamps on Sandstone – EEC.

4.2.2.2.1 Temperate Highland Peat Swamps on Sandstone

The Temperate Highland Peat Swamps on Sandstone ecological community is comprised of temporary or permanent swamps with a substrate of peat over sandstone, and vegetation characterised by the presence of sedges, graminoids (grass-like plants) and forbs (herbaceous non-grass or grass-like plants) with or without shrubs. The swamps generally occur at altitudes from around 600 m to 1200 m above sea level and are restricted to the South Eastern Highlands and Sydney Basin IBRA regions in New South Wales (Threatened Species Scientific Committee 2005).

The structure of Temperate Highland Peat Swamps on Sandstone vegetation includes sedgeland, closed sedgeland, open-rushland, open-heath, closed-heath, tussock grassland, closed-tussock grassland, tall closed-grassland, open-scrub and tall shrubland. The vegetation is usually less than 3 m in height, although

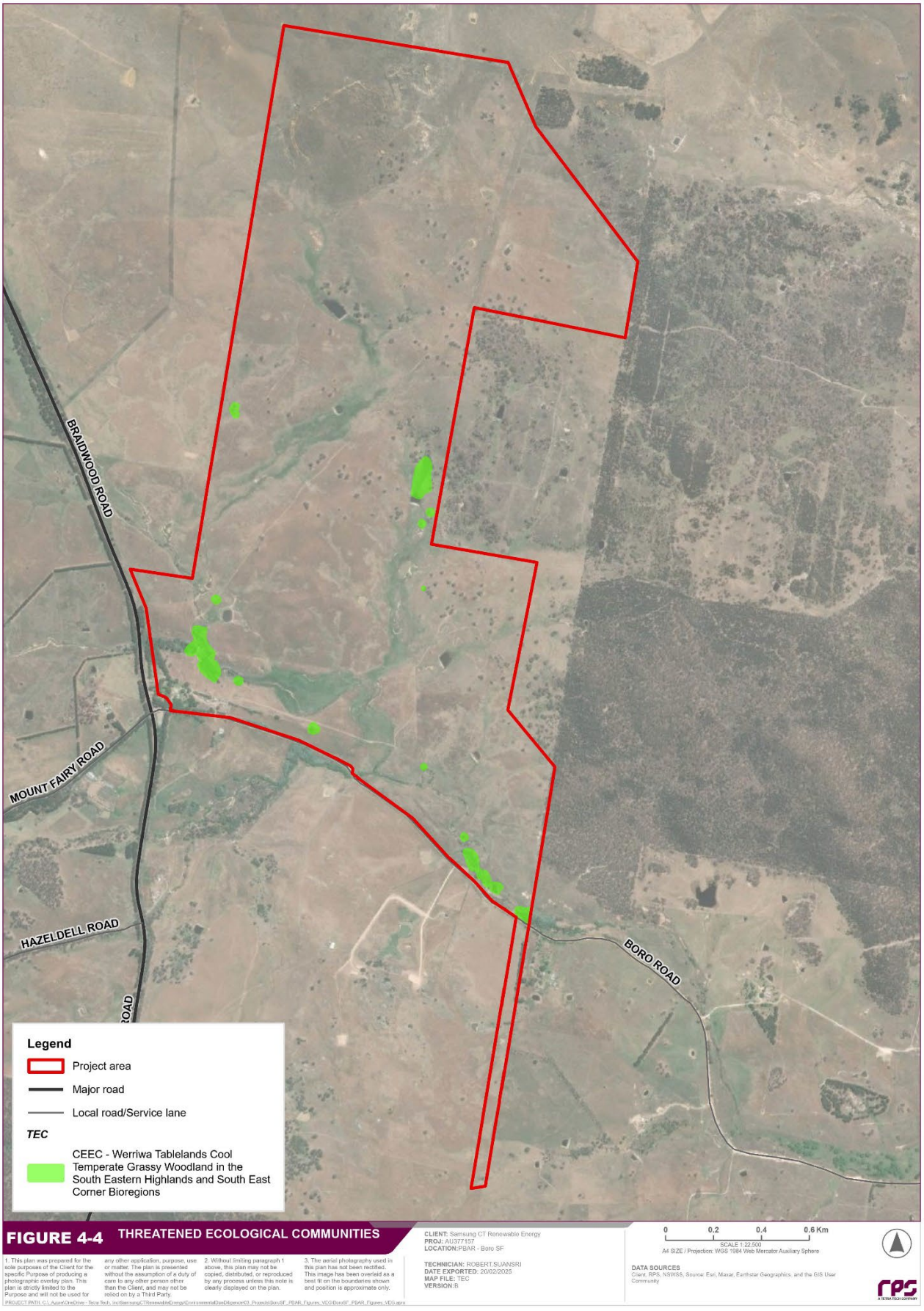
taller shrubs may be present. Emergent trees may occur on swamp margins, and the vegetation here tends to open woodland.

Justification of presence of this TEC within the project area is described below in **Table 4-12**.

Although PCT 3932 within the project area meets some of the key diagnostic characteristics, no sandstone is present (refer to **s4.1.1.3**). Therefore, the vegetation within the project area is considered unlikely to conform to the federal listing for Temperate Highland Peat Swamps on Sandstone.

Table 4-12 Justification for presence of Temperate Highland Peat Swamps on Sandstone

Description paragraph	Approved Conservation Advice (DCCEEW 2008) – description	Justification of vegetation within the project area
1	The Temperate Highland Peat Swamps on Sandstone ecological community comprises temporary or permanent swamps occurring on sandstone in the temperate highlands region in NSW from around 600–1100 m above sea level. The wetter parts of the swamps are occupied by sphagnum bogs and fens, while sedge and shrub associations occur in the drier parts. The level of waterlogging and amount of sedimentation are influenced by the location of the swamps. Hanging swamps (occurring on steep valley sides) have low levels of sedimentation and accumulate organic material slowly, whereas valley swamps and those along watercourses have greater levels of sedimentation and accumulate organic material more quickly. In drier areas, such as the Blue Mountains, the thicker vegetation found around the peat swamps provides 'islands' of good habitat for a diverse range of fauna.	The project area occurs at 650 to 750 m asl. Sedges such as *Juncus* spp. and C*arex* spp. dominated this PCT. However, as there is no sandstone present within the project area, this PCT is considered unlikely to conform to description paragraph 1 of the listing.
2	Temperate Highland Peat Swamps on Sandstone are known from the Blue Mountains, Lithgow, Southern Highlands, and Bombala regions in NSW. In 2005, only 3000 hectares of this ecological community remained. Of this total area, approximately 1300 ha are reserved in the Blue Mountains National Park, with the rest in a mix of freehold, state forests, and Crown land. The swamps of this ecological community occur across a range of locations in the landscape, from hanging swamps to depressions in the landscape, or along watercourses. This ecological community occurs within the Hawkesbury–Nepean (NSW) Natural Resource Management Region.	The project area occurs within the Southeastern Highlands IBRA region. Therefore, this PCT conforms to description paragraph 2 of the listing.
3 (DCCEEW 2014)	Swamps in the Southern Highlands that are included in the EPBC-listed THPSS community include Wingecarribee, Butlers and Wildes Meadow swamps. These swamps have not been classified as either headwater, valley bottom or valley infill swamps. They generally support highly diverse mosaics of vegetation, including sphagnum (*Sphagnum cristatum*) mossland, and open and closed sedgelands, grasslands, heath, shrublands and tall shrublands. Plant families present include Cyperaceae, Juncaceae, Poaceae, Myrtaceae and Ericaceae (subfamily Styphelioideae). Within these families, species present commonly include tussock sedge (*Carex gaudichaudiana*) and spike sedges (*Eleocharis* spp.) in the Cyperaceae, rushes (*Juncus* spp.) in the Juncaceae, common reed (*Phragmites australis*) and tussock grass (*Poa* spp.) in the Poaceae, river bottlebrush (*Callistemon sieberi*) and woolly tea-tree (*Leptospermum grandifolium*) in the Myrtaceae and swamp heath (*Epacris paludosa*) in the Ericaceae.	The patch of this PCT within the project area contained *Juncus* spp., *Carex* spp. and *Leptospermum* spp. This PCT somewhat conforms to description paragraph 3 of the listing, and more detailed flora surveys would confirm this characteristic.


BRAIDWOOD ROAD
MOUNT FAIRY ROAD
HAZELDELL ROAD
BORO ROAD
Legend
Project area
Major road
Local road/Service lane
TEC
CEEC - Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions
FIGURE 4-4 THREATENED ECOLOGICAL COMMUNITIES
CLIENT: Samsung CT Renewable Energy
PROJ: AU377157
LOCATION: PBAR - Boro SF
TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 20/02/2025
MAP FILE: TEC
VERSION: B
0 0.2 0.4 0.6 Km
SCALE 1:22,500
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere
DATA SOURCES
Client, RPS, NSWSS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

4.3 Flora

A total of 106 flora species were recorded within the project area during this preliminary survey, including 31 exotic or naturalised species. Refer to **Appendix B** for the full list of species.

4.4 Fauna

Incidental fauna searches recorded 19 fauna species within the project area, including three introduced species and one threatened species (*Petroica phoenicea* [Flame Robin; BC Act: Vulnerable]). Refer to **Appendix B** for the full list of species.

4.4.1 Fauna habitat

Fauna habitats identified in the project area include:

- Riparian vegetation along Boro Creek and Chain of Ponds Creek. These areas are likely to be used by native frogs, reptiles, and water birds.
- Patches of open forest, woodland and grassland, supporting canopy, shrub, and ground layer vegetation. These areas are likely to be used as foraging and shelter habitat for local fauna, including arboreal mammals and native birds.
- Aquatic habitats associated with watercourses mentioned above as well as the multiple dams present across project area. The creeks and dams in the project area support a consistent flow and supply of water and provide aquatic habitat for local fauna, including birds, amphibians and reptiles.
- Microhabitats including hollow-bearing trees, leaf litter, burrows, rocky areas/outcrops, termite mounds, stick nests, weed thickets and fallen timber. These microhabitats occur throughout the native vegetation (PCTs) of the project area.

4.5 Threatened species

Database searches identified 95 threatened and/or migratory species as having the potential to occur within a ten-kilometre radius of the project area (NSW DCCEEW 2025b, DCCEEW 2025e; refer to **Appendix A**).

A total of 55 species were assessed to have a moderate or greater likelihood of occurrence within the project area. These are listed in **Table 4-13** below, along with recent occurrences in the locality (i.e., historical records within the last ten years).

Threatened species records within the locality are displayed in **Figure 4-5**.

Table 4-13 Threatened and migratory species with recent records in the locality

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Recent records
Flora					
Bossiaea bombayensis	Bombay Bossiaea	CE	-	Moderate	0
Bossiaea oligosperma	Few-seeded Bossiaea	V	V	Moderate	0
Caladenia tessellata	Thick Lip Spider Orchid	V	V	Moderate	0
Callitris oblonga	Pygmy Cypress Pine	V	V	Moderate	0
Calotis glandulosa	Mauve Burr-daisy	V	V	Moderate	0
Commersonia prostrata	Dwarf Kerrawang	E	E	Moderate	0
Diuris aequalis	Buttercup Doubletail	E	E	Moderate	6
Dodonaea procumbens	Creeping Hop-bush	V	V	Moderate	0
Eucalyptus aggregata	Black Gum	V	V	Moderate	0
Eucalyptus recurva	Mongarlowe Mallee	CE	CE	Moderate	0
Genoplesium superbum	Superb Midge Orchid	E	-	Moderate	
Grevillea renwickiana	Nerriga Grevillea	E	-	Moderate	0

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Recent records
Lepidium aschersonii	Spiny Peppercress	V	V	Moderate	0
Lepidium hyssopifolium	Aromatic Peppercress	E	E	Moderate	0
Lysimachia vulgaris var. *davurica*	Yellow Loosestrife	E	-	Moderate	0
Pomaderris cotoneaster	Cotoneaster Pomaderris	E	E	Moderate	0
Pomaderris pallida	Pale Pomaderris	V	V	Moderate	0
Prasophyllum petilum	Tarengo Leek Orchid	E	E	Moderate	0
Swainsona recta	Small Purple-pea	E	E	Moderate	0
Thesium australe	Austral Toadflax	V	V	Moderate	0
Fauna					
Aphelocephala leucopsis	Southern Whiteface	V	V	Moderate	1
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	Moderate	0
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-	Moderate	0
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	Moderate	3
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	High	28
Chthonicola sagittata	Speckled Warbler	V	-	Moderate	0
Circus assimilis	Spotted Harrier	V	-	Moderate	0
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	V	Moderate	0
Daphoenositta chrysoptera	Varied Sittella	V	-	Moderate	1
Delma impar	Striped Legless Lizard	V	V	Moderate	0
Epthianura albifrons	White-fronted Chat	V	-	Moderate	2
Falco subniger	Black Falcon	V	-	Moderate	1
Glossopsitta pusilla	Little Lorikeet	V	-	Moderate	0
Hieraaetus morphnoides	Little Eagle	V	-	Moderate	0
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	V	Moderate	0
Keyacris scurra	Key's Matchstick Grasshopper	E	E	Moderate	0
Lathamus discolor	Swift Parrot	E	CE, MAR	Moderate	0
Litoria aurea	Green and Golden Bell Frog	E	V	Moderate	0
Litoria booroolongensis	Booroolong Frog	E	E	Moderate	0
Litoria castanea	Yellow-spotted Tree Frog	CE	CE	Moderate	0
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V	-	Moderate	0
Myotis macropus	Southern Myotis	V	-	Moderate	0
Neophema chrysostoma	Blue-winged parrot	-	MAR	Moderate	0
Ninox connivens	Barking Owl	V	-	Moderate	0
Ninox strenua	Powerful Owl	V	-	Moderate	1
Petroica boodang	Scarlet Robin	V	-	Moderate	3
Petroica phoenicea	**Flame Robin**	**V**	**-**	**Known**	**2**
Phascogale tapoatafa	Brush-tailed Phascogale	V	-	Moderate	0
Phascolarctos cinereus	Koala	E	E	Moderate	2
Polytelis swainsonii	Superb Parrot	E	E	Moderate	0
Rostratula australis	Australian Painted Snipe	V	V	Moderate	0

Scientific Name	Common Name	BC Act	EPBC Act	Likelihood of Occurrence	Recent records
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	E	E, MAR	Moderate	0
Stagonopleura guttata	Diamond Firetail	V	-	Moderate	0
Tyto novaehollandiae	Masked Owl	V	V	Moderate	2
Varanus rosenbergi	Rosenberg's Goanna	V	-	Moderate	0

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

4.5.1 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.

A total of 27 ecosystem credit species are associated with the PCTs mapped within the project area (**Table 4-14**).

Table 4-14 Predicted ecosystem credit species

Ecosystem credit species	Common name	BC Act listing	EPBC Act listing
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V	-
Botaurus poiciloptilus	Australasian Bittern	E	E
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E
Calyptorhynchus lathami	Glossy-Black Cockatoo	V	-
Chthonicola sagittata	Speckled Warbler	V	-
Circus assimillis	Spotted Harrier	V	-
Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	V	-
Daphoenositta chrysoptera	Varied Sittella	V	-
Dasyurus maculatus	Spotted-tailed Quoll	V	E
Epthianura albifrons	White-fronted Chat	V	-
Falco subniger	Black Falcon	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	V	V,M,MAR
Lathamus discolor	Swift Parrot	E	CE,MAR
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	V	-
Micronomus norfolkensis	Easter Coastal Free-tailed Bat	V	-
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-
Oxyura australis	Blue-billed Duck	V	-
Petroica boodang	Scarlet Robin	V	-
Petroica phoenicea	Flame Robin	V	-
Pteropus poliocephalus	Grey-headed Flying-fox	V	V
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V	-
Stagonopleura guttata	Diamond Firetail	V	-
Stictonetta naevosa	Freckled Duck	V	-

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

4.5.2 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.

4.5.2.1 Flora

The BAM regards all threatened flora species as 'species credit' species (i.e., no ecosystem credit flora species occur – all require a targeted survey or expert report).

A total of 18 threatened flora species have been considered as candidate species for this assessment (**Table 4-15**).

No threatened flora species were identified within the project area during the site visit. However, future targeted threatened flora surveys will further confirm presence or absence.

One threatened flora species that has been historically recorded within the project area, *Diuris aequalis* (Buttercup Doubletail), is listed as Endangered under the BC and EPBC Act, refer to **Figure 4-5**.

Table 4-15 Candidate threatened flora species

Scientific name	Common name	BC Act	EPBC Act	NSW DCCEEW approved survey period	SAII candidate species	Habitat constraint
Acacia bynoeana	Byone's Wattle	E	-	Summer	-	_
Baloskian longpipes	Dense Cord-rush	V	V	Summer	-	-
Bossiaea bombayensis	Bombay Bossiaea	CE	-	September to October	YES	-
Bossiaea oligosperma	Few-seeded Bossiaea	V	V	Late winter to spring	-	-
Callitris oblonga	Pygmy Cypress Pine	V	V	All year round	-	-
Commersonia prostrata	Dwarf Kerrawang	E	E	September to November	-	-
Dillwynia glaucula	Michelago Parrot-pea	E	-	Spring to summer	-	-
Diuris aequalis	Buttercup Doubletail	E	E	Between mid-October and mid-November in the southern part of its range, and between mid-November and early December in populations north of the Abercrombie River.	-	-
Eucalyptus aggregata	Black Gum	V	V	All year round	-	-
Eucalyptus macarthurii	Paddys River Box, Camden Woollybutt	E	E	All year round	-	-
Eucalyptus recurva	Mongarlowe Mallee	CE	CE	All year round	YES	-
Genoplesium superbum	Superb Midge Orchid	E	-	December to April	YES	-
Grevillea renwickiana	Nerriga Grevillea	E	-	Summer	YES	-

Scientific name	Common name	BC Act	EPBC Act	NSW DCCEEW approved survey period	SAII candidate species	Habitat constraint
Leucochrysum albicans subsp. *tricolor*	Hoary Sunray	E	E	Begins between August and December, and ends in March	-	-
Pomaderris cotoneaster	Cotoneaster Pomaderris	E	E	October to November	-	-
Pomaderris delicata	Delicate Pomaderris	CE	CE	Spring	YES	-
Pultenaea pedunculata	Matted Bush-pea	E		Spring to summer	-	-
Thesium australe	Austral Toadflax	V	V	Spring	-	-

V = Vulnerable, E = Endangered, CE = Critically Endangered, - = Not Listed.

4.5.2.2 Fauna

A total of 26 threatened fauna species have been considered as candidate species for this assessment (**Table 4-16**).

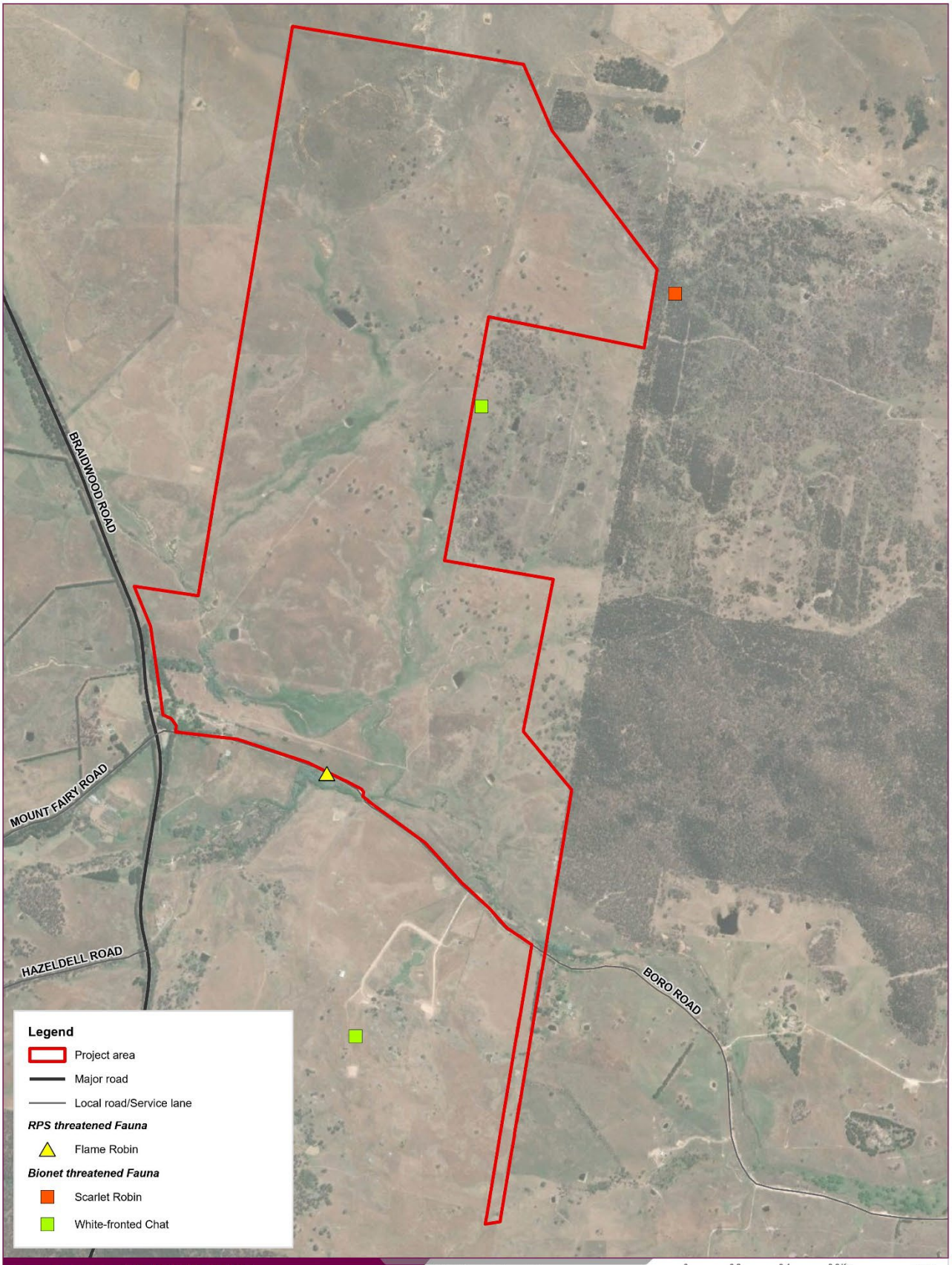
Incidental fauna surveys completed as part of this PBAR confirmed the presence of one threatened fauna species, the Flame Robin (*Petroica phoenicea*) within the project area (**Figure 4-5**).

Table 4-16 Candidate threatened fauna species

Scientific name	Common name	BC Act	EPBC Act	SAII candidate species	Habitat constraints
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	-	Rocky areas or within 50 m of rocky areas.
Callocephalon fimbriatum	Gang-gang Cockatoo	V	-	-	Hollow bearing trees - Eucalypt tree species with hollows greater than 9 cm diameter.
Calyptorhynchus lathami	Glossy Black-Cockatoo	V	-	-	Hollow bearing trees - Living or dead tree with hollows greater than 15 cm diameter and greater than 8 m above ground.
Cercartetus nanus	Eastern Pygmy-possum	V	-	-	-
Chalinolobus dwyeri	Large-eared Pied Bat	V	V	YES	Cliffs; Within 2 km of rocky areas containing caves, overhangs, escarpments, outcrops, or crevices, or within two kilometres of old mines or tunnels.
Delma impar	Striped Legless Lizard	V	V	-	-
Haliaeetus leucogaster	White-bellied Sea-eagle	V	-	-	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)
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	V	-	Requires dense ground cover in a variety of habitats
Lathamus discolor	Swift Parrot	E	CE	-	As per mapped areas.
Litoria aurea	Green and Golden Bell Frog	E	V	-	Semi-permanent/ephemeral wet areas; Within 1 km of wet areas. Swamps – within 1 km of swamp. Waterbodies – within 1 km of waterbody.

Scientific name	Common name	BC Act	EPBC Act	SAII candidate species	Habitat constraints
Litoria booroolongensis	Booroolong Frog	E	E	-	-
Litoria watsoni	Watson's Tree Frog	E	E	-	Semi-permanent/ephemeral wet areas; Swamps; Waterbodies.
Lysimachia vulgaris var. *davurica*	Yellow Loosestrife	E	-	YES	Waterbodies – land containing peat swamps and wetland margins or within 20 m.
Miniopterus orianae oceanensis	Large Bent-winged Bat	V	-	-	Caves - 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 from the scientific literature.
Myotis macropus	Southern Myotis	V	-	-	Waterbodies – waterbodies with permanent pools/stretches 3 m or wider, including rivers, large creeks, billabongs, lagoons, estuaries, dams and other waterbodies, on or within 200 m of the site.
Ninox connivens	Barking Owl	V	-	-	Hollow bearing trees – living or dead trees with hollows greater than 20 cm diameter and greater than 4 m above the ground.
Ninox strenua	Powerful Owl	V	-	-	Hollow bearing trees – living or dead trees with hollow greater than 20 cm diameter.
Petalura gigantea	Giant Dragonfly	E	-	YES	Swamps, within 500 m.
Petaurus norfolcensis	Squirrel Glider	V	-	-	-
Petroica rodinogaster	Pink Robin	V	-	-	-
Phascolgale tapoatafa	Brush-tailed Phascogale	V	-	-	-
Phascolarctos cinereus	Koala	E	E	-	Areas identified via survey as important habitat.
Pseudophryne australis	Red-crowned Toadlet	V	-	-	-
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	-	Breeding camps.
Tyto novaehollandiae	Masked Owl	V	-	-	Hollow bearing trees – living or dead trees with hollows greater than 20 cm diameter.

V = Vulnerable, E = Endangered, CE = Critically Endangered, - = Not Listed.


BRAIDWOOD ROAD
MOUNT FAIRY ROAD
HAZELDELL ROAD
BORO ROAD
Legend
Project area
Major road
Local road/Service lane
RPS threatened Fauna
Flame Robin
Bionet threatened Fauna
Scarlet Robin
White-fronted Chat
FIGURE 4-5 THREATENED FAUNA
CLIENT: Samsung CT Renewable Energy
PROJ: AU377157
LOCATION: PBAR - Boro SF
TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 20/02/2025
MAP FILE: ThrtSpp
VERSION: B
0 0.2 0.4 0.6 Km
SCALE 1:22,500
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere
DATA SOURCES
Client, RPS, NSWSS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

4.6 Matters of National Environmental Significance

Matters of National Environmental Significance (MNES) as per the EPBC Act 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.

4.6.4 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

One EPBC Act listed TEC has potential to be associated with the PCTs of the project area – Temperate Highland Peat Swamps on Sandstone – EEC, associated with PCT 3932.

Although PCT 3932 within the project area meets some of the key diagnostic characteristics, no sandstone is present (refer to **s4.2.2.2**). Therefore, the vegetation within the project area is considered unlikely to conform to the federal listing for Temperate Highland Peat Swamps on Sandstone.

4.6.7 Listed Threatened and Migratory Species

A total of 26 threatened and migratory species listed under the EPBC Act have habitats which may occur within the locality (refer to **Appendix B**). The following species have a moderate or greater likelihood of occurrence within the project area:

Fauna

- *Aphelocephala leucopsis* (Southern Whiteface - Vulnerable)
- *Aprasia parapulchella* (Pink-tailed Legless Lizard - Vulnerable)
- *Callocephalon fimbriatum* (Gang-gang Cockatoo - Endangered)
- *Delma impar* (Striped Legless Lizard - Vulnerable)
- *Keyacris scurra* (Key's Matchstick Grasshopper - Endangered)
- *Lathamus discolor* (Swift Parrot - Critically Endangered, Marine)
- *Litoria aurea* (Green and Golden Bell Frog - Vulnerable)
- *Litoria booroolongensis* (Booroolong Frog - Endangered)
- *Neophema chrysostoma* (Blue-winged parrot - Marine)
- *Phascolarctos cinereus* (Koala - Endangered)

- *Polytelis swainsonii* (Superb Parrot - Vulnerable)
- *Rostratula australis* (Australian Painted Snipe - Endangered, Marine) and
- *Stagonopleura guttata* (Diamond Firetail - Vulnerable).

Flora

- *Bossiaea oligosperma* (Few-seeded Bossiaea - Vulnerable)
- *Caladenia tessellata* (Thick Lip Spider Orchid - Vulnerable)
- *Callitris oblonga* (Pygmy Cypress Pine - Vulnerable)
- *Calotis glandulosa* (Mauve Burr-daisy - Vulnerable)
- *Diuris aequalis* (Buttercup Doubletail - Endangered)
- *Dodonaea procumbens* (Creeping Hop-bush - Vulnerable)
- *Eucalyptus aggregata* (Black Gum - Vulnerable)
- *Eucalyptus recurva* (Mongarlowe Mallee - Critically Endangered)
- *Pomaderris cotoneaster* (Cotoneaster Pomaderris - Endangered)
- *Pomaderris palida* (Pale Pomaderris - Vulnerable)
- *Prasophyllum petilum* (Tarengo Leek Orchid - Endangered)
- *Swainsona recta* (Small Purple-pea - Endangered) and
- *Thesium australe* (Austral Toadflax - Vulnerable).

4.6.8 Nationally Important Wetlands

The project area is approximately 6 km south of Lake Bathurst, a Nationally Important Wetland in NSW.

5 DISCUSSION

5.1 Vegetation communities

Direct impacts associated with the project 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., formal BAM plots). At this preliminary stage, approximately 407.41 ha of vegetation has been mapped within the project area (including 380.87 ha of cleared vegetation). This includes five PCTs:

- PCT 3338: Goulburn Tableland Frost Hollow Grassy Woodland
- PCT 3744: Palerang Hills Peppermint Dry Shrub Forest
- PCT 3746: Southern Tableland Snow Gum-Candlebark Shrub Forest
- PCT 3747: Southern Tableland Western Hills Scribbly Gum Forest
- PCT 3932: Central and Southern Tableland Swamp Meadow Complex.

It is noted that the vegetation mapped as cleared may conform to a derived condition of the above listed PCTs.

5.1.1 Threatened Ecological Communities

Direct impacts to TECs within the project area would be formally assessed within the BDAR during the EIS process. As a precautionary approach, one TEC is assumed present within the project area at this preliminary stage:

- Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions (CEEC).

The CEEC is regarded as a SAII candidate community under the BC Act. A SAII is 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).

An assessment of the potential for serious and irreversible impacts will be completed during the BDAR component of the EIS.

5.2 Threatened species

5.2.1.1 Threatened fauna

The field-validated likelihood of occurrence (**Appendix A**) identified that the project area may provide habitat for 35 locally occurring threatened fauna species with a moderate of greater likelihood of occurrence.

One threatened fauna species was identified within the project area: Flame Robin (*Petroica phoenicea*). Additionally, the native vegetation present may provide potential foraging and sheltering habitat for ten threatened birds and one threatened reptile which have been historically sighted within the locality.

Twenty-six candidate fauna species were identified as relevant to this assessment, three of these are listed SAII candidate species (**Section 4.5.2.2**). The species with a moderate or greater likelihood of occurrence are considered species of concern for the project, as summarised in **Table 5-1** below.

Of the 13 species mentioned above, those considered as species of concern for the project are the Swift Parrot, the Flame Robin, Rosenberg's Goanna, the Gang-gang Cockatoo and the Glossy Black Cockatoo. These species are noted due to the nature of the habitat within the project area (i.e., appropriate roost sites available, rocky outcrops). However, all species, with the exception of Rosenberg's Goanna, are highly mobile (aerial avian) with reduced likelihood of significant impacts.

The Swift Parrot is reliant on Eucalypts. This species is likely to be a moderate-level constraint to the development of the project and will require careful consideration during the project planning. This species is listed under both NSW and Commonwealth legislation, is iconic, and is a key consideration to regulators regionally. The Swift Parrot is locally widespread and nomadic in the landscape.

At a regional level, habitat resources for this species are generally limited, patchy, and degraded. Therefore, any impacts to these patches are generally a key consideration. Swift Parrot utilises Eucalypt resources throughout the region during annual migration/dispersal events. An assessment of the SAII may need to be completed during the biodiversity impact assessment component of the EIS stage.

Table 5-1 Fauna species of concern for the project

Species name	Common name	LoO	SAII?	Recent records (NSW DCCEEW 2025b)	BC Act	EPBC Act
Aphelocephala leucopsis	Southern Whiteface	Moderate	-	1	V	V
Callocephalon fimbriatum	Gang-gang Cockatoo	Moderate	-	3	E	E
Calyptorhynchus lathami	Glossy Black-Cockatoo	High	-	28	V	-
Daphoenositta chrysoptera	Varied Sittella	Moderate	-	1	V	-
Falco subniger	Black Falcon	Moderate	-	1	V	-
Lathamus discolor	Swift Parrot	Moderate	YES	0	E	CE, MAR
Lysimachia vulgaris var. *davurica*	Yellow Loosestrife	Moderate	YES	0	E	-
Neophema chrysostoma	Blue-winged parrot	Moderate	YES	0	MAR	-
Ninox strenua	Powerful Owl	Moderate	-	1	V	-
Petroica boodang	Scarlet Robin	Moderate	-	3	V	-
Petroica phoenicea	Flame Robin	Known	-	2	V	-
Stagonopleura guttata	Diamond Firetail	Moderate	-	2	V	V
Varanus rosenbergi	Rosenberg's Goanna	Moderate	-	1	V	-

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

5.2.1.2 Threatened flora

The field-validated likelihood of occurrence (**Appendix A**) identified the project area may provide habitat for 20 locally occurring threatened flora species with a moderate of greater likelihood of occurrence.

No threatened flora was identified within the project area during preliminary field surveys. The native vegetation present may provide potential habitat for four threatened species which have been historically sighted within the locality, and one within five kilometres of the project area (Buttercup Doubletail).

Eighteen candidate flora species were identified as relevant to this assessment, five of these flora species are listed SAII candidate species (**Section 4.5.2.1**. The species with a moderate or greater likelihood of occurrence are considered species of concern for the project, as summarised in **Table 5-2** below.

A flora species of concern for the project is Buttercup Doubletail which is locally common in the Lower Boro region. The Mongarlowe Mallee *(Eucalyptus recurve)* also has a moderate potential to occur within the project area and should be considered during the EIS. Both species are listed under both NSW and Commonwealth legislation, and Mongarlowe Mallee is an entity at risk of SAII. Further details regarding the distribution, habitats, and ecology of each threatened species are provided in **Appendix A**. An assessment of the SAII may need to be completed during the biodiversity impact assessment component of the EIS stage.

Table 5-2 Flora species of concern the project

Species name	Common name	LoO	SAII?	Recent records (NSW DCCEEW 2025b)	BC Act	EPBC Act
Bossiaea bombayensis	Bombay Bossiaea	Moderate	YES	0	CE	0
Caladenia tessellata	Thick Lip Spider Orchid	Moderate	YES	0	V	V
Calotis glandulosa	Mauve Burr-daisy	Moderate	YES	0	V	V
Diuris aequalis	Buttercup Doubletail	Moderate	-	6	E	E
Eucalyptus recurva	Mongarlowe Mallee	Moderate	YES	0	CE	CE
Pomaderis palida	Pale Pomaderis	Moderate	YES	0	V	V

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

5.3 Indirect impacts

The project may have indirect impacts on local ecological communities and species during the construction, operation and decommissioning phases of the project. 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.

The nature, extent, and duration of the potential indirect impacts in relation to the project is described broadly in **Table 5-3.**

Table 5-3 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 an increase in hard surface areas • Increase of hard surfaces leading to an increased volume of water entering downstream waterways • Introduction of contaminants into surface water, such sediment from the disturbance of soils during construction.
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.
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 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, 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 • Increased noise levels during construction • Artificial light from the project area.
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.

5.4 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 biodiversity offset strategy for the project, 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 a, b, c, d and f (**Table 5-4**).

Table 5-4 Potential prescribed impacts associated with the project

Prescribed impact type	Associated potential direct impacts	Associated potential indirect impacts
Rocks	Removal of habitat (rocks)	N/A
Non-native vegetation	Removal of habitat (non-native vegetation)	• Disturbance • Weed invasion • Spread of plant/animal disease • Pest animals/predation/competition • Soil erosion/sedimentation • Run-off (water quality).
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)
Vehicle strikes	Vehicle strikes to fauna during construction and operation	N/A

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.

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

Impacts from clearing native vegetation and threatened species habitat can be avoided by locating the project disturbance footprint in areas:

- Lacking biodiversity values
- Where the native vegetation or threatened species habitat is in the poorest condition
- 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.

In accordance with the BAM, 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
- Alternative sites within a property on which the project is located that would avoid or minimise impacts on biodiversity values.

The following recommendations are made to avoid and minimise impacts on biodiversity:

- 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, including Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions, which is a CEEC and SAII candidate community
  - Remnant trees, including some larger patches with connectivity to the broader landscape, and which likely provide significant habitat values for a variety of local and threatened fauna (large remnant trees bearing significant hollows, flower and nectar bearing trees, etc.)
  - Native grasslands and rocky habitats which may provide habitat for threatened flora and fauna species (Rosenberg's Goanna, Bombay Bossiaea, Thick Lip Spider Orchid, Buttercup Doubletail)
  - Aquatic and riparian habitats which may provide suitable habitat for threatened fauna (Green and Golden Bell Frog, Booroolong Frog, Yellow Loosestrife).
- Prioritise existing cleared land and/or historically disturbed pasture for the project disturbance footprint.

These recommendations are discussed further below.

6.1 Refine the project footprint

The project area contains one CEEC (also listed as an entity at risk of SAII, and EPBC Act listed) – Werriwa Tablelands Cool Temperate Grassy Woodland in the South Eastern Highlands and South East Corner Bioregions. SAII assessments would be completed as part of the BDAR (supporting the EIS) and consideration of potential impacts to SAII entities should be prioritised during the design development process. Detailed vegetation surveys would be completed to assess the condition of vegetation within the project area. This will include a formal assessment of the grasslands present on-site to guide project design.

The project area contains suitable habitat for a variety of threatened species including the Flame Robin identified during preliminary field surveys undertaken as part of this assessment. Additional species considered to have a moderate or higher likelihood of occurring within the project area include large hollow-dwelling birds such as the Glossy Black-Cockatoo, Gang-gang Cockatoo and Powerful Owl; woodland birds and raptors such as the Scarlet Robin and Black Falcon; woodland mammals such as the Brush-tailed Phascogale and Koala; and reptiles such as the Rosenberg's Goanna. Broadly, these species may utilise habitat throughout the project area, however areas of high habitat value should be avoided through layout refinement.

Revision of habitat mapping and PCT mapping will aid in identifying 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 will improve the viability of the project and reduce impacts to biodiversity as a result of the project.

6.2 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, would reduce potential impacts associated with the project. Areas with historic disturbance (i.e., cleared land, pastureland, heavily grazed areas) should be prioritised development to minimise impacts to areas of high biodiversity values.

6.3 Next steps

In accordance with Section 7.9 of the BC Act, the EIS for the project will be supported by a BDAR prepared in accordance with the BAM; to be prepared by an accredited person under the BC Act. The following key tasks would be completed during the BDAR:

- Validate and refine the SVTM, including formal BAM plots and delineation into vegetation zones
- Conduct field-based threatened species habitat assessments
- Generate a list of candidate species for further assessment
- Conduct targeted surveys for candidate species where geographic and/or habitat constraints are present
- Calculate the number and type of species and/or ecosystem credits required for the project in accordance with the BAM.

Where the project would impact on occupied habitat for a threatened species (identified through the preparation of a species polygon), and/or native vegetation with a suitable Vegetation Integrity Score, the project will require biodiversity offsets. These offsets will be secured in line with a Biodiversity Offset Strategy prepared as part of the BDAR. Impacts to SAII candidate species/communities will be considered in accordance with Section 9.1 of the BAM, allowing the Minister of Planning to make a decision on whether the project is likely to result in an SAII.

As the project also has potential to impact MNES, an EPBC Act Referral will be lodged with Commonwealth DCCEEW. The project will likely utilise the bilateral agreement, therefore SEARs would be issued with supplementary environmental assessment requirements provided by Commonwealth DCCEEW if necessary.

7 REFERENCES

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Appendix A
Likelihood of Occurrence

Apx Table 1: Threatened species likelihood of occurrence

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
Acacia bynoeana	Bynoe's Wattle	E	V	Species	Grows mainly in heath and dry sclerophyll forest in sandy soils. Mainly south of Dora Creek-Morisset area to Berrima and the Illawarra region, west to the Blue Mountains, also recorded from near Kurri Kurri in the Hunter Valley and from Morton National Park.	Low
Anthochaera phrygia	Regent Honeyeater	CE	CE	Species/Ecosystem	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.	None
Aphelocephala leucopsis	Southern Whiteface	V	V	N/A	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
Aprasia parapulchella	Pink-tailed Legless Lizard	V	V	Species	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.	Moderate
Arenaria interpres	Ruddy Turnstone	P	V,M,MAR	N/A	Rocky shores	None

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
Artamus cyanopterus cyanopterus	Dusky Woodswallow	V		Ecosystem	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.	Moderate
Baloskion longipes	Dense Cord-rush	V	V	Species	Drier rainforest, usually near streams. The Dense Cord-rush is endemic to NSW where it is known from the Blue Mountains National Park (NP) 81 km west of Sydney; Kanangra-Boyd NP 100 km west of Sydney; in Hanging Rock Swamp at Penrose State Forest approximately 9 km west of Bundanoon; at The Vines in Morton NP west of Nowra; at the summit of The Pass, on the Braidwood-Nelligen Road; and the Clyde Mountain and Ballalaba areas south of Braidwood.	Low
Bossiaea bombayensis	Bombay Bossiaea	CE		Species	Bombay Bossiaea grows in the steeply incised valley of the Shoalhaven River, near Braidwood on the Southern Tablelands. It is mainly found on sandy, rocky slopes and terraces above the frequent flood line in a shrubland of Callitris endlicheri, Grevillea arenaria, Lomandra longifolia, Micrantheum hexandrum, Pomaderris andromedifolia and Leptospermum polygalifolium.	Moderate
Bossiaea oligosperma	Few-seeded Bossiaea	V	V	Species	Known from two disjunct areas - the lower Blue Mountains in the Warragamba area (Wollondilly, Allum, Tonalli River catchments) and the Windellama area in Goulburn Mulwaree Shire, where it is locally abundant.	Moderate
Botaurus poiciloptilus	Australasian Bittern	E	E	Ecosystem	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.	Low
Caladenia tessellata	Thick Lip Spider Orchid	V	V	N/A	The Tessellated Spider Orchid is found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil. Known from the Sydney area (old	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					records), Wyong, Ulladulla and Braidwood in NSW. Populations in Kiama and Queanbeyan are presumed extinct. Generally found in grassy sclerophyll woodland on clay loam or sandy soils, though the population near Braidwood is in low woodland with stony soil.	
Calidris acuminata	Sharp-tailed Sandpiper	P	V,M,MAR	N/A	Freshwater or saltwater wetlands- the muddy edges of lagoons, swamps, lakes, dams, soaks, sewage dams or temporary floodwaters.	Low
Calidris ferruginea	Curlew Sandpiper	CE	CE,M,MAR	N/A	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
Callitris oblonga	Pygmy Cypress Pine	V	V	N/A	Usually grows in sand along watercourses in shrubland and open woodland in granite country; it also occurs in drier sites, including exposed ridges.	Moderate
Callocephalon fimbriatum	Gang-gang Cockatoo	E	E	Species/Ecosystem	In New South Wales, the Gang-gang Cockatoo is distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine snow gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Moderate
Calochilus pulchellus	Pretty Beard Orchid	E	E	N/A	The species has a cryptic nature, with a single leaf present above ground for only a few months and a flowering stem that lasts for a few days or a week. The habitat of the species varies considerably. At Vincentia the species grows in dense low wet heath in wet sand over sandstone. In Booderee National Park it grows in a tall heathy association. In Morton National Park on the Little forest Plateau it occurs in low heath among scattered clumps of emergent eucalypts and Banksia in shallow coarse white sand over sandstone, in a near-escarpment area subject to strong orographic precipitation.	Low
Calotis glandulosa	Mauve Burr-daisy	V	V	N/A	Mauve Burr-daisy grows in montane grassland, subalpine grassland dominated by Poa spp., temperate grassland, Eucalyptus pauciflora woodland, and dry sclerophyll forest at high altitude in the Australian Alps.	Moderate
Calyptorhynchus lathami	Glossy Black-Cockatoo	V		Species/Ecosystem	Inhabits forest with low nutrients, characteristically with key Allocasuarina spp. Tends to prefer drier forest types with a middle	High

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					stratum of Allocasuarina below Eucalyptus or Angophora. Black Sheoak (Allocasuarina littoralis) and Forest Sheoak (A. torulosa) are important foods. Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead. Endangered population in the Riverina.	
Cercartetus nanus	Eastern Pygmy-possum	V		Species	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.	Low
Chalinolobus dwyeri	Large-eared Pied Bat	E	E	Species	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.	None
Chthonicola sagittata	Speckled Warbler	V		Ecosystem	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.	Moderate
Circus assimilis	Spotted Harrier	V		Ecosystem	The Spotted Harrier occurs throughout the Australian mainland, except in densely 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	Ecosystem	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	

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					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.	
Commersonia prostrata	Dwarf Kerrawang	E	E	Species	Occurs on sandy, sometimes peaty soils in a wide variety of habitats: snow gum woodland at Rose Lagoon; blue leaved stringybark open forest at Tallong; and in brittle gum low open woodland at Penrose; scribbly gum - swamp mahogany ecotonal forest at Tomago.	Moderate
Daphoenositta chrysoptera	Varied Sittella	V		Ecosystem	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.	Moderate
Dasyurus maculatus	Spotted-tailed Quoll	V	E	Ecosystem	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.	Low
Delma impar	Striped Legless Lizard	V	V	Species	Found mainly in natural temperate grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near natural temperate grassland and occasionally in open box-gum woodland. Sometimes found in grasslands with significant amounts of surface rocks, which are used for shelter.	Moderate
Dillwynia glaucula	Michelago Parrot-pea	E		Species	Occurs on exposed patches of clay or on rocky outcrops in eucalypt woodland often dominated by scribbly gum, snow gum, broad-leafed peppermint and red stringybark.	Low
Diuris aequalis	Buttercup Doubletail	E	E	Species	Recorded in Kanangra-Boyd National Park, Gurnang State forest, towards Wombeyan Caves, the Taralga - Goulburn area, and the ranges between Braidwood, Tarago and Bungendore. Grows in forest, low open woodland with grassy understorey and secondary grassland on the higher parts of the Southern and Central Tablelands.	Moderate
Dodonaea procumbens	Creeping Hop-bush	V	V	N/A	Found in the dry areas of the Monaro, between Michelago and Dalgety. Here it occurs mostly in natural temperate grassland or fringing eucalypt	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					woodland of snow gum. There is one population at Lake Bathurst, where it occurs adjacent to the lake bed in grassland dominated by Austrostipa scabra and Carex bichenoviana. Found in open bare patches where there is little competition from other species. Found on sandy-clay soils, usually on or near vertically-tilted shale outcrops. Often occurs on roadside batters. Does not persist in heavily grazed pastures of the Monaro.	
Epthianura albifrons	White-fronted Chat	V		Ecosystem	Low vegetation in salty coastal and inland areas and crops. Runs along ground and is found in local flocks in Winter. In New South Wales the White-fronted Chat occurs mostly in the southern half of the state, occurring in damp open habitats along the coast, and near waterways in the western part of the state.	Moderate
Eucalyptus aggregata	Black Gum	V	V	Species	Found in the NSW Central and Southern Tablelands, with small isolated populations in Victoria and the ACT. Has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands in the lowest parts of the landscape, on alluvial soils, on cold, poorly-drained flats and hollows adjacent to creeks and small rivers. Also occurs as isolated paddock trees in modified native or exotic pastures.	Moderate
Eucalyptus macarthurii	Paddys River Box, Camden Woollybutt	E	E	Species	A moderately restricted distribution, recorded from the Moss Vale District to Kanangra Boyd National Park. In the Southern Highlands it occurs mainly on private land, often as isolated individuals in, or on the edges, of paddocks. Isolated stands occur in the north west part of the range on the Boyd Plateau. The only known record in the conservation estate is within Kanangra Boyd National Park. Occurs on grassy woodland on relatively fertile soils on broad cold flats.	Low
Eucalyptus recurva	Mongarlowe Mallee	CE	CE	Species	Found in shallow soils on gentle slopes in low heathland and in some cases at the margins of the heathland and adjacent low woodland; the woodlands are dominated by brittle gum and snow gum, but scattered candlebark and broad-leafed peppermint trees are also nearby at some sites; in the Mongarlowe area the heathland is dominated by stunted she-oak, with emergent shrubs of finger hakea.	Moderate
Falco hypoleucos	Grey Falcon	V	V	N/A	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		Ecosystem	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,	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					grassland and tree-dotted agricultural land in flat to undulating terrain, and will hunt over pasture and crops.	
Gallinago hardwickii	Latham's Snipe	V	V,M,MAR	N/A	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.	Low
Genoplesium superbum	Superb Midge Orchid	E		Species	The Superb Midge Orchid occurs predominantly in wet heathland on shallow soils above a sandstone cap but has also been found in open woodland interspersed with heath and dry open shrubby woodland.	Moderate
Glossopsitta pusilla	Little Lorikeet	V		Ecosystem	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.	Moderate
Grantiella picta	Painted Honeyeater	V	V	Ecosystem	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.	Low
Grevillea renwickiana	Nerriga Grevillea	E		Species	Restricted to a small area between Mongarlowe (Nettletons Creek) and Nerriga. G. renwickiana occurs in a range of plant communities: low woodland of one or more of Eucalyptus mannifera, E. radiata, E. pauciflora, E. aggregata, E. dives, E. rossii or Allocasuarina nana heath. Especially on sandy or loamy soils fringing damp heath/sedge dominated vegetation and occasionally on ridges in rocky soil.	Moderate
Haliaeetus leucogaster	White-bellied Sea-Eagle	V	MAR	Species/ Ecosystem	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		Species/ Ecosystem	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	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					excepting the most densely forested parts of the Dividing Range escarpment.	
Hirundapus caudacutus	White-throated Needletail	P	V,M,MAR	Ecosystem	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges.	None
Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	E	V	Species	Prefers sandy soils with scrubby vegetation and-or areas with low ground cover that are burn from time to time. A mosaic of post fire vegetation is important for this species. It is found in south-eastern NSW, east of the Great Dividing Range south from the Hawkesbury River, southern coastal Victoria and the Grampian Ranges, south-eastern South Australia, south-west Western Australia and the northern tip of Queensland.	Moderate
Keyacris scurra	Key's Matchstick Grasshopper	E	E	N/A	Typically found in native grasslands and grassy woodlands but it has also been recorded in other vegetation associations usually containing a native grass understory (especially kangaroo grass Themeda triandra) and known food plants (particularly Asteraceae)	Moderate
Lathamus discolor	Swift Parrot	E	CE,MAR	Species/ Ecosystem	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, breeding in Tasmania and also nomadic, moving about in response to changing food availability.	Moderate
Lepidium aschersonii	Spiny Peppercress	V	V	N/A	Found on ridges of gilgai clays dominated by brigalow, with wallaby and spear grasses in the understorey. The species grows as a a component of the ground flora, in grey loamy clays. Vegetation structure varies from open to dense brigalow, with sparse grassy understorey and occasional heavy litter.	Moderate
Lepidium hyssopifolium	Aromatic Peppercress	E	E	N/A	The species occurs in a variety of habitats including woodland with a grassy understorey and grassland. In NSW, there is a small population consisting near Bathurst, two populations near Bungendore, and one near Crookwell. Historical records also exist from near Armidale and possibly Cooma.	Moderate
Leucochrysum albicans var. *tricolor*	Hoary Sunray		E	N/A	Hoary Sunray occurs in a wide variety of grassland, woodland and forest habitats, generally on relatively heavy soils. Plants can be found in natural or semi-natural vegetation and grazed or ungrazed habitat. Bare ground is required for germination. In NSW, the species is often found in association with yellow box, Blakely's red gum and red box.	Low

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
Litoria aurea	Green and Golden Bell Frog	E	V	Species	Inhabits a very wide range of water bodies including marshes, dams and streams, particularly those containing emergent vegetation such as bullrushes or spikerushes. Formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. It also inhabits numerous types of man-made water bodies including quarries and sand extraction sites. Optimum habitat includes water-bodies that are un-shaded, free of predatory fish such as Plague Minnow, have a grassy area nearby and diurnal sheltering sites available.	Moderate
Litoria booroolongensis	Booroolong Frog	E	E	Species	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	N/A	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 watsoni	Watson's Tree Frog	E	E	Species	Within NSW the distribution of L. watsoni is fragmented. There are few specimens recorded between Nadgee NP, in the far south-east of the state, and Monga NP and no specimens between Monga and the one population know from a fire dam in Yadboro State Forest. The Morton plateau population covers the largest area inhabited by the species but is separated from the Budderoo population to the north. These major disjunctions in populations are caused by the species being restricted to upland (above 100m ADH) sites, primarily in heath-woodland with sandy substrates.	Low
Lysimachia vulgaris var. *davurica*	Yellow Loosestrife	E		Species	The NSW populations are in disparate habitat: extensive wetland on peaty soils, riparian wetland vegetation and pasture on a dairy farm. A rhizomatous or stoloniferous perennial that appears to remain in the vegetative stage for some time prior to blooming; the presence of a	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					flowering specimen apparently indicates it has been in an area for some years.	
Macquaria australasica	Macquarie Perch		E	N/A	Macquarie perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries	Low
Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	E	E	Ecosystem	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	Low
Micronomus norfolkensis	Eastern Coastal Free-tailed Bat	V		Ecosystem	Most records are from dry eucalypt forests and woodlands to the east of the Great Dividing Range. Appears to roost in trees, but little is known of this species' habits.	Moderate
Miniopterus orianae oceanensis	Large Bent-winged Bat	V		Species/ Ecosystem	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.	None
Myotis macropus	Southern Myotis	V		Species	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
Neophema chrysostoma	Blue-winged parrot		MAR	N/A	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
Ninox connivens	Barking Owl	V		Species	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.	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
Ninox strenua	Powerful Owl	V		Species	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.	Moderate
Oxyura australis	Blue-billed Duck	V		Ecosystem	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.	Low
Pelargonium sp. *Striatellum*	Omeo Storksbill	E	E	N/A	Flowering occurs from October to March. Occurs in habitat usually located just above the high water level of irregularly inundated or ephemeral lakes. During dry periods, the species is known to colonise exposed lake beds. The species is known to form clonal colonies by rhizomatous propagation.	Low
Petalura gigantea	Giant Dragonfly	E		Species	The Giant Dragonfly is found along the east coast of NSW from the Victorian border to northern NSW. It is not found west of the Great Dividing Range. There are known occurrences in the Blue Mountains and Southern Highlands, in the Clarence River catchment, and on a few coastal swamps from north of Coffs Harbour to Nadgee in the south. Live in permanent swamps and bogs with some free water and open vegetation. Adults emerge from late October and are short-lived, surviving for one summer after emergence.	None
Petaurus australis	Yellow-bellied Glider	V	V	N/A	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.	Low
Petaurus norfolcensis	Squirrel Glider	V		Species	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	Low

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					sites. Diet varies seasonally and consists of Acacia gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein.	
Petroica boodang	Scarlet Robin	V		Ecosystem	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.	Moderate
Petroica phoenicea	Flame Robin	V		Ecosystem	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.	Known
Petroica rodinogaster	Pink Robin	V		Species	The Pink Robin is found in Tasmania and the uplands of eastern Victoria and far south-eastern NSW, almost as far north as Bombala. On the mainland, the species disperses north and west and into more open habitats in winter, regularly as far north as the ACT area, and sometimes being found as far north as the central coast of NSW. Inhabits rainforest and tall, open eucalypt forest, particularly in densely vegetated gullies.	Low
Phascogale tapoatafa	Brush-tailed Phascogale	V		Species	The Brush-tailed Phascogale has a patchy distribution around the coast of Australia. In NSW it is mainly found east of the Great Dividing Range although there are occasional records west of the divide. Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest.	Moderate
Phascolarctos cinereus	Koala	E	E	Species	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.	Moderate
Polytelis swainsonii	Superb Parrot	V	V	N/A	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	Moderate

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					Rivers. Inhabits box-gum, box-cypress-pine and boree woodlands and river red gum forest.	
Pomaderris cotoneaster	Cotoneaster Pomaderris	E	E	Species	Has been recorded in a range of habitats in predominantly forested country. The habitats include forest with deep, friable soil, amongst rock beside a creek, on rocky forested slopes and in steep gullies between sandstone cliffs.	Moderate
Pomaderris delicata	Delicate Pomaderris	CE	CE	Species	Known from only two sites; between Goulburn and Bungonia and south of Windellama (Cullula). At both known sites the Delicate Pomaderris grows in dry open forest dominated by Eucalyptus sieberi with a dense she-oak understorey. Soils are shallow and derived from sandstone and siltstone.	Low
Pomaderris pallida	Pale Pomaderris	V	V	Species	This species usually grows in shrub communities surrounded by Brittle Gum (Eucalyptus mannifera) and Red Stringybark (E. macrorhyncha) or Callitris spp. woodland.	Moderate
Prasophyllum petilum	Tarengo Leek Orchid	E	E	N/A	Grows in open sites within Natural Temperate Grassland at the Boorowa and Delegate sites and in grassy woodland in association with River Tussock Poa labillardieri, Black Gum Eucalyptus aggregata and tea-trees Leptospermum spp. near Queanbeyan and within the grassy groundlayer dominated by Kangaroo Grass under Box-Gum Woodland at Ilford (and Hall, ACT)	Moderate
Pseudophryne australis	Red-crowned Toadlet	V		Species	It is confined to the Sydney Basin, from Pokolbin in the north, the Nowra area to the south, and west to Mt Victoria in the Blue Mountains. Occurs on wetter ridge tops and upper slopes of sandstone formations on which the predominant vegetation is dry open forests and heaths. This species typically breeds within small ephemeral creeks that feed into larger semi-perennial streams. After rain these creeks are characterised by a series of shallow pools lined by dense grasses, ferns and low shrubs and usually contain leaf litter for shelter. Eggs are terrestrial and laid under litter, vegetation or rocks where the tadpoles inside will reach a relatively late stage of development before waiting for flooding waters before hatching will occur.	None
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Species/ Ecosystem	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.	Low
Pultenaea pedunculata	Matted Bush-pea	E		Species	Pultenaea pedunculata occurs in a range of habitats. NSW populations are generally among woodland vegetation but plants have also been	Low

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
					found on road batters and coastal cliffs. Known from western and south-western Sydney, the Appin region, the northeastern Southern Tablelands (e.g. Bungonia, Windellama) and from a small number of records on the far South Coast in NSW. Some occurrences in metropolitan Sydney are presumed extinct, and those known to survive there are very small and vulnerable. It is largely confined to loamy soils in dry gullies in populations in the Windellama area.	
Pycnoptilus floccosus	Pilotbird	V	V	N/A	Pilotbirds are endemic to south-east Australia. Upland Pilotbirds occur above 600 m in the Brindabella Ranges in the Australian Capital Territory, and in the Snowy Mountains in New South Wales and north-east Victoria (Higgins & Peter 2002; Loyn et al. 2021). Lowland Pilotbirds occur in forests from the Blue Mountains west of Newcastle, around the wetter forests of eastern Australia, to Dandenong near Melbourne (Higgins & Peter 2002; Loyn et al. 2021). Pilotbirds are strictly terrestrial, living on the ground in dense forests with heavy undergrowth (Higgins & Peter 2002).	Low
Rhizanthella slateri	Eastern Australian Underground Orchid	V	E	N/A	In NSW, currently known from fewer than 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra. Habitat requirements are poorly understood and no particular vegetation type has been associated with the species, although it is known to occur in sclerophyll forest.	Low
Rostratula australis	Australian Painted Snipe	E	E, MAR	N/A	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
Rutidosis leptorrhynchoides	Button Wrinklewort	E	E	N/A	In the ACT and NSW, Button Wrinklewort occurs in box-gum woodland, secondary grassland derived from box-gum woodland or in natural temperate grassland; and often in the ecotone between the two communities.	Low
Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	V		Ecosystem	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

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
Senecio macrocarpus			V	N/A	In NSW, Large-fruit Fireweed occurs in partly cleared dry forests and box-gum woodlands which transition to Brittle Gum Forest with a relatively undisturbed understorey of native grasses, forbs and subshrubs.	Low
Stagonopleura guttata	Diamond Firetail	V	V	Ecosystem	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, Central 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.	Moderate
Stictonetta naevosa	Freckled Duck	V		Ecosystem	The freckled duck breeds in permanent fresh swamps that are heavily vegetated. Found in fresh or salty permanent open lakes, especially during drought. Often seen in groups on fallen trees and sand spits. The Freckled Duck is found primarily in south-eastern and south-western Australia, occurring as a vagrant elsewhere. It breeds in large temporary swamps created by floods in the Bulloo and Lake Eyre basins and the Murray-Darling system, particularly along the Paroo and Lachlan Rivers, and other rivers within the Riverina.	Low
Swainsona recta	Small Purple-pea	E	E	N/A	Before European settlement, this species occurred in the grassy understorey of woodlands and open-forests dominated by Blakely's red gum, yellow box, candlebark gum and long-leaf box. Grows in association with understorey dominants that include kangaroo grass, poa tussocks and spear-grasses.	Moderate
Synemon plana	Golden Sun Moth	V	V	N/A	The Golden Sun Moth's NSW populations are found in the area between Queanbeyan, Gunning, Young and Tumut. Occurs in natural temperate grasslands and grassy box-gum woodlands in which groundlayer is dominated by wallaby grasses Austrodanthonia spp.	Low
Thesium australe	Austral Toadflax	V	V	Species	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.	Moderate
Tringa nebularia	Common Greenshank	P	E,M,MAR	N/A	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.	Low

Scientific name	Common name	BC Act	EPBC Act	Biodiversity Credit Class	Habitat	Likelihood of Occurrence
Tyto novaehollandiae	Masked Owl	V		Species	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
Varanus rosenbergi	Rosenberg's Goanna	V		N/A	Rosenberg's Goanna occurs on the Sydney Sandstone in Wollemi National Park to the north-west of Sydney, in the Goulburn and ACT regions and near Cooma in the south. This species is a Hawkesbury-Narrabeen sandstone outcrop specialist. Occurs in coastal heaths, humid woodlands and both wet and dry sclerophyll forests.	Moderate

Note: P = Protected, V = Vulnerable, E = Endangered, M = Migratory, MAR = Marine, **- = Not Listed.**

Appendix B
Species lists

Apx Table 2: Flora species list

Scientific name	Common name	3338		3347	3744																	3746	3747	3932														0						
RDP		60	63	67	44	46	48	49	50	51	52	54	55	56	57	58	59	61	62	65	66	64	1	4	53	A1	A2	A4	A3	2	3	5	6	7	8	9
Acacia decurrens	Black Wattle										0.5	10																															
Acacia parramattensis	Parramatta Wattle		2																																								
Allocasuarina littoralis	Black She-Oak									0.5					10	10	20																										
*Andropogon virginicus**	Whisky Grass*																												2														
*Anthoxanthum odoratum**	Sweet Vernal Grass*																						55					0.5			3			60								
*Arctotheca calendula**	Capeweed*			0.1	1	0.2	10					0.3		1						0.2	0.5						0.1																
Aristida spp.															0.1		0.1																										
*Arrhenatherum elatius**	Oatgrass*				1																																						
Atriplex spp.					3	0.5																																					
Austrostipa mollis	Soft Speargrass																						2																				
Austrostipa scabra	Speargrass																																	20		5								
Austrostipa spp.																									0.1							1												
*Avena fatua**	Wild Oats*																									5	90	75	30														
*Bromus catharticus**	Praire Grass*																																		1								
*Bromus hordeaceus**	Soft Brome*																											0.5	1			2		5	5							
Carex appressa	Tall Sedge																							3						2						1						

| Scientific name | Common name | 3338 | 3347 | 3744 | | |

| Scientific name | Common name | 3338 | 3347 | 3744 | | | | | | | | | | | | | | | | | | 3746 | 3747 | 3932 | | | | | | | | | | | | | | | | | |

| Scientific name | Common name | 3338 | 3347 | 3744 | | |

| Scientific name | Common name | 3338 | 3347 | 3744 | | |

Scientific name	Common name	3338	3347	3744									3746	3747	3932					0		
Triptilodiscus pygmaeus	Common Sunray													2								
Utricularia dichotoma	Fairy Aprons														0.1							
Veronica plebeia	Trailing Speedwell						0.2															
Viscum album					0.3																	
Wahlenbergia communis	Tufted Bluebell															0.1						
Wahlenbergia gracilis	Sprawling Bluebell																0.5					
Wahlenbergia graniticola	Granite Bluebell													0.1								
Wahlenbergia luteola	Bluebell																		0.1		0.1	
Xanthorrhoea spp.	Black Wattle				0.1		5				0.2											

Note: * = exotic.

Apx Table 3: Fauna species list

Common name	Scientific name	BC Act	EPBC Act	Number of individuals	Observation Type
Australian Magpie	*Gymnorhina tibicen*	-	-	1	OW
Australian Raven	*Corvus coronoides*	-	-	10	OW
Australian Wood Duck	*Chenonetta jubata*	-	-	5	OW
Common Eastern Froglet	*Crinia signifera*	-	-	100	W
Crimson Rosella	*Platycercus elegans*	-	-	3	O
Eastern Grey Kangaroo	*Macropus giganteus*	-	-	2	O
Eastern Rosella	*Platycercus eximius*	-	-	1	OW
European cattle*	*Bos taurus*	-	-	10	OW
Flame Robin	*Petroica phoenicea*	V	-	2	O
Galah Pink Cockatoo	*Cacatua Hybrid*	-	-	3	O
Horse*	*Equus caballus*	-	-	3	O
Laughing Kookaburra	*Dacelo novaeguineae*	-	-	5	W
Magpie-lark	*Grallina cyanoleuca*	-	-	1	O
Noisy Miner	*Manorina melanocephala*	-	-	1	W
Purple Swamphen	*Porphyrio porphyrio*	-	-	1	O
Sheep feral*	*Ovis aries*	-	-	20	O
Welcome Swallow	*Hirundo neoxena*	-	-	50	O
White-winged Chough	*Corcorax melanorhamphos*	-	-	1	O
Yellow-tailed Black Cockatoo	*Zanda funerea*			5	OW

Note: W = heard, O = observed, OW = heard and observed, * = exotic, V = Vulnerable, - = Not Listed.

Apx Table 4: Exotic flora species list

Scientific name	Common name	High Threat Weed	3338		3347	3744																3746	3747		3932									0					
RDP			**60**	**63**	**67**	**44**	**46**	**48**	**49**	**50**	**51**	**52**	**54**	**55**	**56**	**57**	**58**	**59**	**61**	**62**	**65**	**66**	**64**	**1**	**4**	**53**	**A1**	**A2**	**A4**	**A3**	**2**	**3**	**5**	**6**	**7**	**8**	**9**
Andropogon virginicus	Whisky Grass	Yes																												2								
Anthoxanthum odoratum	Sweet Vernal Grass																								55				0.5			3			60			
Arctotheca calendula	Capeweed				0.1	1	0.2	10					0.3		1						0.2	0.5						0.1										
Arrhenatherum elatius	Oatgrass					1																																
Avena fatua	Wild Oats																										5	90	75	30								
Bromus catharticus	Praire Grass																																			1		
Bromus hordeaceus	Soft Brome																												0.5	1			2		5	5		
Cenchrus clandestinus	Kikuyu Grass	Yes	15			50	30	55		80		75	70		85		25			10		20		75		50		0.1										
Cirsium vulgare	Spear Thistle												0.3														3	1	0.1	0.1								
Conyza spp.																												0.1		0.1								
Dactylis glomerata	Cocksfoot										0.1										0.1																	
Eleusine spp.					0.1																																	
Elymus repens	English Couch																											0.1		10								
Eragrostis curvula	African Lovegrass	Yes																												5								
Erica arborea	Tree Heath																							0.4														
Festuca rubra subsp. *rubra*	Red Fescue		5																											1								
Gamochaeta spp.				0.1	0.1																											1						
Holcus lanatus	Yorkshire Fog																						10			0.1	5	2	2	30	65	25				1	85		
Hordeum murinum	Barley-grass																										40		10	10								

| Scientific name | Common name | High Threat Weed | 3338 | 3347 | 3744 | | | | | | | | | | | | | | | | | | 3746 | 3747 | 3932 | | | | | | | | | | | | | | | | | |

Appendix C
EPBC PMST Report

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: 19-Jun-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	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	2
Listed Threatened Species:	53
Listed Migratory Species:	15

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:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	29
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:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	1
EPBC Act Referrals:	5
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

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
Natural Temperate Grassland of the South Eastern Highlands	Critically Endangered	Community likely to occur within area	In feature area
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			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Aphelocephala leucopsis Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
[Callocephalon fimbriatum](#) Gang-gang Cockatoo [768]	Endangered	Species or species habitat known to occur within area	In feature area
[Calyptorhynchus lathami lathami](#) South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to 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 known 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
[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 may 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Polytelis swainsonii](#) Superb Parrot [738]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Pycnoptilus floccosus](#) Pilotbird [525]	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 known to occur within area	In buffer area only
FISH			
[Macquaria australasica](#) Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area	In feature area
FROG			
[Litoria aurea](#) Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat may occur within area	In feature area
[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
INSECT			
[Keyacris scurra](#) Key's Matchstick Grasshopper [89739]	Endangered	Species or species habitat likely to occur within area	In buffer area only
[Synemon plana](#) Golden Sun Moth [25234]	Vulnerable	Species or species habitat likely to occur within area	In feature area
MAMMAL			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat likely to 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
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	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 likely to 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			
Caladenia tessellata			
Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat may occur within area	In feature area
Calochilus pulchellus			
Pretty Beard Orchid, Pretty Beard-orchid [84677]	Endangered	Species or species habitat may occur within area	In buffer area only
Calotis glandulosa			
Mauve Burr-daisy [7842]	Vulnerable	Species or species habitat may occur within area	In feature area
Commersonia prostrata			
Dwarf Kerrawang [87152]	Endangered	Species or species habitat likely to occur within area	In feature area
Diuris aequalis			
Buttercup Doubletail [21588]	Endangered	Species or species habitat known to occur within area	In feature area
Dodonaea procumbens			
Trailing Hop-bush [12149]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eucalyptus aggregata Black Gum [20890]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lepidium aschersonii Spiny Peppercress [10976]	Vulnerable	Species or species habitat may occur within area	In feature area
Lepidium hyssopifolium Basalt Pepper-cress, Peppercress, Rubble Pepper-cress, Pepperweed [16542]	Endangered	Species or species habitat likely to occur within area	In feature area
Leucochrysum albicans subsp. tricolor Hoary Sunray, Grassland Paper-daisy [89104]	Endangered	Species or species habitat known to occur within area	In feature area
Pelargonium sp. Striatellum (G.W.Carr 10345) Omeo Stork's-bill [84065]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Pomaderris cotoneaster Cotoneaster Pomaderris [2043]	Endangered	Species or species habitat may occur within area	In feature area
Pomaderris delicata [67208]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Pomaderris pallida Pale Pomaderris [13684]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Prasophyllum petilum Tarengo Leek Orchid [55144]	Endangered	Species or species habitat may occur within area	In feature area
Rhizanthella slateri Eastern Underground Orchid [11768]	Endangered	Species or species habitat may occur within area	In feature area
Rutidosis leptorhynchoides Button Wrinklewort [67251]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Senecio macrocarpus			
Large-fruit Fireweed, Large-fruit Groundsel [16333]	Vulnerable	Species or species habitat may occur within area	In feature area
Swainsona recta			
Small Purple-pea, Mountain Swainson-pea, Small Purple Pea [7580]	Endangered	Species or species habitat may occur within area	In buffer area only
Thesium australe			
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Aprasia parapulchella			
Pink-tailed Worm-lizard, Pink-tailed Legless Lizard [1665]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Delma impar			
Striped Legless Lizard, Striped Snake-lizard [1649]	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			
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 known to occur within area	In feature area
Arenaria interpres			
Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area	In buffer area only
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area	In buffer area only
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to 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
Arenaria interpres Ruddy Turnstone [872]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
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 known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat likely to 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
Calidris ruficollis Red-necked Stint [860]		Species or species habitat known to occur within area overfly marine area	In buffer area only
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
Charadrius bicinctus Double-banded Plover [895]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Charadrius ruficapillus Red-capped Plover [881]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known 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
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Species or species habitat known to occur within area overfly marine area	In buffer area only
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 may 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
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 likely 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
Numenius minutus Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Pluvialis fulva Pacific Golden Plover [25545]		Species or species habitat known to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Species or species habitat known to occur within area overfly marine area	In buffer area only
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
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 known to occur within area overfly marine area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa stagnatilis			
Marsh Sandpiper, Little Greenshank [833]		Species or species habitat known to occur within area overfly marine area	In buffer area only

Extra Information

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
Southern RFA	New South Wales	In feature area

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Lake Bathurst	NSW	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Jupiter Wind Farm, Tarago, NSW	2015/7518	Controlled Action	Completed	In feature area
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
INDIGO Central Submarine Telecommunications Cable	2017/8127	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 buffer area only
INDIGO Marine Cable Route Survey (INDIGO)	2017/7996	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 E Preliminary transport and traffic assessment

Amber Organisation
www.amberorg.com.au
1800 022 363

Lisa Montesin
Principal Environmental Consultant
RPS Consulting
Level 16/222 Exhibition St
Melbourne VIC 3000

Ref: 1092
9 April 2025

Issued via email: lisa.montesin@rpsconsulting.com

Dear Lisa

Boro Solar Farm – Preliminary Desktop Traffic Assessment

Amber Organisation has been engaged to provide a preliminary desktop review of the traffic matters associated with the proposed Boro Solar Farm. The project area is located on Lot 2/DP1026850, Lot 2/DP711124, Lot 4/DP1256948, Lot 128/DP754867 and Lot 7302/DP1140943 which have frontages on Boro Road, Braidwood Road and Goulburn Road approximately eight kilometres south of Tarago NSW.

The project would involve the construction, operation, and decommissioning of a large-scale solar farm and battery energy storage system (BESS) with a generating capacity of up to 400 megawatts (up to 150 megawatt solar farm and a 250 megawatts/ 1000-megawatt hours storage BESS). Figure 1 shows the location of the project area in relation to the surrounding transport network, with access to the project expected via two new connections. Both connections are to 1248 Goulburn Road, Boro with crossovers from Braidwood Road onto Lot 2/DP711124, and from Boro Road onto Lot 2/DP1026850.

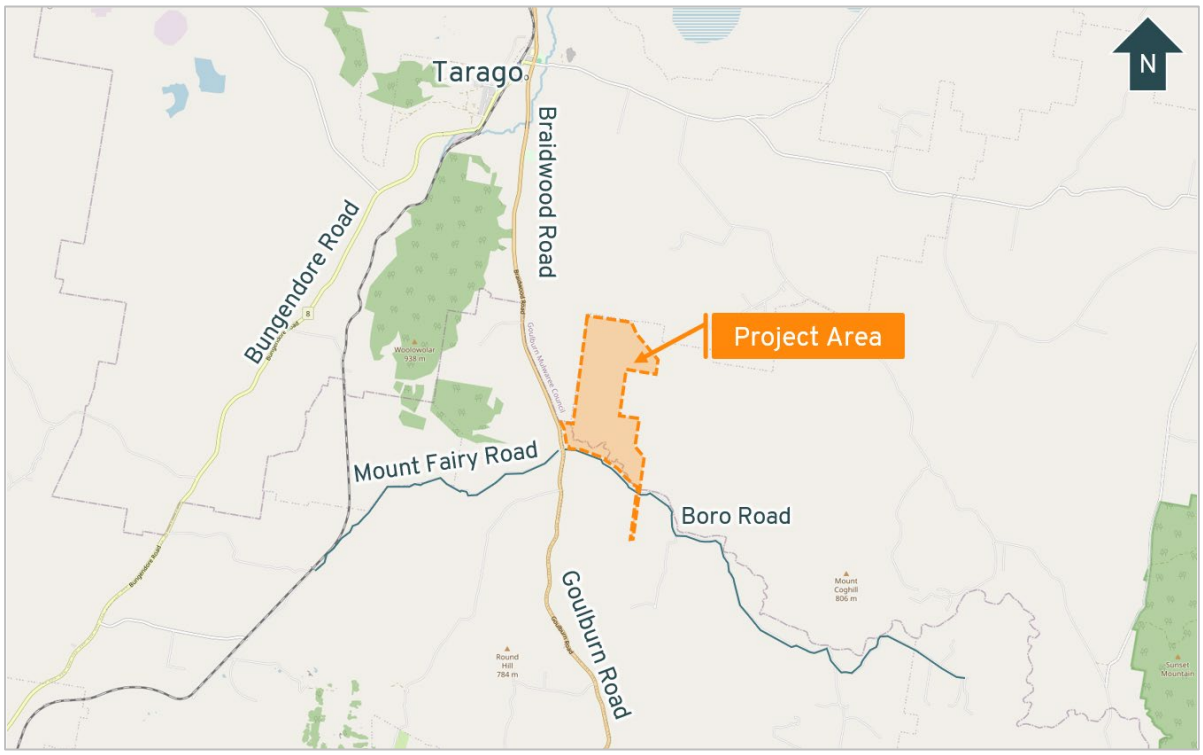
Traffic generated by the project can be separated into three distinct stages: construction, operation and decommissioning. The peak traffic generating potential is expected to be during construction which generates vehicle trips associated with the workforce accessing the project area and the delivery of raw materials and plant.

The construction workforce is expected to primarily be drawn from Goulburn, with materials and equipment generally sourced from the surrounding area where practicable. The delivery port has not been determined at this stage, however, it is anticipated that Port Botany or Port Kembla are the most likely locations where BESS plant would be imported.

The following provides a review of the traffic engineering matters relevant to the project. It includes a preliminary review of the potential access route for construction traffic and oversize/overmass (OSOM) vehicles, as well as a review of the access arrangements for the project area to determine the likely extent of any potential road upgrades required by the increase in traffic generated by construction personnel and heavy vehicles accessing the project are.

The assessment has used available traffic survey data, aerial and road network imagery, and has been undertaken with consideration to the Restricted Access Vehicle network maps provided by Transport for New South Wales (TfNSW) and NHVR.

Figure 1: Project Area



Source: OpenStreetMap

1. Transport network

1.1 Road environment

Braidwood Road is a State road that runs in a general north-south alignment for approximately 44 kilometres between Sloane Street in Goulburn and its continuation as Goulburn Road in Borough. Braidwood Road has a typical carriageway width of approximately 9.0 metres which allows for one lane of traffic in each direction with sealed shoulders. The posted speed limit within the vicinity of the project area is 100 km/hr.

Goulburn Road is a State road that runs in a general north-south alignment for approximately 12 kilometres between Kings Highway in Maran and its continuation as Braidwood Road in Borough. It has a typical carriageway width of approximately 9.0 metres which allows for one lane of traffic in each direction with sealed shoulders. The posted speed limit within the vicinity of the project area is 100 km/hr.

Boro Road is a council road that runs in a general northwest-southeast direction for approximately 13 kilometres between Braidwood Road in Borough and its termination in Mayfield. Boro Road is unsealed with a varying carriageway width between 5.5 metres and 7.5 metres, accommodating traffic in both directions. The speed limit for the road is 100 km/hr.

The intersection of Braidwood Road/ Goulburn Road/ Boro Road is a cross intersection with Mount Fairy Road. The side roads, Boro Road and Mount Fairy Road, are controlled by 'Give Way' signage and line marking with priority given to vehicles travelling on Braidwood Road and Goulburn Road. There are no turn treatments for any turning movements at the intersection.

1.2 Traffic volumes

A search for traffic volume data on the TfNSW website has found that data has not been collected on Braidwood Road or Goulburn Road since 2008. The recording station was located approximately 1.6

kilometres north of the intersection with Boro Road. While the data is considered too old to extrapolate to expected current day volumes, the data does show that there is an even distribution of northbound and southbound traffic on Braidwood Road.

The final location of the traffic surveys would be determined as part of the Environmental Impact Statement (EIS) and preferred access routes, but at a minimum it would likely comprise the intersection of Braidwood Road/ Goulburn Road/ Boro Road during peak periods, supplemented with 7-day classified tube counts.

The survey data would support the future Traffic Impact Assessment and would be a requirement of the road authorities.

1.3 Public transport services

No public transport services have been identified as operating along Braidwood Road or Goulburn Road in the vicinity of the project area.

TfNSW operate school bus services along Braidwood Road and Goulburn Road, utilising bus stops at the intersection with Boro Road. Three school bus services have been identified to stop at the bus stops in the morning between 7.45am and 8.50am and in the afternoon between 3.25pm and 4.10pm.

1.4 Crash history

Amber has conducted a review of the TfNSW Road Safety database for all casualty crashes along Braidwood Road and Goulburn Road, one kilometre north and south of the Boro Road, as well as along Boro Road.

The crash database provides the location and severity of all injury and fatal crashes for the five-year period from 2019 to 2023. The search revealed that no crashes were recorded within the search area.

Given the large search area, the associated traffic volumes on the roads, the road classifications, and the rural high-speed nature of the area, it is concluded that the road network is currently operating in a relatively safe manner.

1.5 Restricted vehicle access

The TfNSW Restricted Vehicle Access Map for the surrounding area is provided within Figure 2 with the green lines indicating approved B-Double routes and the yellow lines approved routes with travel conditions. The figure shows that Braidwood Road, Goulburn Road and Kings Highway are approved routes for 25/26 metre B-Double vehicles.

A review of the TfNSW Oversize Overmass (OSOM) Load Carrying Vehicles Network map has also been undertaken. The map shows approved routes for eligible vehicles operating under the Multi-State Class 1 Load Carrying Vehicles Mass and Mass Exemption Notices. The review indicates that Braidwood Road, Goulburn Road and Kings Highway are also approved routes for Class 1 OSOM vehicles, as illustrated in Figure 2.

Vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump, or drill rig are defined as Special Purpose Vehicles (SPVs). The NSW Special Purpose Vehicle Network map provides details of the approved roads as well as conditions of access and travel restrictions for eligible SPVs. The network map indicates that Braidwood Road, Goulburn Road and Kings Highway are approved for up to SPV Level 2 vehicles. Bridge restrictions are in place for SPV Level 3 vehicles and above at locations on these roads between Goulburn and Bungendore.

The unrated sections of the access route (Boro Road) should be reviewed as part of the EIS.

Figure 2: TfNSW 25/26m B-Double Network of Approved Roads



Source: NHVR Restricted Vehicle Access Map

2. Preliminary traffic assessment

Traffic impacts resulting from the project would be largely limited to the construction phase and can broadly be separated into the following categories:

- Light vehicles associated with transporting the workforce to/from the project area.
- Shuttle buses may be considered to transport the majority of the workforce between the project area and nearby regional centres.
- Medium and Heavy Rigid Trucks (MRV and HRV) used to deliver raw materials and smaller plant.
- Truck and Dog vehicles used to transport earthwork material to/from the project area.
- 19 metre long semitrailers and 26 metre long B-Doubles used to transport larger plant.

It is recommended that traffic surveys be undertaken at the locations detailed at Section 1.2 of this report to assess the capacity of the road network to cater for the additional traffic movements generated during the construction phase. The assessment of the road network is to be undertaken against the requirements set out in the *Austroads Guide to Traffic Management*.

Given the low traffic volumes expected on the surrounding road network, it is not anticipated that the increase in traffic generated during the construction stage would result in any significant adverse impacts to the operation of the road network. Any future assessment completed for the EIS should consider the cumulative impact of other nearby major projects.

During operation the project would generate a negligible level of traffic on the road network.

3. Preliminary route assessment

3.1 Transformer transport vehicle (oversize/overmass)

No decision has been made regarding the port of delivery for plant at this stage, with Port Botany and Port Kembla the likely options. The adopted delivery port would be confirmed as part of the EIS.

A high level assessment of the potential transport routes from the abovementioned ports has been completed. The route assessment has focused on the transformer transport vehicle which typically represents the worst-case scenario due to the length of the vehicle and the associated load. The chosen routes aim to reduce the number of turn manoeuvres at intersections as these may require road upgrades to accommodate the vehicle. It also aims to avoid built-up areas to limit conflicts between the OSOM vehicles and vulnerable road users.

The route from Port Kembla is expected to be as follows:

- Vehicles would depart Wollongong utilising Five Islands Road, Springhill Road, and Masters Road to access the Princes Motorway. Vehicles would then use Picton Road to access the Hume Highway.

The route from Port Botany is expected to be as follows:

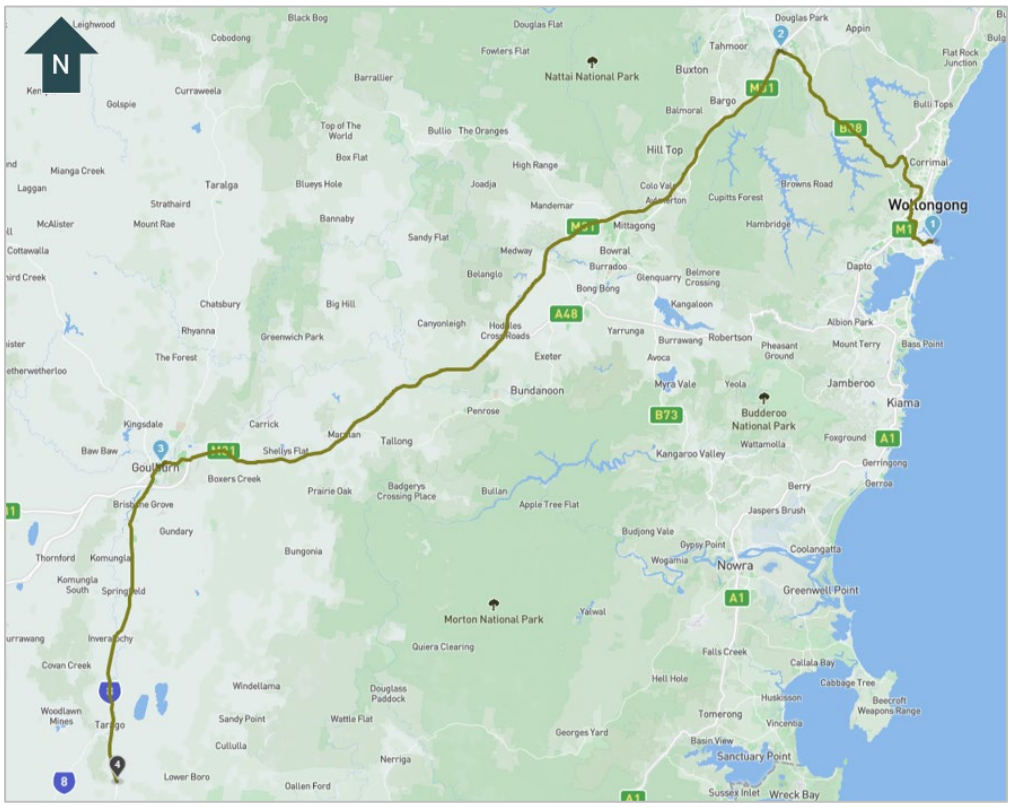
- Vehicles would depart Sydney utilising Botany Road, Bunnerong Road, Gardeners Road, M8 Motorway, and the M5 Motorway (east) to access the Hume Highway.

Both routes from Port Botany and Port Kembla would then follow the same route on the Hume Highway from Picton Road onwards. From this point the route to the project area is expected to be as follows:

- Vehicles would utilise the Hume Highway to Goulburn, exiting at Sydney Road, then use Reynolds Street, Grafton Street, Sloane Street and Braidwood Road to access the project area.

The proposed routes for the transformer transport vehicle from Port Kembla and Port Botany are shown within Figure 4 and Figure 5, respectively.

Figure 3: OSOM Vehicles – Indicative Access Route from Port Kembla


N
Wollongong
Nattai National Park
Morton National Park
Budderoo National Park
Nowra
Goulburn
Tarago
Kiama
Sanctuary Point
Wreck Bay
Jamberoo
Berry
Gerringong
Gerroa
Greenwell Point
Coolangatta
Jaspers Brush
Bundanoon
Moss Vale
Mittagong
Bowral
Hill Top
Buxton
Tahmoor
Appin
Corrimal
Dapto
Albion Park
Kangaroo Valley
Exeter
Robertson
Burrawang
Yarrunga
Kangaloon
Bong Bong
Belanglo
Medway
Sandy Flat
Bannaby
Mandemar
Cupitts Forest
Browns Road
Hambridge
Crookhaven Heads
Lake Conjola
Milton
Ulladulla
Batemans Bay
Moruya
Bega
Eden
Merimbula
Tathra
Bermagui
Narooma
Tilba Tilba
Central Tilba
Cobargo
Bodalla
Wallaga Lake
Tuross Head
Moruya Heads
Broulee
Mossy Point
Malua Bay
Rosedale
Surf Beach
Long Beach
Durras
Bendalong
Sussex Inlet
Callala Bay
Huskisson
Vincentia
Basin View
Tomerong
Falls Creek
Hell Hole
Quiera Clearing
Yalwal
Inverary
Covan Creek
Windellama
Douglass Paddock
Sandy Point
Wattle Flat
Cullulla
Nerriga
Georges Yard
Lower Boro
Oallen Ford
Tallong
Marulan
Carrick
Kingsdale
Baw Baw
Shellys Flat
Boxers Creek
Prairie Oak
Badgerys Crossing Place
Bullan
Apple Tree Flat
Brisbane Grove
Gundary
Bungonia
Thornford
Komungla
Komungla South
Springfield
Woodlawn Mines
Wingello
Penrose
Canyonleigh
Hoddles Crossroads
Greenwich Park
Big Hill
Chatsbury
Rhyanna
The Forest
Exeter
Avoca
Myra Vale
Yeola
Foxground
Wattamolla
Pheasant Ground
Mount Terry
Bass Point
Albion Park
Kangaloon
Glenquarry
Belmore Crossing
Burradoo
Belanglo
Joadja
Colo Vale
Aylmerton
Mandemar
Cupitts Forest
Browns Road
Hambridge
Mittagong
Bowral
Medway
Sandy Flat
Bannaby
Mount Rae
McAlister
Strathaird
Taralga
Mianga Creek
Laggan
Cottawalla
Curraweela
Golspie
Barrallier
Fowlers Flat
Douglas Flat
Black Bog
Cobodong
Leighwood
Nattai National Park
Buxton
Tahmoor
Douglas Park
Appin
Flat Rock Junction
Bulli Tops
Balmoral
Bargo
Hill Top
Corrimal
Wollongong
Dapto
Albion Park
Mount Terry
Bass Point
Kiama
Jamberoo
Berry
Gerringong
Gerroa
Greenwell Point
Coolangatta
Jaspers Brush
Budjong Vale
Gypsy Point
Wogamia
Nowra
Bundanoon
Moss Vale
Myra Vale
Yeola
Foxground
Wattamolla
Budderoo National Park
Kangaroo Valley
Exeter
Robertson
Burrawang
Yarrunga
Kangaloon
Bong Bong
Belanglo
Medway
Sandy Flat
Bannaby
Mandemar
Cupitts Forest
Browns Road
Hambridge
Mittagong
Bowral
Hill Top
Buxton
Tahmoor
Appin
Corrimal

It is noted that each route is generally approved within the NSW Oversize Overmass Load Carrying Vehicles Network Map. The routes utilise the 4.6 metre high vehicle network. The route would have to undergo a more rigorous route assessment if the expected load height exceeds this constraint, noting that an alternate route may be required in some instances. Travel conditions and restrictions are applicable in certain sections which are outlined as follows:

Port Kembla route

- Princes Motorway
    - Vehicles or combinations exceeding 2.5 metres wide are not permitted to travel Monday to Saturday from 8.00am to 10.00am; and Monday to Friday 3.00pm to 6.00pm (except on state-wide public holidays) southbound on the Nowra Bridge over the Shoalhaven River at Nowra.
    - Vehicles or combinations exceeding 3.5 metres wide or 25.0 metres long are not permitted to travel between 8.00am and sunset on weekends or a state-wide public holiday on the Princes Highway/Motorway between the start of the M1 Motorway at Waterfall and Rose Valley Road at Gerringong; between Woodhill Mountain Road at Berry and Bendalong Road at Conjola; between Golf Ave at Ulladalla and Mystery Bay Road at Narooma; and between Cobargo Bermagui Road at Cobargo and Toallo Road at Pambula.
    - Vehicles or combinations exceeding 3.5 metres wide or 25.0 metres long are not permitted to travel between sunrise and sunset on weekends or a state-wide public holiday between Rose Valley Road at Gerringong and Woodhill Mountain Road at Berry; between Bendalong Road at Conjola and Golf Ave at Ulladalla; between Mystery Bay Road at Narooma and Cobargo Bermagui Road at Cobargo; and between Toallo Road at Pambula and Imlay Street at Eden.

Port Botany route

- Bunnerong Road
    - The driver of a defined heavy vehicle (in excess of 12.5m in length) is permitted to travel from Port Botany to a destination on Beauchamp Road, Matraville despite "No Trucks" restrictions on Bunnerong Road at Matraville (Road Rule 104) and to make a left turn from Wentworth Avenue into Denison Road at Eastgardens, despite a no left turn sign (Road Rule 91).
- M8 Motorway Tunnel
    - Dimension Limits: Width: 2.5m, Height: 4.3m, Length: 19m. If your vehicle exceeds the above dimensions you must apply for a Class 1 permit before you commence your journey.
- M5 Motorway
    - An operator of a vehicle or combination equal to or exceeding 4.3 metres wide must contact the motorway operator at least five days before travel.

Applicable to both routes

- Hume Highway
    - Travel is not permitted after 4.00pm on Sundays or state-wide public holidays between the M5/M7 interchange at Prestons and Picton Road at Wilton.
    - Vehicles or combinations exceeding 3.5 metres wide or 25.0 metres long are not permitted to travel between 8.30am and sunset on weekends or a state-wide public holiday between the M5/M7 interchange at Prestons and the Illawarra Highway at Suttons Forest.

Oversize vehicle movements to and from the project area would be required to travel during permitted times only. The vehicles are subject to specific road permits that would be applied for once the dimensions of the load and the specific delivery vehicle are known.

The route for the transformer transport vehicle is recommended to be reviewed as part of a future detailed Route Assessment which would be prepared as part of the preparation of the EIS. The Route Assessment should provide an assessment and commentary on the following matters:

- Confirm the dimensions and loading of the OSOM vehicle.
- Contact TfNSW, relevant Council(s), and rail authorities to undertake an assessment of any bridge structures based on the loading of the vehicle.
- Provide a review of the height clearances along the access route and confirm the vehicle is able to suitably access the project area.
- Provide a horizontal alignment review utilising swept paths to confirm if any road upgrades are required at key pinch points and provide concept designs for any road improvements.
- Identify suitable pullover bay locations.

Overall, the vehicle is expected to be able to be accommodated within the existing road reserve with no major road upgrades required. It is noted that the routes typically make use of State roads which are designed to accommodate the associated loads.

We note that some upgrades may be required to Boro Road to access the project area which would be determined as part of the EIS in consultation with Goulburn Mulwaree Council and /or Queanbeyan-Palerang Regional Council.

3.2 General construction traffic (B-doubles)

B-Double vehicles travelling to/from the project area are anticipated to utilise the same routes identified above. It is noted that the routes are currently approved for 25/26 metre B-Double vehicles within the NSW Restricted Access Vehicles Network Map, with exception to Boro Road. Some travel conditions may apply if Port Botany is the adopted transport route, including height (up to 4.4 metres) restrictions in the tunnels.

Boro Road is not rated to accommodate B-Double vehicles. It is recommended that any local roads are designed to accommodate simultaneous two-way vehicle movement for the largest heavy vehicle to access the project area. Alternatively, traffic management measures can be considered to safely control vehicle movements. Any road upgrades should be undertaken in consultation with Goulburn Mulwaree Council and /or Queanbeyan-Palerang Regional Council and would be assessed as part of the EIS.

3.3 Railway crossings

The indicative access routes do not traverse any railway level crossings but would require consultation for any railway overbridges.

3.4 Unsealed roads

The adopted access route is expected to primarily utilise the State Road network. Boro Road is unsealed which may require upgrades subject to consultation with Goulburn Mulwaree Council and /or Queanbeyan-Palerang Regional Council. This is to be determined as part of the EIS and should be undertaken in accordance with the *Unsealed Roads Manual*.

4. Access arrangements

4.1 Turn treatments

The primary traffic impact during construction is generated by staff accessing the project area in the morning peak hour and exiting the project area in the evening peak hour, and by heavy vehicles accessing the project area during the day. Staff are generally expected to primarily be located in Goulburn, Tarago and Bungendore.

Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings specifies the turning treatments required at intersections. The minimum treatment is a Basic Left/Right Turn facility which is suitable for relatively low volumes of through and turning traffic.

Two accesses have been proposed for the project, one directly from the State road network off Braidwood Road, and another off Boro Road. The Braidwood Road access and the intersection of Braidwood Road/ Goulburn Road/ Boro Road would need to undergo the turn treatment assessment when the traffic volumes expected to utilise each access are confirmed.

The use of shuttle buses to transport the workforce to and from the project area is also recommended to minimise the number of turning movements into and out of the project area during morning and evening peak periods and the associated impacts on the road network.

4.2 Sight distance

Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections specifies the Safe Intersection Sight Distance (SISD) as the minimum sight distance which should be provided along the major road at any intersection. Table 3.2 of the guide specifies the SISD required for various design speeds. Braidwood Road has a posted speed limit of 100 km/hr and Boro Road has an assumed speed limit of 100 km/hr.

Based on a posted speed limit of 100 km/hr, a design speed of 110 km/hr is applicable which requires an SISD of 300 metres based on a reaction time of 2.5 seconds. We note that the SISD requirement may change if the traffic surveys return an 85th percentile vehicle speed different to the adopted design speed, which would be determined as part of the EIS.

The location of the site access on Braidwood Road is constrained by the vertical alignment to the north and the horizontal alignment to the south. The SISD would be slightly decreased taking into consideration the gradients on both approaches to the access. Further assessment of the sight distance would be undertaken as part of the EIS and would require a site visit for confirmation.

The location of the site access on Boro Road appears to be suitable for meeting the SISD requirement to the west, however, is constrained by the horizontal alignment to the east. The SISD would increase for unsealed roads, however it would be expected that the 85th percentile vehicle speed would be less than the design speed on unsealed roads, which would need to be determined from a traffic survey. Further assessment of the sight distance would be undertaken as part of the EIS and would require a

site visit for confirmation, however early investigations reveal that finding a compliant access location within the vicinity of the proposed access point would be attainable.

Sight distance and turn treatment assessments would also need to be undertaken for the intersection of Boro Road and Braidwood Road, if it is used for the site access. A preliminary assessment shows that the sight distance may be deficient in both directions based on the posted speed limit.

A further detailed assessment should be undertaken as part of the EIS to confirm the preferred site access and upgrade requirements. We note that TfNSW typically take a very conservative view on the requirements with limited scope (if any) to modify or change the applicable AustRoads guidelines.

5. Conclusion

Based on the above assessment, it has been determined that:

- It is recommended that an intersection survey and tube count be undertaken at Braidwood Road and Boro Road. The traffic surveys will establish the existing traffic environment.
- School bus services operate along Braidwood Road and Goulburn Road. The interaction and any potential conflict between heavy vehicles and school buses will be assessed as part of the EIS.
- Port Kembla or Port Botany are the likely delivery port for the solar farm and BESS plant. The assessment identified travel routes for the transformer transport vehicle (OSOM) and general construction traffic (B-Doubles). The routes are expected to be able to accommodate these vehicles with no major road upgrades required.
- The use of shuttle buses to transport the workforce to and from the project area is recommended to minimise the number of turning movements into and out of the site accesses during morning and evening peak periods and the associated impacts on the road network.
- A minimum sight distance of 300 metres is required at the site accesses and the intersection of Boro Road and Braidwood Road based on a design speed of 100 km/hr. The precise location of the site access is to comply with the Austroads Guidelines, with further assessment to be undertaken as part of the future Traffic Impact Assessment and site visit, noting that TfNSW will take a conservative view on the upgrade requirements.

If you have any questions, please feel free to contact the undersigned.

Yours sincerely
Amber Organisation



Shannon Eduards
Traffic Engineer



Tom Dwyer
Associate

Appendix F Preliminary social impact assessment spreadsheet

Assessment (SIA) Worksheet — Boro Solar Farm — Date: 18-Jun-25

PROJECT ACTIVITIES	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
Which **project activity / activities** could produce social impacts ?	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	Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its: You can also consider the various magnitudes of these characteristics					Level of assessment for each social impact	What methods and data sources will be used to investigate this impact?			Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?	What **mitigation / enhancement measures** are being considered?
								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?		Secondary data	Primary Data - Consultation	Primary Data - Research		
Construction	access	Construction may cause temporary traffic disruptions due to lane closures and increased vehicle movements, affecting local travel, access to services, and daily routines.	Negative	Yes - this project	Preliminary Traffic and Transport Assessment (see in Scoping Report)	Cumulative	Potential for cumulative impacts from other construction projects in the area and combined impacts with temporary roadworks for this project.	No	No	No	No	Yes	Detailed	Required	Broad engagement	Not required	No	Assessment and management of traffic impacts will be provided in the EIS.
Construction	access	Temporary roadworks on Braidwood, Goulburn and Boro Roads may disrupt local travel routes, affecting connectivity between Mayfield, Boro, Tarago and Manar, with potential impacts on access to work, schools, and services.	Negative	Yes - this project	Preliminary Traffic and Transport Assessment (see in Scoping Report)	Cumulative	Potential for cumulative impacts from other construction projects in the area and combined impacts with construction-based traffic disruptions.	Unknown	No	No	No	Yes	Detailed	Required	Broad engagement	Not required	No	Assessment and management of traffic impacts will be provided in the EIS..
Construction	access	Increased pressure on community infrastructure and services associated with an influx of construction workers may reduce locals' access to as schools, childcare and medical services.	Negative	Unknown		Cumulative	Potential for cumulative impacts from other construction projects in the area.	No	No	No	Yes	Yes	Minor	Required	Targeted - Council	Targeted research	No	SIA to assess service capacity through social baseline and, where required, consultation with Council.
All project stages	community	The project could impact 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		Cumulative	Potential for cumulative impacts from other renewable energy projects in the area.	No	No	No	No	Yes	Minor	Required	Limited - if required	Not required	No	Prioritise consultation with affected stakeholders if necessary and develop mitigation strategies for residual impact.
Operation	way of life	The project, alongside other nearby developments, may cumulatively alter the area's visual character and landscape, potentially affecting the community's sense of place, identity, and connection to the local environment.	Negative	No		Cumulative	Potential for cumulative visual impacts from other development in the area.	Unknown	No	Unknown	No	Yes	Minor	Required	Broad consultation	Targeted research	No	Consideration of cumulative amenity impacts throughout EIS and consideration within SIA in a social context
Construction	culture	Impacts to Aboriginal cultural and/or historic heritage sites.	Negative	Yes - this project	Aboriginal Cultural Heritage Assessment Report (in progress as part of the EIS)	No	Not required	Yes	Yes	Yes	Yes	Yes	Detailed	Required	Broad consultation	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.
Construction	health and wellbeing	Increased traffic could increase the road safety risk for local drivers and pedestrians.	Negative	Yes - this project	Preliminary Traffic and Transport Assessment (see in Scoping Report)	Cumulative	Potential for cumulative impacts from other construction projects in the area.	No	No	No	No	Yes	Detailed	Required	Broad consultation	Targeted research	No	Consideration of cumulative amenity impacts throughout EIS and consideration within SIA in a social context
Construction	health and wellbeing	Noise from the construction site could affect the physical and mental health of nearby residents.	Negative	Yes - this project	Preliminary Noise and Vibration Assessment (see in Scoping Report)	Cumulative	Potential for cumulative noise impacts from other construction projects in the area.	No	No	No	Unknown	No	Detailed	Required	Broad consultation	Targeted research	No	Noise management measures will be determined based on the outcomes of the noise impact assessment to be completed as part of the EIS.
All project stages	decision-making systems	Limited community knowledge or involvement in the project could reduce trust in decision-making systems and their perceived ability to influence outcomes.	Negative	No		Cumulative	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. Engagement at both neighbour and community levels. Develop strategies to promote local involvement and employment.
Construction	community	An influx of non-local construction workers may temporarily alter the population profile of nearby towns, influencing local demographics, housing demand, and community dynamics.	Negative	Unknown		Cumulative	Potential for cumulative impacts from other construction projects in the area.	No	No	No	Unknown	Unknown	Minor	Not required	Broad consultation	Not required	No	SIA to include population baseline and assess potential workforce-driven changes. Consultation with Council to identify and plan for temporary population shifts.
Construction	livelihoods	Influx of non-local construction workers may boost local business activity, including hospitality venues such as cafes and restaurants, shops, and accommodation.	Positive	No		Cumulative	Potential for cumulative impacts from other construction projects in the area.	No	No	No	No	No	Minor	Not required	Not required	Not required	No	Consultation with business groups to understand local impacts of the development and how they may be enhanced
Construction	livelihoods	The project could create employment opportunities for local construction workers and those in related fields.	Positive	Unknown		Cumulative	Potential for cumulative impacts from other construction projects in the area.	No	No	No	No	No	Minor	Not required	Targeted	Targeted research	No	SIA to identify local workforce capacity and consult with Council, local businesses, and training providers to maximise local employment outcomes.
Operation	livelihoods	The project could create local employment opportunities for its ongoing operation and maintenance.	Positive	Unknown		Cumulative	Potential for cumulative impacts from other renewable energy projects in the area.	No	No	No	No	No	Minor	Required	Limited	Not required	No	SIA to identify local workforce capacity and consult with Council, local businesses, and training providers to maximise local employment outcomes.
Construction	livelihoods	Procurement of materials from local businesses can support the regional economy, strengthen local supply chains, and create flow-on benefits for employment and community wellbeing.	Positive	Unknown		Cumulative	Potential for cumulative impacts from other construction projects in the area.	No	No	No	No	No	Minor	Required	Targeted	Targeted research	No	Consultation with business groups to understand local impacts of the development and how they may be enhanced
Operation	surroundings	The visual impact of solar panels creates a visual disturbance to the landscape.	Negative	Yes - other project	Bookaar Solar Farm - Landscape and Visual Impact Assessment	No	Not required	No	Yes	No	Yes	Yes	Detailed	Required	Broad consultation	Targeted research	No	Visual Impact Assessment as part of the EIS will guide layout and screening measures, with consultation to refine mitigation with affected stakeholders.
Construction	livelihoods	Potential impacts on housing availability, rental affordability, and accommodation capacity, affecting residents' economic stability and access to housing.	Negative	No		Cumulative	Potential for cumulative impacts from other construction projects in the area bringing more people to the area.	Yes	No	No	Yes	Yes	Standard	Required	Broad engagement	Not required	No	Project will potentially use a temporary accommodation facility for construction workers. The need for this accommodation will be assessed as part of the EIS.
All project stages	livelihoods	Upskilling the local workforce through vocational training schemes could enhance long-term employment opportunities and strengthen local capacity.	Positive	No		Cumulative	Potential for cumulative impacts from other construction projects in the area, particularly energy projects.	No	Yes	No	No	No	Minor	Required	Targeted	Targeted research	No	SIA to review local demographics and workforce needs, with targeted consultation with Council and vocational institutions to inform training opportunities aligned to regional demand.
All project stages	health and wellbeing	Uncertainty and perceived impacts, such as loss of amenity or perceived electromagnetic fields and pollution, may cause stress for residents and affect their sense of wellbeing.	Negative	No		No	Not required	Unknown	Yes	No	Unknown	Yes	Minor	Required	Broad consultation	Targeted research	No	Prioritise consultation with affected stakeholders and develop mitigation strategies for residual impact with input from affected residents and specialists.
All project stages	health and wellbeing	Increased bushfire risk from solar and BESS infrastructure may raise safety concerns and anxiety among residents in fire-prone areas.	Negative	Yes	Preliminary Bushfire Assessment (see in Scoping Report)	No	Not required	Yes	Yes	Yes	Unknown	Yes	Minor	Required	Limited - if required	Not required	No	Prioritise consultation with affected stakeholders and revise activities to minimise impacts if necessary.
Construction	livelihoods	Vehicle access during construction may increase the risk of weed spread and biosecurity breaches, potentially impacting local farming operations and community livelihoods.	Negative	No		No	Not required	No	No	Yes	No	Yes	Standard	Required	Targeted	Targeted research	No	Consult directly with near neighbours and the affected property to develop site-specific biosecurity and weed management measures for construction access.
Construction	health and wellbeing	Dust from construction and traffic on unsealed roads may affect air quality, impacting the health, comfort, and daily activities of nearby landholders and residents along haulage routes.	Negative	No		No	Not required	No	No	Unknown	Unknown	Unknown	Standard	Required	Broad engagement	Not required	No	Develop a Construction and Environmental Management Plan (CEMP) which includes dust suppression measures in accordance with relevant EPA guidelines Prioritise consultation with affected stakeholders.

Appendix G Preliminary heritage assessment



Boro Solar Farm

Heritage Constraints Scoping Report

RPS

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Document Tracking

Project Name:	Boro Solar Farm
Project Number:	24NEW9576
Project Manager:	Dr Gary Marriner

This report should be cited as 'Eco Logical Australia 2024, Boro Solar Farm Heritage Constraints Scoping Report, Prepared for RPS.'

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Abbreviations

Abbreviation	Description
AACAI	Australian Association of Consulting Archaeologists Inc.
ACHA	Aboriginal Cultural Heritage Assessment
AHD	Australian Heritage Database
AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
BESS	Battery Energy Storage System
ELA	Eco Logical Australia
JWF	Jupiter Wind Farm
LALC	Local Aboriginal Land Council
LEP	Local Environment Plan
LGA	Local Government Area
PAD	Potential Archaeological Deposit
Project	Construction, operation and decommissioning of a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150-megawatt solar farm and a 250 megawatts/ 1000-megawatt hours storage BESS)
project area	The indicative development area for the project located on privately land owned as shown in Figure 1
Project disturbance footprint	Area of project-related disturbance determined for the assessment of environmental impacts, which would be refined for the EIS
RAP	Registered Aboriginal Party
SEARs	Secretary's Environmental Assessment Requirements
SHI	State Heritage Inventory
SOHI	Statement of Heritage Impact
SSD	State Significant Development

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1. Project Understanding

1.1. Background

Ecological Australia Pty Ltd (ELA) has been engaged by RPS to prepare a heritage scoping report to identify any Aboriginal or historical heritage constraints present within the area proposed for the Boro Solar Farm at Boro, NSW approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales (known as the project area, see Figure 1).

1.2. Site location

The project area is located in the South East and Tablelands region of New South Wales. The project area has frontages onto Boro Road and Braidwood Road, Boro NSW and falls within the following lot boundaries: Lot 2/DP1026850, Lot 33/DP750033, Lot 4/DP1256948, Lot 2/DP711124, Lot 128/DP754867, and Lot 7302/DP1140943. The project area is split across Goulburn Mulwaree Local Government Area (LGA) and Queanbeyan-Palerang LGA. The project area is 40 kilometres south of Goulburn and comprises of approximately 420 hectares of land along Boro Road and Braidwood Road, Boro NSW (see Figure 1). The project area falls within both the Pejar Local Aboriginal Land Council (LALC) and the Batemans Bay LALC.

1.3. Limitations

This report is limited to identifying the existing known heritage constraints of the project area and predicting the potential heritage constraints based on landform sensitivity. This scope does not include Aboriginal community consultation or a site inspection.

1.4. Authorship

This report was prepared by Chloe Verman and reviewed by Dr Gary Marriner.

Chloe Verman has a BA [Archaeology] from the University of Sydney.

Dr Gary Marriner has a BA and MA [Archaeology and Anthropology] from the University of Cambridge, an MPhil [Archaeological Research] from the University of Cambridge, and a PhD [Archaeology] from the University of New England. He is a full Member of the Australian Association of Consulting Archaeologists Inc. (AACAI).

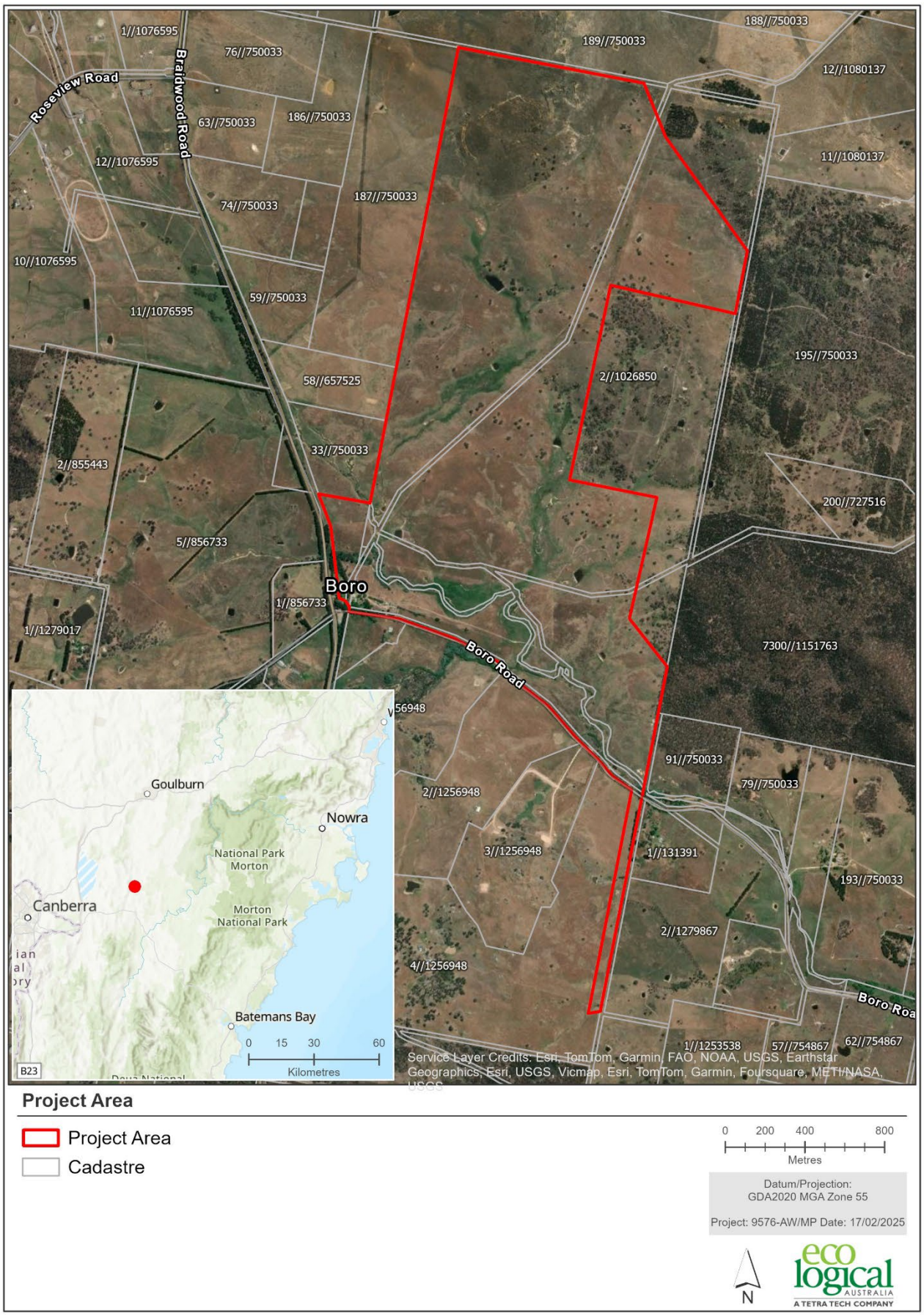


Figure 1 The project area

2. Aboriginal Heritage Constraints

2.1. Existing Environment

The South East and Tablelands region has traditionally been occupied by several Aboriginal peoples including the Walbanga, the Ngarigo, the Ngunawal and the Gandangara (NSW NPWS 2003). Tindale's mapping of Aboriginal Australia suggests that the project area may fall within the boundaries of the Ngunawal peoples (Tindale 1974). Colonial ethnographer R.H. Mathews stated that the country boundaries of the Ngunawal extended from Goulburn to Yass, to Boorowa in the south, Lake George in the east and Goodradigbee in the west (Mathews 1904).

2.1.1. Aboriginal Heritage Information Management System Search

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was also undertaken on 22 November 2024. The search covered a ten-kilometre radius surrounding the project area and aimed to understand the known archaeological resources and provide an understanding of the types of features that might be present in the current landscape (Figure 2).

Table 1 Search Parameters for the AHIMS database

Search Parameters		Search Results	
GDA Zone	55	Aboriginal sites	4
Eastings	738514 - 748514	Aboriginal Places	0
Northings	6103702 - 6113702		

The extensive search identified a total of four (4) Aboriginal sites within the search parameters. The closest AHIMS site is located 1.5 kilometres northwest of the project area (Figure 2).

All AHIMS sites have been recorded as being artefact features, either artefact scatters or isolated finds. AHIMS ID 57-3-0253 (Chain of Ponds Ck IF 1), was recorded as an isolated find in 1995. This site consists of a single grey silcrete flake located on a gently sloping ridge, exposed on a vehicle track. This site is approximately 3.7 kilometres northeast of the project area.

The three other AHIMS sites identified in the search, and listed below, were recorded in 2008. All three sites are located roughly 1.5 kilometres northwest of the project area. The three sites are artefact scatters, all associated with drainage depressions and/or gentle sloping landforms.

AHIMS ID 57-3-0410 comprised of an extensive artefact scatter, containing cores, retouched artefacts and silcrete flakes. A sample of 50 artefacts were recorded associated with this site, with a further estimated 250 artefacts observed in the immediate area.

AHIMS ID 57-3-0411 consists of 18 artefacts, predominantly silcrete flakes as well as backed blades and a hatchet.

AHIMS ID 57-3-0412 identified 25 stone artefacts eroding out of an exposure on a gentle slope. Low visibility impacted the full assessment of the area. This site was noted as having a high potential for additional subsurface artefacts.

2.1.2. Heritage Database Searches

A search of the Australian Heritage Database (AHD) and State Heritage Inventory (SHI) was conducted on the 22 November 2024 in order to determine if any places of Aboriginal significance are located within the project area.

No Aboriginal places or sites of archaeological significance have been recorded on the local, state or national databases.

2.1.3. Archaeological Context

The project area partially falls within the area of withdrawn project, the Jupiter Wind Farm (JWF). As part of the pre-planning approval for the JWF, an Aboriginal archaeological assessment was undertaken to assess the archaeological potential of the area (ERM 2016).

Three Aboriginal sites were identified as part of the archaeological investigations, as well as two areas of Potential Archaeological Deposit (PAD). None of these sites were previously known or recorded. One of these sites, JWF1, is located outside but in close proximity to the current project area boundary (Figure 3). These have not yet been registered on the AHIMS database and as such were not identified through the database search.

JWF1 consists of a single isolated silcrete flake located within a flat landform, surrounded by gentle slopes within a wider landscape of rolling hills. As the site was not recorded on AHIMS, the location mapped in Figure 2 and Figure 3 is approximate, based on maps included in ERM 2016. The site was noted as "likely an expression of movement throughout the landscape, rather than permanent occupation camps" (ERM 2016:75).

2.1.4. Landform Sensitivity

An archaeologically sensitive landscape is an area that has the potential for archaeological material to be present within it. According to the *Due Diligence Code of Practice* (DECCW 2010a), archaeologically sensitive landscapes can include areas:

- Within 200m of waters; or
- Located within a sand dune system; or
- Located on a ridge top, ridge line, headland; or
- Located within 200m below or above a cliff face; or
- Within 20m of or in a cave, rock shelter, or a cave mouth and is on land that is not disturbed land.

The Due Diligence Code of Practice (DECCW 2010a:18) defines disturbed land as areas that have any land that:

> "*Has been the subject of a human activity that has changed the land's surface, being changes that remain clear and observable. Examples include ploughing, construction of rural infrastructure (such as dams and fences), construction of roads, trails and tracks (including fire trails and tracks and walking tracks), clearing vegetation, construction of buildings and the erection of other structures, construction or installation of utilities and other similar services (such as above or below ground electrical infrastructure, water or sewerage pipelines, stormwater drainage and other similar infrastructure) and construction of earthworks*."

Based on this definition the project area is not considered disturbed land in general as it has not been subjected to clear and observable human impact. That said, there are small areas such as around terracing and tracks that are disturbed.

All Aboriginal sites, identified in the vicinity of the project area, have been recorded on gentle slopes, flat terrain in close proximity to water sources. Gentle slopes adjacent to creek or streams are furthermore widely considered sensitive for evidence of Aboriginal occupation. The project area is

predominantly comprised of undulating hills and gentle slopes with a significant number of drainage lines throughout associated with Chain of Ponds Creek and Boro Creek.

The project area has sensitive landforms with the likelihood of Aboriginal objects and Places to be present.

2.2. Potential Impacts

As there are sensitive landforms and previously identified Aboriginal sites within close proximity to the project area, there is potential for impact on Aboriginal cultural heritage values.

Aboriginal objects are protected under the *National Parks and Wildlife Act 1974* (NPW Act) regardless of whether they are registered on AHIMS or not. It is an offense to disturb or damage these sites without first having obtained the appropriate approvals – an Aboriginal Heritage Impact Permit (AHIP). Works or activities that could potentially disturb the ground surface include all earthworks associated with the project that have the potential to disturb surface and *in situ* subsurface Aboriginal sites.



Figure 2 Site features within vicinity to the project area



Figure 3 Site features in proximity to project area

2.3. EIS Assessment Approach

The project has an estimated development cost exceeding $30 million and is therefore classified as State significant development (SSD) under the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). Approval would be required from the Minister for Planning and Public Spaces under the NSW Environmental Planning and Assessment Act 1979 (EP&A Act).

This heritage constraints assessment has been prepared for the scoping report and supports an application to the Secretary of the NSW Department of Planning, Housing and Infrastructure (DPHI) for Secretary's Environmental Assessment Requirements (SEARs), which would guide the preparation of an environmental impact statement (EIS) to support the development application under Part 4 Division 4.7 of the EP&A Act. An Aboriginal Cultural Heritage Assessment (ACHA) would be prepared as part of the EIS and would address the presence of a known Aboriginal site in close proximity to the project area.

An ACHA will be prepared in accordance with the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH, 2011) and the requirements of the NPW Act.

Aboriginal community consultation is required to inform the ACHA process and must be undertaken in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010a).

Archaeological investigations will also be required to inform the ACHA process and must be undertaken in accordance with the *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (DECCW, 2010b). The scope of the archaeological investigations may include test excavations if required.

3. Historical Heritage Constraints

3.1. Brief Historical Context

Settlement of the South East and Tablelands region began in the 1820s, following early exploratory expeditions by Hamilton Hume, Charles Throsby, James Meehan and John Oxley (NSW NPWS 2003). Initial expeditions noted the agricultural potential of the area, and the area was subsequently settled for grazing in the 1820s (NSW NPWS 2003). The major regional centre of Goulburn was founded between 1829 and 1833. Goulburn and the surrounding towns, in particular Braidwood and Bungendore, flourished during the Gold Rush of the 1850s (NSW NPWS 2003). While the growth of many of these smaller towns has tapered in recent decades, their historical heritage values have contributed to promoting tourism in the area (NSW NPWS 2003).

The nearest town is Tarago, located approximately 5 kilometres to the north along Braidwood Road. Tarago is located along the Bombala Railway Line and has a State Heritage listed Railway Station built in 1884 (SHR item #01262) as well as the locally listed Loaded Dog Hotel (Heritage Item ID I592). The hotel was built in 1848 and was a meeting place and 'safe house' for bush rangers in the surrounding area.

3.2. Existing Environment

To provide an understanding of the existing heritage context, searches of all relevant heritage registers was undertaken on 22 November 2024. This search aimed to determine if there were any known places of historic significance located within or in proximity (i.e. 10 kilometres) to the project area. The results of the search are summarised in Table 2, and shown in Figure 4.

The JWF EIS identified two historical heritage sites in relation to the current project area. A historical grave was identified within the northern section of the current project area and a historical mine shaft was recorded outside the current project area to the east. This survey, for the JWF EIS, was targeted to identifying Aboriginal sites and focused on areas with the highest probability of encountering Aboriginal artefacts and sites which does not necessarily correspond to areas with the highest frequency of historical sites. Given that two historical sites were identified during the survey there is the potential for more sites in the project area.

Table 2: Summary of nearest heritage listed items

Register	Nearest Item/s	Significance	Location
Queanbeyan-Palerang Local Environmental Plan (LEP) 2022	Currency Lass Hotel and outbuildings (I332) Hylands Cemetery, including headstones adjacent to vault (I333) Former cold store (I334)	Local	5km southwest
Goulburn Mulwaree LEP	Tarago Railway Station (I591) The Loaded Dog Hotel (formerly Lake Bathurst Hotel) and outbuildings (1848) (I592)	State Local	5.2km northwest
State Heritage Register	Tarago Railway Station group (01262)	State	5.2km northwest
Commonwealth Heritage List	None identified within 10 kilometres	n/a	n/a

Register	Nearest Item/s	Significance	Location
National Heritage List	None identified within 10 kilometres	n/a	n/a
Register of the National Estate	Tarago Railway Station, Goulburn - Braidwood Rd, Tarago, NSW, Australia (1133)	Assumed National	5.2km northwest

3.3. Potential Impacts

The *Heritage Act 1977* (NSW) (Heritage Act) provides protection of the environmental heritage of the state which includes places, buildings, works, relics, movable objects or precincts that are of state or local heritage significance. Section 136 of the Heritage Act provides the mechanism whereby harm to a 'building, work, relic, or place (that is not on the SHR or subject to an Interim Heritage Order) can be stopped or prevented by the Minister for Heritage or Chairperson of the Heritage Council of NSW. To demonstrate that harm is not occurring or is being suitably offset, Statements of Heritage Impact are prepared.

Under Section 140 of the Heritage Act, a person must not disturb or excavate any land knowing or having reasonable cause to suspect that the disturbance or excavation will or is likely to result in a 'relic' being discovered, exposed, moved, damage or destroyed unless the disturbance or excavation is carried out in accordance with a Section 140 permit. As the proposal is seeking approval under Part 4 of the EP&A Act (SSD) an excavation permit under Section 139 of the Heritage Act is not required as outlined in Section 4.41 of the EP&A Act.

Section 4(1) of the Heritage Act (as amended 2009) defines a 'relic' as *"any deposit, artefact, object or material that relates to the settlement of the area that comprises NSW, not being Aboriginal settlement, and is of State or Local heritage significance".* The Heritage Council must be notified on the discovery of a relic under Section 146 of the Heritage Act.

At present there are no listed heritage items in the project area, however the Heritage Act also provides protection for unlisted heritage items and so the project area requires assessment. There is at least one unassessed historical site in the project area (the historical grave site) and another in proximity. The historical archaeological potential of the project area is also at present unknown. Figure 4 outlines the potential historic heritage impacts from the Project.

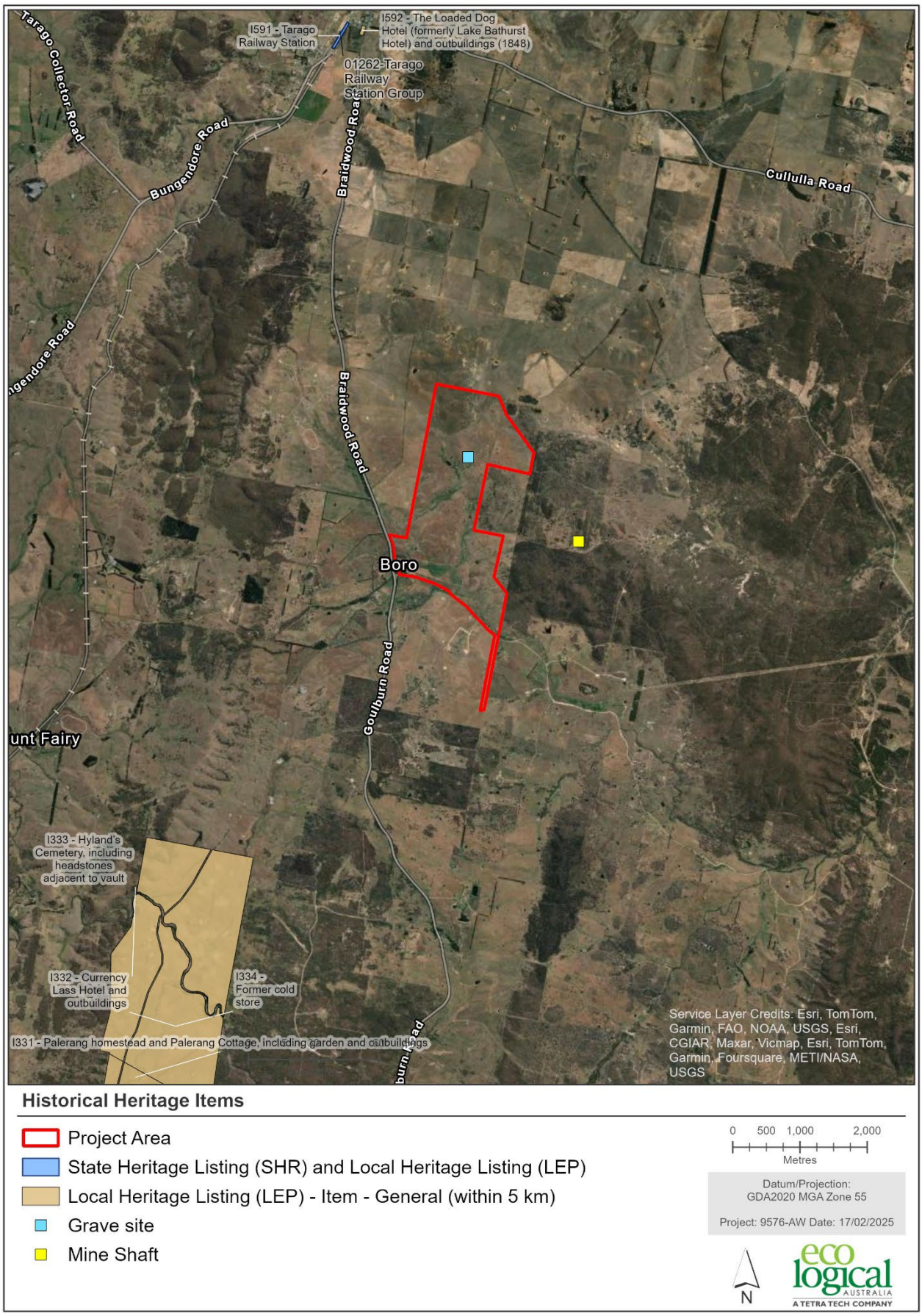


Figure 4 Historical heritage items within vicinity to the project area

3.4. EIS Assessment Approach

Currently the historical heritage value of the project area is unknown with at least one unassessed historical site (the historical grave) within the project area. Under Section 4.2 of the *Large Scale Solar Energy Guideline* (DPHI 2022), non-Indigenous heritage items and places of significance need to be considered when selecting sites for large-scale solar energy development. The presence of historical mining sites in the vicinity also indicates there may be archaeological potential for sites within the project area. Historical mining is a key NSW Historical research theme as defined by the Heritage Council of NSW (Heritage Council 2001).

To understand the potential for historical heritage values on the project area a Historical Heritage Assessment (HHA) will be completed for the Project. This will be prepared regarding the *NSW Heritage Manual* (NSW Heritage Office 1996) acknowledging that most of that document has been superseded. It will follow the relevant sections of the *Statements of heritage impact guidelines* (DPE, 2023), *Investigating heritage significance* (Heritage Council 2021), and *Assessing heritage significance (*DPE 2023). The scope of the HHA will include:

- A search of all relevant statutory heritage registers.
- A review of any relevant historical records, previous assessments, background, maps, plans and aerials and other sources of information regarding heritage items in the region.
- The preparation of a historical context of the project area to highlight key historical phases and activities that have the potential to be significant.
- A field survey of the project area with an emphasis on sites identified during preliminary research and areas with historical archaeological potential and the recording of any historic sites/relics identified.
- Preparation of a HHA which considers the potential for impacts on any significant adjacent heritage items.
- Identification of any necessary impact mitigation and management measures.

4. References

Department of Planning and Environment (NSW), 2023, *Guidelines for preparing a statement of heritage impact*

Department of Planning and Environment (NSW), 2023, *Assessing heritage significance*

Department of Environment, Climate Change and Water (DECCW), 2010a. *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales*.

Department of Environment, Climate Change and Water, 2010b. *Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales*

Department of Environment, Climate Change and Water, 2010c. *Aboriginal consultation requirements for Proponents 2010*

Department of Planning, Housing and Infrastructure, 2022, *Large-Scale Solar Energy Guidelines*

ERM, 2016. *Jupiter Wind Farm Cultural Heritage Assessment.* Prepared for EPYC Pty Ltd.

Heritage Council of NSW, 2021, *Investigating Heritage Significance*

Mathews, R H 1904. *"The Ngunawal language." The Wiradyuri and other languages of NSW*. In Anthropological Institute of Great Britain and Ireland Journal 33: 294-299.

NSW Heritage Office, 1996. *NSW Heritage Manual*

NSW National Parks and Wildlife Service, 2003. *The Bioregions of NSW: Their biodiversity, conservation and history.*

Office of Environment and Heritage (OEH) 2011. *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW*.

Tindale, N 1974. *Aboriginal tribes of Australia: Their Terrain, Environmental Controls, Distribution, Limits, and Proper Names* / by Norman B. Tindale, with an Appendix on Tasmanian Tribes by Rhys Jones, Australian National University Press, 1974.

Appendix A Extensive AHIMS Search

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : Boro Road
Client Service ID : 953345

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status **	SiteFeatures	SiteTypes	Reports
57-3-0253	Chain of Ponds CK IF 1;	AGD	55	747350	6112070	Open site	Valid	Artefact : -	Isolated Find	
	Contact	Recorders	Rod Wellington					Permits		
57-3-0410	Tarago Survey Unit 1/Locale 1 T SU1/L1	AGD	55	742475	6112031	Open site	Valid	Artefact : 300		101377
	Contact	Recorders	Doctor.Rebecca Parkes					Permits	3127	
57-3-0411	Tarago Survey Unit 2/Locale 1 T SU2/L1	AGD	55	742430	6111607	Open site	Valid	Artefact : 18		101377
	Contact	Recorders	Doctor.Rebecca Parkes					Permits	3127	
57-3-0412	Tarago Survey Unit 3/Locale 1 T SU3/L1	AGD	55	742482	6111406	Open site	Valid	Artefact : 25		101377
	Contact	Recorders	Doctor.Rebecca Parkes					Permits	3127	

**** Site Status**
Valid - The site has been recorded and accepted onto the system as valid
Destroyed - The site has been completely impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There is nothing left of the site on the ground but proponents should proceed with caution.
Partially Destroyed - The site has been only partially impacted or harmed usually as consequence of permit activity but sometimes also after natural events. There might be parts or sections of the original site still present on the ground
Not a site - The site has been originally entered and accepted onto AHIMS as a valid site but after further investigations it was decided it is NOT an aboriginal site. Impact of this type of site does not require permit but Heritage NSW should be notified

Report generated by AHIMS Web Service on 22/11/2024 for Chloe Verman for the following area at Datum :GDA, Zone : 55, Eastings : 738432.0 - 748432.0, Northings : 6103373.0 - 6113373.0 with a Buffer of 0 meters.. Number of Aboriginal sites and Aboriginal objects found is 4

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Appendix H Preliminary noise impact assessment

Preliminary Noise Assessment

Boro Solar Farm
Boro, NSW

Prepared for: RPS Consulting Pty Ltd
June 2025
MAC242190-01RP1V3

Muller Acoustic Consulting

Document Information

Preliminary Noise Assessment

Boro Solar Farm

Boro, NSW

Prepared for: RPS Consulting Pty Ltd

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DOCUMENT ID	DATE	PREPARED	SIGNED	REVIEWED	SIGNED
MAC242190-01RP1V3	20 June 2025	Rod Linnett		Oliver Muller	

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1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by RPS Consulting Pty Ltd (RPS) to prepare a Preliminary Noise Assessment (PNA) for the proposed Boro Solar Farm located in Boro, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales (the 'project'). This report presents the methodology and findings of the PNA for the construction, operation and decommissioning of the project.

1.1 Purpose and Objectives

The purpose of the PNA is to quantify potential environmental noise emissions associated with the construction and operation and decommissioning of the project. Where potential impacts are identified, the assessment includes recommendations for potential noise mitigation and management measures.

This PNA is part of the scoping report and would support an application to the Secretary of the NSW Department of Planning, Housing and Infrastructure (DPHI) for Secretary's Environmental Assessment Requirements (SEARs), which would guide the preparation of an Environmental Impact Statement (EIS) to support the development application under Part 4 Division 4.7 of the EP&A Act.

1.2 Scope of the Assessment

The PNA includes the following key tasks:

- review construction and operating and decommissioning activities to identify key noise generating plant, equipment, machinery or activities proposed to be undertaken as part of the project;
- identify the closest and/or potentially most affected receivers within the area of influence to the project;
- determine project-specific construction Noise Management Levels (NMLs), and operational noise criteria;
- undertake 3D noise modelling to predict levels that may occur as a result of the construction, operation and decommissioning of the project at the closest and/or potentially most affected receivers;
- provide a comparison of predicted noise levels against relevant construction and operational (noise) criteria;
- assess the potential noise impacts associated with construction, operational and decommissioning aspects of the project;

- assess the potential noise impacts associated with road traffic noise during construction; and
- provide feasible and reasonable noise mitigation and management measures, and monitoring options, where criteria may be exceeded.

The assessment has been undertaken in accordance with the following documents:

- NSW Department of Environment and Climate Change (DECCW) – NSW Interim Construction Noise Guideline (ICNG), July 2009;
- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI), 2017;
- NSW Department of Environment, Climate Change and Water (DECCW) – NSW Road Noise Policy (RNP), March 2011;
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures; and
- International Standard ISO 9613:1996 - Acoustics - Attenuation of sound during propagation outdoors.

A glossary of terms, definitions and abbreviations used in this report is provided in **Appendix A**.

2 Project Description

Samsung C&T Renewable Energy Australia Pty Ltd (SREA) propose to construct, operate and decommission the 400-megawatt Boro Solar Farm including a Battery Energy Storage System (BESS) with a capacity of 250 megawatts / 1000-megawatt hours storage located on the corner of Boro Road and Braidwood Road in the locale of Boro, NSW.

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

- a solar farm with PV modules mounted on single-axis tracking systems plus associated power conversion units (PCUs), a cable network and internal access tracks.
- a BESS with a capacity of up to 250 megawatts / 1000-megawatt hours storage.
- electrical infrastructure including:
  - a central substation with a step-up facility.
  - underground and some overhead electrical reticulation connecting the PV arrays to the central substation.
  - a new 330-kilovolt switching station and connection via overhead or underground transmission infrastructure to Transgrid's 330-kilovolt overhead transmission line.
- permanent on-site ancillary infrastructure:
  - operation and maintenance facility.
  - internal access road network, with access and egress points from and to public roads.
  - utility and amenity services.
- temporary construction ancillary infrastructure:
  - site compounds, laydown and storage areas.
  - potential construction workforce accommodation on site.
- potential upgrades to the surrounding road network for the expected traffic volumes and oversize and/or overmass vehicles (OSOM) during construction, and maintenance during operation if required
- site access:
  - via Braidwood Road to the west and Boro Road to the south

- transport route would be via the Hume Highway, Braidwood Road and Boro Road.

- land tenure:
  - the project area is freehold land, comprising five lots of privately owned land which has been leased by SREA for the project.

2.1 Description of Proposed Construction Works

The project includes installation of groups of north aligned PV modules on mounting structures with the resultant height of the panels approximately 2.35 metres when horizontal. Approximately 300,000 PV panels would be installed using a single axis tracking system, tilting along the east - west axis. The PV mounting structure would comprise steel posts driven into the ground using a small pile driver. Additional support structures would be attached to the piles, which would then support the PV panels.

Where cabling of each PV array/module to inverters is required to be underground, earthworks would primarily involve trenching. Other minor earthworks would be required to support installation of ancillary infrastructure, BESS foundations and associated cabling connections. Most of the infrastructure would be pre-fabricated off- site, delivered and assembled on-site. Construction activities associated with the BESS would involve the placement of packaged/ skid type equipment at the appropriate location (by crane or crane truck) and is a negligible noise source/event.

It is anticipated that the solar farm would be constructed over a twenty four month period during standard construction hours.

During construction, traffic generated by the project would include employee and delivery vehicles. During the peak construction period, the traffic volume is expected to be up to a maximum of eight (8) heavy vehicles (semi-trailers or B-doubles) per hour and up to 40 light vehicles for worker transport per day.

Decommissioning would be similar activities and equipment used for construction, but would be generally less intensive.

2.2 Description of Proposed Operation

PV infrastructure on site would comprise of groups of PV panels installed in rows. The PV modules will be on a single axis tracker system which would follow the sun from east to west during the day. Electrical cabling would be attached beneath the modules and would connect the individual PV modules to each other. The project would be contained solely within the site as shown in **Figure 1**. Project layout drawings are presented in **Appendix B**.

The project would operate 24 hours a day, 7 days a week. During operation, the PV panels would generate electricity which would be fed into the power grid with excess solar energy from the PV system being stored in the BESS.

Key noise emissions from the operation of the project are associated with the inverter, batteries and transformer(s). The BESS typically consists of containerised battery modules fitted with relevant switches and controllers. As this equipment generates heat, a Heating Ventilation and Air Conditioning (HVAC) system is required to provide cooling and is the primary noise source associated with the BESS. The HVAC system consists of an air conditioner, heat exchanger and ventilation fans or liquid cooling depending on equipment chosen.

When required, maintenance activities would occur during standard working hours (except for emergencies) and are expected to include:

- panel cleaning;
- repairs or replacement of infrastructure, as required; and
- land management including mowing to control vegetation as required.

Typical noise sources associated with maintenance activities would include light vehicle movements on site and maintenance of equipment.

2.3 Receiver Review

Using aerial photography, geospatial information and other project design information, MAC has identified the following potentially sensitive receivers that may be affected by noise from construction, operation and decommissioning activities and project related road traffic. Table 1 presents a summary of receiver identification, type, address and coordinates. These are reproduced visually in Figure 1.

Table 1 Receiver Locations			
Receiver ID	Receiver Type	Coordinates (GDA2020/MGA55)	
		Easting	Northing
R01	Rural Residential	742593	6107913
R02	Rural Residential	742512	6107971
R03	Rural Residential	742313	6107846
R04	Rural Residential	742299	6107519
R05	Rural Residential	742480	6107077
R07	Rural Residential	743594	6106704
R08	Rural Residential	744068	6106727
R09	Rural Residential	745033	6106579
R10	Rural Residential	744493	6106069
R11	Rural Residential	742924	6106131
R12	Rural Residential	741264	6107048
R13	Rural Residential	741205	6107648
R14	Rural Residential	741564	6110437
R15	Rural Residential	741557	6110618
R16	Rural Residential	745699	6110375
R17	Rural Residential	745778	6110502
R18	Rural Residential	745995	6110258
R19	Rural Residential	746213	6109847

Note: There is no receiver R06. Preliminary surveys identified a receiver ID R06, which was later verified to be a farm shed.

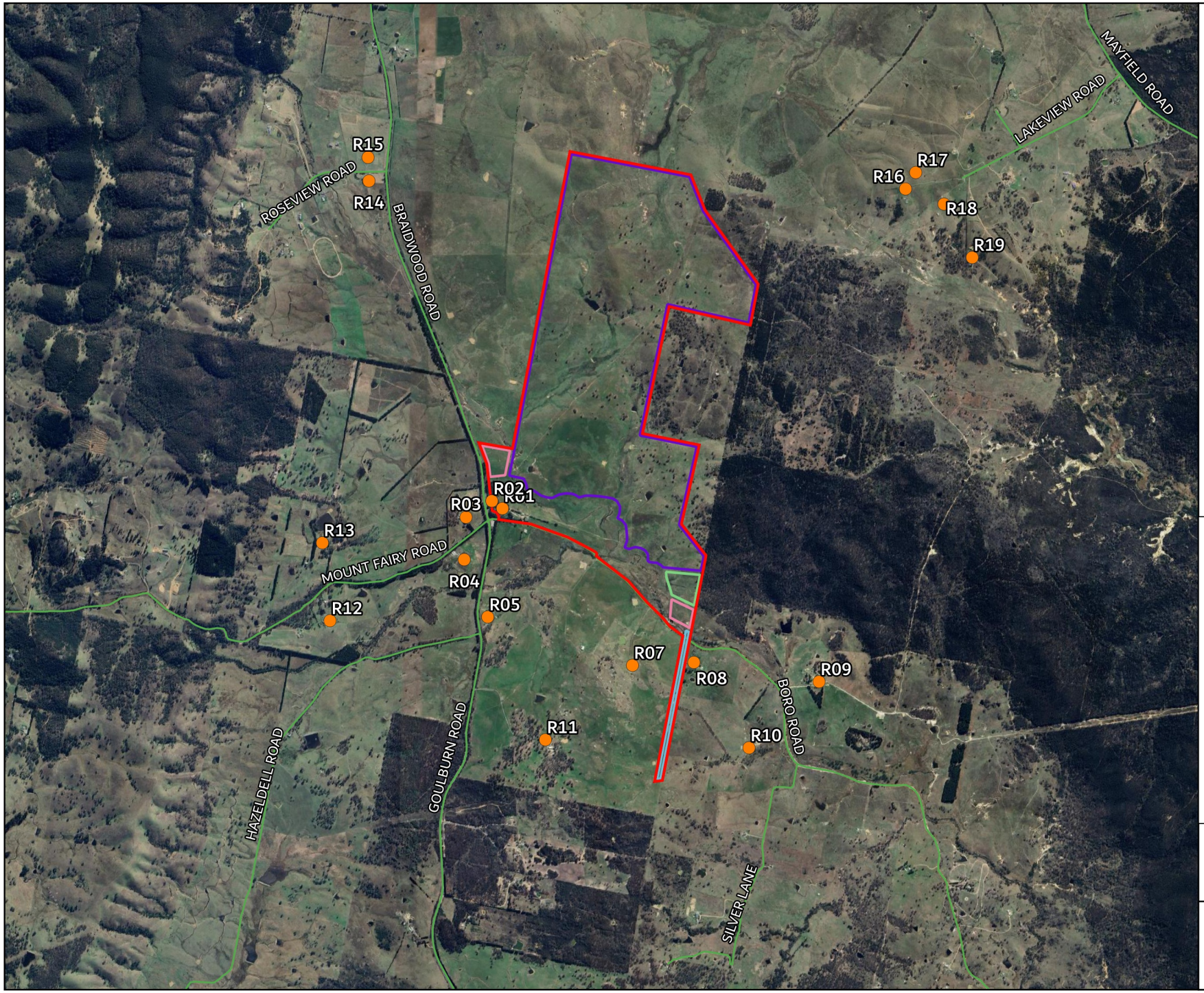


FIGURE 1

Project Layout

MAC242190-01

Boro Solar Farm

KEY

- Receiver
- Project Area
- BESS, Substation
- Construction Compound
- Solar Array
- Transmission Easement

0 300 600 900 1,200 1,500 m

N

MAC
Muller Acoustic Consulting

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3 Noise Policy and Guidelines

3.1 Noise Policy for Industry

The EPA released the Noise Policy for Industry (NPI) in October 2017 which provides a process for establishing noise criteria for consents and licenses enabling the EPA to regulate noise emissions from scheduled premises under the Protection of the Environment Operations Act 1997.

The objectives of the NPI are to:

- provide noise criteria that is used to assess the change in both short term and long-term noise levels;
- provide a clear and consistent framework for assessing environmental noise impacts from industrial premises and industrial development proposals;
- promote the use of best-practice noise mitigation measures that are feasible and reasonable where potential impacts have been identified; and
- support a process to guide the determination of achievable noise limits for planning approvals and/or licences, considering the matters that must be considered under the relevant legislation (such as the economic and social benefits and impacts of industrial development).

The policy sets out a process for industrial noise management involving the following key steps:

1. Determine the Project Noise Trigger Levels (PNTLs) (ie criteria) for a development. These are the levels (criteria), above which noise management measures are required to be considered. They are derived by considering two factors: shorter-term intrusiveness due to changes in the noise environment; and maintaining the noise amenity of an area.
2. Predict or measure the noise levels produced by the development with regard to the presence of annoying noise characteristics and meteorological effects such as temperature inversions and wind.
3. Compare the predicted or measured noise level with the PNTL, assessing impacts and the need for noise mitigation and management measures.
4. Consider residual noise impacts - that is, where noise levels exceed the PNTLs after the application of feasible and reasonable noise mitigation measures. This may involve balancing economic, social and environmental costs and benefits from the proposed development against the noise impacts, including consultation with the affected community where impacts are expected to be significant.

5. Set statutory compliance levels that reflect the best achievable and agreed noise limits for the development.

6. Monitor and report environmental noise levels from the development.

3.1.1 Project Noise Trigger Levels (PNTL)

The policy sets out the procedure to determine the PNTLs relevant to an industrial development. The PNTL is the lower (ie, the more stringent) of the **Project Intrusiveness Noise Level** (PINL) and **Project Amenity Noise Level** (PANL) determined in accordance with Section 2.3 and Section 2.4 of the NPI.

3.1.2 Rating Background Level (RBL)

The Rating Background Level (RBL) is a determined parameter from noise monitoring and is used for assessment purposes. As per the NPI, the RBL is an overall single figure background level representing each assessment period (day, evening and night) over the noise monitoring period.

For low noise environments, such as rural environments, minimum assumed RBLs apply within the NPI and can be adopted in lieu of completing background noise measurements. This is considered the most conservative method for establishing noise criteria for a project. The minimum assumed RBLs are as follows:

- Minimum Day RBL = 35dBA;
- Minimum Evening RBL = 30dBA; and
- Minimum Night RBL = 30dBA.

Due to the rural nature of the locality, the PINLs for the Project have been determined based on the minimum RBL+5dBA.

3.1.3 Project Intrusiveness Noise Level (PINL)

The PINL ($LA_{eq(15min)}$) is the RBL + 5dB and seeks to limit the degree of change a new noise source introduces to an existing environment. Hence, when assessing intrusiveness, background noise levels need to be measured.

3.1.4 Project Amenity Noise Level (PANL)

The PANL is relevant to a specific land use or locality. To limit continuing increases in intrusiveness levels, the ambient noise level within an area from all combined industrial sources should remain below the recommended amenity noise levels specified in Table 2.2 (of the NPI). The NPI defines two categories of amenity noise levels:

- **Amenity Noise Levels (ANL)** – are determined considering all current and future industrial noise within a receiver area; and
- **Project Amenity Noise Level (PANL)** – is the recommended level for a receiver area, specifically focusing the project being assessed.

Additionally, Section 2.4 of the NPI states: "to ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows":

PANL for new industrial developments = recommended **ANL** minus 5dBA.

The following exceptions apply when deriving the PANL:

- areas with high traffic noise levels;
- proposed developments in major industrial clusters;
- existing industrial noise and cumulative industrial noise effects; and
- greenfield sites.

Where relevant this assessment has considered influences of traffic with respect to amenity noise levels (ie areas where existing traffic noise levels are 10dB greater than the recommended amenity noise level).

The recommended amenity noise levels as per Table 2.2 of the NPI are reproduced in **Table 2**.

Table 2 Amenity Noise Levels			
Receiver Type	Noise Amenity Area	Time of day	Recommended amenity noise level dB LAeq(period)
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks.	See column 4	See column 4	5dB above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day
School Classroom	All	Noisiest 1-hour period when in use	35 (internal) 45 (external)
Hospital ward			
- internal	All	Noisiest 1-hour	35
- external	All	Noisiest 1-hour	50
Place of worship - internal	All	When in use	40
Passive Recreation	All	When in use	50
Active Recreation	All	When in use	55
Commercial premises	All	When in use	65
Industrial	All	When in use	70

Notes: The recommended amenity noise levels refer only to noise from industrial noise sources. However, they refer to noise from all such sources at the receiver location, and not only noise due to a specific project under consideration. The levels represent outdoor levels except where otherwise stated.

Types of receivers are defined as rural residential; suburban residential; urban residential; industrial interface; commercial; industrial – see Table 2.3 and Section 2.7 of the NPI.

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

3.1.5 Cumulative Noise

Section 2.4 of the NPI states "*where the Project Amenity Noise Level applies and it can be met, no additional consideration of cumulative industrial noise is required.*"

3.1.6 Maximum Noise Assessment Trigger Levels

The potential for sleep disturbance from maximum noise level events from a project during the night-time period needs to be considered. The NPI considers sleep disturbance to be both awakenings and disturbance to sleep stages.

Where night-time noise levels from a development/premises at a residential location exceed the following criteria, a detailed maximum noise level event assessment should be undertaken:

- $L_{Aeq(15min)}$ 40dB or the prevailing RBL plus 5dBA, whichever is the greater, and/or
- L_{Amax} 52dB or the prevailing RBL plus 15dBA, whichever is the greater.

A detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period. Other factors that may be important in assessing the impacts on sleep disturbance include:

- how often the events would occur;
- the distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the development;
- whether there are times of day when there is a clear change in the noise environment (such as during early morning shoulder periods); and
- current understanding of effects of maximum noise level events at night.

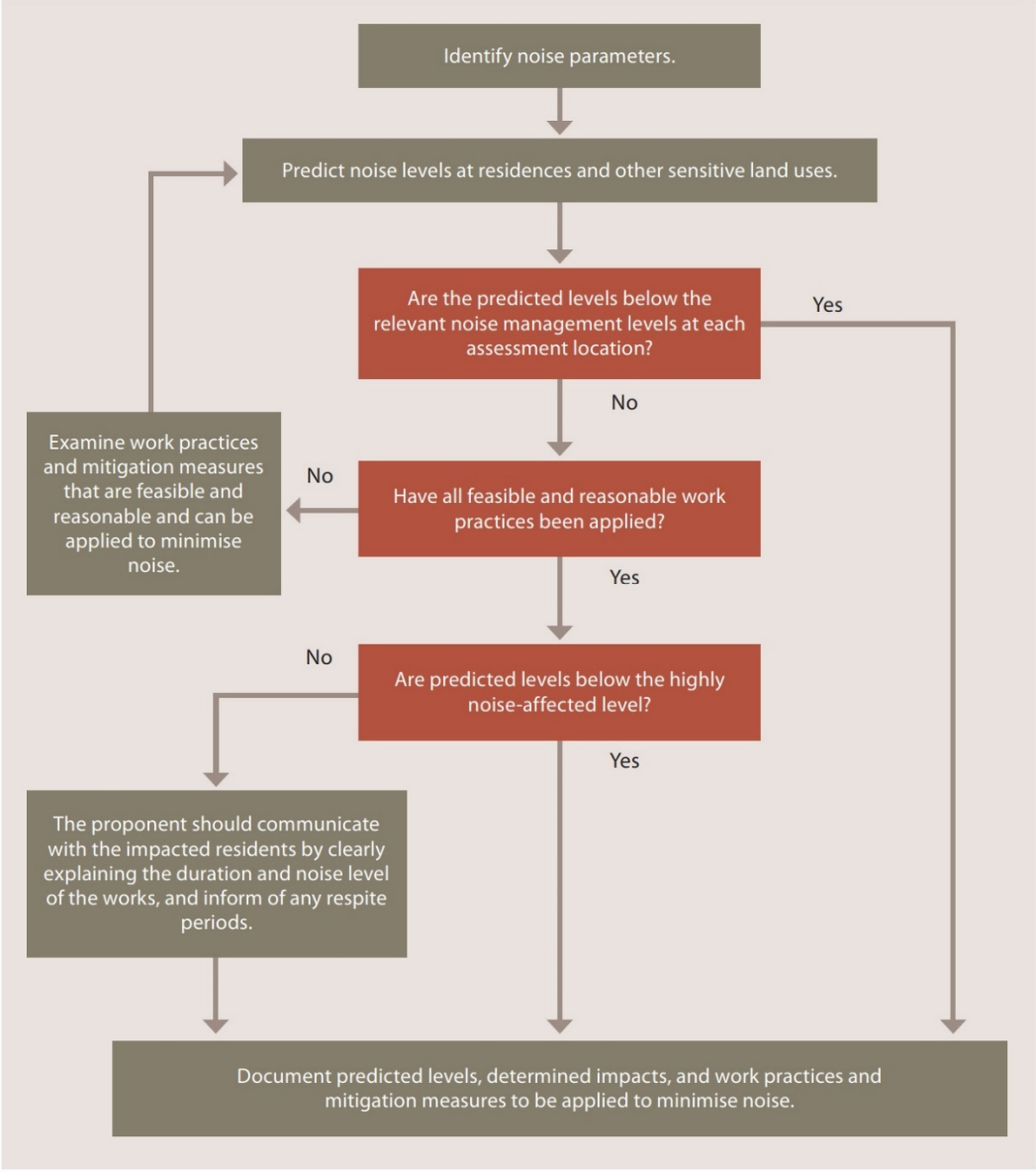
3.2 Interim Construction Noise Guideline

The ICNG sets out procedures to identify and address the impacts of construction noise on residences and other sensitive land uses. The ICNG would also be the appropriate guideline to assess potential noise impacts from decommissioning. This section provides a summary of noise objectives that are applicable to the assessment. The ICNG provides two methodologies for the assessment of construction noise emissions:

- Quantitative, which is suited to major construction projects with typical durations of more than three weeks; and
- Qualitative, which is suited to short term infrastructure maintenance (< three weeks).

The qualitative assessment methodology is a more simplified approach that relies on noise management strategies. This study has adopted a quantitative assessment approach which is summarised in **Figure 2.** The quantitative approach includes identification of potentially affected receivers, derivation of the construction noise management levels, quantification of potential noise impact at receivers via predictive modelling and, provides management and mitigation recommendations.

Figure 2 Quantitative Assessment Processes for Assessing and Managing Construction Noise



Source: Department of Environment and Climate Change, 2009.

3.2.1 Standard Hours for Construction

Table 3 summaries the ICNG recommended standard hours for construction works.

Table 3 Recommended Standard Hours for Construction

Daytime	Construction Hours
Monday to Friday	7am to 6pm
Saturdays	8am to 1pm
Sundays or Public Holidays	No construction

These recommended hours do not apply in the event of direction from police, or other relevant authorities, for safety reasons or where required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.

Construction activities are anticipated to be undertaken during standard construction hours.

3.2.2 Out of Hours Construction

Works conducted outside of recommended standard hours are considered out of hours work (OOH). The ICNG suggests that any request to vary the hours of construction activities as identified above shall be:

- considered on a case by case basis or activity-specific basis;
- accompanied by details of the nature and need for activities to be undertaken during the varied construction hours;
- accompanied by written evidence that activities undertaken during the varied construction hours are strongly justified;
- appropriate consultation with potentially affected receivers and notification of the relevant regulatory authorities has occurred; and
- all practicable and reasonable mitigation measures would be put in place.

3.2.3 Construction Noise Management Levels

Section 4 of the ICNG (DECC, 2009) details the quantitative assessment method involving predicting noise levels and comparing them with the Noise Management Level (NML) and are important indicators of the potential level of construction noise impact. **Table 4** reproduces the ICNG Noise Management Level (NML) for residential receivers. The NML is determined by adding 10dB (standard hours) or 5dB (OOH) to the Rating Background Level (RBL) for each specific assessment period.

Table 4 Noise Management Levels

Time of Day	Management Level LAeq(15min)[1]	How to Apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays.	Noise affected RBL + 10dB	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured LAeq(15min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. The proponent should also inform all potentially impacted residents of the nature of work to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account times identified by the community when they are less sensitive to noise such as before and after school for work near schools, or mid-morning or mid-afternoon for work near residences; and if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours.	Noise affected RBL + 5dB	A strong justification would typically be required for work outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable practices have been applied and noise is more than 5dBA above the noise affected level, the proponent should negotiate with the community. For guidance on negotiating agreements see section 7.2.2.

Note 1: The Rating Background Level (RBL) is an overall single figure background level representing each assessment period over the whole monitoring period. The RBL is used to determine the construction noise management levels for noise assessment purposes and is the median of the ABL's.

3.2.4 Construction Sleep Disturbance

Section 4.3 of the ICNG (DECC, 2009) states that a sleep disturbance assessment is required where construction activities are planned to occur for more than two consecutive nights. Given that construction activities are anticipated to occur during standard construction hours, sleep disturbance has not been considered in this assessment.

3.3 Road Noise Policy

The road traffic noise criteria are provided in the Department of Environment, Climate Change and Water NSW (DECCW), Road Noise Policy (RNP), 2011. The policy sets out noise criteria applicable to different road classifications for the purpose of quantifying traffic noise impacts. Road noise criteria relevant to this assessment are presented in detail in **Section 4.4**.

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4 Assessment Criteria

Background noise monitoring has not been conducted for this project and hence, the minimum assumed Rating Background Levels (RBL) of 35dBA for the daytime period and 30dBA for the evening and night time periods have been adopted in accordance with NPI methodology.

4.1 Operational Noise

4.1.1 Project Intrusiveness Noise Levels

The PINLs for the project are presented in **Table 5** and have been determined based on the RBLs +5dBA.

Table 5 Project Intrusiveness Noise Levels

Receiver	Period[1]	Adopted RBL dB LA90(period)	PINL dB LAeq(15min)
All Residential Receivers	Day	35	40
	Evening	30	35
	Night	30	35

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

4.1.2 Project Amenity Noise Levels

The PANL for relevant residential receivers and other receiver types (ie non-residential) potentially affected by the project are presented in **Table 6.**

Table 6 Amenity Noise Levels and Project Amenity Noise Levels

Receiver Type	Noise Amenity Area	Assessment Period[1]	Recommended ANL dB LAeq(period)	ANL dB LAeq(period)[2]	PANL dB LAeq(15min)[3]
Residential	Rural	Day	50	50	53
		Evening	45	45	48
		Night	40	40	43

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note 2: Project Amenity Noise Level equals the Amenity Noise Level as there is no other industry in the area.

Note 3: Includes a +3dB adjustment to the amenity period level to convert to a 15-minute assessment period as per Section 2.2 of the NPI.

4.1.3 Project Noise Trigger Levels

The PNTLs are the lower of either the PINLs or the PANLs. **Table 7** presents the derivation of the PNTLs in accordance with the methodologies outlined in the NPI. For this assessment the night time PNTL of 35dB $L_{Aeq(15min)}$ is the limiting criteria for residential receivers.

Table 7 Project Noise Trigger Levels

Catchment	Assessment Period[1]	PINL dB $L_{Aeq(15min)}$	PANL dB $L_{Aeq(15min)}$	PNTL dB $L_{Aeq(15min)}$
Residential Receivers (Rural)	Day	40	53	40
	Evening	35	48	35
	Night	35	43	35

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

4.1.4 Maximum Noise Trigger Levels

The maximum noise trigger levels shown in **Table 8** are based on night time RBLs and trigger levels as per Section 2.5 of the NPI. The trigger levels would be applied to transient noise events that have the potential to cause sleep disturbance.

Table 8 Maximum Noise Trigger Levels

Residential Receivers			
$L_{Aeq(15min)}$		L_{Amax}	
40dB $L_{Aeq(15min)}$ or RBL + 5dB		52dB L_{Amax} or RBL + 15dB	
Trigger	40	Trigger	52
RBL +5dB	35	RBL +15dB	45
Highest	**40**	**Highest**	**52**

Note: Monday to Saturday; Night 10pm to 7am. On Sundays and Public Holidays Night 10pm to 8am.

Note: NPI identifies that maximum of the two values is to be adopted which is shown in bold font.

4.2 Construction Noise Management Levels

The relevant Noise Management Levels (NMLs) for standard construction hours are presented in **Table 9**.

Table 9 Construction Noise Management Levels

Receiver Type	Assessment Period[1]	Adopted RBL dB L_{A90}	NML dB $L_{Aeq(15min)}$
Rural Residential	Standard Hours	35	45 (RBL+10dBA)

Note 1: See Table 3 for Standard Recommended Hours for Construction.

4.3 Construction Vibration

Department of Environment and Conservation (DEC) 2006, *Assessing Vibration: A Technical Guideline* (the 'Guideline') provides guidance on determining effects of vibration on buildings occupants. The guideline does not address vibration induced damage to structures, blast induced vibration effects or structure borne noise effects.

The Construction Noise & Vibration Strategy (CNVS, V4.2 Transport for NSW, 2020) sets out safe working distances to achieve the human response criteria for vibration. The key vibration generating source proposed to be used is small pile driver used to drive the piles into the ground on which the PV mounting structures are mounted and vibratory roller for road construction. The CNVS sets a safe working distance of 50m for a hammer piling rig and 100m for a large vibratory roller to achieve the residential human response criteria for continuous vibration. Therefore, as the nearest non project related receivers to the project are greater than 100m from the project boundary, human exposure to vibration is anticipated to be minimal. Furthermore, where the human response criteria are satisfied, the structural or cosmetic criteria for sensitive receivers will be achieved. Therefore, vibration impacts are not considered to be a significant issue and have not been considered further in this assessment.

4.4 Road Traffic Noise

It is acknowledged that the functional classification of roads connecting to arterial roads such as major highways are 'Collector Roads' in accordance with the Roads and Maritime Noise Criteria Guideline (April 2015). However, the Road Noise Policy does not provide separate noise criteria for Collector Roads but applies the sub-arterial category to all roads that are not classified as local roads and hence, the 'sub arterial road' category has been adopted for Braidwood Road and Local Road category has been adopted for Boro Road. The relevant road traffic noise criteria are provided in the RNP and are presented in **Table 10** for residential receivers.

Table 10 Road Traffic Noise Assessment Criteria			
Road category	Type of project/development	Assessment Criteria – dBA	
		Day (7am to 10pm)	Night (10pm to 7am)
Freeways/arterial/ sub-arterial Roads	Existing residences affected by additional traffic on freeways/arterial/sub-arterial roads generated by land use developments	60dB LAeq(15hr)	55dB LAeq(9hr)
Local roads	Existing residences affected by additional traffic on local roads generated by land use developments	55dB LAeq(1hr)	50dB LAeq(1hr)

Additionally, the RNP states where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to 2dBA, which is generally accepted as the threshold of perceptibility to a change in noise level.

5 Modelling Methodology

A computer model using DGMR (iNoise, Version 2024) noise modelling software was used to quantify noise emissions from the project. iNoise is an intuitive and quality assured software for industrial noise calculations in the environment. 3D noise modelling is considered industry best practice for assessing noise emissions from projects.

The model incorporated a three-dimensional digital terrain map giving all relevant topographic information used in the modelling process. Additionally, the model uses relevant noise source data, ground type, attenuation from barrier or buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers. Where relevant, modifying factors in accordance with Fact Sheet C of the NPI have been applied to calculations.

The model calculation method used to predict noise levels was in accordance with ISO 9613-1 'Acoustics - Attenuation of sound during propagation outdoors. Part 1: Calculation of the absorption of sound by the atmosphere' and ISO 9613-2 'Acoustics - Attenuation of sound during propagation outdoors. Part 2: General method of calculation' including corrections for meteorological conditions using CONCAWE[1]. The ISO 9613 standard from 1996 is the most used noise prediction method worldwide. Many countries refer to ISO 9613 in their noise legislation. However, the ISO 9613 standard does not contain guidelines for quality assured software implementation, which leads to differences between applications in calculated results. In 2015 this changed with the release of ISO/TR 17534-3. This quality standard gives clear recommendations for interpreting the ISO 9613 method. iNoise fully supports these recommendations. The models and results for the 19 test cases are included in the software.

5.1 Operational Assessment Methodology

For this assessment, operational noise predictions were modelled for a typical worst case operational scenario over a 15-minute assessment period based on the operational assumptions and sound power levels in **Table 11**. Equipment noise emission data used in modelling for this assessment were obtained from manufacturers data or the MAC database. Where relevant, modifying factors in accordance with Section 3.3 and Fact Sheet D of the NPI have been applied to calculations.

[1] Report no. 4/18, "the propagation of noise from petroleum and petrochemical complexes to neighbouring communities", Prepared by C.J. Manning, M.Sc., M.I.O.A. Acoustic Technology Limited (Ref.AT 931), CONCAWE, Den Haag May 1981

Table 11 Operational Equipment Sound Power Levels, Lw dBA re 10^{-12} Watts								
Noise Source/Item	Source Type	Lw/ Item	Quantity	Adjustments, dB				Total Lw
				Duration per 15 minutes	Quantity	Mitigation	Penalty	
PV Panel Tracking Motor	Area	50	4,300	-12[1]	36	-5[1]	10	79
PV Panel Tracking Motor Reset	Area	50	4,300	-5[2]	36	-5[1]	10	86
Power Conversion Unit	Point	77	100	Constant	20	--	5[3]	102
BESS Storage Module	Area (Centralised)	78	400	Constant	26	--	5[3]	109
Substation	Area	90	1	Constant	--	--	5[3]	95

Note 1: Tracking motor is situated underneath the PV panel, -5dB attenuation applied to account for shielding provided by the panel. Tracking motor operates 1 minute per 15 minutes.

Note 2: Tracking motor operates up to 5 minute per 15 minutes during reset.

Note 3: Modifying factor penalty of +5dB added for low frequency and tonality at 50Hz.

During the day, the panels track the sun from east to west, operating less than one minute every 15 minutes. At sundown or before sunrise, the trackers reposition from a 60-degree tilt in the west to a 30-degree tilt in the east to the east. The worst-case emissions scenario is when the panels reposition or reset requiring all trackers to operation simultaneously for up to five minutes.

5.1.1 Meteorological Analysis

Noise emissions can be influenced by prevailing weather conditions. Light stable winds (<3m/s) and temperature inversions have the potential to increase noise at a receiver.

Fact Sheet D of the NPI provides two options when considering meteorological effects:

- adopt the noise enhancing conditions for all assessment periods without an assessment of how often the conditions occur – a conservative approach that considers a source to receiver winds for all receivers and F class temperature inversions with wind speeds up to 2m/s at night; or
- determine the significance of noise enhancing conditions. This requires assessing the significance of temperature inversions (F and G Class stability categories) for the night time period and the significance of light winds up to 3m/s for all assessment periods during stability categories other than E, F or G.

Standard meteorological conditions and noise-enhancing meteorological conditions as defined in Table D1of the NPI are reproduced in **Table 12**.

Table 12 Standard and Noise-Enhancing Meteorological Conditions

Meteorological Conditions	Meteorological Parameters
Standard Meteorological Conditions	Day/evening/night: stability categories A–D with wind speed up to 0.5m/s at 10m AGL.
Noise Enhancing Meteorological Conditions	Daytime/evening: stability categories A–D with light winds (up to 3 m/s at 10m AGL). Night-time: stability categories A–D with light winds (up to 3m/s at 10m AGL) and/or stability category F with winds up to 2m/s at 10 m AGL.

A detailed analysis of the significance of noise enhancing conditions has not been undertaken and hence, the (worst case) NPI noise enhancing meteorological conditions have been applied to the noise modelling assessment and are presented in **Table 13**.

Table 13 Modelled Meteorological Parameters

Assessment Condition[1]	Temperature	Wind Speed[2]/ Direction	Relative Humidity	Stability Class[2]
Day	20°C	3m/s all directions	50%	D
Evening	10°C	3m/s all directions	50%	D
Night	10°C	2m/s all directions	50%	F

Note 1: Day 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening 6pm to 10pm; Night - the remaining periods.

Note 2: Implemented using CONCAWE meteorological corrections.

5.2 Construction Assessment Methodology

Construction activities are proposed to be progressive (trenching, piling and assembly) and would occur at several locations simultaneously. Noise emissions were modelled for the following scenarios:

- general construction activities- fencing, minor earthworks, clearing, utility adjustments, erection of site fencing and workers compounds and accommodation;
- trenching for cabling;
- piling of panel supports;
- assembly of the panels;
- transport (on site);
- BESS installation;
- transmission line connection; and
- decommissioning.

It is envisaged that all four construction scenarios have the potential to occur simultaneously at up to two key locations across the site. Noise emission data and assumptions used in this assessment are summarised in **Table 14**. All significant noise generating construction activities would be limited to standard construction hours. Where low intensity construction activities are required to be undertaken outside standard construction hours, such as cabling, minor assembly, use of hand tools etc, they would be managed such that they are not audible at any residential receivers.

Table 14 Construction Equipment Sound Power Levels, Lw dBA (re 10^{-12} Watts)

Noise Source/Item	Utilisation %	Quantity	Lw/Item	Total Lw
General Construction & Decommissioning				
General Construction Activities	90	1	108	108
Total – General Construction[1]				**108**
Transmission Line Connection				
Backhoe	80	1	104	103
Mobile Crane	75	1	100	99
Total – Transmission Line Connection[2]				**104**
Trenching & Earthworks				
Backhoe	80	1	104	103
Light vehicle	25	2	76	73
Total – Trenching & Earthworks				**102**
Piling				
Piling Rig (hydraulic)	80	1	112	111
Tele-handler	75	1	106	105
Light vehicle	25	2	73	70
Total – Piling				**112**
Assembly				
Tele-handler	75	1	106	105
Light vehicle	25	1	73	67
Hand tools/Power tools	30	1	102	97
Welder	30	1	105	100
Total – Assembly				**106**
Transport (on site)				
Heavy vehicle	40	1	104	101
Tele-handler	50	1	106	103
Total – Transport				**105**

Note 1: General construction activities would involve several and varied equipment for various tasks, resulting in similar overall sound power level.

Note 2: Typical equipment required for underground cable connection or overland poles.

5.3 Road Traffic Noise Assessment Methodology

Due to the low traffic volume generated by the project over a typical day during the construction phase, road traffic noise calculation methods such as Calculation of Road Traffic Noise (CRTN - ISBN 0 11 550847 3) by Department of Transport (UK) 1988 or Traffic Noise Model (TNM) by the United States Department of Transport, Federal Highway Administration are not considered appropriate as they are primarily intended to calculate noise emissions from motorways and highways. Whilst each method has a low volume correction, the project traffic volume is out of the scope of these methods.

Therefore, road traffic noise has been calculated using the Traffic Noise Model (TNM) by the United States Department of Transport, Federal Highway Administration Low Volume Calculation Tool at an offset distance of 15m for receivers along the transport route using the parameters presented in **Table 15.**

Table 15 Road Traffic Noise Modelling Parameters

Noise Source/Item	Lw dBA re 10^{-12} W	Movements/hr[1]	Speed, km/h	Source Height, m[2]
Heavy vehicle (rigid, semi trailer or B-double)	104	16	50	1.5
Light Vehicle	96	80	50	0.75

Note 1: Each vehicle that enters the project site consists of two movements – one movement entering the project area; and one movement leaving the project area.

Note 2: Height above ground level.

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6 Noise Assessment Results

6.1 Operational Noise Assessment

Noise levels were predicted at each assessed receiver at a height of 1.5m above ground level during worst case noise enhancing meteorological conditions. **Table 16** summarises the predicted operational noise levels which are demonstrated to comply with the PNTLs at all non-project related residential receivers. Noise contours for typical operational noise levels during the night-time period are presented in **Figure 3** and for tracking motor resetting in **Figure 4**.

Table 16 Predicted Operational Noise Levels

Receiver ID	Highest Predicted Noise Level Day, Evening, Night dB $LA_{eq(15min)}$		Limiting Night PNTL dB $LA_{eq(15min)}$	Compliance Achieved
	Normal Operations	Trackers Repositioning		
R01	<30	<30	35	Yes
R02	<30	<30	35	Yes
R03	<30	<30	35	Yes
R04	<30	35	35	Yes
R05	<30	<30	35	Yes
R07	32	33	35	Yes
R08	<30	31	35	Yes
R09	<30	<30	35	Yes
R10	<30	<30	35	Yes
R11	<30	<30	35	Yes
R12	<30	<30	35	Yes
R13	<30	<30	35	Yes
R14	<30	<30	35	Yes
R15	<30	<30	35	Yes
R16	<30	<30	35	Yes
R17	<30	<30	35	Yes
R18	<30	<30	35	Yes
R19	<30	<30	35	Yes

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

6.1.1 Maximum Noise Level Assessment

A detailed maximum noise level assessment is not required as predicted noise levels for night time operations do not exceed the maximum noise trigger levels of 40dB $LA_{eq(15min)}$ and there are no operational noise sources that generate significant maximum noise events.

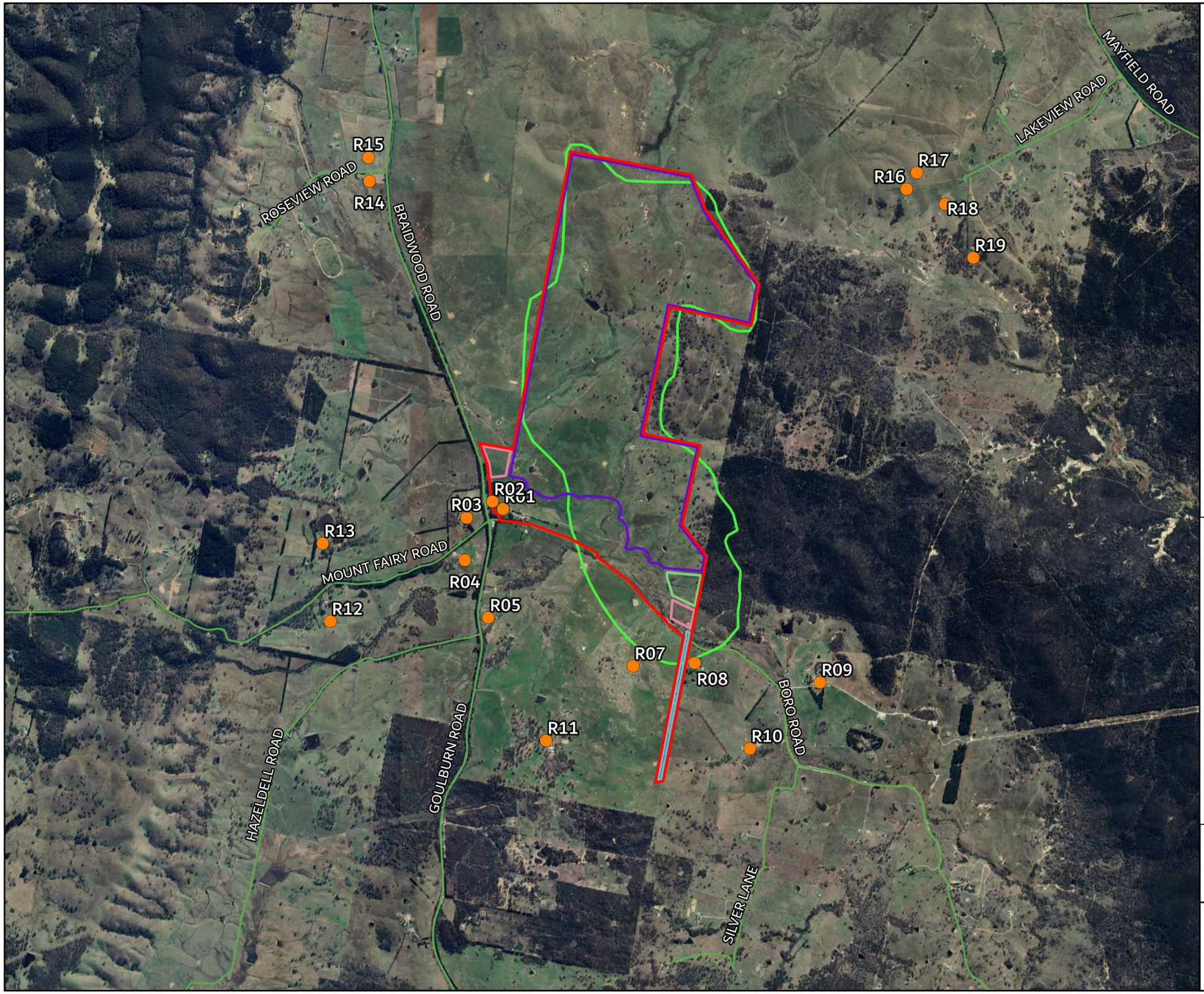


FIGURE 3

Predicted Noise Level - Night Operation

Noise Enhancing Conditions

MAC242190-01

Boro Solar Farm

KEY

- Receiver
- Project Area
- BESS, Substation
- Construction Compound
- Solar Array
- Transmission Easement
- 35dB LAeq(15min)

0 300 600 900 1,200 1,500 m

N

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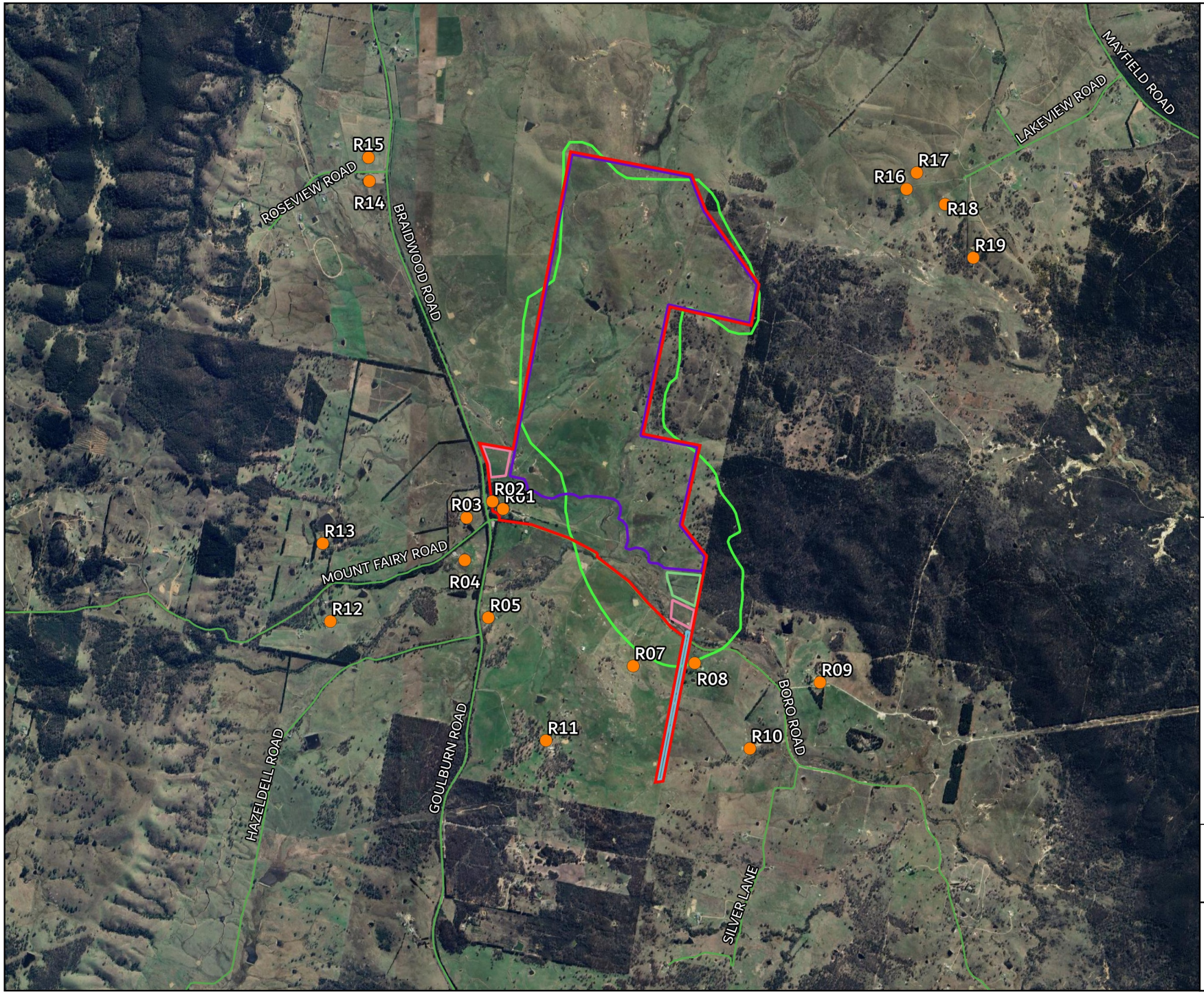


FIGURE 4

Predicted Noise Level - Night

Operation Tracker Reset

Noise Enhancing Conditions

MAC242190-01

Boro Solar Farm

KEY

- Receiver
- Project Area
- BESS, Substation
- Construction Compound
- Solar Array
- Transmission Easement
- 35dB LAeq(15min)

0 300 600 900 1,200 1,500 m

N

MAC
Muller Acoustic Consulting

6.2 Construction Noise Assessment

Noise levels were predicted to all identified receivers at 1.5m above ground level based on typical construction activities (piling, assembly, trenching, on site transport) during standard construction hours. Table 17 summarises the predicted noise level range and maximum predicted noise level for each of the construction scenarios (trenching, piling assembly and transport (on site) at identified receivers.

Table 17 Predicted Construction Noise Levels

Receiver ID	Predicted Noise Level Range dB $LA_{eq(15min)}$[1]	Highest Predicted Noise Level dB $LA_{eq(15min)}$	NML Standard Hours dB $LA_{eq(15min)}$	Compliance Achieved
R01	35 - 41	41	45	Yes
R02	34 - 41	41	45	Yes
R03	30 - 37	37	45	Yes
R04	<30 - 34	34	45	Yes
R05	<30 - 31	31	45	Yes
R07	<30 - 30	30	45	Yes
R08	<30	<30	45	Yes
R09	<30	<30	45	Yes
R10	<30	<30	45	Yes
R11	<30	<30	45	Yes
R12	<30	<30	45	Yes
R13	<30	<30	45	Yes
R14	<30	<30	45	Yes
R15	<30	<30	45	Yes
R16	<30	<30	45	Yes
R17	<30	<30	45	Yes
R18	<30	<30	45	Yes
R19	<30	<30	45	Yes

Note 1: Noise levels from construction activities vary due to their position across the project site with respect to surrounding receivers.

Noise levels are expected to satisfy the NMLs at all identified receivers when works are at their nearest proximity during standard construction hours.

Predicted noise levels for specific construction scenarios – BESS construction and transmission line connection during standard construction hours at identified receivers are presented in Table 18.

Table 18 Predicted Construction Noise Levels				
Receiver ID	Predicted Noise Level dB $LA_{eq(15min)}$ BESS	Predicted Noise Level dB $LA_{eq(15min)}$ Transmission Connection	NML Standard Hours dB $LA_{eq(15min)}$	Compliance Achieved
R01	<30	<30	45	Yes
R02	<30	<30	45	Yes
R03	<30	<30	45	Yes
R04	<30	<30	45	Yes
R05	<30	<30	45	Yes
R07	33	37	45	Yes
R08	32	57	45	No
R09	<30	<30	45	Yes
R10	<30	<30	45	Yes
R11	<30	<30	45	Yes
R12	<30	<30	45	Yes
R13	<30	<30	45	Yes
R14	<30	<30	45	Yes
R15	<30	<30	45	Yes
R16	<30	<30	45	Yes
R17	<30	<30	45	Yes
R18	<30	<30	45	Yes
R19	<30	<30	45	Yes

Noise levels are expected to satisfy the NMLs at all identified receivers when works are at their nearest proximity during standard construction hours except at receiver R08 during the works required in the proposed transmission easement. The exceedance would be temporary in duration and only occur while works are within a 400m corridor nearest to receiver R08.

6.3 Road Traffic Noise Assessment

During construction, traffic generated by the project include employee/subcontractor and delivery vehicles. The traffic volume over a typical day for standard construction hours is expected to be up to a maximum of eight heavy vehicles (semi-trailers or B-doubles) per hour and up to 40 light vehicles for worker transport per day.

The transport route for all vehicles to the access the project site would be via the Hume Highway, Braidwood Road and Boro Road. Therefore, it has been assumed that the closest residential receivers along the transport route are 15m from the road to represent a potential worst case assessment scenario.

Predicted noise levels from project related construction traffic has been calculated using the methodology described in Section 5.3 and the parameters presented in Table 15. The results presented in Table 19 show the calculated noise levels as $LA_{eq(1hr)}$ for local roads and $LA_{eq(15hr)}$ for arterial/sub arterial roads to align with RNP categories and assessment periods.

Table 19 Predicted Construction Road Traffic Noise Levels

Road Type	Offset Distance to Receiver	Predicted Noise Level	RTN Criteria	Compliance Achieved
Arterial, Sub Arterial and Collector Roads	15m	48dB LAeq(15hr)	60dB LAeq(15hr)	✓
	15m	50dB LAeq(9hr)	55dB LAeq(9hr)	✓
Local Roads	15m	47dB LAeq(1hr)	55dB LAeq(1hr)	✓
	15m	50dB LAeq(1hr)	50dB LAeq(1hr)	✓

Results demonstrate that project construction traffic noise levels would comply with the relevant RNP criteria.

Therefore, it is concluded that project related road traffic noise levels would satisfy the relevant RNP criteria at any residential receiver along the proposed transport routes for the daytime and night time periods and not increase existing noise levels by more than 2dB.

7 Discussion and Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Preliminary Noise Assessment for a proposed Solar Farm with Battery Energy Storage System near Boro, NSW.

The results of the Preliminary Noise Assessment demonstrate that noise emissions from the project would satisfy construction NMLs at all receiver locations, except for a temporary short term exceedance predicted when transmission line connections works are at their closest point to receiver R08.

The results of the Preliminary Noise Assessment demonstrate that emissions from the project would satisfy the operational PNTLs at all identified receivers.

Furthermore, sleep disturbance is not anticipated, as there are no operational noise sources that generate significant maximum noise events and noise emissions from the project are predicted to satisfy the EPA maximum noise level criteria.

Road traffic noise emissions associated with the project construction phase are anticipated to satisfy the relevant RNP criteria at all receivers along the proposed transportation route.

A qualitative assessment of potential vibration impacts has been completed. Due to the nature of the works proposed and distances to potential vibration sensitive receivers, vibration impacts from the project would be negligible.

Based on the Preliminary Noise Assessment results, the project satisfies the relevant requirements of the Interim Construction Noise Guideline, Noise Policy for Industry and the Road Noise Policy.

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Appendix A – Glossary of Terms

A number of technical terms have been used in this report and are explained in **Table A1**.

Table A1 Glossary of Acoustical Terms

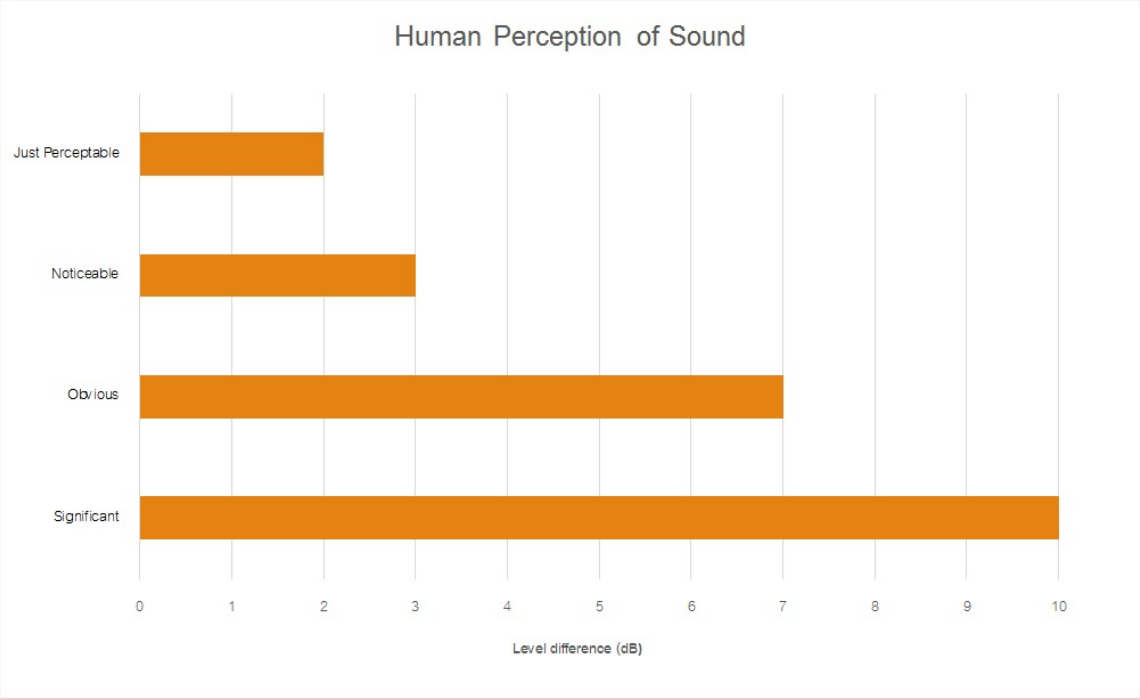
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Z-weighted or decibels Linear (unweighted).
Extraneous Noise	Sound resulting from activities that are not typical of the area.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A sound level which is exceeded 10% of the time.
LA90	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
LAeq	Represents the average noise energy or equivalent sound pressure level over a given period.
LAmax	The maximum sound pressure level received at the microphone during a measuring interval.
Masking	The phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
RBL	The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period.
Sound power level (Lw or SWL)	This is a measure of the total power radiated by a source in the form of sound and is given by 10.log10 (W/Wo). Where W is the sound power in watts to the reference level of 10^{-12} watts.
Sound pressure level (Lp or SPL)	the level of sound pressure; as measured at a distance by a standard sound level meter. This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA

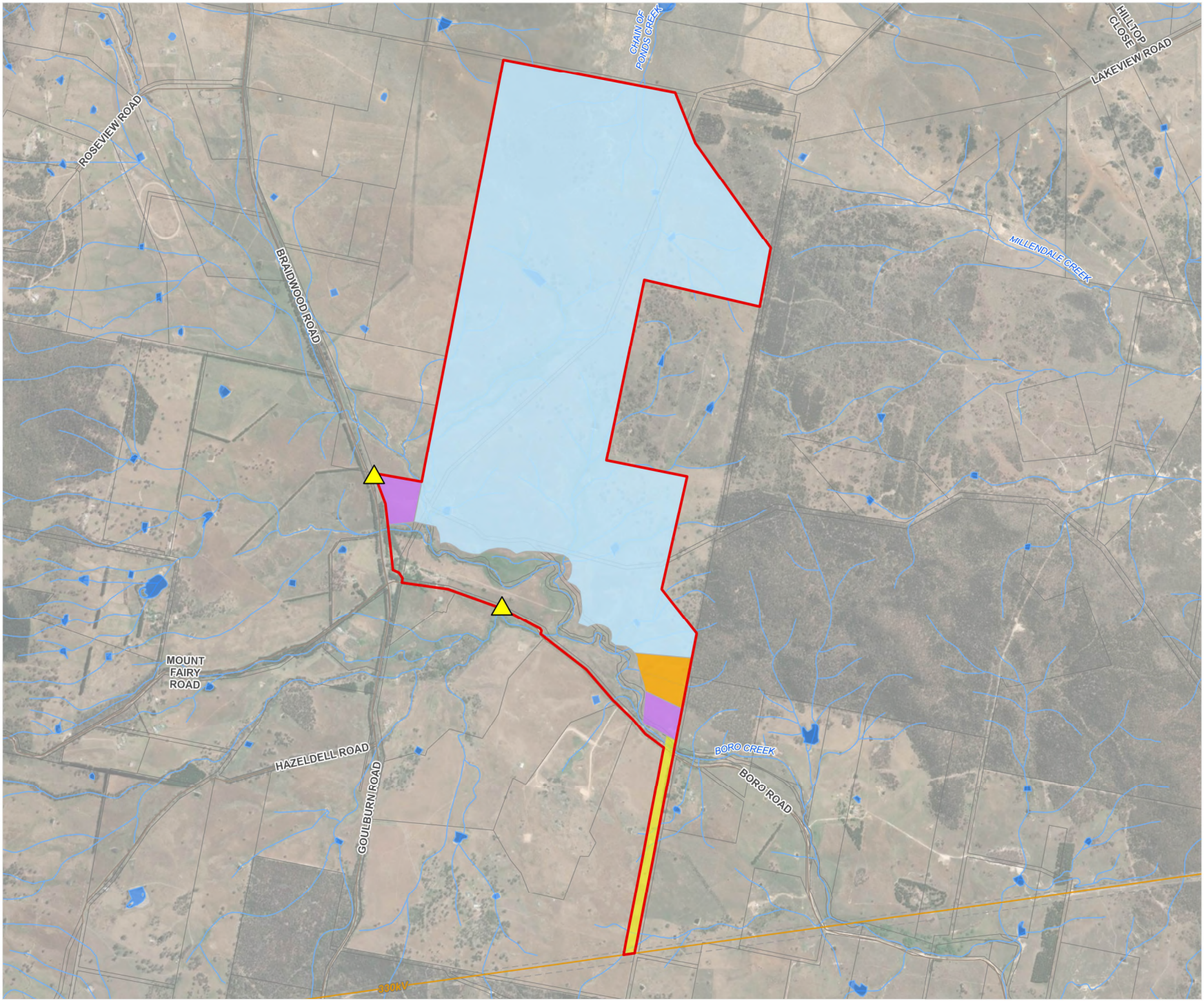
Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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Appendix B – Project Layout



- Project area
- BESS, switching station and onsite substation investigation area
- Potential construction compounds area(s) and O&M facility investigation areas
- Proposed transmission easement
- Solar array
- Proposed site access
- Existing 330 kV transmission line

0 200 400 600 800 1,000 1,200 m

SCALE 1:20,000
A3 SIZE / GDA2020 (EPSG:7855)

PROJ: 604-OEENVSYD-377175
CLIENT: Samsung CT Renewable Energy
MAP:SCOPING_Project Layout
AUTHOR: ROBERT.SUANSRI
DATE CREATED: 10/02/2025
VERSION: B

DATA SOURCES:
Samsung CT Renewable Energy, RPS, NSW Spatial Services, ESRI, Geoscience Australia,

A TETRA TECH COMPANY

FIGURE 3-1: PRELIMINARY PROJECT LAYOUT

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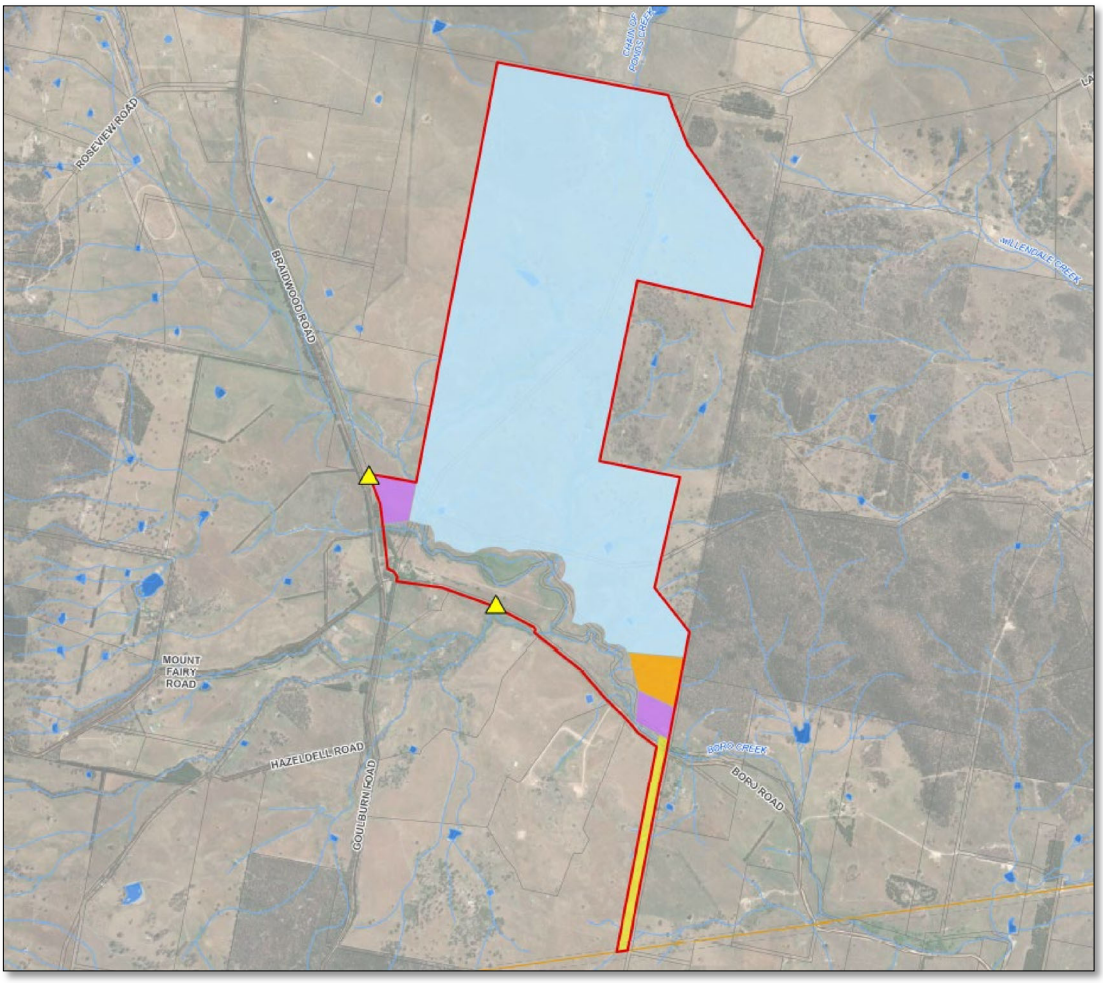
Appendix I Preliminary bushfire assessment

BUSHFIRE PLANNING AUSTRALIA

BUSHFIRE SCOPING ASSESSMENT

Boro Solar Farm

Prepared for RPS AAP Consulting Pty Ltd



Bushfire Planning Australia

Stuart Greville
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BPAD-26202
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BPA Reference: 2409 Boro Solar Farm

Prepared for RPS AAP Consulting Pty Ltd on behalf of
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Attention: Lisa Montesin
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FPA AUSTRALIA BRONZE MEMBER Fire Protection Association Australia

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Disclaimer and Limitation

This report is prepared solely for RPS AAP Consulting Pty Ltd on behalf of Samsung C&T Renewable Energy Australia Pty Ltd (the 'Applicant') for the specific purposes of only for which it is supplied (the 'Purpose'). This report is not for the benefit of any other person; either directly or indirectly and is strictly limited to the purpose and the facts and matters stated in it and will not be used for any other application.

This report is based on the site conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Bushfire Planning Australia at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Document Status: 2409 - Boro Solar Farm

Version	Status	Purpose	Author	Review Date
1	Draft	Draft for review	Katrina Greville	18 November 2024
2	Draft	Draft for Applicant review	Stuart Greville	16 December 2024
3	Final	Final for submission	Stuart Greville	19 February 2025
4	Final	Inserted PCT figure	Stuart Greville	4 March 2025
5	Final	Updated with client comments	Stuart Greville	29 April 2025

BPAD Certification

As the author of this Bushfire Scoping Assessment (BSA), I certify this BSA provides the detailed information required by the NSW Rural Fire Service under Clause 45 of the Rural Fires Regulation 2022 and Appendix 2 of Planning for Bushfire Protection 2019 in accordance with the requirements of section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).



BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Stuart Greville

Accredited Bushfire Practitioner

BPAD-26202

Date: 29 April 2025

In signing the above, I declare the report is true and accurate to the best of my knowledge at the time of issue.

Executive Summary

Bushfire Planning Australia (BPA) was engaged by RPS AAP Consulting Pty Ltd (RPS) to conduct a bushfire scoping assessment of the proposed Boro Solar Farm for Samsung C&T Renewable Energy Australia Pty Ltd (the Applicant).

The project includes the construction, operation and decommissioning of a solar farm along with a battery energy storage system (BESS) and supporting infrastructure. The project is anticipated to have a generation capacity of up to 400 megawatts (up to 150 megawatt solar farm and a 250 megawatts / 1,000 megawatt hours storage BESS). The project area (**Figure 1**) is located in Lower Boro, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales (NSW).

A bushfire scoping assessment has found that the project area has a low to moderate bushfire hazard potential. The vegetation within and surrounding the project area is predominantly used for grazing across a mixture of derived grasslands and pastures. The primary bushfire hazard is located to the east of the project area and is identified as a forest, namely Southern Tablelands Dry Sclerophyll Forest, as described in the NSW Rural Fire Service (NSW RFS) document *Planning for Bushfire Protection 2019* (PBP 2019). Additionally, woodland and forest vegetation formations exist within the isolated areas throughout the project area.

The following bushfire protection measures would need be implemented to reduce the impact of a bushfire to an acceptable level for the proposed development and demonstrate the project is able to comply with PBP 2019:

1. Asset Protection Zones (APZ) around solar farm and BESS infrastructure; including solar arrays, substations, office and temporary facilities shall be provided and managed as an APZ as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*.
2. To allow for emergency services personnel to undertake property protection activities, a minimum 10 metre defendable space (APZ) that permits unobstructed vehicle access is to be provided around the perimeter of the project area compounds and maintenance yards.
3. Property access roads are to be constructed in accordance with Table 5.3b and Chapter 7.4a of PBP 2019.
4. One (1) x 20,000L water tank dedicated for firefighting purposes is required as the project area is greater than 1 hectare.
5. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards within the project area.
6. All hazardous materials shall be safely stored in a secure enclosure to ensure these do not contribute to a bushfire event.
7. A Fire Management Plan shall be prepared in consultation with the NSW RFS Queanbeyan – Palerang Fire Control Centre (or relevant regulator), prior to the commencement of construction and in accordance with the Conditions of Approval.
8. The operators of the facility shall prepare a Bushfire Emergency Management and Operations Plan prior to the commencement of operations.

Additional Recommendation

9. The Victorian CFA Renewables Energy Facilities Design Guidelines would recommend up to three (3) water tanks dedicated for firefighting purposes for a project area of this size, being:
    i. one (1) x 45,000 litre water tank located adjacent to an internal access road
    ii. one (1) x 45,000 litre water tank located within 120 metres of all infrastructure associated with the BESS
    iii. one (1) x 45,000 litre water storage tank provided at the main entrance to the facility or as instructed by the NSW RFS.

Should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the project area, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

This assessment has been made based on the bushfire hazards related to the project area at the time of production (April 2025).

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Terms and Abbreviations

Abbreviation	Meaning
Applicant	Samsung C&T Renewable Energy Australia Pty Ltd (SREA)
Application	Application for Development Consent under Part 4.7 of the EP&A Act and the Determination under Part 9 of the EPBC Act
APZ	Asset Protection Zone
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
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
Australian DCCEEW	Australian Department of Climate Change, Energy, the Environment and Water
BAR	Bushfire Assessment Report
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BESS	Battery Energy Storage System
BEMOP	Bushfire Emergency Management and Operations Plan
BFPL	Bush Fire Prone Land
BFPLM	Bush Fire Prone Land Map
BFRMP	Bush Fire Risk Management Plan
BLMP	Biodiversity and Land Management Plan
BMP	Bush Fire Management Plan
BMZ	Bushfire Management Zones
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPM	Bush Fire Protection Measures
DPI Water	NSW Department of Primary Industries – Water
Due Diligence	Environmental assessment process by which minor project components may be located within the project area but external to the Survey Area as stipulated in Section 3 of the EIS during the detailed design (post-approval) phase
EP&A Act	NSW Environmental Planning and Assessment Act 1979
FCC	Fire Control Centre
FDI	Fire Danger Index
FSS	Fire Safety Study
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
NCC	National Construction Code
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
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP or PBP (2019)	Planning for Bushfire Protection 2019

Project	Construction, operation, and decommissioning of a large-scale solar farm and BESS with a generating capacity of up to 400 megawatts (up to 150 megawatt solar farm and a 250 megawatts / 1,000 megawatt hours storage BESS).
Project area	The indicative development area for the project located on privately owned land
Project disturbance footprint	Area of project-related disturbance determined for the assessment of environmental impacts, which will be refined for the EIS
Receiver	Assessment location
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
SEARs	Secretary's Environmental Assessment Requirements
Study area	The Study area refers to the project area and the buffer for this assessment.
Subject Site	The summation of all lots included for the project

1. Overview - Report inclusions

Bushfire Planning Australia (BPA) was engaged by RPS AAP Consulting Pty Ltd (RPS) to conduct a bushfire scoping assessment of the Boro Solar Farm for Samsung C&T Renewable Energy Australia Pty Ltd (the Applicant).

The project includes the construction, operation and decommissioning of a solar farm along with a battery energy storage system (BESS) and supporting infrastructure. The project is anticipated to have a generation capacity of up to 400 megawatts (up to 150 megawatt solar farm and a 250 megawatts / 1,000 megawatt hours storage BESS). The project area (**Figure 1**) is located in Lower Boro, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales (NSW).

The impacts and proposed mitigation for bushfires from the proposed construction, operation and decommissioning phases of the project are addressed in this report in accordance with relevant regulatory requirements and guidelines (this assessment).

Section 8.3 of Planning for Bushfire Protection 2019 (PBP 2019) refers to any type of development that are not residential/ rural residential subdivisions, Special Fire Protection Purposes (SFPPs) or residential infill development as 'Other development'. The project seeks consent for the construction of several non-habitable buildings on the project area in addition to the BESS.

The National Construction Code (NCC) does not provide for any bush fire specific performance requirements for other development, such as the proposed industrial development. The general fire safety construction provisions of the NCC are taken as acceptable solutions in this instance.

Nevertheless, in order to demonstrate the project is able to satisfy the aims and objectives of PBP 2019, this bushfire scoping assessment (BSA) was completed to determine the bushfire hazard that has the potential to threaten the project. Based on this assessment, a series of bushfire protection measures that would provide for an increased level of protection on property and life from the threat of bushfire have been recommended; thereby satisfying the aims and objectives of PBP 2019.

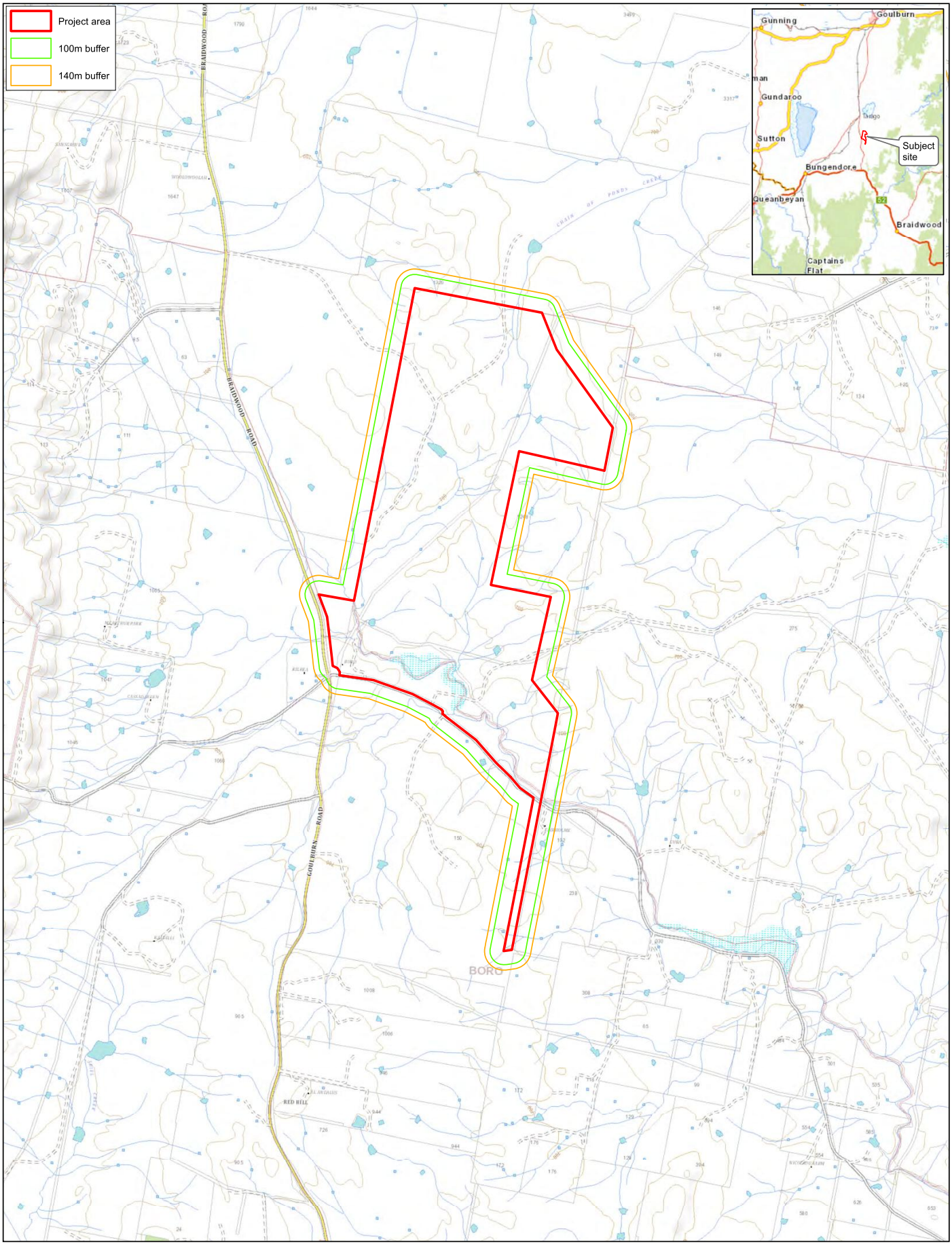
2. Project area Description

2.1. Overview

The project spans across multiple lots known as the project area and is required to be assessed and considered in its entirety as part of this bushfire hazard assessment.

Table 1: Project area Details

Address	1248 Goulburn Road & 94 Boro Road, Boro
Lot / DP	Lot 2 DP1026850 Lot 2 DP711124 Lot 4 DP1256948 Lot 128 DP754867 Lot 7302 DP1140943
LGA	Goulburn Mulwaree and Queanbeyan-Palerang Regional Councils
Project area	Approximately 420 hectares
Land Use Zone	C3 Environmental Management and RU1 Primary Production
Context	The project is located in Lower Boro, approximately 40 kilometres south of Goulburn and 200 kilometres south-west of Sydney in New South Wales across multiple lots. The project area is primarily cleared and being used for agriculture purposes with scattered vegetation, some low gradient hills, streams and dams. Similarly, grassland / grazed lands surround the entire project area with exception of an isolated forest to the east of the project area.
Topography	Majority of the project area is flat, however, there is an increase in slope from the north-west corner to the south-east corner of the project area.
Fire Danger Index	The project area lies within a local government area with a Fire Danger Index (FDI) rating of 100.



BUSHFIRE PLANNING AUSTRALIA

Source:	Base Map © Department of Customer Service 2020
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File:	File: 2409-BoroRoadSolarFarm-Fig1-SiteLocation-250219 Date: 19/02/2025

0 250 500 750 Meters

A3 Scale: 1:25,000

Coordinate System: GDA2020 MGA Zone 55

Project: Boro Solar Farm
Job No: 2409

Figure 1:

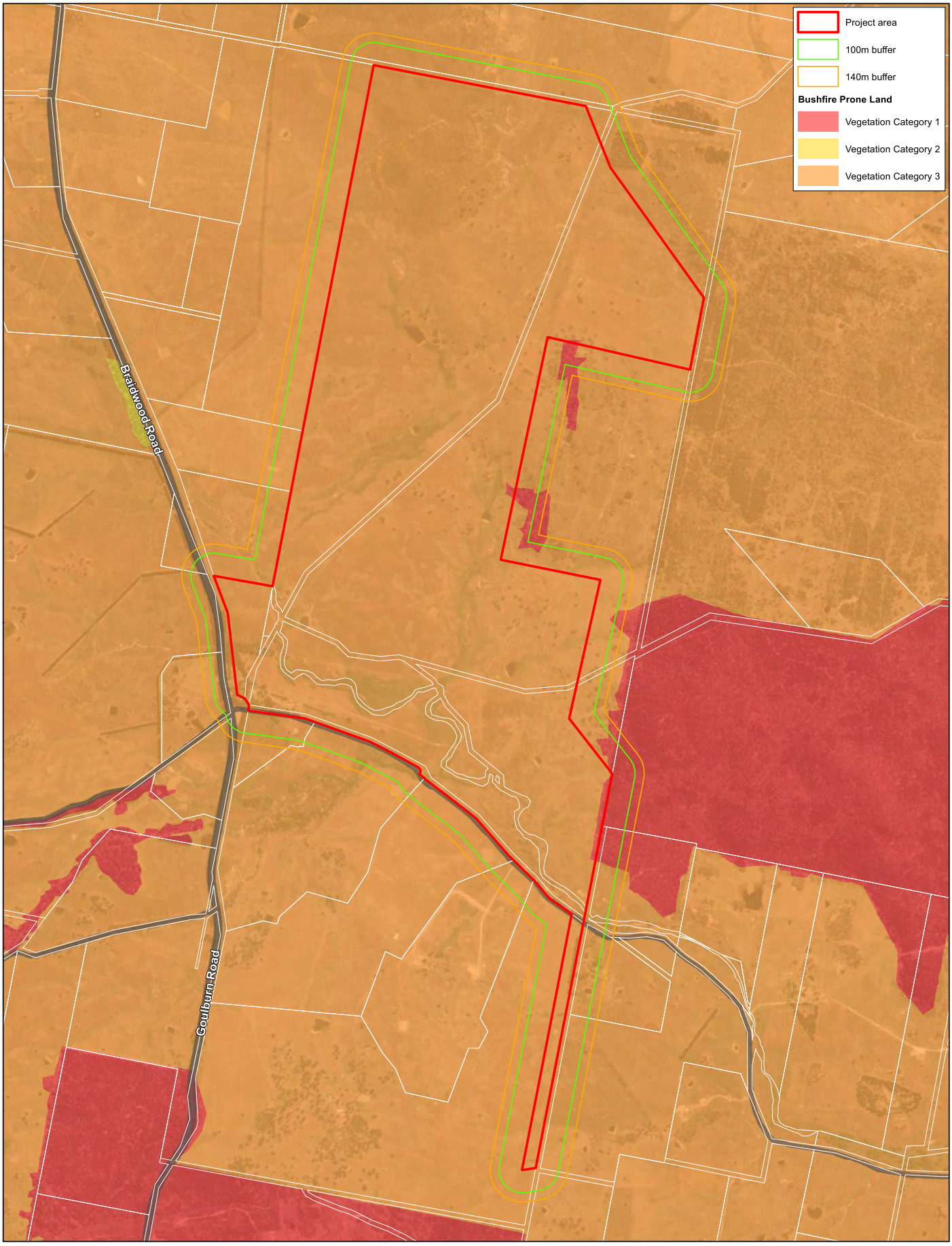
Site Location

2.2. Bushfire Prone Land

Bushfire activity is prevalent in landscapes that carry fuel and the two predominant bushfire types are grassland and forest fires. Factors such as topographic characteristics and quantity of fuel loads influence the intensity and spread of fire. The scale of a bushfire hazard is tailored to the characteristics of the hazard, the size and characteristics of the affected population, types of land use exposed to bushfire, predicted development growth pressures and other factors affecting bushfire risk.

Figure 2 demonstrates the entire project area is mapped as Vegetation Category 3 bushfire prone land in addition to two small, isolated sections within the project area that is mapped as Vegetation Category 1 bushfire prone land.

In accordance with PBP 2019, as assessment of the vegetation within 140 metres in all directions of the project area has been considered. Vegetation Category 3 bushfire prone land exists in all directions of the project area. Additionally, there is Vegetation Category 1 bushfire prone land to the east of the project area which is identified as the primary bushfire hazard.



BUSHFIRE PLANNING AUSTRALIA

Source:	Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024 Aerial photo: Maxar 2020 NSW Bush Fire Prone Land © State Government of NSW and NSW Rural Fire Service 2024
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File:	File: 2409-BoroRoadSolarFarm-Fig2a-BFPL-250219 Date: 19/02/2025

0 100 200 300 400 500 600
Meters

A3 Scale: 1:15,000

Coordinate System: GDA2020 MGA Zone 55

Project: Boro Solar Farm
Job No: 2409

Figure 2:

NSW Bush Fire Prone Land

2.3. Bush Fire Risk Management Plan

The New South Wales *Rural Fires Act 1997* (RF Act) requires each bushfire management committee to prepare a Bush Fire Risk Management Plan (BFRMP) for a nominated area; commonly defined by local government area boundaries. A BFRMP is a strategic document that identifies community assets at risk across a fire district and sets out coordinated treatment measures to reduce the risk of bushfire to the assets.

BFRMPs are often not site specific, and individual sites or development do not have a statutory obligation to prepare a BFRMP, however, it is often recommended as part of preparedness, a BFRMP is completed.

2.3.1. Southern Tablelands & Lake George Bush Fire Risk Management Plan

2.3.1.1. Climate & Bushfire Season

The Southern Tablelands Bush Fire Management Committee (STBFRMC) developed the Southern Tablelands Bush Fire Risk Management Plan (STBFRMP) which was approved on 21 March 2019. The Southern Tablelands includes local government areas of Yass Valley, Upper Lachlan and Goulburn-Mulwaree and relates to the project area north of Boro Creek. Similarly, the Lake George Bush Fire Management Committee (LGBFRMC) developed the Lake George Bush Fire Risk Management Plan (LGBFRMP) which was approved on 21 November 2018. Lake George is specific to the Queanbeyan Palerang Regional Council local government area and relates to the project area south of Boro Creek (i.e. the transmission corridor).

The Goulburn-Mulwaree and Queanbeyan Palerang regions experience warm to hot summers and cool winters with peak rainfall generally falling during winter and spring. The STBFRMC and LGBFRMC has varied the local Bush Fire Danger Period, declaring that the ordinary start date of the Bushfire Danger Period for these regions is October, and the standard end date is March / April. These dates may be adjusted according to seasonal conditions.

Typical days of extreme fire danger occur with periods of dry north westerly winds, bringing maximum temperatures to the vicinity of 35-37°C. Usually these days occur around December to February. The mean maximum temperature for the region is 33°C occurring in January.

2.3.1.2. Bushfire History

There have been a number of bushfires recorded within five kilometres of the project area dating back to 2011 varying in size and impact, mostly flat open grassland fires. The largest bushfire occurred in 2017 approximately 750 metres south-west of the project area in Mount Fairy.

2.3.1.3. Southern Tablelands & Lake George BFRMP Assets

The STBFRMP and LGBFRMP investigated the high-risk human settlements and ranked them according to the assessed bushfire risk and the likely consequence of a bushfire attack.

The STBFRMC and LGBFRMC includes a series of treatment actions for each asset and nominates the responsible agencies required to undertake the treatment actions.

The project area is not identified in the STBFRMP or LGBFRMP as an asset.

2.4. Project Description

The project would involve the construction, operation, and decommissioning of a large-scale solar farm along with a BESS and supporting infrastructure (as shown in **Figure 3**). The project is anticipated to have a generation capacity of up to 400 megawatts (up to 150 megawatt solar farm and 250 megawatts / 1,000 megawatt hours of storage BESS.

The solar farm would be inter-connected via a series of underground cables (expected to be 33 kilovolts) connecting the solar arrays to a central substation, which would then transform the electricity to either 330 kilovolts or 500 kilovolts for dispatch into the NEM.

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

1. a solar farm with PV modules mounted on single-axis tracking systems plus associated power conversion units (PCUs), a cable network and internal access tracks
2. a BESS with a capacity of up to 250 megawatts/ 1,000-megawatt hours storage
3. electrical infrastructure including:
    - ❑ a central substation with a step-up facility
    - ❑ underground and some overhead electrical reticulation connecting the PV arrays to the central substation
    - ❑ a new 330-kilovolt switching station and connection to Transgrid's 330-kilovolt overhead transmission line.
4. permanent on-site ancillary infrastructure:
    - ❑ operation and maintenance facility
    - ❑ internal access road network, with access and egress points from and to public roads
    - ❑ utility and amenity services.
5. temporary construction ancillary infrastructure:
    - ❑ site compounds, laydown and storage areas
6. potential construction workforce accommodation on site.
7. potential upgrades to the surrounding road network for the expected traffic volumes and oversize and/or overmass vehicles (OSOM) during construction, and maintenance during operation if required site access:
    - ❑ via Braidwood Road to the west and Boro Road to the south
    - ❑ transport route from Port Botany to Braidwood Road and Boro Road would be via the M5 Motorway and the Hume Highway
    - ❑ transport route from Port Kembla to Braidwood Road and Boro Road would be via Five Islands Road, Princess Highway, M1 Freeway, Picton Road and the Hume Highway.
8. land tenure
    - ❑ the project area is freehold land, comprising five lots of privately owned land which has been leased by SREA for the project.

Geotechnical investigations would be required during detailed design to determine the suitability and availability of the material on site for use, and the depth of bedrock. The magnitude and location of these additional ancillary activities would be determined following further detailed site investigations and would be identified and assessed in the EIS.

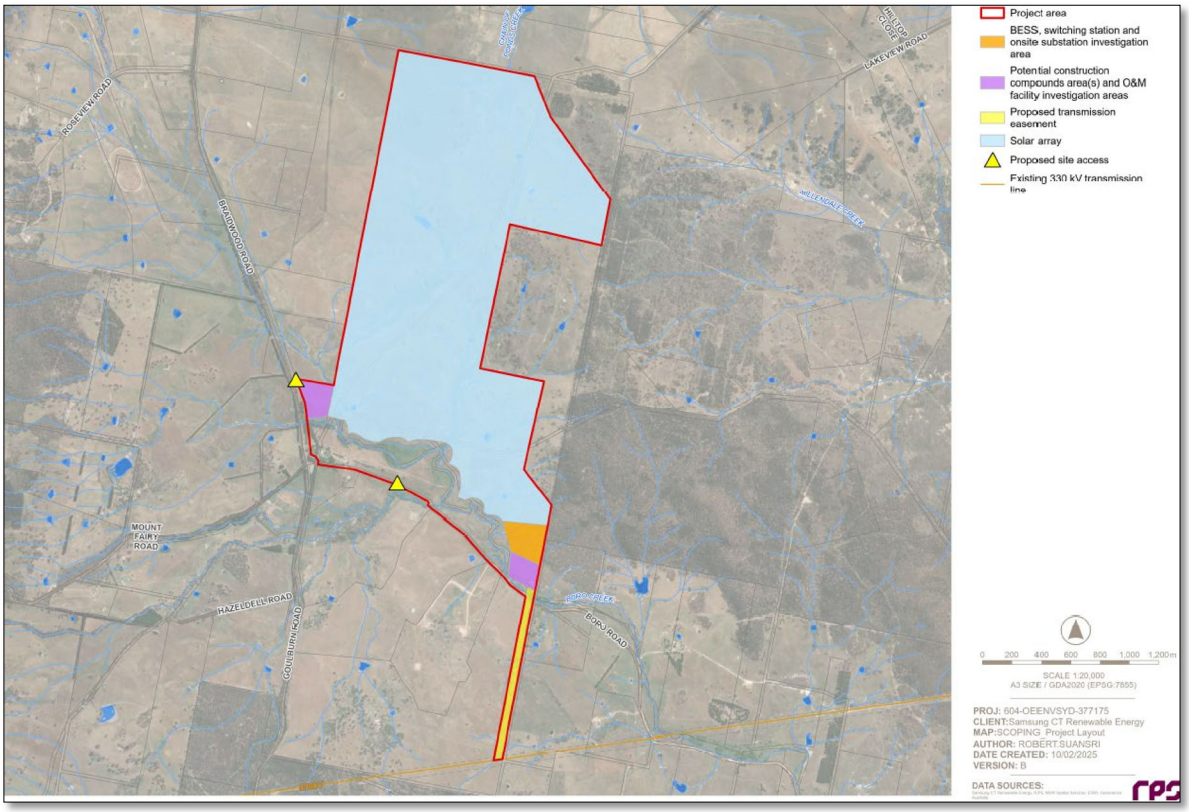


Figure 3: Project area (RPS February 2025)

2.5. Industrial Development

Section 8.3 of PBP 2019 provides specific advice for developments that are not residential subdivision, special fire protection purposes (SFPPs) or residential infill. The project is limited to Class 5-8 and 10 buildings of the National Construction Code: Building Code of Australia (NCC). These classes of buildings include factories, warehouses, offices and other industrial facilities.

The general aims and objectives of PBP 2019 apply in relation to matters such as access, water and services, emergency planning and landscaping/ vegetation management. However, it is prudent that a suitable package of bushfire protection measures be proposed commensurate with the assessed level of risk of the future development. Accordingly, this assessment will recommend areas cleared of vegetation are maintained at the hazard interface to ensure defendable space is provided for firefighting purposes.

Notwithstanding the available bushfire protection measures outlined in PBP 2019, the NCC does not provide for any bushfire specific performance requirements for industrial (non-habitable buildings) and as such Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas* (AS3959-2018) does not apply as a set of deemed-to-satisfy provisions. However, the following objectives apply in relation to access, water and services, and emergency and evacuation planning:

- To provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation.
- To provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development.
- To provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building.
- Consideration of storage and hazardous materials away from the hazard wherever possible.

2.6. Renewable Energy Facilities Design Guidelines

The Victorian Country Fire Authority (CFA) published a set of guidelines for renewable energy facilities in August 2023. Whilst the guidelines apply to a separate jurisdiction, as there is limited documentation and guidance material in NSW or other jurisdictions, the CFA guideline has been informally adopted as best practice requirements for the renewable energy industry.

PBP 2019 does not have a set of specific Acceptable Solutions for large scale solar farms, or large-scale battery installations. PBP 2019 provides a set of considerations and provisions for solar and wind farms being a minimum 10 metre managed APZ separating the infrastructure from combustible vegetation and the APZ must be maintained to the standard of an IPA for the life of the development. As such, the model requirements outlined in the CFA guideline have been adopted to demonstrate the project is able to satisfy the aims and objectives of PBP 2019.

3. Bushfire Hazard Assessment

A bushfire hazard assessment has been completed in accordance with the submission requirements detailed in Appendix 2 of PBP 2019, including an assessment of the predominant vegetation surrounding the project area and the effective slope underneath the classified vegetation.

3.1. Vegetation Assessment

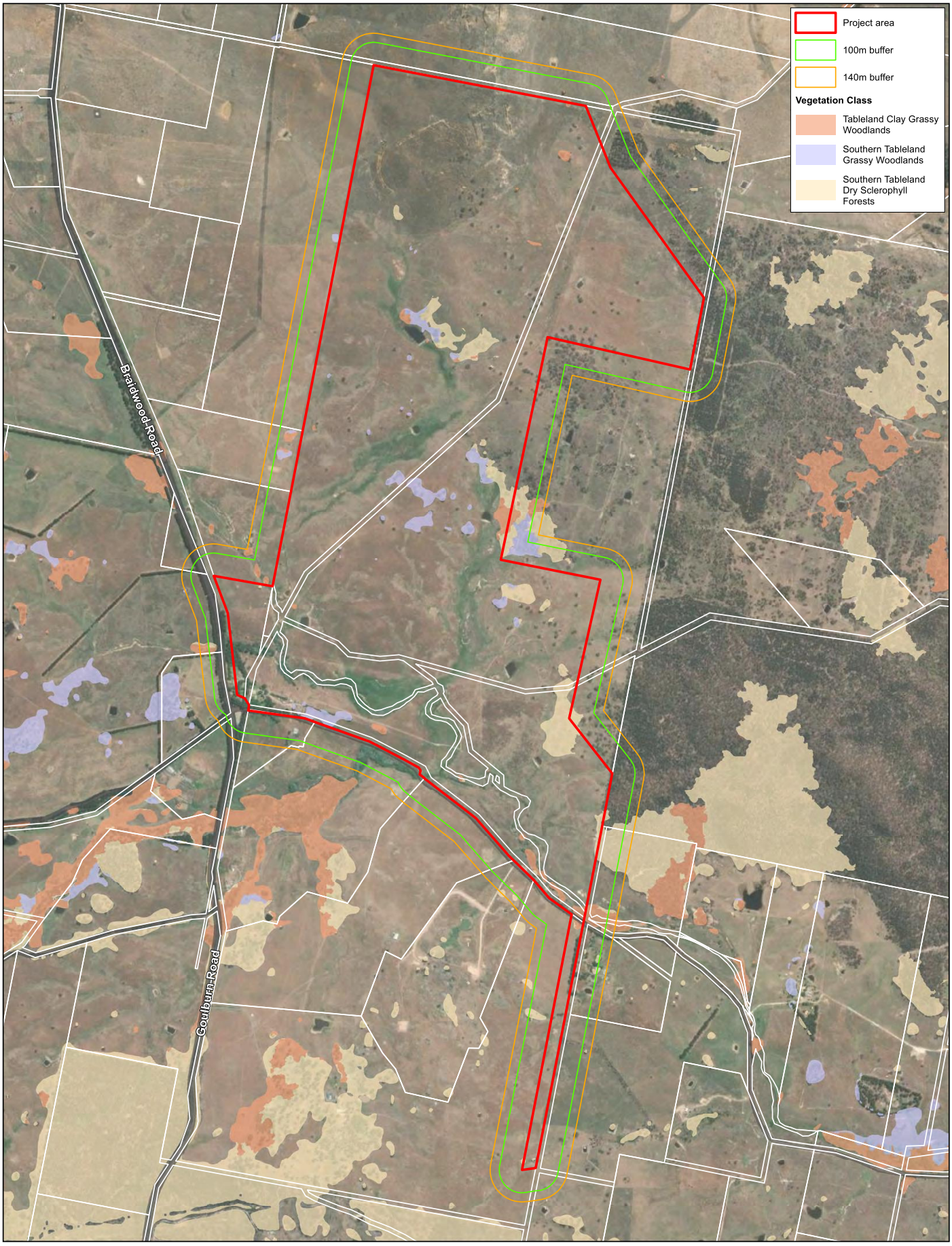
Vegetation classification over the project area and surrounding areas within 140 metres from the project area has been carried out as follows:

- Aerial Photograph Interpretation to map the vegetation classification and extent.
- Reference to NSW State Vegetation Type NSW Department of Planning, Industry and Environment 2021 (**Figure 4**).
- Reference to RPS Report - Figure 4.3 Plant Community Types (date exported 20 February 2025) (**Figure 5**).

In accordance with PBP 2019, an assessment of the vegetation over a distance of 140 metres in all directions from the project area was undertaken.

Vegetation that may be considered a bushfire hazard was identified in all directions from the project area. The vegetation classification is based on the revised Table 2.3 in AS3959-2018 and Appendix 1 of PBP 2019. The inconsistencies between the mapping sources listed above was quantified during the site inspection and compared to the Keith Vegetation Formations (*Ocean Shores to Desert Dunes - The Native Vegetation of New South Wales and the ACT*).

The majority of the project area supports historically cleared land comprised of pasture lands recently grazed along with isolated woodland and forest vegetation.



BUSHFIRE PLANNING AUSTRALIA

Source:	Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024 Aerial photo: Maxar 2020 Vegetation: © State Government of NSW and Department of Planning and Environment 2023
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File:	File: 2409-BoroRoadSolarFarm-Fig3a-Vegetation-NSW-SVT-250219 Date: 19/02/2025

0 100 200 300 400 500 600
Meters

A3 Scale: 1:15,000

Coordinate System: GDA2020 MGA Zone 55

Project: Boro Solar Farm
Job No: 2409

Figure 4:

NSW State Vegetation Type

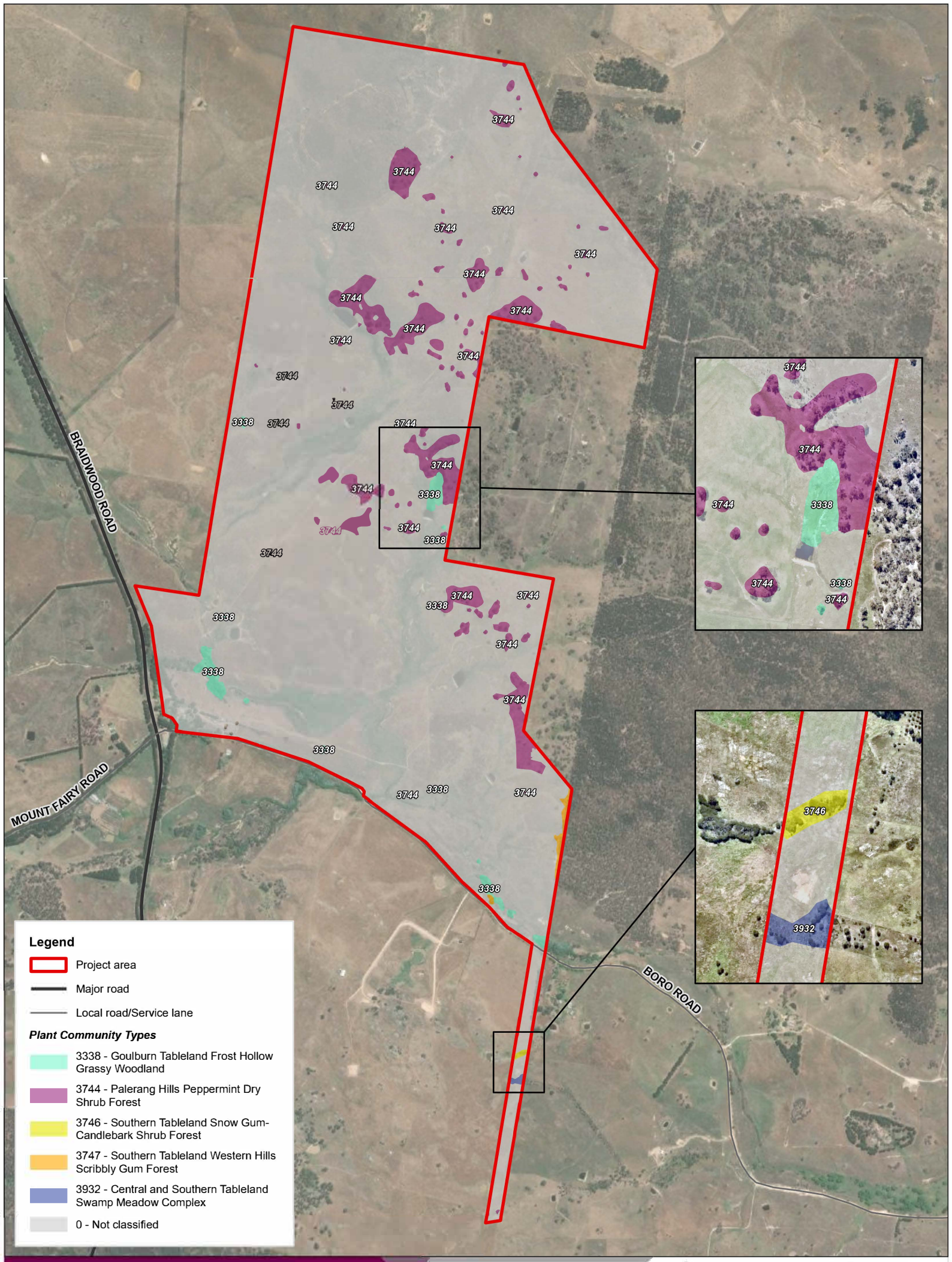


FIGURE 5 PLANT COMMUNITY TYPES

CLIENT: Samsung CT Renewable Energy
PROJ: AU377157
LOCATION: PBAR - Boro SF

TECHNICIAN: ROBERT.SUANSRI
DATE EXPORTED: 20/02/2025
MAP FILE: PCT
VERSION: B

0 0.2 0.4 0.6 Km
SCALE 1:22,500
A4 SIZE / Projection: WGS 1984 Web Mercator Auxiliary Sphere

DATA SOURCES
Client, RPS, NSWSS, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

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:\Azure\OneDrive - Tetra Tech, Inc\SamsungCTRenewableEnergy\Environmental\DueDiligence\03_Projects\BoroSF_PBAR_Figures_VEG\BoroSF_PBAR_Figures_VEG.aprx

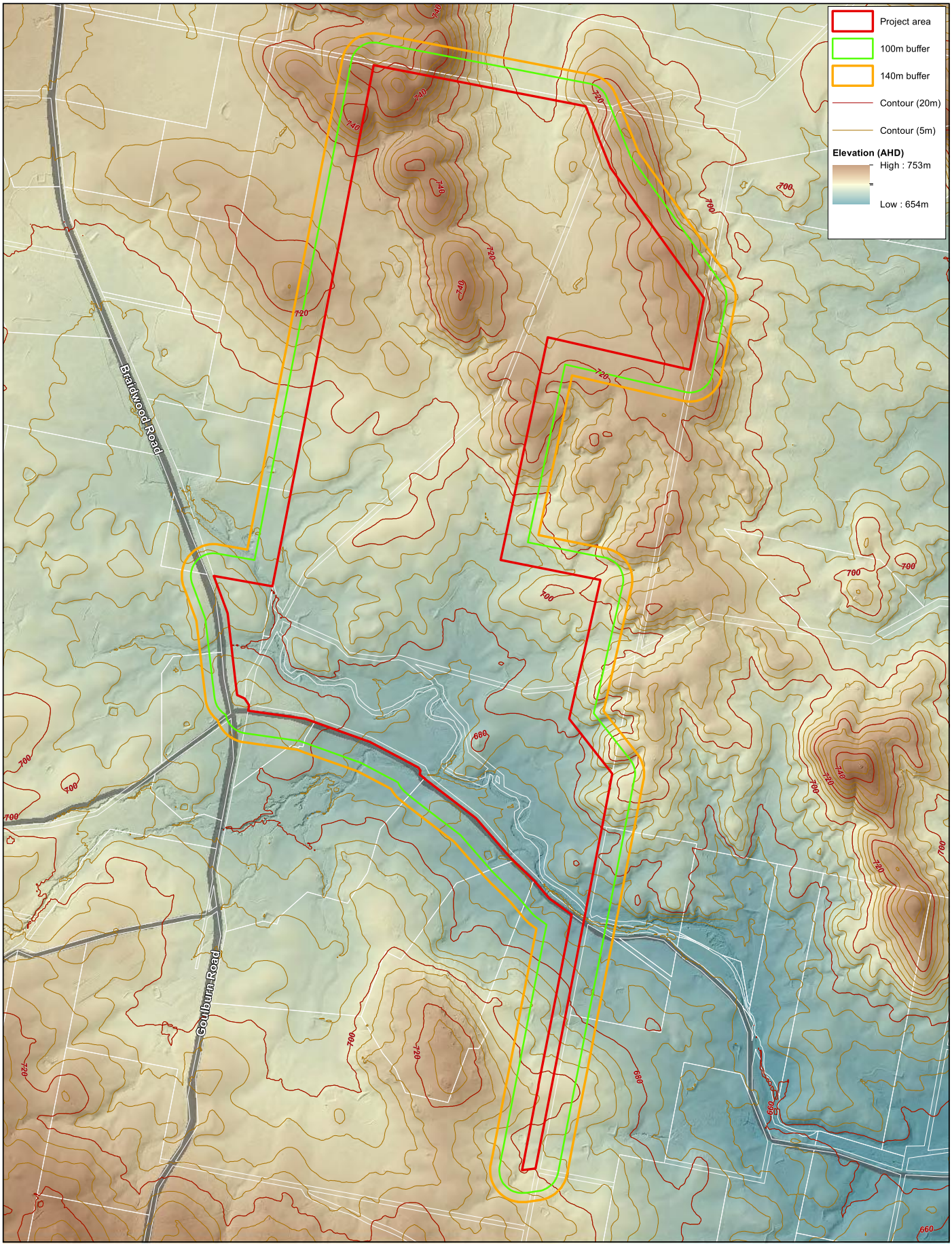
3.2. Slope Assessment

The slope assessment was undertaken as follows:

- Review of LiDAR point cloud data - including Digital Elevation Model (DEM) (NSW LPI)
- Slope Analysis (5 degree increments); and
- Detail survey of existing contours.

An assessment of the slope over a distance of 140 metres in the hazard direction from the project area was undertaken. The effective slope was then calculated under the classified vegetation where there was a fire run greater than 50 metres. The topography of the project area has been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the project.

The effective slope in all directions is shown in **Figure 6** and **Figure 7.**



BUSHFIRE PLANNING AUSTRALIA

Source:	Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024 Surface analysis: Derived from LiDAR - BRAIDWOOD 1 metre Resolution Digital Elevation Model © Department Finance, Services and Innovation 2015 & 2017
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File:	File: 2409-BoroRoadSolarFarm-Fig4a-DEM-250429 Date: 29/04/2025

0 100 200 300 400 500 600
Meters

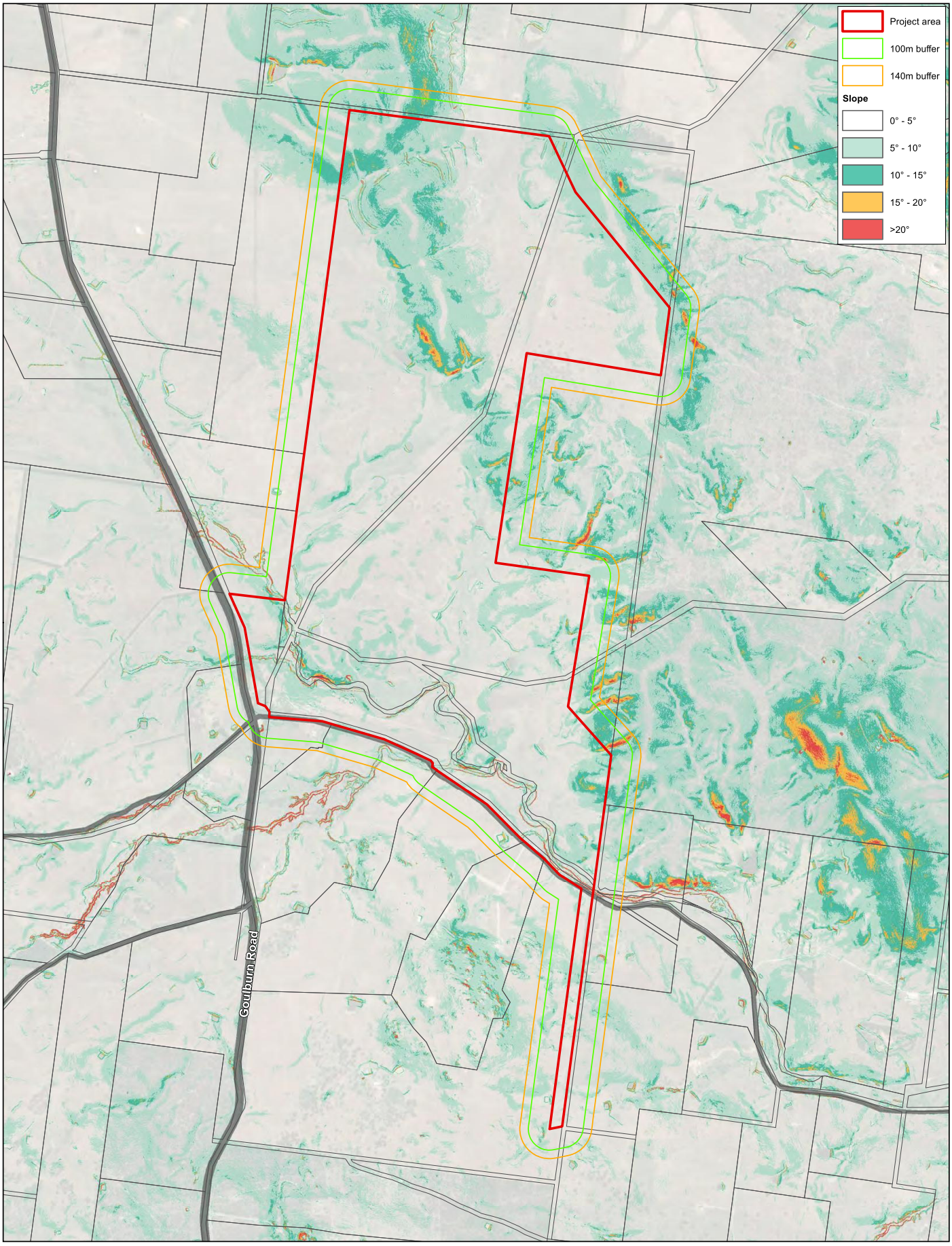
A3 Scale: 1:15,000

Coordinate System: GDA2020 MGA Zone 55

Project: Boro Solar Farm
Job No: 2409

Figure 6:

Digital Elevation Model



BUSHFIRE PLANNING AUSTRALIA

Source:	Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024 Aerial photo: Maxar 2020 Surface analysis: Derived from LiDAR - BRAIDWOOD 1 metre Resolution Digital Elevation Model © Department Finance, Services and Innovation 2015 & 2017
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File:	File: 2409-BoroRoadSolarFarm-Fig5a-SlopeLiDAR-250219 Date: 19/02/2025

0 100 200 300 400 500 600
Meters

A3 Scale: 1:16,111

Coordinate System: GDA 1994 MGA Zone 56

Project: Boro Solar Farm
Job No: 2409

Figure 7:

Slope Analysis: LiDAR

3.3. Slope & Vegetation Assessment Results

All vegetation identified within the current Bush Fire Prone Land map (**Figure 2**) has been assessed and considered for the preliminary assessment report.

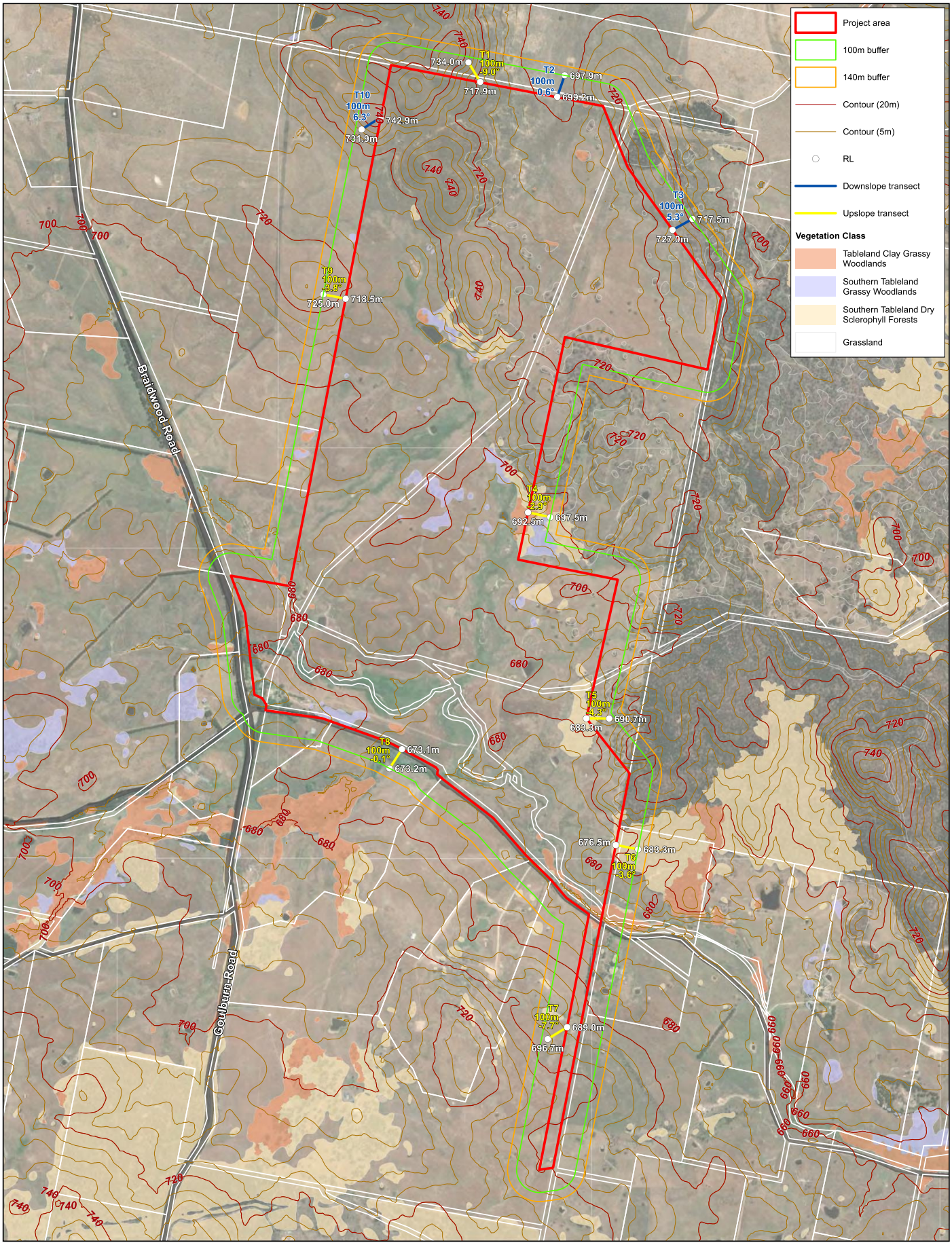
Vegetation located within the project area largely consists of grassland formations and some isolated sections of woodland and forest vegetation. The woodland and forest formation largely exists within the mid to mid-eastern portion of the project area.

Vegetation within 140 metres surrounding the project area is largely identified as grassland vegetation, although forest vegetation, identified as Southern Tablelands Dry Sclerophyll Forest, exists to the south-east of the project area and is identified as the primary bushfire hazard.

The results of the Bushfire Hazard Assessment are presented in **Table 2** and **Figure 8**. This includes the vegetation classification relevant to the project area and its surrounding land, and its associated fuel loads sourced from the *NSW RFS Comprehensive Vegetation Fuel Loads Fact Sheet (March 2019)*.

Table 2: Project area Vegetation & Fuel Load

Vegetation	Vegetation Classification	Overall Fuel Load (t/ha)
Grassland	Riverine Plain Grassland	6.0
Woodland	Tableland Clay Grassy Woodland	18.61
	Southern Tableland Grassy Woodland	19.01
Forest (Dry, Shrubby)	Southern Tableland Dry Sclerophyll Forest	30.85



BUSHFIRE PLANNING AUSTRALIA	Source:	Cadastral Boundary: NSW Department of Finance, Services and Innovation 2024 Aerial photo: Maxar 2020 Vegetation: © State Government of NSW and Department of Planning and Environment 2023 Surface analysis: Derived from LiDAR - BRAIDWOOD 1 metre Resolution Digital Elevation Model © Department Finance, Services and Innovation 2015 & 2017	Project: Boro Solar Farm Job No: 2409
	Disclaimer:	No warranty is given in relation to the data (including accuracy, reliability, completeness, currency or suitability) and no liability is accepted (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for direct marketing or be used in breach of the privacy laws.	
	File:	File: 2409-BoroRoadSolarFarm-Fig6-SlopeVeg-250219 Date: 19/02/2025	

0 100 200 300 400 500 600
Meters

A3 Scale: 1:15,000

Coordinate System: GDA2020 MGA Zone 55

Figure 8:
Slope & Vegetation Assessment

3.4. Significant Environmental Features

The project disturbance footprint is wholly located within that part of the project area that is predominantly cleared and disturbed with exception of Chain of Ponds Creek and Boro Creek that run through the northern and southern sections of the site respectively. A Biodiversity Development Assessment Report will be prepared as part of the EIS.

3.5. Threatened Species, populations or ecological communities

A Biodiversity Development Assessment Report will be prepared as part of the EIS.

3.6. Aboriginal Objects

A separate Aboriginal heritage cultural impact statement will be undertaken as part of the EIS.

4. Bush Fire Protection Measures

PBP 2019 refers to the project as 'Other development'. In order to comply with PBP, the development should:

- Note the range of available Bush Fire Protection Measures (BPMs).
- Satisfy the aims and objectives of PBP 2019.
- Consider any matters listed for the specific purpose.
- Propose an appropriate combination of BPMs.

As part of this assessment, the recommended BPMs demonstrate the aims and objectives of PBP 2019 are able to be satisified, including the matters considered by the RFS necessary to protect persons, property and the environment from the danger that may arise from a bushfire.

Section 8.3.9 of PBP 2019 requires the BPMs to be commensurate with the bushfire hazards and associated risks. The recommended BPMs have been assessed for compliance against Section 5.3 of PBP 2019, being BPMs for residential and rural residential subdivisions. Whilst the project is not required to provide BPMs relevant to residential land development, in this instance given the absence of any development specific criteria (e.g. for solar farms and large scale battery storage systems), the BPMs for residential development have been proposed as part of adopting a precautionary approach.

4.1. Asset Protection Zones

An Asset Protection Zone (APZ) is an area surrounding a development that is managed to reduce the bushfire hazard to an acceptable level to mitigate the risk to life and property. The required width of the APZ varies with slope and the type of hazard. The foremost effective treatment for reducing bushfire risk is the establishment of an APZ. This involves the removal and continual management of vegetation to reduce the effect of flame contact and radiant heat on the asset/s as well as providing access for firefighting operations. An APZ also reduces the chances of a fire escaping from a site and entering surrounding bushland by ensuring a fuel-free (fuel-reduced) environment whereby fire cannot propogate and spread.

4.1.1. Determining the Appropriate Setbacks

A leading factor when determining the APZ for the project area is the ability for firefighters to gain access. A secondary consideration is the vulnerability of the asset, such as what is required to prevent exposure to bushfire attack from exceeding a threshold that may result in material combustion or ignition, or more importantly, the threat to life.

The methodology to determine the appropriate APZ setback has adopted an acceptable solution (in accordance with PBP 2019 Table A1.12.3). Whilst PBP 2019 does not explicitly require the project to provide an APZ in accordance with Appendix 1 of PBP 2019, Section 8.3.5 of PBP 2019 nominates a minimum 10 metre APZ for the structures and associated buildings / infrastructure. It is also noted the CFA Model Requirements nominates a minimum 10 metre firebreak around BESS, large scale solar farms and related infrastructure. Accordingly, this is recommended for the project area as shown in **Table 3**.

Notwithstanding the required APZs, in accordance with the precautionary principle, all components of the project area would be maintained as an inner protection area to minimise exposure to excessive radiant heat levels.

Table 3: Required Asset Protection Zones

Vegetation Classification (PBP 2019)	Slope	PBP 2019 (Table A1.12.2)
Grassland	Flat/ Upslope	10m
	0.0°-<5.0°	12m
	5.0°-<10.0°	13m
	10.0°-<15.0°	15m
	15.0°-<20.0°	17m
Woodland	Flat/ Upslope	12m
	0.0°-<5.0°	16m
	5.0°-<10.0°	20m
	10.0°-<15.0°	25m
	15.0°-<20.0°	32m
Forest	Flat/ Upslope	24m
	0.0°-<5.0°	29m
	5.0°-<10.0°	36m
	10.0°-<15.0°	45m
	15.0°-<20.0°	56m

Table 4: Asset Protection Zone Compliance Table (PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
5.3.1 ASSET PROTECTION ZONES **Table 5.3a** To provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at buildings are below critical limits and to prevent direct flame contact.	Potential building footprints must not be exposed to radiant heat levels exceeding 29kW/m^2.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the Forest Fire Danger Index (FFDI).	**Able to Comply**	The recommended setbacks are to be managed as an APZ to ensure that no components of the solar farm (including solar array, compounds, substations, sheds etc) are exposed to excessive radiant heat levels. The APZs would need to be between 10m and 45m based on the type of vegetation adjacent to the asset and slope. The APZ is to permit unobstructed vehicle access around the perimeter of each asset.
	APZs are managed and maintained to prevent the spread of a fire towards the building.	The APZ is managed in accordance with the requirements of Appendix 4.	**Able to Comply**	Any part of the project area identified as an APZ shall be managed for the life of the project as an inner protection area (IPA) in accordance with the requirements of PBP 2019.
	The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	**Able to Comply**	All recommended APZs are located within the project area.
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	The APZ is not located on lands with a slope exceeding 18°.	**Able to Comply**	All APZs are located on slopes less than 18°.

4.2. Landscaping and Vegetation Management

The design and management of the landscaped areas in the vicinity of any buildings or structures have the potential to improve the chances of survival of people and buildings. It is not expected any part of the project area would be extensively landscaped, however, should any landscaping be considered, landscaping in and around a bushfire hazard should consider the following:

- Priority given to retaining species that have a low flammability.
- Priority given to retaining species which do not drop much litter in the bushfire season and which do not drop litter that persists as ground fuel in the bush fire season.
- Priority given to retaining smooth barked species over stringy bark.
- Create discontinuous or gaps in the vegetation to slow down or break the progress of fire towards the dwellings.

The principles of landscaping for bushfire protection aim to:

- Prevent flame impingement on buildings.
- Provide a defendable space for property protection.
- Reduce fire spread.
- Deflect and filter embers.
- Provide shelter from radiant heat.
- Reduce wind speed.

Careful thought must be given to the type and physical location of any proposed landscaping. Inappropriately selected and positioned vegetation has the potential to 'replace' any previously removed fuel load.

Whilst it is recognised that fire-retardant plant species are not always the most aesthetically pleasing choice for landscaping, the need for adequate protection of life and property requires that a suitable balance between visual and safety concerns be considered.

Where landscaping may be required to provide visual screens to dwellings, landscaping shall be located no less than 100 metres from the affected building/s that are within the project area.

Table 5: Landscaping Compliance Table (PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with APZ standards (see Appendix 4). Fencing is constructed in accordance with section 7.6.	**Able to Comply**	All new landscaping would consider the requirements of APZs per Appendix 4. All new fencing would need to comply with PBP 2019 section 7.6.

4.3. Access

In the unlikely event of a serious bushfire, it will be essential to ensure that adequate ingress / egress and the provision of defendable space are afforded in the project layout. PBP 2019 requires an access design that enables safe operational access to structures and water supply whilst facilitating adequate emergency and operational response. All bushfire prone areas should have an alternate access or egress option depending on the bushfire risk, the siting of the development and the chances of the primary access road being obstructed or cut by fire for a prolonged period.

The following design specifications detailed in PBP 2019 are relevant to the project:

- All property access roads shall be two-wheel drive all weather roads.
- be through roads, but if unavoidable then dead ends should be no more than 200 metres in length, incorporate a minimum 12 metres turning circle (either in cul-de-sac or T-head formation) and should be clearly sign posted as dead ends.
- the capacity of road surfaces is sufficient to carry fully loaded fire fighting vehicles (approximately 15 tonnes for areas with reticulated water, 23 tonnes for all other areas).
- non perimeter roads comply with Table 5.3b (PBP 2019) - Road widths for Category 1 Tanker.
- curves of roads (other than perimeter roads) are a minimum inner radius of 6 metres and minimal in number, to allow for rapid access and egress.
- maximum grade for sealed roads do not exceed 12.5°.
- have a minimum vertical clearance to a height of four metres at all times.
- should they exist, no services or hydrants are located within the parking bays.

There are two proposed access points to the project area being:

- The south of the project area from Boro Road, Boro (north of 1154 Goulburn Road, Boro).
- The south-western corner of the project area from Braidwood Road (through Lot 2 DP711124).

Both access points will be security controlled for emergency ingress and egress.

Furthermore, existing and new access track would provide direct access to the solar array, BESS and related infrastructure within the project area.

All proposed internal roads would satisfy the requirements for property access roads required by PBP 2019 as they are designed to suit large heavy vehicles and provide clear egress.

Tables 6 and **7** demonstrate the project area and associated access network are able to satisfy the Acceptable Solutions detailed in Tables 5.3b and 7.4a of PBP 2019.

Table 6: Access Table 5.3b Compliance Table

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
5.3.2 ACCESS (GENERAL REQUIREMENTS) **Table 5.3b** To provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from the area.	Fire fighters are provided with safe all weather access to structures.	Property access roads are two-wheel drive, all-weather roads.	**Able to Comply**	The project area is located wholly within private land and no new public roads are required. Primary access to the project area will be provided from both Braidwood Road and Boro Road. A number of access tracks are proposed to provide direct access to the solar array, BESS and related infrastructure located within the project area.
		Perimeter roads are provided for residential subdivisions of three or more allotments.	**N/A**	
		Subdivisions of three or more allotments have more than one access in and out of the development.	**N/A**	
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	**N/A**	
		Access roads must provide suitable turning areas in accordance with Appendix 3.	**Able to Comply**	
		Maximum grades for sealed roads do not exceed 15° and an average of not more than 10° or other gradient specified by road design standards, whichever is the lesser gradient.	**Able to Comply**	
		All roads are through roads.	**Able to Comply**	The network of internal access roads are able to provide entry and exits in multiple directions.
		Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	**N/A**	
		Where access / egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	**Able to Comply**	
		One way only public access roads are no less than 3.5m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	**N/A**	

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
ACCESS ROAD CAPACITY	The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	**Able to Comply**	The capacity of the new property access roads would have sufficient load capacity for all firefighting vehicles.
ACCESS TO WATER	There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	**Able to Comply**	An all-weather road access and hardstand shall be provided to the hard-suction point and/ or hydrant. The hardstand must be maintained to a minimum of 23 tonne GVM, eight (8) metres long and six (6) metres wide.
		Hydrants are provided in accordance with AS2419.1:2005	**N/A**	
		There is suitable access for Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	**Able to Comply**	
PERIMETER ROADS	Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	There are two-way sealed roads.	**N/A**	No new public perimeter roads are included in the project area.
		Minimum 8m carriageway width kerb to kerb.		
		Parking is provided outside of the carriageway width.		
		Hydrants are to be located clear of parking areas.		
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.		
		Curves of roads have a minimum inner radius of 6m.		
		The maximum grade road is 15° and average grade is 10°.		
		The road crossfall does not exceed 3°.		
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches is provided.		
NON-PERIMETER ROADS	Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m width kerb to kerb.	**N/A**	No new non-perimeter roads are included in the project area.
		Minimum 5.5m width kerb to kerb.		
		Parking is provided outside of the carriageway width.		
		Hydrants are to be located clear of parking areas.		

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.		
		Curves of roads have a minimum inner radius of 6m.		
		The road crossfall does not exceed 3°.		
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches is provided.		
PROPERTY ACCESS	Fire fighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	**N/A**	All internal property access roads would remain in private ownership and not be publicly accessible.
		In circumstances where this cannot occur, the following requirements apply: ❑ minimum 4m carriageway width; ❑ in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; ❑ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; ❑ provide a suitable turning area in accordance with Appendix 3; ❑ curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; ❑ the minimum distance between inner and outer curves us 6m; ❑ the crossfall is not more than 10 degrees; ❑ maximum grades for sealed roads do not exceed 15 degrees and	**Able to Comply**	All new property access roads are expected at a minimum to satisfy the design requirements for non-perimeter roads. All property access roads are a minimum 4m wide and capable of accommodation a vehicle with a 23 tonne capacity.

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
		not more than 10 degrees for unsealed roads; and ❑ a development compromising more than three dwellings has access by dedication of a road and not by right of way. Note: Some short constrictions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.		

Table 7: Access Table 7.4a Compliance Table (Infill Development - PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
Access	Fire fighters are provided with safe all weather access to structures.	Property access roads are two-wheel drive, all-weather roads.	**Able to Comply**	All new access roads within the project area would comply with the minimum engineering requirements of PBP 2019.
	The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	**Able to Comply**	The capacity of the new property access roads would have sufficient load capacity (23 tonne) for all firefighting vehicles.
	There is appropriate access to water supply.	Hydrants are provided in accordance with AS2419.1:2005	**N/A**	The recommended static water supply would be provided and immediately accessible to responding firefighters. It is not expected a new reticulated water supply will be installed to service the project area. As such, no new hydrants will be available.
		There is suitable access for Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	**Able to Comply**	
	Fire fighting vehicles can access the dwelling and exit the property safely.	At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road	**Able to Comply**	Multiple access and entrance roads to the project area are provided in multiple directions.
		There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	**N/A**	The project area has frontage and direct access to both Braidwood Road and Boro Road.
		In circumstances where this cannot occur, the following requirements apply: ❑ minimum 4m carriageway width; ❑ in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long	**Able to Comply**	All new property access roads are expected at a minimum to satisfy the design requirements under Table 7.4a of PBP 2019.

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
		by 2m wide, making a minimum trafficable width of 6m at the passing bay; ❑ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; ❑ provide a suitable turning area in accordance with Appendix 3; ❑ curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; ❑ the minimum distance between inner and outer curves us 6m; ❑ the crossfall is not more than 10 degrees; ❑ maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and ❑ a development compromising more than three dwellings has access by dedication of a road and not by right of way. Note: Some short constructions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.		

4.4. Services - water, electricity and gas

Adequate services of water for the protection of buildings during and after the passage of a bushfire is essential for firefighting purposes. In addition, gas and electricity services should be located and installed so as not to contribute to the risk of fire or impede the firefighting effort.

4.4.1. Water

In the event of a fire sufficient water must be available and safely accessible to emergency responders and firefighting vehicles to ensure that fire suppression activities are safe, time, effective and not hindered in anyway.

Firefighting infrastructure must be designed to allow effective response to the risks and hazards at the facility. A reliable water supply must be provided to cover buildings, control rooms, substations and grid connections.

The project area would not be connected to a reticulated water supply. Accordingly, a static water supply is required for firefighting purposes. It is recommended the project area is suitably equipped to respond to any fires on site. The CFA provides a best practice guideline, Renewable Energy Facilities Design Guidelines, and states the minimum requirements for water supply are as follows:

1. Water access points must be clearly identifiable and unobstructed to ensure efficient access.
2. Static water storage tank installations must comply with *AS 2419.1-2021: Fire hydrant installations – System design, installation and commissioning*.
3. The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel.
4. The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.
5. The static water storage tanks must be located at vehicle access points to the facility and must be positioned at least 10 metres from any infrastructure (solar panels, battery energy storage systems, etc.).
6. The hard-suction point must be provided, with a 65 millimetre and 150 millimetre full bore isolation valve equipped with a Storz connection, sized to comply with the required suction hydraulic performance.
7. The hard-suction point must be positioned within 4 metres to a hardstand area and provide a clear access for emergency services personnel.
8. An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 23 tonne GVM, 8 metres long and 6 metres wide.
9. The road access and hardstand must be kept clear at all times.
10. The hard-suction point must be protected from mechanical damage (e.g. bollards) where necessary.
11. An external water level indicator must be provided to the tank and be visible from the hardstand area.
12. Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.
13. Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest static water tank(s).

PBP 2019 does not provide water supply requirements for renewable energy facilities therefore it is appropriate to adopt current industry best practice, being the CFA Renewable Energy Facilities Design Guidelines.

4.4.2. Electricity

By design, the project is part of the electricity transmission and generating network. The project would include the construction of a new high voltage electrical switchyard.

Whilst the entire project area would be managed as an APZ, vegetation clearance to any connecting transmission lines shall comply with the ISSC3 Guideline for Managing Vegetation Near Power Lines and any applicable local network provider operating procedures.

The project area has a relatively low fire potential with no flammable material stored, handled or produced and is designed with a high degree of control of the batteries themselves, including highly automated shut-down and application of fire suppressants.

4.4.3. Gas

Any reticulated or bottled gas should be installed and maintained according to the requirements of the relevant authorities and AS 1596-2002. It is expected that the location of gas services would not lead to ignition of surrounding bushland or the fabric of buildings.

4.5. Construction Standards - Bushfire Attack Level

The project area is partly zoned RU1 Primary Production under the *Queanbeyan–Palerang Regional Local Environment Plan 2022* and also partly zoned C3 Environmental Management under the *Goulburn Mulwaree Council Local Environment Plan 2009*, which is a prescribed non-residential zone, and the Project is permissible with consent within this zone.

A Bushfire Attack Level (BAL) rating is typically applied to a residential building, or Class 9 buildings occupied by vulnerable persons. PBP 2019 does not require BALs to be applied to infrastructure buildings or other non-habitable structures. As stated within Section 8.3.1 of PBP 2019, the NCC does not provide for any bushfire specific performance requirements for non-residential development, such as Class 5-8 and 10 buildings. As such, AS3959-2018 *Construction of buildings in bushfire prone areas* (AS3959-2018) are not considered as a set of deemed-to-satisfy provisions. However, compliance with AS3959-2018 and the National Association of Steel-framed Housing (NASH) standard may be considered when meeting the aims and objectives of PBP 2019 - for future industrial buildings.

It is not proposed to apply a BAL rating to any component of the project area, however the methodology to determine BAL ratings as a derivative of determining radiant heat flux exposure has been adopted as an indicator to guide the design process when siting the various components of the project. Furthermore, the recommended APZs ensure no part of the project area would be exposed to direct flame contact.

4.6. Emergency Services

NSW RFS is the primary bushfire emergency response agency for any incident affecting the project area. There is a NSW Rural Fire Service located at 419 Mount Fairy Road, Mount Fairy, approximately 8.1km (or 10mins) south east of the project area (**Figure 9**). This would likely be the first responder to an emergency.

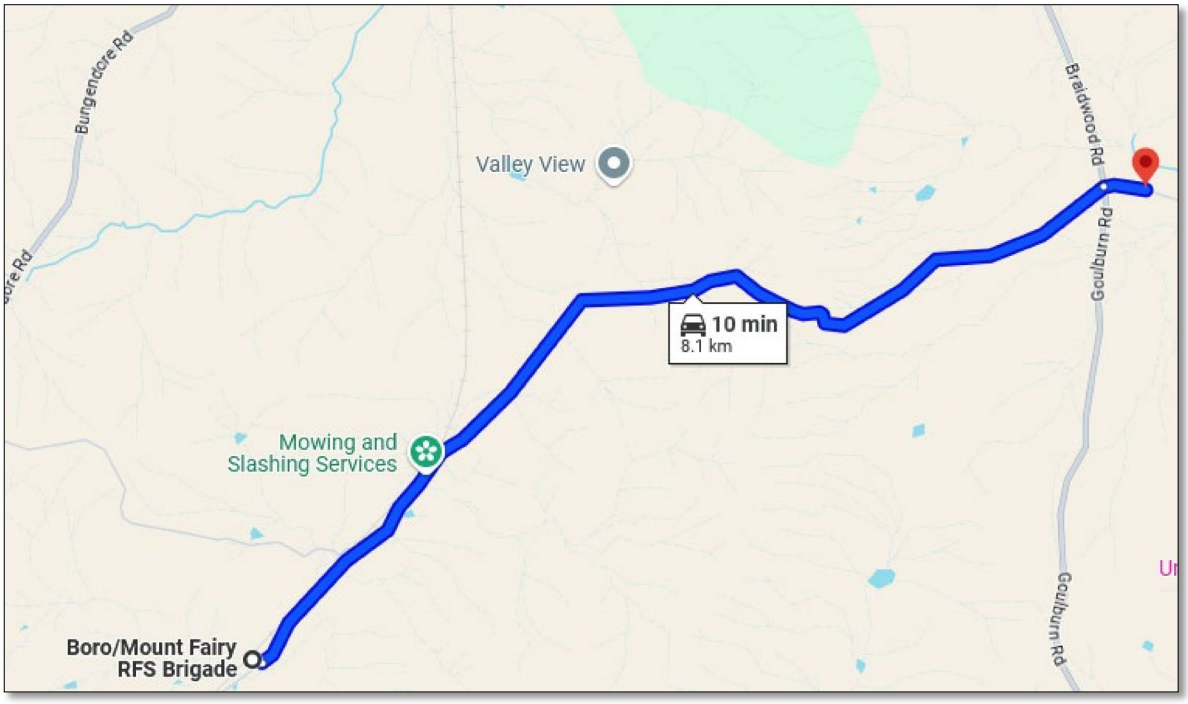


Figure 9: Boro / Mount Fairy Rural Fire Brigade

4.7. Emergency Management Planning

It is recommended a 'Bushfire Emergency Management Plan' (BEMP) be prepared in accordance with the RFS document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' for the construction and operational phases of the project or as required by conditions of development consent. The BEMP must be prepared in consultation with the local fire control centre (FCC) and address the following:

- Property Incident Plan.
- detailed measures to prevent or mitigate fires igniting.
- 24-hour emergency contact details including alternative telephone contact.
- work that should not be carried out during total fire bans.
- site infrastructure plan.
- fire fighting water supply plan.
- site access and internal road plan.
- availability of fire-suppression equipment, access and water.
- implementation of Asset Protection Zones (APZ) and their continued maintenance.
- storage and location of hazards (Physical, Chemical and Electrical) that will impact on fire fighting operations and procedures to manage identified hazards during fire fighting operations.
- notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bushfire danger period to ensure weather conditions are appropriate.
- any additional matters as required by the FCC (BEMP review and updates).
- appropriate bush fire emergency management planning.

5. Conclusion and Recommendations

5.1. Conclusion

Bushfire Planning Australia (BPA) was engaged by RPS AAP Consulting Pty Ltd (RPS) to conduct a bushfire scoping assessment of the proposed Boro Solar Farm for Samsung C&T Renewable Energy Australia Pty Ltd (the Applicant).

A bushfire assessment has found that the project area has a low to moderate bushfire hazard potential. The vegetation within and surrounding the project area is predominantly used for grazing across a mixture of derived grasslands and pastures. The isolated areas of woodland and forest vegetation formation as described in the NSW Rural Fire Service document *Planning for Bushfire Protection 2019* (PBP 2019) present the greatest bushfire hazard, albeit this type of vegetation is only found in small areas throughout the project area and to the east of the site.

5.2. Recommendations

The bushfire protection measures recommended for the project will address any residual risk, minimise bushfire impact on the proposed assets and reduce the risk of a fire initiating and spreading from the project area to the surrounding vegetation.

The following bushfire protection measures would need be implemented to reduce the impact of a bushfire to an acceptable level for the proposed development and demonstrate the project is able to comply with PBP 2019:

1. Asset Protection Zones (APZ) around solar farm and BESS infrastructure; including solar arrays, substations, office and temporary facilities shall be provided and managed as an APZ as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*.
2. To allow for emergency services personnel to undertake property protection activities, a minimum 10 metre defendable space (APZ) that permits unobstructed vehicle access is to be provided around the perimeter of the project area compounds and maintenance yards.
3. Property access roads are to be constructed in accordance with Table 5.3b and Chapter 7.4a of PBP 2019.
4. One (1) x 20,000L water tank dedicated for firefighting purposes is required as the project area is greater than 1 hectare.
5. Consideration should be given to landscaping and fuel loads on site to decrease potential fire hazards within the project area.
6. All hazardous materials shall be safely stored in a secure enclosure to ensure these do not contribute to a bushfire event.
7. A Fire Management Plan shall be prepared in consultation with the NSW RFS Queanbeyan – Palerang Fire Control Centre (or relevant regulator), prior to the commencement of construction and in accordance with the Conditions of Approval.
8. The operators of the facility shall prepare a Bushfire Emergency Management and Operations Plan prior to the commencement of operations.

Additional Recommendation

9. The Victorian CFA Renewables Energy Facilities Design Guidelines would recommend up to three (3) water tanks dedicated for firefighting purposes for a project area of this size, being:
    i. one (1) x 45,000 litre water tank located adjacent to an internal access road
    ii. one (1) x 45,000 litre water tank located within 120 metres of all infrastructure associated with the BESS
    iii. one (1) x 45,000 litre water storage tank provided at the main entrance to the facility or as instructed by the NSW RFS.

Should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the project area, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

This assessment has been made based on the bushfire hazards related to the project area at the time of production (April 2025).

6. References

- Country Fire Authority (Victoria) Design Guidelines and Model Requirements for Renewable Energy Facilities v 4 (2023)
- Industry Safety Steering Committee (2005). *ISSC 3 Guideline for managing Vegetation Near Power Lines*
- Keith, D. (2004). Ocean Shores to Desert Dunes - The Native Vegetation of New South Wales and the ACT.
- NSW Rural Fire Service (2005). *Standards for Asset Protection Zones*. NSW Rural Fire Service.
- NSW Rural Fire Service (2014). *A Guide to Development of a Bushfire Emergency Management and Evacuation Plan*.
- NSW Rural Fire Service (2019). *Comprehensive vegetation fuel loads*
- NSW Rural Fire Service (2019). Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.
- Ramsay, GC and Dawkins, D (1993). *Building in Bushfire-prone Areas – Information and Advice*. CSIRO and Standards Australia.
- Rural Fires and Environmental Assessment Legislation Amendment Act 2002.
- Standards Australia (2018). AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.

Appendix J Cumulative impact scoping assessment

Cumulative impact scoping summary

Table 8-1 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 8-2 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
Capital Solar Farm (MP10_0121)	15 kilometres west	Approved – operational					
	Key features: • 50 MW solar farm located adjacent to Capital Wind 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 and topography change between proposed developments. No further assessment proposed.	Due to the operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Due to the 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.
Capital Wind Farm (MP05_0179)	15 kilometres west	Approved – operational					
	Key features: • 140 MW wind farm including 67 wind turbines and ancillary 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 and topography change between proposed developments. No further assessment proposed.	Due to the operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Due to the 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.
Capital Wind Farm: Stage 2 (MP10_0135)	15 kilometres west	Approved – construction					
	Key features: • 140 MW wind farm including 41 wind turbines and ancillary 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 and topography change between proposed developments. No further assessment proposed.	Due to the operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Access to Tarago and Goulburn via the local road network are likely to be impacted. Construction haulage may also impact on Braidwood Road southbound.	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
			Standard cumulative impact assessment required.			Cumulative impacts are anticipated. Detailed cumulative impact assessment required.	
Blind Creek Solar Farm (SSD-13166280)	20 kilometres south-west	Approved – construction					
	Key features: • 300 MW solar farm and 243 MW BESS and ancillary infrastructure		Cumulative impacts on biodiversity, in particular clearance of native vegetation, listed threatened species, and SAII are possible. Standard cumulative impact assessment required.	Low risk of cumulative visual impacts due to distance and topography change 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 Goulburn via the local road network is likely to be impacted. 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.
Gundary Solar Farm (SSD-48225958)	30 kilometres north	Proposed					
	Key features: • 400 MW solar farm with energy storage 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 and topography change 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 Goulburn via the local road network is likely to be impacted. 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.
Merino Solar Farm (SSD-59155459)	30 kilometres north	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 Goulburn via the local road	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
	• 450 MW solar farm with energy storage and associated infrastructure		particular clearance of native vegetation, listed threatened species, SAII and bird and bat strike during operation are possible. Detailed cumulative impact assessment required.	distance and topography change between proposed developments. No further assessment proposed.	distance between proposed developments. No further assessment proposed.	network is likely to be impacted. 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.
Woodlawn Mine (MP07_0143)	10 kilometres north-west	Approved – operational since 1978					
	Key features: • The project is a zinc-copper-lead-gold-silver open cut and underground mine facility. Located within the Woodlawn Eco Precinct		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 and topography change between proposed developments. No further assessment proposed.	Due to the distance between developments, cumulative impacts are not anticipated. No further assessment proposed.	Due to the distance and operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Low cumulative risk as the mine has had a long operating period. Community sentiment towards either project would not be affected.
Woodlawn Bioreactor (DA31-02-99)	10 kilometres north-west	Approved – operational					
	Key features: • The project is a putrescible landfill operation and associated intermodal facility. The landfill site is at the former Woodlawn open cut mine site within the Woodlawn Eco Precinct		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 and topography change between proposed developments. No further assessment proposed.	Due to the distance between developments, cumulative impacts are not anticipated. No further assessment proposed.	Due to the distance and operational status of the project, cumulative impacts are not anticipated. No further assessment proposed.	Low cumulative risk as the bioractor has had a long operating period. Community sentiment towards either project would not be affected.
Woodlawn Wind Farm	10 kilometres north-west	Approved – operational					

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
(DA250-10-2004)	**Key features:** • 50 MW wind farm including 23 wind turbines and ancillary infrastructure. Located within the Woodlawn Eco Precinct		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 and topography change between proposed developments. No further assessment proposed.	Due to the distance between developments, cumulative impacts are not anticipated. No further assessment proposed.	Due to the 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.