SOMEVA RENEWABLES

MAKING COMPLEX EASY

POTTINGER WIND FARM

Scoping Report

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Contents

Tables

Figures

Appendices

Cover photo courtesy of Moir Landscape Architecture Pty Ltd (2023)

1 INTRODUCTION

This section provides an introduction to the Applicant and Project. It includes the objectives of the Project as well as relevant site information and any related development. Relevant background is provided as well as key strategies to avoid, minimise or offset the Project impacts.

1.1 Preamble

Pottinger Renewables Pty Ltd (Applicant) seeks to construct, operate, maintain, and decommission the 750 Megawatt (MW) Pottinger Wind Farm (Project). Someva Pty Ltd (Someva Renewables) will develop the Project. Located 60 km south of Hay in NSW in the rural locality of Booroorban, the Project is located entirely within the South West Renewable Energy Zone (REZ) as shown in **Figure 1.1**.

The preliminary Project Area as utilised in this Scoping Report is shown on **Figure 1.2** in the context of its regional setting and comprises a property in single landownership of approximately 14,000 ha. Preliminary Lot and DP details applicable to the Scoping Report are discussed in **Section 2.3.1.4**.

The Project has a preliminary Capital Investment Value (CIV) of approximately $1,675,000,000 and will provide Full Time Equivalent (FTE) employment for up to 450 personnel during construction.

The Project is State Significant Development (SSD) as defined under State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) and will require a Development Consent under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

RPS Group AAP Consulting Pty Ltd (RPS) has been engaged by the Applicant to prepare this Scoping Report to support the SSD development consent process.

The Scoping Report supports an application to the Secretary of the NSW Department of Planning and Environment (DPE) for Secretary's Environmental Assessment Requirements (SEARs). The SEARs will guide the preparation of the Project Environmental Impact Statement (EIS) which shall support the Development Application (DA) under Part 4 Division 4.7 of the EP&A Act.

The DA and supporting EIS shall be prepared in accordance with 'State Significant Development Guidelines' (DPIE, 2022a), be accompanied by the consent of the owners/s of the land as required in Section 23(1) of the *Environmental Planning and Assessment Regulation 2021* and include a Declaration from a Registered Environmental Assessment Practitioner (REAP).

The Scoping Report also supports a Referral application under Part 9 of the Commonwealth (Cwlth) *Environment Protection and Biodiversity Conservation Act 199*9 (EPBC Act).

1.2 The Applicant

Someva is an Australia renewable energy developer and advisor.

Someva develops renewable energy projects with a focus on creating new income opportunities for landowners, supporting communities grow into new industries, and providing lower cost electricity for the needs of future Australian generations.

Someva's experience across project planning, design, construction and operations is aimed at creating the future clean energy infrastructure to support a transition to a low carbon economy.

The relevant contact address is **36-38 Young Street, Sydney NSW 2000** and **ABN** is **78 617 643 384**.

Someva's team members have been involved in the full end to end life cycle of renewables projects since 2008, working across development, construction and operation of approximately 2.3 GW of assets in Australia and Asia. Someva currently has an early-stage development portfolio of approximately 2 GW.

1.3 Project Overview

The Applicant seeks in perpetuity approval for the construction, operation and decommissioning of a 750 MW wind farm, electrical infrastructure, other infrastructure and ancillary activities generally including the following components:

- Up to 108 Wind Turbine Generators (WTGs) of which each has a tip height of up to 280 m;
- Electrical reticulation network:
  - Up to five main transformers and an optional second satellite substation and associated transformers, switchroom, and reactive plant;
  - On-site connection to Project EnergyConnect, associated switch and other equipment at the main substation;
  - Internal electrical reticulation (both underground and overhead); and
  - Approximately 500 MW / 2 gigawatt hours (GWh) Battery Energy Storage (BESS);
- Other temporary and permanent infrastructure including:
  - Operations and Maintenance (O&M) facility and infrastructure including site office, storage facilities, car parking and fencing;
  - Accommodation facilities;
  - Construction and operational compounds;
  - Hardstands for WTGs and other infrastructure;
  - Internal access tracks and road turning head connecting Project infrastructure;
  - Meteorological masts; and
  - Concrete batching plants, crushing facilities, gravel / borrow pits, construction laydown areas;
- Ancillary activities including sourcing of materials for construction; sourcing of water for construction; subdivision and boundary adjustments, visual screening and associated ancillary works;
- Access road use and Project-required upgrades:
  - Project Area access: via the Cobb Highway from Jerilderie Road in the north east and West Burrabogie Road in the west, as well as emergency access; and
  - Wind farm components access: via a major Port in either NSW, VIC, SA, via the Sturt Highway and/or Cobb Highway, then Jerilderie Road and/or West Burrabogie Road;
- Operational workforce of up to 40 Full Time Equivalent (FTE) and construction up to 450 FTE;
- Construction generally within standard construction hours and operations 24 hours per day 7 days per week; and
- Preliminary disturbance footprint of up to 470 ha.

No external transmission lines or associated easements are currently anticipated for the Project.

Some of the Project-associated infrastructure will be shared with the Pottinger Solar Farm (the subject of a separate application) as generally shown within the white dashed boundary on **Figure 1.2**.

The Applicant has adopted early strategies to avoid, minimise or offset the impacts of the Project to the extent known at the scoping stage. These are detailed in **Section 3.5.5**.

1.4 Background

Someva identified the South West REZ area in 2019 as an area of interest for renewables for a number of reasons including due to the Project EnergyConnect transmission line proposal, likelihood of solar and wind resource, significant distances to non-associated dwellings, suitable grazing pasture, and suitable terrain.

Someva commenced consultation with the Project's single local farming landowner in 2021 and together worked on a range of pre-feasibility activities to progress the proposal that is now the Pottinger Energy Park.

The Pottinger Energy Park, located in Hay, NSW, aims to generate up to 1 GW of renewable energy through wind, solar, and battery storage infrastructure.

The Project is named after the Pottinger family, who through two generations installed and maintained windmills in the region from the early 1900s till 1982 which aided the development of the Merino industry in the Riverina. Without this vision to embrace a new technology of the time it would have "been little short of murder to turn sheep loose into those paddocks" - Terry McGoverne, the Wool Barrons.

Pottinger Park in Conargo, a homage to Manny Pottinger who was a local windmill technician, provides a brief history of the windmill technology and its importance to growing the Merino industry and support economy in the area. This strong local history of innovation demonstrates how natural resources like wind, being "Natures Gift" - Manny Pottinger, support livelihoods in the region and would continue through the proposed Pottinger Energy Park.

Someva Renewables, the 100% Australian-owned project developer, is committed to building the energy park sustainably and responsibly, working closely with government agencies and community organisations.

The Project is expected to raise awareness about renewable energy and environmental sustainability within the community and drive economic growth and diversification in the region.

1.5 Related Development

The Pottinger Renewable Energy Park comprises the Project and the Pottinger Solar Farm (and BESS) will combine to provide a large-scale energy system in the REZ. The Projects will progress generally in parallel, but determination timeframes are outside of the control of the Applicant and as such, approval for each is being sought separately.

The Pottinger Solar Farm is the subject of a separate DA. It will utilise some elements of the Project and this will be defined in its relevant documentation.

Conversely, the Project will utilise construction, operation, maintenance and decommissioning infrastructure, personnel and access associated with the Pottinger Solar Farm as generally described in **Section 3.2.6**.

The only other external development that the Project will require additional access to is EnergyConnect.

No existing use or continuing use rights are to be relied upon to facilitate the Project.

1.6 Objectives

The objectives of the Project are to:

- Create new income opportunities for landowners;
- Support communities grow into new industries;
- Provide a significant source of renewable energy to assist in reducing greenhouse gas (GHG) emissions;
- Providing lower cost electricity for the needs of future Australian generations;
- Contribute to renewable energy requirements and consequently NSW and Commonwealth targets for renewable energy;
- Collaborate with communities to allow residents, businesses and local industry to be incorporated into project design and long term commitments that set up lasting and meaningful contributions locally;

- Provide financial benefits to its neighbours and the community through the Voluntary Planning Agreement (VPA) and neighbour benefit agreements;
- Provide employment and education opportunities 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; and
- Achieve a high level of environment, community and safety standards.

1.7 Relevant Guidelines

The Scoping Report has been prepared in alignment with the following guidelines:

- 'NSW Wind Energy Guideline for State Significant Wind Energy Development' (DPE, 2016a), including:
  - 'Wind Energy: Visual Assessment Bulletin' (DPE, 2016b);
  - 'Wind Energy: Noise Assessment Bulletin' (DPE, 2016c);
- 'State Significant Development Guidelines - Preparing a Scoping Report: Appendix A to the State Significant Development Guidelines' (DPIE, 2022a) (Scoping Report Guidelines);
- 'Social Impact Assessment Guideline for State Significant Projects' (DPIE, 2023a) (Social Guidelines);
- 'Cumulative Impact Assessment Guidelines for State Significant Projects '(DPIE, 2022b); and
- 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2022c) (Engagement Guidelines).

Other relevant guidelines and plans are listed in the Scoping Report Guidelines' required 'Scoping Summary Table' in **Appendix A**.

Appendix B includes a summary of the 'Scoping Report Guidelines' requirements and indicates where each is addressed in this Scoping Report.

1.8 Structure

This Scoping Report has the following structure:

- **Section 1** describes the preliminary Project and the Applicant, an overview of the Project for which approval is sought, and the purpose of this Scoping Report. It also notes any related development, relevant guidelines, the Project objectives and structure of this Scoping Report;
- **Section 2** outlines the strategic context for the Project, including alignment with International, Federal land local policy and strategic goals, the land use planning of the Project Area, the site setting and features, and provides a preliminary project justification;
- **Section 3** describes the Project including the Project Area, interaction with other Projects, staging and alternatives considered including environmental benefits of the preferred Project;
- **Section 4** outlines the statutory context for the Project including the power to grant approval, permissibility, other approvals and mandatory matters for consideration;
- **Section 5** describes the stakeholder engagement plan, identification, engagement conducted to date, preliminary community feedback and proposed future engagement;
- **Section 6** provides relevant background, a preliminary assessment of environmental and social aspects and includes a summary of the proposed EIS assessment approach for each; and
- **Section 7** and **Section 8** provide the Abbreviations and References, respectively.

Appendices A to **F** support the Scoping Report.

Pottinger Wind Farm

Figure 1.1: Regional Locality Plan

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Date: 15/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 1650000

Basemap: ESRI (2023)

Data Sources: Spatial Services Spatial Data Services, Energy Co

Prepared By: EL Reviewed by: TS

Version: 4.3

This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Area
- Project Area

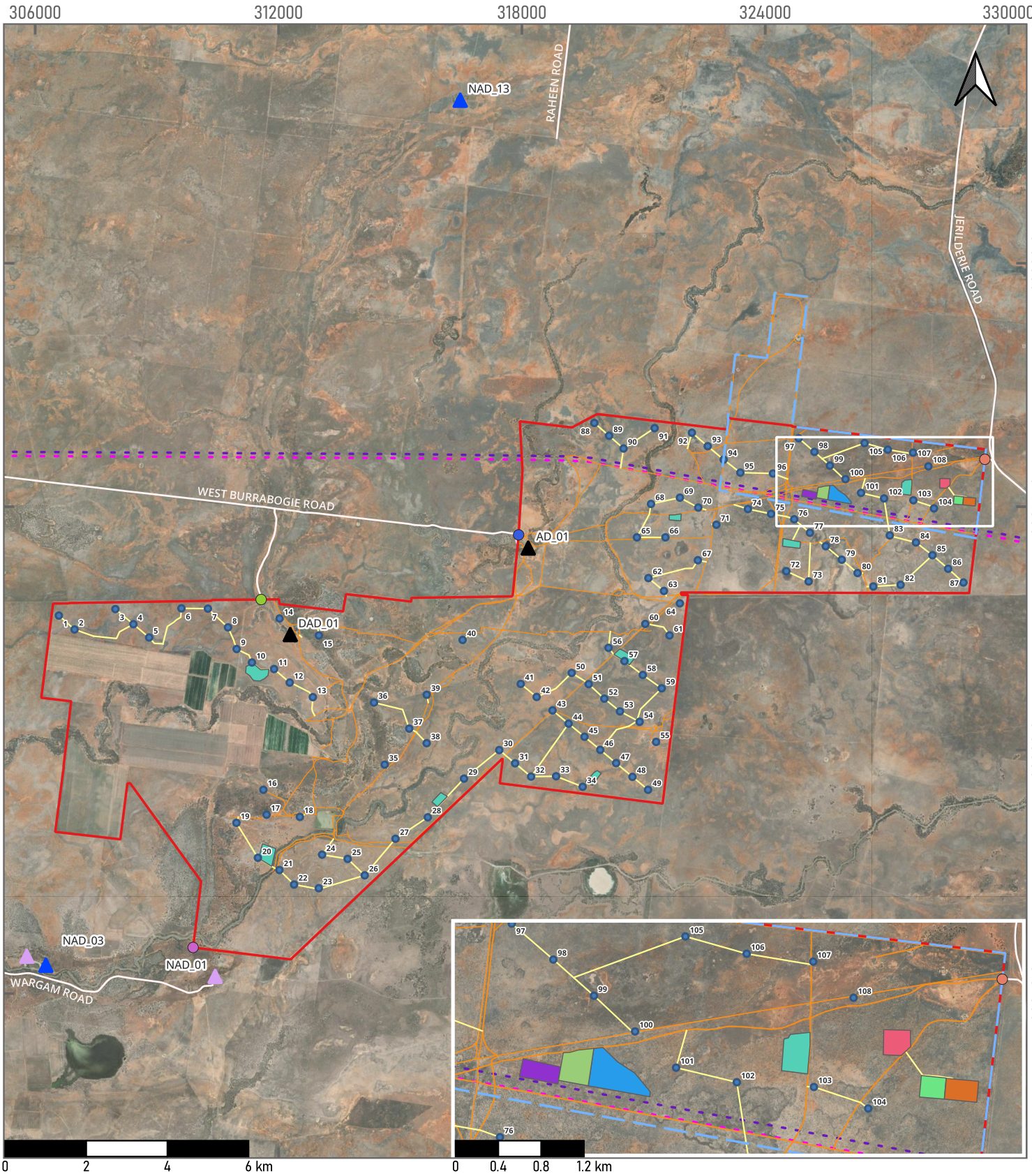
Government Areas
- Edward River LGA
- Hay LGA
- Murrumbidgee LGA
- South West REZ

Existing Infrastructure
- Main Roads
- Railway Lines

Transmission Lines
- 132 kV
- 220 kV
- 330 kV
- Project Energy Connect

Surrounding Projects
- BESS
- Energy Hub (EH)
- Energy Park (EP)
- Solar Farm (SF)
- Wind Farm (WF)

Protected Areas
- Historic Site
- National Park
- Nature Reserve
- Regional Park
- State Conservation Area
- Hydro Area



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Pottinger Wind Farm

Figure 1.2: Conceptual Preliminary Layout

Date: 19/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services
Prepared By: EL Reviewed By: TS
Version: 5.4

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Legend

Project Infrastructure

- Project Area
- Dual Application Area with Pottinger Solar Farm (subject of separate application)
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure

- Existing 220 kV Transmission
- Project Energy Connect
- Main Roads
- Existing Access Tracks

Dwellings

- Associated
- Non-Associated
- Non-Associated (Associated with other project)

2 STRATEGIC CONTEXT

This section identifies the key strategic issues that are relevant to the assessment of the Project. It also describes the key features of the site and surrounds, existing land use and land ownership. Relevant future developments in the area that could affect or be affected by the Project have been summarised.

2.1 Policy and Strategic Goals Alignment

2.1.1 International

2.1.1.1 United Nations Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a global call for action to "*promote prosperity while protecting the planet*" (UN, 2015). The SDGs address a range of socioeconomic and environmental issues including education, health, social protection, job opportunities, climate change and environmental protection. The 17 SDGs of the 2030 Agenda for Sustainable Development came into force on 1 January 2016. Australia has been a United Nations (UN) member state since 1945 and adopted the SDGs in its national policymaking.

There are several SDGs that renewable energy infrastructure aligns with, the core goal being Goal 7 – Affordable and Clean Energy. Target 7.A of Goal 7 aims to *"enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology by 2030".*

Other SDGs that the Project indirectly aligns with include:

- SDG 8 – Decent Work and Economic Growth;
- SDG 9 – Industry, Innovation and Infrastructure;
- SDG 11 – Sustainable Cities and Communities; and
- SDG 13 – Climate Action.

The Project is a renewable energy project and will therefore contribute to addressing socioeconomic and environmental issues through advancing cleaner fossil-fuel technology and energy efficiency.

2.1.1.2 United Nations COP26 (2021)

A key outcome of the UN Framework Convention on Climate Change Conference of the Parties (COP) held in Glasgow in 2021 (COP26) was the agreement to "*revisit and strengthen… 2030 targets in nationally determined contributions…by the end of 2022"* (UNFCC, 2021).

Nations were also called upon to "*phase down unabated coal power and inefficient subsidies for fossil fuels".* As a result, the Australian Federal Government committed to achieve net zero GHG emissions by 2050.

The Project will contribute to the reduction of GHG emissions through renewable energy generation.

2.1.1.3 United Nations COP21

The UN Framework Convention on Climate Change COP – COP21 (The Paris Agreement) was an important stepping-stone for international relations on climate change as it brought all nations into a common cause to combat climate change. The core outcome of the Paris Agreement is to limit emissions globally, by holding the increase in the global average temperature to well-below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels (UNFCC, 2015).

The Project will contribute to meeting Australia's commitments under the Paris Agreement through reducing annual GHG emissions by approximately 1.2 million tonnes per annum (Mtpa) through renewable energy generation.

2.1.2 Federal

2.1.2.1 Government's Large-scale Renewable Energy Target

The Renewable Energy Target (RET) is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and encourage the additional generation of electricity from sustainable and renewable sources.

The Large-scale Renewable Energy Target (LRET) incentivises the development of renewable energy power stations in Australia through a Renewable Energy Certificate Market for the creation and sale of certificates called large-scale generation certificates (LGCs). LRET-accredited power stations can create LGCs for electricity generated from that power station's renewable energy sources. LGCs can then be sold to:

- Liable entities under the RET (mainly electricity retailers); and
- Companies and individuals looking to support their claims about reducing emissions, using renewable electricity, or by surrendering offsets such as Australian Carbon Credit Units (ACCUs).

The current target under the LRET is for 33,000 GWh of additional renewable energy to be generated annually. The current targets, accreditation of power stations, and creation of LGCs will remain until the end of the scheme in 2030.

Once operational, the Project could generate up to 2,623 GWh of electricity annually. The Project will therefore contribute significantly to meeting the LRET target.

2.1.2.2 Climate Change Act 2022

In 2022 the Australian Government passed the *Climate Change Act 2022* (Climate Change Act) which outlines goals to combat climate change through legislative requirements. The Climate Change Act is pivotal in setting requirements for the generation of energy in Australia and targeting GHG emissions. Australia's GHG reduction targets are a 43% reduction in GHG emissions from 2005 levels by 2030 and to achieve net zero by 2050. These GHG emission targets are derived from the Paris Agreement's goals as stated in **Section 2.1.1.3**.

The Climate Change Act also introduces the requirement for the Minister for Climate Change and Energy to prepare an annual climate change statement to be presented in the House of Parliament, as informed by the Climate Change Authority.

The Project aligns with the Climate Change Act's objectives for GHG emission reduction by utilising renewable energy as a source for clean energy to Australia's electricity supply.

2.1.2.3 National Electricity Market

The National Energy Market (NEM) is a wholesale market through which electricity is traded in Australia. The NEM incorporates approximately 40,000 km of transmission lines and cables in Australia and spans the eastern and south eastern coasts (including QLD, NSW, ACT, SA, VIC and TAS) (AEMO, 2022a). It delivers around 80% of all electricity consumption in Australia (DCCEEW, 2023). The NEM facilitates the exchange of electricity between generators and retailers. Retailers resell the electricity to businesses and households. The Australian Energy Market Operator (AEMO) controls the NEM and is responsible for monitoring electricity consumption and the flow of energy across the power system (AEMO, 2021).

AEMO recognises that the NEM needs to be modernised to accommodate and respond to changes in electricity generation, emerging technologies, such as solar batteries, and shifting consumer preferences. (DCCEEW, 2023).

The 'Renewable Integration Study' (RIS) is a multi-year plan to maintain system security in the future NEM with a high share of renewable resources (AEMO, 2020). The results of the Stage 1 RIS finds that if in the next five years the recommended actions are taken to address the regional NEM-wide challenges (keeping balance in a system in which energy supply is increasingly variable and uncertain), the NEM could be operated securely with up to 75% instantaneous input of wind and solar electricity generation (AEMO, 2020).

The Project will contribute via its infrastructure to connect to the NEM and allow for its distribution to retailers. The Project will directly feed into the NEM and contribute to the large-scale goal of renewable energy generation being prominent in the market and reduce the reliance on fossil fuels.

2.1.2.4 Integrated System Plan 2022

The 'Integrated System Plan' (AEMO, 2022b) (ISP) is an integrated roadmap for the efficient development of the NEM over the next 20 years and beyond. The primary objective is to optimise value to end consumers by designing the lowest cost, secure and reliable energy system capable of meeting any emissions trajectory determined by policy makers at an acceptable level of risk (AEMO, 2022b).

The ISP also serves to inform policymakers, investors and consumers. It draws on stakeholder engagement and industry expertise in order to maximise the value and benefits to electricity consumers. The ISP provides detail on the network projects within QLD, NSW, ACT, VIC, SA and TAS, and how each will connect as well as outlines the REZs in Australia.

The Project is located within the South West REZ as shown on **Figure 1.1**. The Project will align with Phase 2 of the ISP which states "*Renewable generation development to replace energy provided by retiring coal-fired generators and supported by the actionable ISP projects"* (AEMO, 2021).

Phase 2 will be achieved through the development of Variable Renewable Energy (VRE) in the South West REZ, which is to be supported by the proposed Project EnergyConnect as shown on **Figure 1.2.**

The Project will connect to Project EnergyConnect and will therefore support the ISP.

2.1.2.5 Project EnergyConnect and the South West REZ

The Project Area is located within the Project EnergyConnect corridor which is a proposed 330 kV transmission line between SA and NSW with a total length of 900 km. The NSW component is being undertaken in two stages. The Western Section, which will connect the NSW and SA transmission networks, received state and federal planning approval in late 2021. The second stage, which connects the Buronga and Wagga Wagga substation was approved September 2022.

The Project Area is located within the South West REZ which was chosen due to:

- Abundance of high-quality wind and solar resources;
- Proximity to existing transmission lines and planned Project EnergyConnect;
- Relative land-use compatibility; and
- A strong pipeline of proposed projects.

The South West REZ was formally declared by the Minister for Energy under section 19(1) of the *Electricity Infrastructure Investment Act 2020* and published in the NSW Gazette on in November 2022.

Figure 1.1 illustrates the proximity of Project EnergyConnect and the South West REZ.

2.1.3 NSW Government's Commitments

2.1.3.1 Net Zero Plan Stage 1: 2020-2030

The 'Net Zero Plan Stage 1: 2020-2030' (DPIE, 2020a) (Net Zero Plan) sets the framework for how the NSW Government will achieve net zero emissions by 2050. In September 2021, the NSW Government announced the reduction of emissions by 50% below 2005 levels by 2030.

The Project will contribute to the Net Zero Plan's goals through the reduction of GHG emissions.

2.1.3.2 NSW Electricity Strategy

The 'NSW Electricity Strategy' (State of NSW and DPIE, 2019) (NSW Strategy) is the NSW Government's plan for a reliable, sustainable and affordable energy. The NSW Strategy aligns with the Net Zero Plan and will respond to current electricity demand challenges in an effort to combat electricity prices and reliability by:

- Delivering Australia's first coordinated REZs;
- Saving energy, especially at times of peak demand via the Energy Security Safeguard;
- Supporting the development of new electricity generators;
- Setting a target to bolster the state's energy resilience; and
- Making it easier to do energy business in NSW.

The Project is consistent with the NSW Strategy as it provides renewable energy generation and storage capacity that will ultimately result in lower cost of power in comparison to wholesale prices.

2.1.3.3 NSW Transmission Infrastructure Strategy

The 'NSW Transmission Infrastructure Strategy' (State of NSW and DPIE, 2018) (Transmission Strategy) builds upon the broader objective of making energy more affordable and securing energy supplies.

The Transmission Strategy aims to:

- Boost NSW interconnections with VIC, SA and QLD, and unlock more power from the Snowy Hydro Scheme;
- Increase NSW's energy capacity by prioritising Energy Zones in the Central-West, South West and New England regions of NSW; and
- Work with other states and regulators to streamline regulation and improve conditions for investment.

The Project will meet the objectives of the Transmission Strategy as it would increase NSW's connections with neighbouring states through Project EnergyConnect. It will also contribute to the South West REZ, resulting in an overall increase in NSW's energy capacity.

2.1.3.4 NSW Electricity Infrastructure Roadmap

The 'NSW Electricity Roadmap' (NSW Government, 2023) (Roadmap) is a plan to make the state's electricity system into one that is cheap, clean and reliable.

The Roadmap aims to streamline investment into transmission, generation, storage and the firming of infrastructure as coal-fired generation plants retire and are phased out (e.g. Vales Point in 2029, Mt Piper in 2040, Bayswater in 2033, Eraring in 2025. Liddell closed in April 2023.) (AEMO, 2023).

2.1.3.5 Renewable Energy Zones

REZs combine renewable energy infrastructure, storage and high-voltage transmission infrastructure. Each REZ will contain multiple renewable energy projects and electricity storage, in an effort to capitalise on economies of scale to deliver cheap, reliable and clean electricity for homes and businesses in NSW.

Five REZs have been identified so far in NSW in the NSW Strategy and Roadmap, which include: Central-West Orana, New England, South West, Hunter-Central Coast, and Illawarra. The REZs will help lower electricity costs through increased competition and support new local jobs and business opportunities during construction and operation.

The Project will contribute to the South West REZ by reducing carbon emissions by delivering a greater mix of renewable energy to the NEM, and supporting the goals and targets identified in **Section 1.6**.

2.2 Land Use Planning

The north eastern part of the Project Area is located within the extents of the Hay Shire Council Local Government Area (LGA) and the south western part in Edward River Council LGA. The Edward River Council utilises three different Local Environmental Plans (LEPs) of which Conargo LEP 2013 is applicable to the Project. The Hay Shire Council utilises the Hay LEP 2011 in its administration.

Both LGAs are situated within the broader Riverina Murray region as shown on **Figure 1.1**.

2.2.1 Riverina Murray Regional Plan 2041

The 'Riverina Murray Regional Plan 2041' (DPE, 2023) (Regional Plan) set a 20-year framework, vision and direction for strategic planning and land use in the area. The Regional Plan covers 20 LGAs, of which Hay and Edward River are a part of. The Regional Plan is prepared under the EP&A Act and draws from the Local Strategic Planning Statements (LSPSs) prepared by each council for the LGA.

The Regional Plan is underpinned by environment values and seeks to protect and harness these values to support ongoing prosperity and growth and to build resilience against natural hazards (DPE, 2023). The Regional Plan supports a transition to net zero emissions region by 2050 and will explore a future South West REZ.

The Regional Plan is made up of environment, community and economic objectives. The Project meets the following objectives from the Regional Plan:

- *"Objective 11 – Plan for integrated and resilient utility infrastructure*
  - *Ensuring the region has a sustainable and reliable power source will ensure new residential and economic development can be accommodated.*
- *Objective 13 – Support the transition to net zero by 2050.*
  - *AEMO forecasts a step-change in the transition away from fossil fuels and higher electrical demand. This transition requires fundamental changes in how electricity is generated, transported, stored and used."*

2.2.2 Hay Shire Council Local Strategic Planning Statement 2020

The 'Hay Shire Council Local Strategic Planning Statement 2020 (Hay Shire Council, 2020) (Hay LSPS) sets the framework for Hay Shire's economic, social and environmental land use needs over the next 20 years. The Hay LSPS planning priorities and actions provide the rationale for decisions on land use to achieve the community's broader visions (Hay Shire Council, 2020). The Hay LSPS is informed by the Community Strategic Plan (CSP), and also gives effect to the Regional Plan, implementing the directions and actions at a local level.

The Project directly addresses "*Planning Priority 9: Renewable Energy – Encourage the growth of Renewable Energy Installations*." This Priority recognises the opportunity that the Hay Shire presents for renewable energy generation in that it possesses high number of daylight hours, level topography, affordable land, and nearby grid connections.

This Priority has been derived from the Regional Plan "*Objective 13 – Support the transition to net zero by 2050"* as referred to in **Section 2.2.1**.

2.2.3 Hay Shire Council Community Strategic Plan 2022-2032

The 'Hay Shire Community Strategic Plan 2022-2032' is a 10-year plan that sets out the strategic direction and community vision and objectives for the community (Hay Shire Council, 2021). The CSP identifies five objectives which the CSP is built around:

- Environmental sustainability;
- Liveable and vibrant community;
- Economic prosperity and sustainability;
- Governance and organisational performance; and
- Our infrastructure.

The Project is consistent with the following objectives and targets of the CSP:

- *"Environmental sustainability*
  - *A1.2 – Foster environment of investment for environmental sustainability*
  - Target: *reduction in non-renewable energy.*
- *Liveable and vibrant community*
  - B3 – Our community has access to a range of employment opportunities.
  - Target: *increase in employment options.*
- *Economic prosperity and sustainability*
  - *C1 – Our community welcomes new and innovative industry to support our future*
  - Target: *increase in business numbers and opportunities across the community.*
- *Our infrastructure*
  - *E1.1 – Deliver infrastructure and assets that are responsive to community need.*
  - *E1.3 – Provision of sustainable infrastructure that is adaptive to changing, suitable/ betterment and funding levels."*

2.3 Site Setting and Features

2.3.1 Site Context

2.3.1.1 Regional Community

The Project Area is situated in the rural locality of West Burrabogie Rd, approximately 60 km south of Hay and 110 km north of Deniliquin. The Project Area is within the Riverina Murray Region of NSW approximately 720 km west of Sydney. It is located within the Hay LGA and Edward River LGA.

Nearby Towns and Population Centres

The nearest population centre is Hay, located north of the Project Area with a population of 2,300 (ABS, 2021). Other nearby towns located near the Project Area include:

- Hay (main centre) – 60 km north;
- Deniliquin (main centre) – 110 km south;
- Wanganella – 69 km south;
- Darlington Point – 80 km north east;
- Colleambally – 90 km east;

- Conargo – 100 km south;
- Balranald – 120 km west;
- Jerilderie – 125 km south east; and
- Swan Hill – 191 km south west.

Nearby Renewable Energy and Related Projects

There are a number of existing and/ or proposed renewable energy projects located in proximity to the Project Area which have a potential for cumulative impacts, as shown on **Figure 1.1**.

Table 1 describes each in relation to its proximity to the Project and includes a description and states the status of each nearby project, as well as the number of wind turbines and/or photovoltaic (PV) panels proposed. The Project Area borders Bullawah Wind Farm immediately to the east, and The Plains Wind and Solar Farm to the north and west.

Table 1 Nearby Renewable Energy Projects

Project	Distance to Project Area	Description	Current Status
Bullawah Wind Farm	<1 km (adjacent)	• 170 wind WTGs • ~1,000 MW capacity	Proposed
The Plains Solar Farm	<1 km (adjacent)	• 900,900 PV panels • 500 MW capacity • BESS	EIS to be prepared
The Plains Wind Farm	<1 km (adjacent)	• 226 WTGs • 1,800 MW capacity	EIS to be prepared
Project EnergyConnect (NSW – Eastern Section)	<1 km (within Project Area)	• 330 kV transmission line	Western Section approved. Second stage to be approved.
Lang's Crossing Solar Farm	13 km	• 5 MW capacity	Determined
Hay Solar Farm	15 km	• 430,000 PV panels • 110 MW capacity	Determined
Dinawan Energy Hub	25 km	• ~2,500 MW capacity	Proposed
Baldon Wind Farm	40 km	• 162 WTGs • 800-900 MW capacity	EIS to be prepared
Yanco Delta Wind Farm	42 km	• 210 WTGs • 1,500 MW capacity	Responding to submissions
Keri Keri Wind Farm	50 km	• 170 WTGs • 1,003 MW capacity	EIS to be prepared
Keri Keri Solar Farm	65 km	• 900,000-950,000 PV panels • 400 MW capacity	EIS to be prepared
Currawarra Solar Farm	66 km	• 667,000 PV panels • 195 MW capacity	Determined
Burrawong Wind Farm	82 km	• 107 WTGs • 750 MW capacity	EIS to be prepared
Tarleigh Park Solar Farm	85 km	• 290,000 PV panels • 90 MW capacity	Determined
Southdown Solar Farm	85 km	• 335,000 PV panels • 130 MW capacity	EIS to be prepared
Limondale Solar Farm	95 km	• 300,000 PV panels • 349 MW capacity	Operational
Finley Solar Farm	97 km	• 500,000 PV panels • 175 MW capacity	Operational
Sunraysia Solar	100 km	• 750,000 solar modules • 255 MW capacity	Operational

2.3.1.2 Local Community

The Project Area is located within the Hay Plains, which is characterised by a relatively flat topography with low relief. The existing land uses are predominantly agricultural and irrigated cropping and grazing.

The Project is situated in the rural locality of Boorooban. The locality of around 33 residents sits alongside the Booroorban State Forest and features include the Royal Mail Hotel and a public hall.

2.3.1.3 Natural Features

Topography and Geology

The elevation across the Project Area is very uniform, ranging from approximately 93 m to 96 m above sea level (ASL), however predominantly flat in landscape (**Figure 2.1**)**.** The Project Area is situated upon the Shepparton Formation which consists of poorly consolidated clays, sands and gravels, forming an extensive flat alluvial floodplain (Geoscience Australia, 1988).

The region is made up of Quaternary alluvial sediments with shallow and small depressions that are as deep as 2 m. These depressions form a number of dry lakes studded in the landscape. In some areas these depressions form large scale swamps. The landform is also characterised by isolated low rises formed by aeolian processes (Environment NSW, 2011).

Climate

The nearest air quality monitoring station is located in Hay as part of the Rural NSW air quality monitoring network (DPE, 2018) and measures particulate matter (PM_{10} and $PM_{2.5}$), Total Suspended Particles; wind speed, wind direction and sigma theta; ambient temperature; and relative humidity.

This station provides hourly pollutant concentrations data, as well as 24-hour summary and air quality category (AQC) ratings. Pollutant levels are currently very low.

The nearest weather station is at Hay Airport (Station No. 075019), which lies at an elevation of 92.0 m Australian Height Datum (AHD). A review of the Australian Bureau of Meteorology (BOM) climatic records from– 2007 - 2022 indicate a mean summer maximum temperature of 35.9°C in January, and a mean winter minimum temperature of 3.86°C in July.

Rainfall records from this same station indicate a mean annual rainfall of 367.4 mm, with the highest monthly maximum occurring in June (35.8 mm) and the lowest monthly maximum occurring in April (25.8 mm) (BOM, 2023).

The wind in the Hay region is most often from the south from September to June, and predominantly from the west from June to September. The average hourly wind speed experiences mild seasonal variation over the course of the year. The windier part of the year is from August to March, with average wind speeds of more than 15.3 km/h, and the calmer time of the year is from mid-March to August, with an average hourly wind speed of 13.3 km/h (Weather Spark, 2023).

The Applicant has Light Detection and Ranging (LiDAR) on site which measures wind speeds at various heights. It has collected data since 2022.

Vegetation

Lack of water and dry, arid conditions support scattered stands of belah trees, saltbush and speargrass communities (NPWS, 2003). A number of saltbush and cottonbush varieties dominate the region with very sparse tree communities, thus yielding clear, open views of the expanse. The lack of tall canopy species allows higher wind speeds with continual wind actions on the landscape. Mid-canopy species such as lignum and nitre goosefoot are occasionally visible in the landscape and are favoured for emu grazing. Predominance of low-storey vegetation allows easier grazing opportunities for sheep, thus rendering the area favourable for livestock grazing. Most canopy cover is prominent within the extents of the Oolambeyan National Park and South West Woodlands Nature Reserve extents.

Watercourses

There are several water courses within the Project Area (DPIE, 2018). The main watercourses within the Project Area are:

- Nyangay Creek;
- Coleambally Outfall Drain; and
- Eurolie Creek (flows into Coleambally Outfall Drain).

The Project Area is located south of the Murrumbidgee River and north of an irrigation channel (Coleambally Outfall Drain). The watercourses within the Project Area are within the Murrumbidgee Catchment.

Traces of irrigated cropping and pastures are also prevalent on the outer edges of the Project Area and are flat and open. Creeklines and dry lakes create floodplains that are fertile and suitable for agricultural activities. All water channels remain dry and exhibit vegetation characteristics that are unique to the Riverina region.

National Parks and Conservation Areas

The nearest national parks and conservation areas are located to the north, east and south, and north west of the Project Area. The closest conservation area is the South West Woodland Nature Reserve located approximately 10 km south west of the nearest proposed turbine Wind Pioneer (WP43).

Oolambeyan National Park falls within the extents of land that is categorised as C1- National Parks and Nature Reserves. The National Park is located within the extents of Murrumbidgee Council. The nearest turbine is approximately 7 km south west of the National Park. No development is proposed within the boundaries of the National Park.

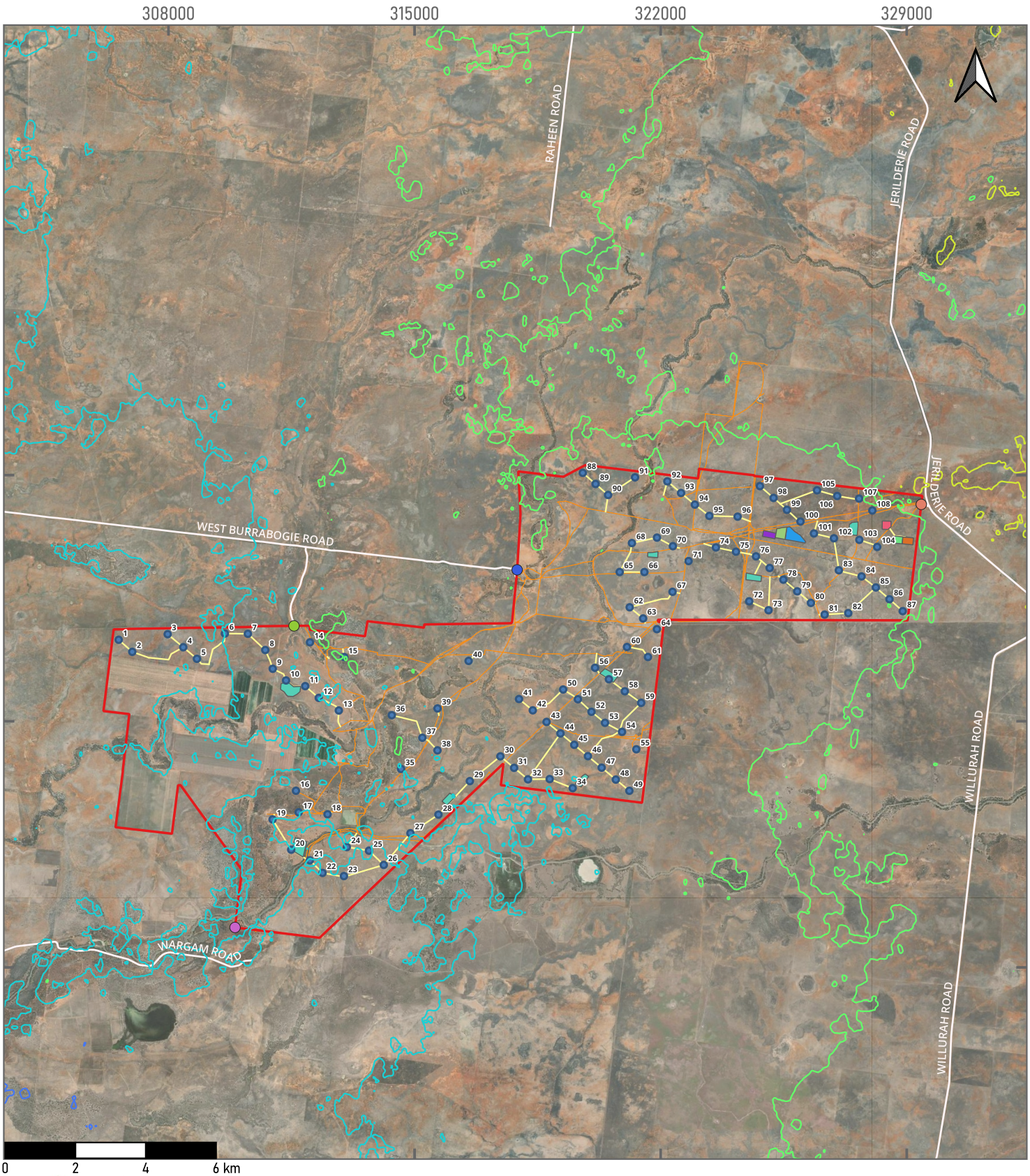
Significant ecological, cultural and historic associations have been identified for the Oolambeyan National Park which is located north east of the Project Area. The region also has significant historic and cultural associations such as Aboriginal sites, hearths, and stone artefacts along with colonial associations such as a former merino stud property of the western Riverina. Although the Park's prominent hydrological features have been modified and regulated especially in the eastern parts, it boasts a variety of biodiversity and landscape values which make it a unique representation of the Hay Plains character in south west NSW.

South West Woodland Nature Reserve is characterised by fragmented parcels of woodlands that are spread across areas closer to Coleambally and Steam Plains. The Reserve protects a number of significant endangered ecological communities and is known for educational and recreational associations such as bushwalking, birdwatching and research (Moir, 2023).

The zoning and location of the nearby national parks and conservation areas are provided in **Table 2**. It also describes the distance and direction from the nearest WTG, which LEP the Park / Area occurs within, and relevant zoning of each.

Table 2 Nearby National Parks and Conservation Areas

Park / Area	Nearest WTG	LEP	Zoning
Oolambeyan National Park (north east)	25 km north east	Murrumbidgee LEP 2013	C1 – National Parks and Nature Reserves
South West Woodland Nature Reserve (south west)	10 km south west	Conargo LEP 2013	C1 – National Parks and Nature Reserves



Pottinger Wind Farm

Figure 2.1: Topography

SOMEVA RENEWABLES

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 150000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, ELVIS NSW
Prepared By: EL Reviewed by: TS
Version: 4
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

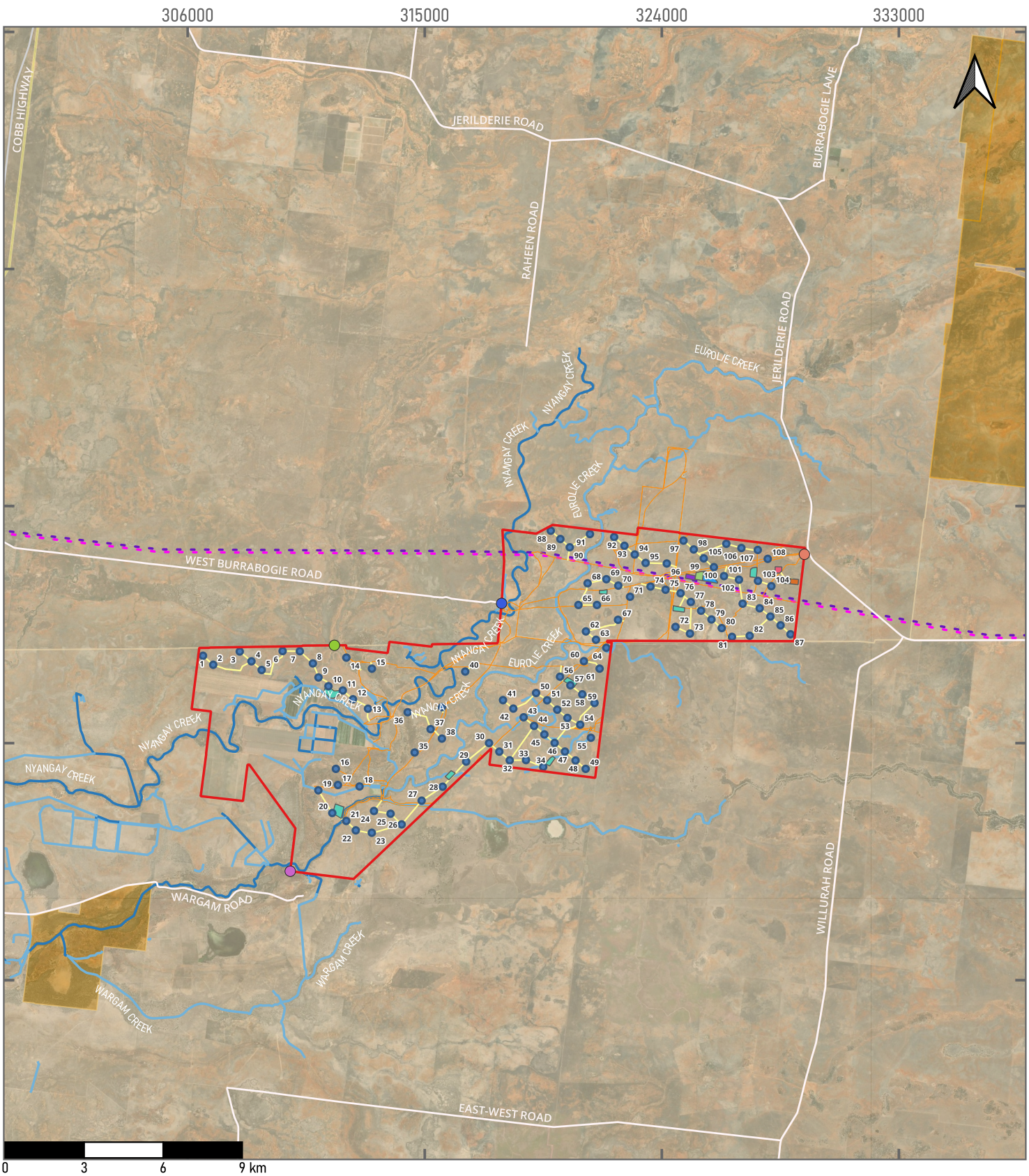
Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station

Temporary Infrastructure
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure
- Main Roads
- Existing Access Tracks

5m Contour (ELVIS)
- 85
- 90
- 95
- 100



Pottinger Wind Farm

Figure 2.2: Land Zoning

SOMEVA RENEWABLES

Date: 12/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 200000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, NSW EPI Planning
Prepared By: TS
Version: 4.3
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Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure
- Existing 220 kV Transmission
- Project Energy Connect
- Highways
- Main Roads
- Existing Access Tracks

Land Zoning - EPI Primary Planning
- C1 - National Parks and Nature Reserves
- RU1 - Primary Production
- SP2 - Infrastructure

Strahler Stream Order Value
- 1
- 2

2.3.1.4 Built Features

There is one associated residence within the Project Area, and a further associated dwelling approval.

The Cobb Highway and Sturt Highway serve as important commuting corridors as they provide connection to the towns of Balranald, Hay, Wagga Wagga, Deniliquin and others. Minor road connections are provided by Willurah Road, Jerilderie Road and north Boundary Road.

The Project will directly connect to the existing 330 kV transmission line, which crosses the Project Area from west to east.

Recreational associations occur mostly within the extents of Hay and along the Murrumbidgee River to the north of the Project Area. Recreational facilities include campgrounds, ovals, parks and Bidgee Riverside Walk along the Murrumbidgee River.

2.3.2 Land Ownership

2.3.2.1 Project Area

Table 3 contains a list of lots within the Project Area of which this application applies. Lots shared between the wind farm and solar farm applications are shown with an asterisk (*).

Table 3 Lot/ DP within the Project Area

Lot	DP	Lot	DP
5	DP756282	7	DP756315
4	DP756282	13	DP756282
1	DP134988	12	DP756282
8	DP756282	15	DP756282
7	DP756282	9	DP756282
50	DP756282	10	DP756282
4	DP134988	11	DP756282
10	DP756315	14	DP756282
11	DP756315	54	DP756282
9	DP756315	60	DP756809
35	DP756315	53	DP756809
36	DP756315	62	DP756809
22	DP756315	51	DP756809
40	DP756315	61	DP756809
20	DP756315	52	DP756809
47	DP756315	6	DP756282
21	DP756315	3	DP116080
5	DP756315	88	DP756809
6	DP756315	48	DP756282
41	DP756315	3	DP756282
42	DP756315	1	DP756282
55	DP756315	84	DP756809
54	DP756315	46	DP756282
53	DP756315	2	DP756282
8	DP756315	45	DP756282
19	DP756315	90	DP756809

Lot	DP	Lot	DP
30	DP756315	49	DP756282
25	DP756282	33	DP756282
51	DP756315	44	DP756282
32	DP756315	32	DP756282
31	DP756315	47	DP756282
35	DP756282	91	DP756809
34	DP756282	109	DP756809
36	DP756282	108	DP756809
37	DP756282	107*	DP756809*
12	DP756315	5	DP116080
13	DP756315	7	DP134988
52	DP756315	6	DP134988
18	DP756315	5	DP134988
29	DP756315	1	DP542495
25	DP756315	20	DP756282
37	DP756315	16	DP756282
28	DP756315	17	DP756282
27	DP756315	38	DP756282
33	DP756315	42*	DP591554*
17	DP756315	44	DP756315
16	DP756315	48	DP756315
23	DP756315	1	DP1081067
24	DP756315	2	DP1081067
26	DP756282	1	DP134991
24	DP756282		

2.3.2.2 Associated and Non-Associated Dwellings

Table 4 lists properties and associated (AD) and non-associated dwellings (NAD) in proximity to the Project which were subject to preliminary assessments which are also shown on **Figure 2.3**. DAD_01 is a dwelling entitlement (i.e. no dwelling exists however a DA is in place).

All non-associated dwellings (NAD) are over 2.9 km from the closest WTG.

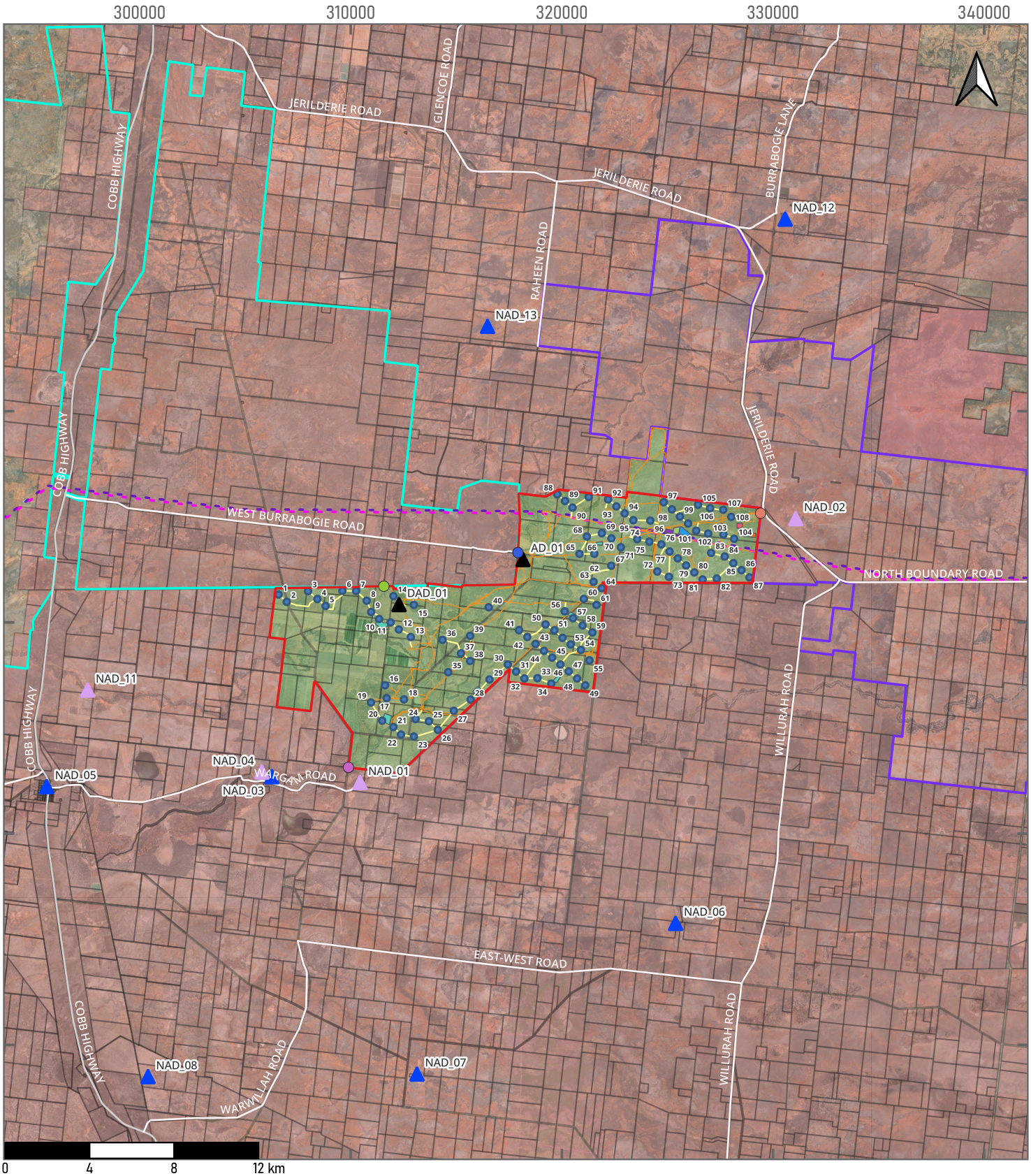
Table 4 Dwellings in Proximity to the Project Area

ID	Associated	Non-Associated	Associated with other Renewables Project	Distance to closest WTG (m)
AD_01	X			2,692
NAD_01		X	X	2,981
NAD_02		X	X	3,057
NAD_03		X		5,858
NAD_04		X	X	6,123
DAD_01	X			473

2.3.2.3 Agreements with Other Parties

Where dwelling owners are hosting Project infrastructure or have entered into an Agreement, they are referred to as 'Associated' dwellings, all other dwellings are referred to as 'non-Associated' dwellings. Associated and non-Associated landholders within and surrounding the Project Area are shown in **Figure 2.3**. Of note:

- One landowner (AD_01) is associated with the Project - the land where the Project will be located will be appropriately leased through an 'Associated Landholder Agreement';
- Five non-associated landowners have been identified within 8,000 m of the proposed WTG locations;
- For any required subdivision as indicated in **Section 1.3**, the remainder of the land parcel will continue to be utilised for agricultural purposes in consultation with the landholder;
- The Applicant will seek to enter into additional Benefit Sharing Agreements in consultation with nearby neighbours, or if relevant EIS assessments identify that relevant impact criteria cannot be met at non-Associated dwellings; and
- The Applicant will seek to enter into an appropriate offset mechanism to offset biodiversity impacts where required and as assessed in the EIS.



Pottinger Wind Farm

Figure 2.3: Land Ownership

SOMEVA RENEWABLES

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 250000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, SixMaps NSW
Prepared By: EL Reviewed By: TS
Version: 5.1
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Legend

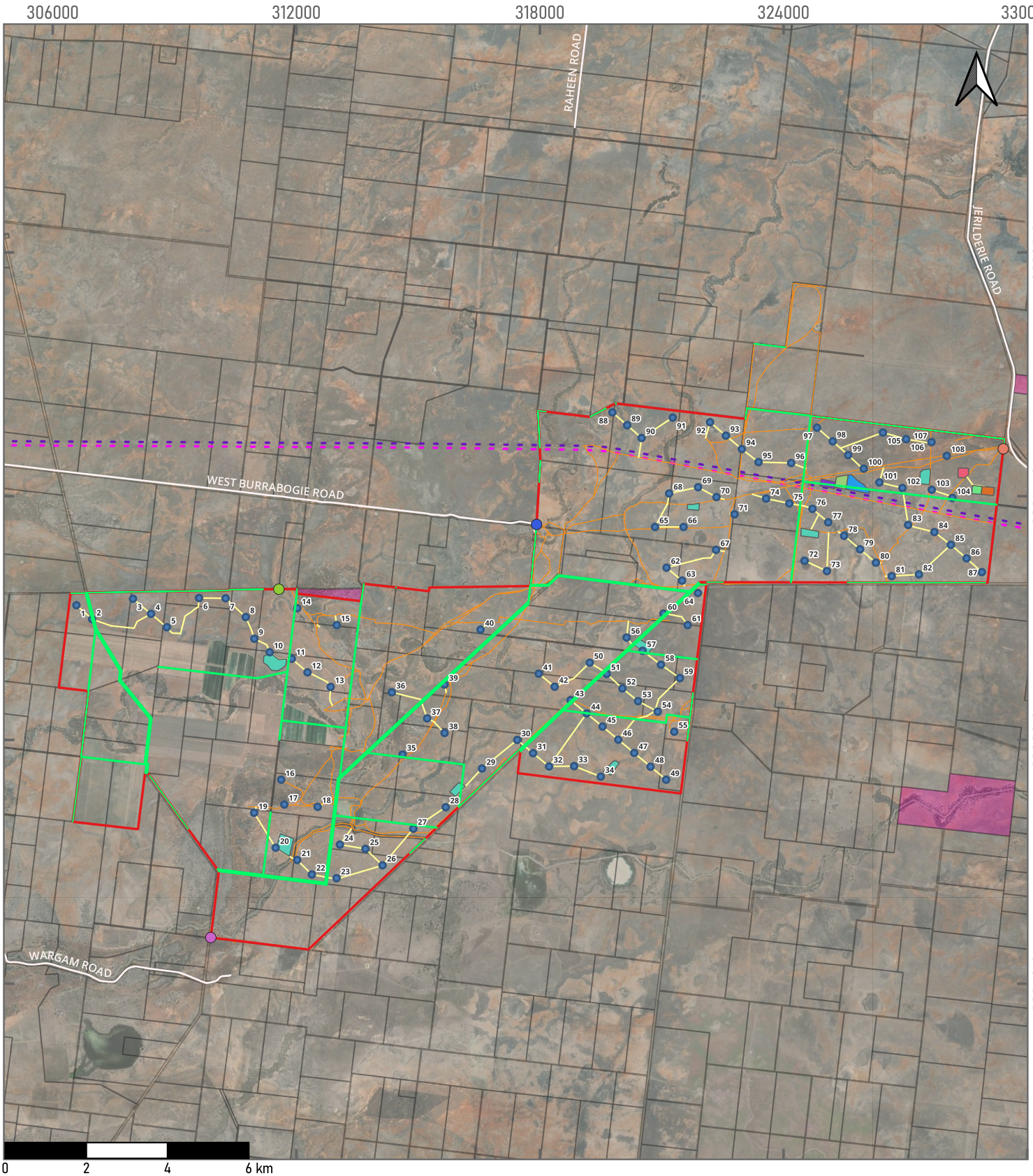
Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure
- Existing 220 kV Transmission
- Project Energy Connect
- Highway
- Main Roads
- Existing Access Tracks

Neighbouring Projects
- Bullawah Wind Farm Project Boundary
- The Plains Renewable Energy Park Project Boundary

Cadastre and Land Ownership
- Associated
- Non-associated

Dwellings
- Associated
- Non-Associated
- Non-Associated (Associated with other project)



Pottinger Wind Farm

Figure 2.4: Land Ownership (Crown)

Date: 19/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, SixMaps NSW
Prepared By: EL Reviewed By: TS
Version: 4.1
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Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure
- Existing 220 kV Transmission
- Project Energy Connect
- Main Roads
- Existing Access Tracks

Land Ownership
- The State of New South Wales
- Private Land
- Crown - Paper Roads

2.4 Land Use

The Project Area is entirely zoned RU1 – Primary Production under the Hay LEP and Conargo LEP as shown on **Figure 2.2**. The Project Area covers approximately 100 land parcels (i.e. individual lot / DPs). Any land parcels with dwelling entitlements additional to those included in this Scoping Report, will be identified in the EIS. The land parcels within the Project Area are in **Table 3**.

The Project Area is situated on a single property, "West Burrabogie Station" which is a large-scale sheep breeding property containing native grazing pastures, with some irrigated cropping areas.

2.5 Risks and Hazards

Wind farm developments by their nature require areas of land to accommodate WTGs and ancillary infrastructures. Due to this, these developments are often located in rural areas, which typically result in changes to landscape character and may generate impacts from the Project construction and/or operation. Those that require more detailed assessment, due to an increased risk of significant impacts include biodiversity, noise and vibration, landscape and visual, and social factors.

Key potential risks of the Project on environmental and social aspects are investigated in **Section 6**.

2.6 Cumulative Impacts

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

Projects in proximity to the Project as shown on **Figure 1.1** with each at varying approval stages as described in **Section 2.3.1**.

2.7 Project Justification

This section provides a summary on why the Project has been selected and what the expected benefits and outcomes are. These benefits include long-term strategic benefits to NSW as well as to Australia's renewable energy generation prospects.

2.7.1 Project Benefits

2.7.1.1 Wind Farm Benefits

Wind farms provide a significant contribution to Australia's transition to greener energy. The Australian Wind Alliance (AWA) prepared the report, 'Building Stronger Communities: Wind's growing role in regional Australia' (AWA, 2019), which outlines the ways in which wind farms deliver financial and social benefits to the surrounding community. Key points from the report are summarised as:

- Wind farm construction has delivered an economic boost of almost $5.1 billion to regional Australia, and new construction projects to provide a further $4.8 billion in economic activity into the regional economy;
- Across the 25-year life span of Australia's existing wind farms and wind farms under construction, an estimated $18.3 billion could be delivered to host communities;
- Up to $18.3 billion could be delivered to host communities across the 25-year life span of wind farm projects, including currently operational wind farms and those currently under construction; and
- From 2021, Community Enhancement Funds will make available $5 million annually for community projects.

The report also notes that wind farms deliver significant local investment and financial contributions to local Councils, which directly support local community projects and services.

2.7.1.2 Project-Specific Benefits

The Project would provide renewable, low-cost energy to the NEM, and will contribute to the Commonwealth and NSW Government's emission reduction targets (refer to **Section 2.1**). This will be achieved by supporting the transition from large fossil fuel generation, towards renewable energy production and assist in GHG emission reduction.

The Project is located in the South West REZ, which will coordinate with policy in the other NSW REZs to provide up to 12 GW of renewable energy capacity within the state. The NSW Government (EnergyCo, 2023) expects the REZs to deliver benefits that include:

- Energy bill savings from reduced wholesale electricity costs;
- Emissions reduction from a cleaner energy sector;
- Reliable energy from significant amounts of new energy supply; and
- Host community benefits through strategic planning and best practice engagement and formalised benefit sharing arrangements.

In addition, the Project will provide benefits to the region and local communities including:

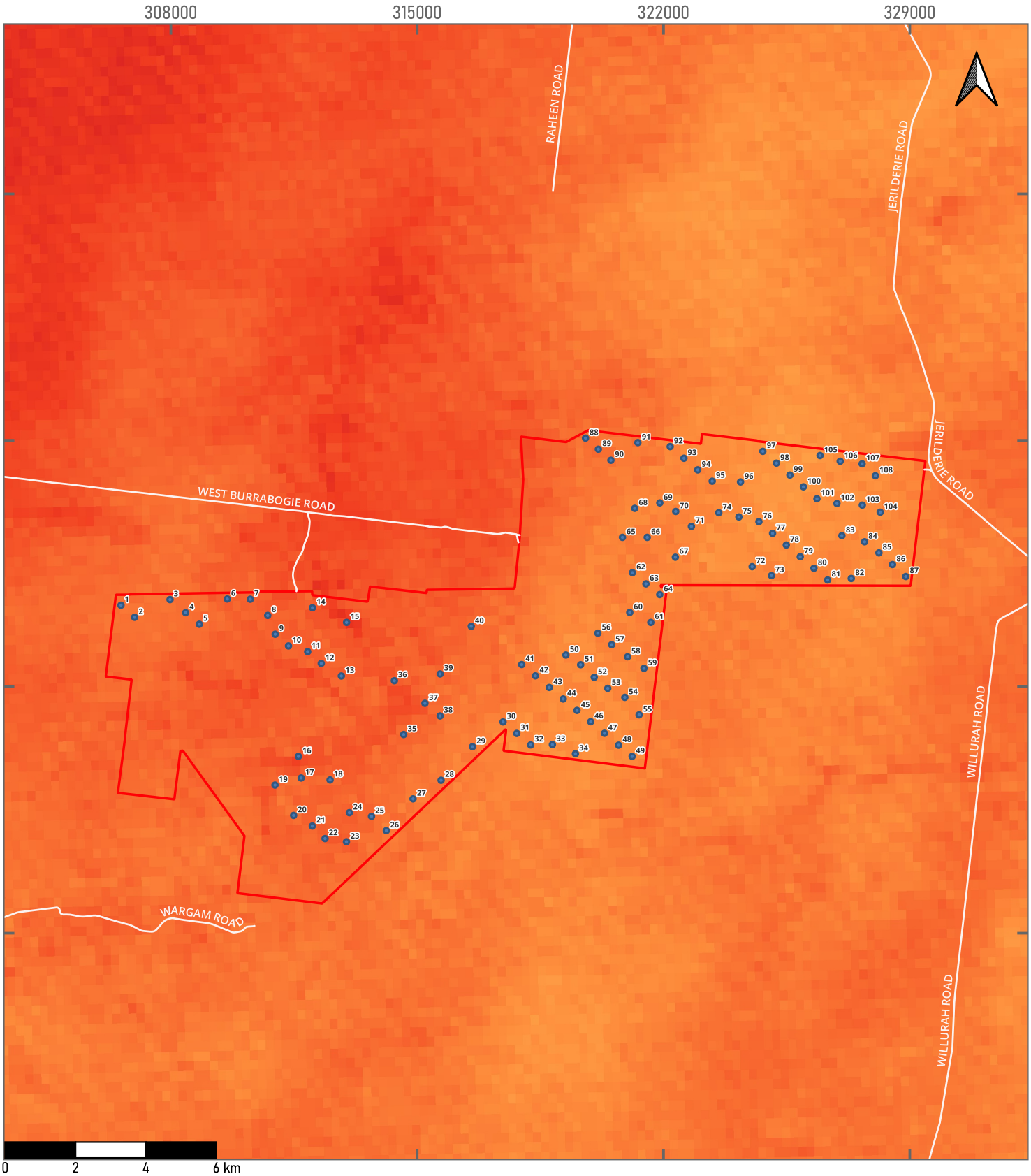
- Contributing to support over 450 construction jobs in the South West REZ region alone at its peak;
- Direct investment in the Murray River region;
- Opportunities for local contractors and businesses;
- Diversified income stream for rural landholders;
- Renewable low-cost energy to the national grid; and
- Development of new skilled labour in the region within the growing renewable energy industry.

2.7.2 Site Suitability

The Project Area is considered suitable for development as it is:

- Located within the Project EnergyConnect corridor, which will allow for the renewable energy generated from the Project to be supplied to the NEM;
- Located within the boundaries of the proposed South West REZ, and the Project will contribute to the future development of the REZ;
- Located within a superior wind resource area consistent with Global Wind Resource (2023) as shown in **Figure 2.5** and demonstrated by on-site wind data monitoring;
- Proximate to a number of other existing and proposed renewable energy projects located within the region and in close proximity to the Project Area;
- Easily accessible via the Cobb Highway; and
- Consistent with the "*RU1 – Primary Production"* zoning and will meet the following objective of the zone: to encourage sustainable primary industry production.

The Project will therefore contribute to creating greater diversity within the local economy, where land uses have experienced diversification in recent years through a growth in dryland cropping and horticulture, conservation, irrigation, native landscapes and forestry.



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 2.5: Wind Resource Mapping

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations

Existing Infrastructure

- Main Roads

Global Wind Atlas Wind-speed 100m (m/s)

Band 1 (Gray)

- 6.5
- 6.7
- 6.9
- 7.0
- 7.2

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 150000

Basemap: ESRI Satellite (2022)

Data Sources: Global Wind Atlas 2023
Prepared By: EL Reviewed By: TS
Version: 2.2
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

3 THE PROJECT

This section provides a simple and accurate overview of the preliminary Project description and includes a conceptual layout of the development for which approval is sought. It details the likely staging of Project, preliminary disturbance footprint, feasible alternative options considered and notes preliminary benefits of the preferred Project.

3.1 Project Area

The Project Area is the area of land of which the Application applies (unless otherwise stipulated in this section). The Project Area currently covers a total area of approximately 14,000 ha in the Edward River Council and Hay LGA and is zoned RU1. Land ownership is predominantly private, with small parcels or Crown land.

The Project is located approximately 60 km south of Hay and 110 km north of Deniliquin in NSW and is entirely within the South West REZ.

3.2 Preliminary Project Description

The Project includes the in-perpetuity approval for construction, operation, maintenance and decommissioning of a wind farm with a nominal generating capacity of 750 MW, including associated infrastructure and ancillary activities.

The preliminary conceptual Project layout is shown in **Figure 1.2**. Aspects not shown in **Figure 1.2** but which are described in **Table 5** will generally be located within the Project Area and will be confirmed in the EIS.

The final design and location of the Project elements will be subject to further detailed design and assessment, including consideration of the outcomes of technical and environmental assessments as part of the EIS. Additional disturbance areas (e.g. 'cut and fill' and Asset Protection Zones (APZ)) will also be considered during this process.

The preliminary Project design components and specifications are summarised in **Table 5**. All values in **Section 3** of this Scoping Report are approximate.

Table 5 Preliminary Project Summary

Element	Feature	Specification
Energy Generation	Wind turbine generators	• Up to 108 turbines in an area of 14,000 ha • Tip height up to 280 m • Hub height up to 180 m • Indicative WTG nameplate capacity: 7 MW
Electrical Reticulation Network	Substations	• Consisting of five main 33/330kV transformers • Optional Second 'satellite' 33/330 kV substation
	Transmission line easement	No external transmission line easements required. Subject to on-site connection to Project EnergyConnect
	Internal electrical reticulation network	Internal 33 kV, 66 kV, 132 kV, or 330 kV electrical reticulation network
	Switchyard	Switch and other equipment to connect to Project EnergyConnect at main substation
Other Infrastructure	Operations and Maintenance (O&M) facility and infrastructure	• Permanent site office and maintenance and storage facilities
	Battery Energy Storage System (BESS)	• Approximately 500 MW / 2 GWh

Element	Feature	Specification
	Construction and operational infrastructure	• Temporary construction compounds (including office buildings, parking, work areas and storage facilities) • Temporary concrete bathing plants • Temporary and permanent wind monitoring masts • Temporary Accommodation Facilities
Ancillary Activities	Quarrying	• Temporary site borrow pits for sand and gravel materials during construction
Access	Internal access tracks	• Nominally 6 m wide unsealed gravel access roads
	Port and Other NSW locations	• From Port via the Cobb Highway, then Jerilderie Road and/or West Burrabogie Road • Potential minor road upgrades required on the transport route.
Pottinger Solar Farm Interactions	Interactions	• Infrastructure as stipulated in EIS
Personnel	Construction Operations	• Up to 450 FTE (generally within standard construction hours) • Up to 40 FTE 24/7
Preliminary Disturbance	Maximum Project Disturbance	• Up to 470 ha, largely within Project Area

3.2.1 Energy Generation

The Project comprises up to 108 WTGs with each having a hub height of approximately 180 m and a maximum tip height of 280 m (to the top of the vertical blade). Each will have a generating capacity of approximately 7 MW and a combined maximum installed capacity of 750 MW.

For preliminary modelling purposes a 6.6 MW Siemens Gamesa Renewable Energy (SGRE) model turbine has been utilised with a blade length of up to 85 m.

Each WTG will be situated over gravel hardstands with concrete footings, mounted onto tubular steel or concrete towers.

3.2.2 Electrical Reticulation Network

The Project will supply energy to the NEM by connecting on site to Project EnergyConnect. The electrical reticulation network will contain overhead and underground cabling to the substation(s).

High-voltage overhead lines will connect the switching station to the NEM infrastructure. Underground reticulation will connect the WTGs to the optional substations which in turn will connect to the main substation and switching station.

Up to three substations (inclusive of associated transformers) may be required, inclusive of system strength equipment, protection, communications equipment, switchgear and a control room.

3.2.3 Other Infrastructure

The Project will comprise various supporting infrastructure including (but not limited to) offices, workshops, LIDAR/meteorological masts, laydown areas, mobile concrete batching plant/s, rock crushing facilities (for suitable aggregates for mobile concrete batching, hardstand construction and/or for access track), borrow pits (and associated access), construction laydown areas, construction and operational compounds (including site office, maintenance and storage facilities, car parking, and security fencing).

Temporary workers accommodation for construction activities may also be required. This will be confirmed during the preparation of the EIS.

3.2.4 Ancillary Activities

Ancillary onsite activities will be required to support the Project and may include: communication cables, water storage tanks, environmental monitoring equipment, hardstands, road works and access tracks, landscaping and fencing.

External ancillary activities may include: sourcing of gravel, rock and other materials for construction, sourcing of water for construction, subdivision and boundary adjustments (e.g. substations and switchyard).

3.2.5 Access

3.2.5.1 On Site

Internal access tracks will be required for the movement of equipment and materials throughout the Project Area. These tracks will facilitate the construction of the Project, as well as maintenance works required during operation and decommissioning. Where practical, these will align with existing tracks.

3.2.5.2 External

Access to the site during construction and operation will utilise the existing road network. Primary access will be via the Cobb Highway from Jerilderie Road in the north east (Site Entrance B), and West Burrabogie Road in the west (Site Entrance A). A third access point off Wargam Road (Site Entrance C) will be further assessed during the EIS stage. A separate Emergency Access is also available at the end of West Burrabogie Road.

The transport route from a suitable port(s) or other areas in NSW or Australia to the Project Area, as well as any required road upgrades will be identified as part of the EIS. Indicatively, major components may be via the Port of Newcastle or Port Kembla.

The port/s of origin will be refined and/or the preferred route(s) adequately assessed in the EIS.

3.2.6 Pottinger Solar Farm Interactions

The Pottinger Solar Farm (subject of a separate DA) will utilise some elements of the Project as described in the EIS. This includes (at least): access roads, O&M and workshop, substations and other infrastructure facilitating connection to the NEM, BESS, workforce, switchyards and accesses.

3.3 Preliminary Disturbance Footprint

The Project will involve a temporary and permanent footprint that is subject to design refinement. For the purposes of this Scoping Report, up to 470 ha has been assumed to be disturbed.

The permanent development footprint is the area that will remain altered after construction of the Project is complete and generally includes areas that the following are situated on: WTG foundations, crane pads, permanent access roads, transmission line poles and associated tracks, substations, switchyards, O&M Facilities and road upgrades required for the transport haul route.

The temporary development footprint is the area that will be disturbed during construction of the Project and rehabilitated after construction and generally includes (but is not limited to): temporary construction compound, concrete batching plants, underground transmission lines, transmission line access, laydown and assembly areas, temporary workers accommodation.

3.4 Staging

Table 6 provides a summary of indicative staging for the Project with key stages discussed further below.

Table 6 Indicative Project Staging

Stage	Estimated Date Completion
Site selection and feasibility	2020 – 2021
Planning and approvals process	2023 – 2024
Construction	2026
Operations	2027
Decommissioning	After 50 years from operational commencement (or as stipulated in the EIS)

3.4.1 Construction

Construction activities are anticipated to commence between 2025 and 2026 after the final design and procurement stage has been completed, and certainty on Project EnergyConnect connection is available. The construction of the WTGs, electrical reticulation network and ancillary infrastructure is estimated to take 24 months including commissioning of the Project.

The Project will employ up to 450 FTE employees throughout the construction stage. Temporary workers accommodation may be located within the Project Area or located offsite if it is determined to be required.

3.4.2 Operations

The Project will operate in perpetuity with individual WTGs requiring replacement or repowering at approximately 35 years. During operation, approximately 40 FTE permanent staff will be employed.

Wind farms are generally designed to operate autonomously; however maintenance works will be required during operation of the Project as such additional contractors may be required from time to time. The employed operational staff will complete preventative maintenance and/or breakdown/damages works to ensure service intervals are met.

3.4.3 Decommissioning

Potential options for the decommissioning of the Project will be outline in the EIS. WTGs and infrastructure will continue to be upgraded and replaced within the assessed parameters of the EIS, and decommissioned (at the appropriate time).

At decommissioning, rehabilitation will occur and all above-ground infrastructure related to the Project will be removed, subject to consultation with associated landowners (i.e. roads and other required infrastructure may be retained).

3.5 Alternatives Considered

3.5.1 No Project

The Project Boundary is currently used for broad acre sheep grazing. The “do nothing” scenario would allow for broad acre sheep grazing to continue however would forgo up to 450 FTE jobs during construction and associated direct and indirect economic inputs to the local and regional economy of approximately $330 million during construction and $30 million during Operations. The Project’s capital investment and associated flow on effects would also not be realised.

Proposed community contributions via a VPA and Community Benefit Fund would also not be realised.

The “do nothing” approach does not meet the objectives to develop renewable energy projects in NSW and does support the project objectives.

The Project aims to generate renewable energy and limit production of GHGs. To not progress the Project would not result in savings of 1.2 Mtpa of GHG and powering of 380,000 households annually. Not developing the Project would be a missed opportunity to contribute to the reduction of Australia's use of fossil fuels for energy generation.

3.5.2 Alternative Sourcing of Energy

The Project lies within the area between Buronga, Hillston and Deniliquin within South West REZ declared in 2022.

The South West REZ policy (with other REZs) will provide up to 12 GW of renewable energy capacity in NSW. The Project will provide up to 750 MW alone.

The expected benefits of the NSW REZs are to provide: more reliable energy from significant amounts of renewable energy supply, provide energy bill savings, reduce emissions, and create community partnerships (EnergyCo, 2023).

3.5.3 Alternative Site Location

During Project pre-feasibility, the Applicant assessed up to three locations within the South West REZ for the Project. Primarily for biodiversity constraints reasons, the Project Area was selected as the lowest impact.

A preliminary social assessment also identified a higher level of non-associated dwelling density around other sites.

3.5.4 Maximised Site Layout

During pre-feasibility, upon confirmation of the proposed location, the Applicant identified a layout which maximised energy output and economic benefits to the State.

The Maximum Site Layout is shown on **Figure 3.1** which included 127 WTG's and approximately 500 ha of overall disturbance. Biodiversity constraints have been presented on a worst-case scenario basis to allow for consideration of impact minimisation over the life of the project, and strategies are likely to be able to be developed that balance impact minimisation with maximising the benefits a project of this nature can provide.

An iterative process was utilised to determine the optimum number of WTGs and associated infrastructure in relation to preliminary environmental assessment findings.

3.5.5 Benefits of Proposed Layout to Maximum Site Layout

The biodiversity specialist consultant, Biosis was engaged to identify vegetation categories which should be avoided where possible during project development utilising the following principles:

- For WTGs
  - Avoid disturbance in Category 4 area (including a 100 m buffer); and
  - Avoid disturbance within 300 m of riparian zones;
- For other infrastructure
  - Avoid Category 4;
  - Avoid Category 3 land unless unavoidable; and
  - Locate ancillary infrastructure in Categories 1 or 2 land where possible.

Category ratings generally include:

- Category 1: Non-native vegetation or areas likely to meet the definition of Category 1 – Exempt Land and where prescribed impacts are considered negligible;
- Category 2: All native vegetation (not subject to the Category 3 or 4 constraints) remains a moderate constraint due to the legislative requirements to avoid and minimise impacts, and the potential for threatened species to occur;
- Category 3: Additional 200 m buffer on No-Go areas associated with mapped Plains Wanderer habitat to reduce the potential for indirect impacts, generally during the operational phase of the project. Includes mapped wetlands, woodland/wetlands and riparian vegetation, including a 300 m buffer on mapped polygons to reduce the potential for turbine collisions. These comprise areas of highest potential habitat for waterbirds, raptors and microbats, with wetland areas in particular likely to provide habitat to a large number of waterbirds in flood years. Mapped potential threatened ecological communities (TECs) listed under the *Biodiversity and Conservation Act 2016* (BC Act) or EPBC Act; and
- Category 4: DPE mapped Important Areas of Plains Wanderer habitat plus 100 m buffer to reduce potential for direct impacts to areas of highest potential habitat.

Biosis' assessment of ecological impacts is discussed at **Section 6.4**.

Noise, social and visual specialists were also requested to advise if any layout changes were required to response to early community engagement and/or unacceptable predicted impacts and are discussed in **Sections 6.3**, **6.13** and **6.2**, respectively.

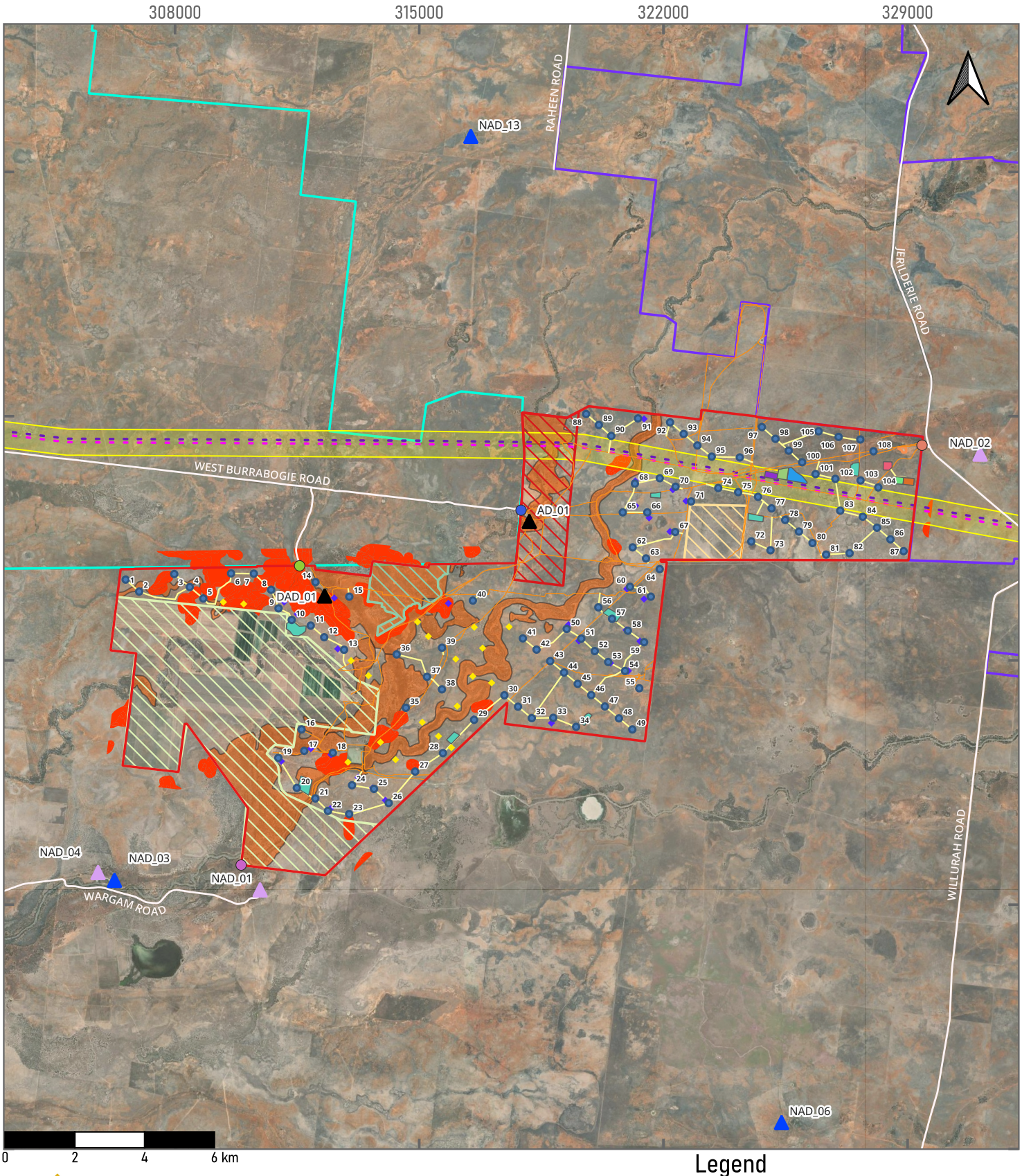
A minimum setback of 2.9 km from any non-associated dwelling was adopted in the Proposed Layout. The layout will be further considered in the EIS in response to detailed findings.

Table 7 provides a summary of the environmental and social benefits of the Project compared to the maximum site layout.

Figure 3.1 illustrates these constraints against the maximum site layout. It also shows where WTGs have been deleted (yellow diamonds) or relocated (blue diamonds).

Table 7 Benefits of the Project compared to the Maximum Site Layout

Feature	Layout Changes Detail	Ecology Benefits	Visual, Noise, Social or Benefits
WTG and base	Ecology: • Relocated WTG: 29, 50, 53, 54, 91 (displaced 74-128 m). • Deleted 19 WTGs	20 hectares of Cat 3 habitat avoided. 10 hectares of Cat 4 habitat avoided.	None, as no exceedances above relevant criteria identified. Setback of minimum 2.5 km from any non-associated dwelling adopted.
Ancillary infrastructure	Relocated: Solar Temporary Storage and Construction; and Temporary Construction, Batching and Laydown (moved up to 1 km).	30 ha of Cat 3 habitat avoided.	None, as no exceedances above relevant criteria identified.



Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Wind Turbine - Relocated
- Wind Turbine - Removed
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Neighbouring Projects
- The Plains Renewable Energy Park Project Boundary
- Bullawah Wind Farm Project Boundary

Existing Infrastructure
- Existing 220kV Transmission
- Project Energy Connect
- Turbine Exclusion Zone (375m)
- Transmission Lines
- Main Roads
- Existing Access Tracks

Dwellings
- Associated
- Non-Associated
- Non-Associated (Associated with other project)

Initial Project Constraints
- Category 4 Vegetation Constraint
- Preliminary Wetland/Riparian Vegetation Mapping
- Landowner Dwelling Zone
- Sand Quarry
- Swamp Paddock
- Cropping and Farming
- Carbon Sequestration

SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 3.1: Initial Environmental Constraints

Date: 19/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 150000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, NSW Planning Portal
Prepared By TS
Version: 5.2
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

4 STATUTORY CONTEXT

This section identifies the relevant statutory requirements for both NSW and Commonwealth legislation for in relation to all aspects of the Project. It identifies all relevant statutory requirements that must be considered before the Application is determined. A discussion on how each is relevant to the justification and evaluation of the Project is included. It includes a grouped and tabulated summary of requirements.

4.1 Power to Grant Approval

NSW approval for the Project will be sought under Part 4, Division 4.7 of the EP&A Act, which outlines the approval pathway for development deemed to be 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 SEPPs include *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP).

Under 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 in Chapter 2 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 co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that: has a capital investment value of more than $30 million…"

The term "capital investment value" is not defined in the Planning Systems SEPP. Clause 2.2(3) of the Planning System SEPP provides that language used in Chapter 2 of the Planning Systems SEPP has the same meaning as per the standard local environmental planning instrument prescribed by the Standard Instrument (Local Environmental Plans) Order 2006. Its Dictionary defines "electricity generating works" as "electricity generating works means a building or place used for the purpose of— (a) making or generating electricity, or (b) electricity storage."

As the Project involves development for the purpose of electricity generating works using wind and solar power and will have a capital investment value of more than $30 million, the Project is classified as SSD under Part 4.

4.2 Permissibility

4.2.1 Transport and Infrastructure SEPP 2021

The permissibility of wind and solar farm developments in NSW is determined by the T&I SEPP.

Section 2.36(1) states that "electricity generating works" may be carried out with development consent on land within a prescribed rural, industrial or special use zone.

The Project Area is zoned RU1 Primary Production within the Hay LEP 2011 and Conargo LEP 2013. Electricity generating works are not permitted within the RU1 zoning. Clause 2.36(1)(b) of the T&I SEPP states that development for the purpose of electricity generating works may be carried out by any person with consent on any land in a prescribed rural, industrial or special use zone.

Under clause 2.7(1) of the TI SEPP, the provisions prevail where there are inconsistencies with any other EPIs, including LEPs. Therefore, the Project is permissible with development consent.

4.2.2 Electricity Infrastructure Investment Act 2020

The South West REZ was formally declared by the Minister for Energy under section 23(1) of the *Electricity Infrastructure Investment Act 2020* and published in the NSW Gazette (NSW Government, 2022) on 4 November 2022. The South West REZ may support up to 2.5 GW of additional transmission capacity.

The Project is located entirely within the South West REZ as shown in **Figure 1.1**.

4.3 Other Approvals

Table 8 identifies other approvals and pre-conditions required for exercising the power to grant approval for the Project and justifies each in relation to sections 4.42 of the EP&A Act, federal approvals and other NSW approvals. It also describes approvals that would have been required if the Project was not a SSD Project in accordance with section 4.41 of the EP&A Act.

Table 8 Other Required Approvals

Approval Category	Legislation	Requirement
Consistent Approvals (under Section 4.42 of the EP&A Act)	*Roads Act 1993* (Roads Act)	Consent from the appropriate roads' authority under section 138 of the Roads Act is required for any works undertaken on or under public roads. **An approval for works in relation to public roads will be required for the Project where public road network upgrades are required as a direct result of the Project**.
	Crown Land Management Act 2016 (CL Act)	The CL Act provides for the administration and management of Crown land in NSW. Crown land may not be occupied, used, sold, leased, licensed, dedicated, reserved, or otherwise dealt with unless authorised by the CL Act. **Crown land "paper roads" exist in the Project Area (see Figure 2.4).** **The landholder is in consultation with Crown lands to close these paper roads. It is expected that these roads will be closed prior to construction.** **However, if roads continue to exist at the commencement of construction, an appropriate licence will be sought.** **Further information to the closure to these crown roads will be provided in the EIS.**
	Protection of the Environment Operations Act 1997 (POEO Act)	Under the provisions of Schedule 1, clause 17 of the POEO Act, "electricity works (wind farms)" and associated activities requiring an Environment Protection Licence (EPL). **An EPL will be sought for the Project.**
	Coal Mine Subsidence Compensation Act 2017 (CMS Act)	Part 3 clause 22 of the CMS Act specifies that an application for approval to alter or erect improvements, or to subdivide land, within a mine subsidence district is to be made. **As the Project Area is not located on or adjacent to mine subsidence land, no engagement or approvals in this regard are required.**
	Mining Act 1992	The *Mining Act 1992* aims to encourage and facilitate the discovery and development of mineral resources in NSW. A review of MinView (MinView, 2023) indicates there are no exploration licences or leases within the Project Area. **As the Project Area is not located on or adjacent to any lands where an exploration licence exists, no engagement or approvals in this regard are required.**
	Petroleum (Onshore) Act 1991	The *Petroleum (Onshore) Act 1991* aims to encourage and facilitate the discovery and development of petroleum resources in NSW. A review of MinView (MinView, 2023) indicates there are no existing petroleum production leases within the Project Area. **As the Project Area is not located on or adjacent to any lands where a petroleum production lease exists, no engagement approvals in this regard are required.**

Approval Category	Legislation	Requirement
	Pipelines Act 1967	The *Pipelines Act 1967* controls pipeline construction, operation, and licensing in NSW. Part 3 section 11 of the *Pipelines Act 1967* requires a person to be a registered holder of a licence before any construction of a pipeline commences. **The Project does not involve the construction and operation of water pipelines and as such, no approvals in this regard are required.**
Native Title (Cwlth)	*Native Title Act 1993* (NT Act)	For any Crown land within the Project Area where Native Title has not been extinguished under the NT Act a strategy should be developed. No current claims under the NT Act exist within the Project Area. **Crown land is described further at Section 2.3.2.1. Any NT Act matters will be considered further by the Applicant during the preparation of the EIS.**
EPBC Act Approval (Cwlth)	*Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)	Approval from the Australian Minister for the Environment and Heritage for the is required for any action that will or is likely to have a significant impact on one or more Matters of National Environmental Significance (MNES) under the EPBC Act. The Project will be assessed in the manner specified in Schedule 1 to that Agreement including addressing the matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulation 2000. **Biodiversity is further discussed in Section 6.4. An application under Part 9 of the EPBC Act will be prepared and submitted.**
	'Amending Agreement – No.1 - New South Wales Assessment Bilateral Agreement' (Bilateral Agreement)	Where a NSW SSD Project is deemed "Controlled" it is assessed in accordance with the 'Bilateral Agreement' (Commonwealth of Australia & NSW, 2020). Under the Bilateral Agreement, the NSW determining authority's Assessment Report will be provided to DCCEEW inclusive of a recommendation as to whether the Project should be approved and conditions that may be applied to any Federal approval. **Biodiversity is further discussed in Section 6.4. An application under Part 9 of the EPBC Act will be prepared and submitted.**
Civil Aviation (Cwlth)	*Civil Aviation Regulations 1988*	Reporting of tall structures to the Royal Australian Air Force (RAAF) is required under the Civil Aviation Regulations 1988. A detailed assessment in accordance with the regulations and consultation with the relevant agencies will be undertaken as part of the preparation of the EIS.
Other Approvals	*Aboriginal Land Rights Act 1983* (AL Act)	The AL Act establishes Aboriginal Land Councils at State and Local levels. These Land Councils have a statutory obligation under the Act to take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area. Under the Act, Aboriginal Land Councils can claim Crown land which is not lawfully used or occupied and that are not needed, nor likely to be needed, for an essential public purpose. The Project Area is located within the Hay and Deniliquin Local Aboriginal Land Council (LALC) boundaries. No current claims under the AL Act exist within the Project Area. **Crown land is described further at Section 2.3.2.1. Any NT Act matters will be considered further by the Applicant during the preparation of the EIS.**
	Water Management Act 2000 (WM Act)	Any person or organisation, including a local water utility, taking water from a water source must be authorised to take water by a water access licence and a water supply work approval under section 60A of the WM Act unless an exemption applies. **The requirement for any WM Act approvals will be determined as part of the EIS.**

Approval Category	Legislation	Requirement
	Conveyancing Act 1919 (Conveyancing Act)	The Project Area will require lease of premises under the Conveyancing Act. Subdivision consent is generally not required under section 23G of the Conveyancing Act, may apply if subdivision for the purpose of construction, operation and maintenance of a substation is required. **The need for any lease from the owners of the land and or subdivision will be determined as part of the EIS.**
	Biodiversity Conservation Act 2016 (BC Act)	Part 7, Division 2 of the BC Act specifies the requirements for a biodiversity assessment depending on the planning pathway under the EP&A Act. If an activity is likely to have a significant impact or will be carried out in a declared area of outstanding biodiversity value, the proponent must apply the Biodiversity Assessment Method (BAM) and a Biodiversity Development Assessment Report (BDAR). **A BDAR will be prepared for the Project and provide a discussion of the management and protection of listed threatened species of native flora and fauna and threatened ecological communities (TECs) and assess biodiversity offsets consistent with the Biodiversity Offset Scheme (BOS). Biodiversity is discussed at Section 6.4.**
	Local Land Services Act 2013 (LLS Act)	Division 5 clause 60S, clearing of native vegetation in a regulated rural area is authorised without any approval or other authority under this Part if it is clearing carried out by or on behalf of the landholder in accordance with a land management (native vegetation) code under this Division. **Biodiversity is further discussed in Section 6.4. An assessment of any Category 1 "exempt land", 'Category 2 "regulated land" and "excluded land" relevant to the Project will be conducted during the EIS.**
Approvals not required under Section 4.41 of the EP&A Act	*Fisheries Management Act 1994* (FM Act)	Section 201, 205 and 219 require a permit for the purpose of dredging works, any harm to marine vegetation, or for any activities that block the passage of fish, respectively. **The Project will not involve dredging works, impact marine vegetation or block the passage of fish and as such, no approvals in this regard are required. The methodology of the BDAR is discussed at Section 6.4.3.**
	Heritage Act 1977 (Heritage Act)	Approval is required to carry out an act, matter or thing referred to in Section 57(1), or an excavation permit under section 139. **The Project will not require an approval under section 57 or 139 subject to section 4.41 of the EP&A Act. The methodology of the Heritage assessment is discussed at Section 6.6.3.**
	National Parks and Wildlife Act 1974 (NPW Act)	Sections 86, 87 and 90 require approval for any works which may impact an item of Aboriginal heritage. **The Project will not require approvals under 86,87 or 90 subject to section 4.41 of the EP&A Act. The methodology of the Heritage assessment is discussed at Section 6.6.3.**
	Rural Fires Act 1997 (RF Act)	Where a project requires subdivision for residential or rural residential development, a bush fire safety authority under Section 100B is required. **An approval under section 100B will not be required subject to section 4.41 of the EP&A Act. The methodology of the Bushfire assessment is discussed at Section 6.15.2.**
	Water Management Act 2000 (WM Act)	A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the WM Act is required where impacts are predicted. **The methodology of the water assessment is discussed at Section 6.10.3 which will determine if a water use approval under the WM Act is required for the Project.**

4.4 Mandatory Matters for Consideration

Table 9 describes mandatory conditions that must be satisfied before the determining Authority may grant approval.

Table 9 Mandatory Considerations – Planning

Statutory Reference	Mandatory Consideration
EP&A Act and Regulation	
Section 1.3 - Objects of the Act	The Objects of the 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 promote the delivery and maintenance of affordable housing, e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats, f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage), g) to promote good design and amenity of the built environment, h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants, i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State, j) to provide increased opportunity for community participation in environmental planning and assessment. **The EIS will address each relevant Object of the Act and provide a justification on how the Project meets each.**
Section 4.15 – Evaluation	The consent authority is required to take the following matters into consideration in determining a development application: • Relevant environmental planning instruments including – T&I SEPP – *State Environmental Planning Policy (Resilience and Hazards) 2021* (Hazards SEPP) – SEPP (Biodiversity and Conservation) 2021 – Hay LEP – Conargo LEP • The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality • The suitability of the site for the development • Any submissions made in accordance with this Act or the regulations • The public interest **The EIS will address each evaluation matter and provide relevant detail in relation to how the Project is consistent with each.**
Relevant EPIs	
T&I SEPP	See **Section 4.2.1**

Statutory Reference	Mandatory Consideration
Hazards SEPP – Chapter 3	Chapter 3 of the Hazards SEPP assesses the potential hazards associated with a Project by providing definitions and guidelines for hazardous industry, offensive industry, hazardous storage establishments, and offensive storage establishments. In accordance with Section 3.7 of Hazards SEPP, consideration will be given to current circulars or guidelines published by DPE relating to hazardous or offensive development, including: • Hazardous Industry Planning Advisory Paper No 3 – Risk Assessment • Hazardous Industry Planning Advisory Paper No 12 – Hazards **A preliminary risk screening assessment will be undertaken for the Project as described in Section 6.15.1.**
Hazards SEPP – Chapter 4	Chapter 4 of the 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. **An assessment will be prepared to determine the potential contamination risk associated with the Project as described in Section 6.15.1. Noting the agricultural land use of the Project Area, the assessment will take in the consideration of historical land use that may have resulted in contamination within and surrounding the Project Area.**
Conargo Local Environmental Plan 2013 (Conargo LEP)	Relevant components of the Conargo LEP include: • Section 1.2 – Aims of Plan • Land Use Table – Objectives and permissible uses of the RU1 – Primary Production zone **The EIS will address relevant sections of the Conargo LEP.**
Deniliquin Local Environment Plan 2013 (Deniliquin LEP)	Relevant components of the Deniliquin LEP include: • Section 1.2 – Aims of Plan • Land Use Table – Objectives and permissible uses of the RU1 – Primary Production zone **The EIS will address relevant sections of the Deniliquin LEP.**
Hay Local Environmental Plan 2011 (Hay LEP)	Relevant components of the Hay LEP include: • Section 1.2 – Aims of Plan • Land Use Table – Objectives and permissible uses of the RU1 – Primary Production zone **The EIS will address relevant sections of the Hay LEP.**
Development Control Plans (DCP)	Under Section 2.10 of the Planning Systems SEPP, DCPs do not apply to SSD projects as: *"Exclusion of application of the development control plans* *Development control plans (whether made before or after the commencement of this policy) do not apply to-* *a) State significant development, or* *b) development for which a relevant council is the consent authority under section 4.37 of the Act."* **As such, DCPs do not apply to the Project Area.**

5 STAKEHOLDER ENGAGEMENT

5.1 Introduction

To date, the engagement planning has identified key stakeholders and suitable engagement strategies specific to each stakeholder group and stage of the Project. Early engagement with host landowners, nearby neighbours (within 8 km of Project Area), LALCs and local Councils noted their preference for the engagement methods identified in **Table 10**.

Consultation methods will continue to be modified in response to stakeholder feedback, as additional stakeholders are identified and as monitoring data is captured, providing a more comprehensive understanding of the impact of each engagement tool.

5.2 Stakeholder Engagement Plan

Consultation methods will continue to be modified in response to stakeholder feedback, as additional stakeholders are identified and as monitoring data is captured, providing a more comprehensive understanding of the impact of each engagement tool.

Table 10 Preferred Engagement Methods

Indicative Preference Level	Engagement Tool
High	Individual meetings (face-to-face / 1-1)
	Email communications (for significant Project updates and general notification of when we are in-region for follow up meetings / engagements)
	Limited group size Project briefings/ meetings (both virtual and in-person), among key stakeholder groups (mainly nearby neighbours indicate preference for this) Groups sizes have typically included 2-3 family members and/or individuals at one time
Medium	Individual meetings (phone and video conference calls methods)
	Community / stakeholder surveys, including options for follow up face-to-face engagements / survey administering
	Project website (Pottinger Wind Farm) with frequent updates and direct notification of updates to key stakeholders by the Applicant
	Letters and newsletters (via email and mailbox drops)
	Newspaper ad updates (to Hay and Deniliquin and surrounds community)
Low	Mass community information sessions (virtual, and drop-in) – which are planned to commence post-issuing of SEARs.

5.3 Stakeholder Identification

Table 11 identifies a diverse range of community stakeholder groups to be potentially engaged throughout the Project. The following table will be modified in response to stakeholder feedback and as additional stakeholders are identified via ‘snowball sampling’. A detailed stakeholder register is maintained in Someva’s secure cloud-based community engagement software program to ensure privacy and confidentiality is maintained (where required).

Table 11 Initial Stakeholder Identification

Stakeholder Group	Details / Key Areas of Interest / Risk Responses
Associated (WTG and other Project infrastructure - host landowners)	• One landowner hosting WTGs are financial beneficiaries. Have direct impacts from construction and operational activities, including traffic management, land management, electrical infrastructure, and road maintenance.
Neighbours (within 8 km), non-associated dwellings. Direct adjoining landowners and residents adjacent the Project Area.	• Four neighbours identified (initial assessment), with a further two neighbours around 10 kms from Project Area, and 10+ neighbour dwellings between 12-21 km away from Project Area. • Direct impacts from construction and operational activities. • Visual impacts from the WTGs and other infrastructure are likely.
Federal Government Departments and representative/s	• MP Sussan Ley, Member for Farrer. Deputy Leader of the Opposition. • Department of Regional NSW • Department of Environment; Department of Infrastructure and Regional Development; Department of Agriculture, Water and Environment • MP Tanya Plibersek, Minister for the Environment and Water.
State Government Agencies, Departments and Representatives	• Biodiversity and Conservation Directorate (BCD) • Transport for NSW (TfNSW) • MP Helen Jennifer Dalton, Member for Murray. Member of the Legislative Assembly, • MP Penny Sharpe, Minister for portfolios covering Energy, Environment, Heritage and Climate Change. Member of the Legislative Assembly. • NSW Department of Planning and Environment; Transport for NSW; Environmental Protection Authority; Office of Environment and Heritage; Energy Corporation of NSW; NSW National Parks and Wildlife Services; Australian Alpine National Park.
Local Council Representatives (Hay Shire and Edward River Councils)	• Hay Shire a. Council: David Webb (General Manager); Jack Treblanche (Director Planning and Development); Alison McLean (Economic Development Officer); Mark Dowling (Director Corporate and Community Services) b. Councillors: Cr Carol Oataway (Mayor); Cr Lionel Garner (Deputy Mayor); Cr Geoff Chapman; Cr Jenny Dwyer; Cr Martyn Quinn; Cr Paul Porter; Cr Peter Handford. • Edward River a. Council: Phil Stone (General Manager); Mark Dalzell (Director Infrastructure); Marie Sutton b. Councillors: Cr Pete Betts (Mayor); Cr Paul Fellows (Deputy Mayor); Cr Shirlee Burge; Cr Harold Clapham; Cr Linda Fawns; Cr Pat Fogarty; Cr Tarria Moore; Cr Marc Petersen
Nearby town centres	• Near: Hay; Deniliquin; Booroorban (village) • Further afar: Coleambally; Conargo; Swan Hill; Griffith.
NSW Roads and Maritime Authority	• NSW R&M are responsible for building and maintaining road infrastructure and managing the day-to-day compliance and safety for roads and waterways in NSW.
Local Media	• Radio stations; newspapers; community newsletters; community Facebook groups. This includes Deniliquin Pastoral Times, The Riverine Grazier, and ABC Radio Riverina.
Local community members	• Community members, organisations and groups who live greater than 12 km from proposed Project infrastructure.

Stakeholder Group	Details / Key Areas of Interest / Risk Responses
Emergency Services	• Hay / Deniliquin Hospital and Health Service • Fire and Rescue NSW Fire Station – Deniliquin and Hay • NSW Ambulance– Deniliquin and Hay • NSW Police Service– Deniliquin and Hay
Airports	• Hay Airport. • Ravensworth Airport • Deniliquin Airport
Traditional Owners and other Aboriginal Groups	• Hay Local Aboriginal Land Council • Deniliquin Local Aboriginal Land Council • Registered Aboriginal Parties (RAPs) • Nari Nari Tribal Council (Hay) • Hay Aboriginal Community Corporation Working Party • Hay Aboriginal Medical Service • NSW Aboriginal Land Council
Local Business and Employment Agencies	• Regional/local suppliers, businesses, and industry capability networks. • Local Business Chambers
Industry and interest groups	• Clean Energy Council; NSW Farmers Association; and others, as identified post-SEARs.
Local Schools and Education Institutions	• Primary and high schools, such as HCS Preschool; Booligal Public School; Hay Public School Hay War Memorial High School • Education or other Hay School of the Air • Hay Inc. (Rural Education Program) • TAFE NSW Hay
Electricity / Utility Network Service Providers	• The three electricity distributors in NSW: Essential Energy; Endeavour Energy; Ausgrid • Telstra; Optus; NBNCo
Other renewable energy industry interest groups	• South West REZ industry reference group • Surrounding largescale renewable energy project developers

5.4 Engagement Conducted

The Project team has undertaken two in-region visits (December 2022; February 2023) to engage with key stakeholders and soft-launch the Project to reduce community engagement fatigue. Direct engagement, including meetings with neighbour groups near the Project Area is being prioritised to ensure their active engagement with the Project.

The Project website was launched in March 2023 at https://www.somevarenewables.com.au/project-pottinger. It includes access to the online community survey, Project Fact Sheet, Frequently Asked Questions, and key points of contact to engage directly and discuss the Project.

Outcomes from activities undertaken to date are shown in Table 12. Dwellings are shown on Figure 2.3.

Table 12 Outcomes from Stakeholder Engagement

Stakeholder	Date/s	Consultation Activity and Key Outcomes
Host Landowners (AD #1)	Continuous since Project inception (2020)	Provided Project updates >three times per month, including to planning and development schedules proposed. Regular updates regarding stakeholder engagement, ecological, visual, noise and other survey work. Favourable responses received.
Neighbours (NADs) within 8 km of the Project Area. (NADs #01-04) – 4 NAD landowners identified, noting some NADs own multiple dwellings across their properties. The Project Team is in direct contact with all 4 of the NADs, including NAD11 (10 kms from Project Area).	12 December 2022 onwards	Two in-region consultations were conducted, 12-13 December 2022 and 7-9 February 2023, coupled with remote consultations, to directly engage with stakeholders (focusing on neighbours within 8 km zone) and 'ground-truth' desktop assessments. >30 communications via phone calls, emails, and face-to-face meetings with all identified landowners of the identified NADs provided overview of the Project. All four NADs support the project: • Three of the NADs, who are also associated with other renewable energy projects, have provided verbal support for the Project. • Only NAD_03 is identified as not hosting any related aspect of renewable energy development projects at the time of this report.
Hay Council General Manager; Economic Development Officer.	29 Nov 2022 onwards	13 December 2022: Presentation to Hay Council leader/s to introduce the Project and the Project Team. Supportive response from Council. Key points of contact established for ongoing Project engagement. Project team continues to engage with the identified Hay council point of contact regularly to ensure relevant updates of project progress and stakeholder engagements.
Edward River Council Leadership Team: Development Services Mgr.; Local Infrastructure Director.	29 Nov 2022 onwards	8 February 2023: Presentation to Edward River Council leader/s to introduce the Project and the Project Team. Supportive response from Council. Key points of contact established for ongoing Project engagement. Project team committed to engage with the identified Edward River Council point of contact regularly to ensure relevant updates of project progress and stakeholder engagements.
Sussan Ley, MP (Federal Government, Member for Farrer)	29 Nov 2022 onwards	Emails and phone calls to coordinate meetings and introduce the Project and the company. 02 February 2023: face to face meeting with MP Ley to brief on the project. Supportive response received. Project team committed to frequent updates as project development progresses.

Stakeholder	Date/s	Consultation Activity and Key Outcomes
Helen Dalton, MP (State Government, Member for Murray).	29 Nov 2022 onwards	Seven emails and four phone calls to introduce the Project and the company. Acknowledgement of communication received. 31 Jan 2023: MP's office advised via phone call they would be a to meet the earliest they could meet would be end of March. We agreed to send through project-significant updates via email to ensure MP Dalton's office is kept updated on the project. Latest project briefing material was email through following the phone call.
Department of Planning and Environment (DPE)	19 January 2023	Scoping phase update and introduction of the Project. Key points of contact established.
Biodiversity and Conservation Directorate (BCD)	2 June 2023	Following a request to BCD on 26 May 2023, BCD confirmed on 2 June 2023 the following in regard to early engagement on the Project: "*while our preference is always for early consultation on proposed SSD projects, in this instance we are OK to have that engagement once we receive the Scoping Report and during the preparation of SEARs.*"
Transport for NSW	7 June 2023	Following a request to TfNSW on 26 May 2023, TfNSW had no comment on the transport route for Project infrastructure, and that the TTIA be prepared during the EIS phase of the Project.
Hay Local Aboriginal Land Council (LALC)	5 December 2022 onwards	One face-to-face meeting with Hay LALC on 12 December 2022. 10 emails and five phone calls to sustain engagement and coordinate schedules. Favourable response and support received. Engagement and Project information provided via email and f2f. Ongoing engagement to ensure the Project Team are engaging with Registered Aboriginal Parties authorised to engage with the Project on behalf of their communities.
Deniliquin Local Aboriginal Land Council (LALC)	5 December 2022 onwards	1 face-to-face meeting with Deniliquin LALC on 9 February 2023 to introduce the Project and discuss strategies to risk-mitigate potential Project impacts on Aboriginal heritage and other cultural matters. >four phone calls and four emails prior to f2f meeting. Follow up video-calls to brief on project progress and next steps in April. Favourable response and support received. Deniliquin LALC are keen to be involved in the cultural heritage management and any future soil turn activities at identified Project sites that fall on the Edward River LGA side of the Project.

5.5 Community Feedback to Date

The key issues identified from the community engagement to date show a broad suite of interests regarding all aspects of the Project including in the planning and assessment of the Project, environmental and social impacts, opportunities for economic and other social benefits and the Project's interaction with other large developments in the region.

Table 13 Feedback from initial Stakeholder Consultation

Description of Concern/s Raised	Source of Feedback	Feedback Received (Issues / Concerns Raised)
A change in the natural environment and visual amenity	NAD neighbours within 8 km of the Project.	A minor issue raised by stakeholders for this Project. The flat uninterrupted views of Hay plains carry value for some local neighbours, however it was noted by all neighbours they support wind development in their area.
Project benefits sharing.	NAD Neighbours within 8 km of the Project; local councils (Hay	Access to a neighbour benefit sharing program (i.e. project proximity revenue streams and/or other benefits) was noted by the Project's neighbours as something they would value. The value of establishing a consistent standard

Description of Concern/s Raised	Source of Feedback	Feedback Received (Issues / Concerns Raised)
	Shire; Edward River); LALCs	across any proposed neighbour benefits sharing that may emerge from nearby projects as well was noted. VPAs were cited as a significant benefit local stakeholders were envisaging, though concerns were raised over the need to potentially consolidate efforts, design and administration of these funds with other potential renewable energy projects that may emerge in the LGA due to low local capacity.
Housing and accommodation	Local councils (Hay; Edward River)	Hay/Deniliquin councils noted they are under existing housing demand pressures, and this issue is expected to increase as proposed largescale renewable development projects in the area approach construction phase in the coming years. Both councils advised a coordinated approach to address construction-phase accommodation matters for nearby renewable energy projects needs to be made a priority by Applicants.
Local infrastructure (road network and electricity grid)	Host landowners; Neighbours within 8 km of the Project; local councils (Hay Shire; Edward River).	Several stakeholders wanted to understand the Project scope and scale, and extent of potential local infrastructure upgrades, including to roads and energy distribution networks (grid / transmission line upgrades). Concerns were raised by project neighbours about the constraints on the electricity grid stemming from additional renewable energy generation projects in the area. This concern also stems from the reality that three of the four project neighbours are also hosting renewable energy development projects (wind/solar), so a related concern to note is the potential for future community disharmony / division to emerge as some projects proceed at the cost of others (due to grid access or other constraints).
Community disharmony / division	Host landowners; Neighbours within 8 km of the Project; local councils (Hay; Edward River).	Noting the above, three of the four project neighbours are also hosting renewable energy development projects (wind/solar) on their property. All project neighbours are aware there is limited access to the grid to enable energy transmission, which is a critical enabler to project development success. The potential for disharmony to emerge between project neighbours, as some projects proceed at the cost of others (due to grid access constraints), was frequently noted.
Aboriginal Heritage	LALCs (Hay; Deniliquin); Host landowners; local councils (Hay Shire; Edward River).	Minimum concerns raised by both LALCs following initial discussions about potential scope and future impacts of the Project. Both LALCs noted the value of early engagement, including through site visit/s to ensure familiarity and early identification of potential sensitive locations for further investigation during EIS.
Diversity of income streams	Host landowners; Neighbours within 8 km of the Project; local councils (Hay; Edward River); LALCs	Stakeholders noted the severe impact of the recent droughts on the landscape and ability to continue stock grazing (sheep and cattle) activities. Sharing of economic benefits (financial) resulting from the Project was noted as a key benefit sought to improve agribusiness resilience. One local business operator (project neighbour) also noted the potential for eco-tourism opportunities to emerge, given the large scale and number of renewable energy projects proposed.
Demands for local goods and services	Host landowners; local councils (Hay; Edward River); LALC	This project is forecasted to result in a significant increase in demand for local goods and services, and result in the emergence of a renewable energy service economy. Several stakeholders noted the value of exploring 'Local Content' targets for the Project (i.e. prioritising supply from local goods/services first, where appropriate), including for First Nations peoples.
Fires (grass and bush)	Neighbours within 8 km of the Project	Stakeholders noted the enduring risk of bush and grass fires in the area to agribusiness operations and livelihoods. Stakeholders noted the potential benefits that may result from the project due to upgraded local infrastructure and increased local traffic (early fire detection).
Health and wellbeing	Neighbours within 8 km of the Project	There were no concerns raised through consultations about the potential for any other health/wellbeing matters that typically emerge from community feedback for renewable energy projects (such as noise output, electromagnetic fields, visual, blade throw or any other matter along this line).

Description of Concern/s Raised	Source of Feedback	Feedback Received (Issues / Concerns Raised)
Future wind farm decommissioning	Neighbour within 8 km of the Project	Limited number of stakeholders (neighbours) cited concerns about the extent to which wind turbines could be recycled in the future and/or replaced ('re-energised'). The neighbours want assurance that they will continue to deliver value or be replaced/removed in the future. They also wanted to understand what happens if the Project is on-sold to another operator and wanted assurances the wind turbine assets wouldn't be abandoned.

5.6 Proposed Future Engagement

Details of the proposed future engagement based on current community and stakeholder engagement are provided in **Table 14**.

Table 14 Proposed Future Engagement

Stakeholder Group	Engagement Activities
Host landowners	• Face-to-face (f2f) meetings • Email / letter / phone calls / factsheet / newsletter updates / website / direct contact line (mobile + email) • Community information sessions
Neighbours (landowners) within 8 km of the Project site	• Door knocking • f2f meetings • Email / letter / phone calls / factsheet / newsletter updates / website / direct contact line • Community information sessions
Nearby towns	• Information sessions (virtual and in-region) / website / direct contact line (mobile + email) / newsletter and email updates • Advertising in local newspaper and via local council channels
Hay and Edward River Councils	• f2f meetings • Email / letter / phone calls / factsheet / newsletter updates / website / direct contact line (mobile + email) • Community information sessions
Local Businesses	• Information sessions (virtual and in-region) / website / direct contact line (mobile + email) / newsletter and email updates • Advertising in local newspaper and via local council channels
Traditional Owners and other Aboriginal Groups	• f2f meetings • Email / letter / phone calls / factsheet / newsletter updates / website / direct contact line
Emergency Services (Hay and Deniliquin), including local Hay Airport	• Meetings / briefings / emails / phone calls / factsheet + Project updates / website / direct contact line (mobile + email) • Advertising in local newspaper and via local council channels • Information sessions
Chambers of Commerce	• Meetings / information sessions (virtual and in-region) / website / direct contact line (mobile + email) / newsletter and email updates • Advertising in local newspaper and via local council channels
Local Media	• Presentations • Emails / factsheet + Project updates / website / direct contact line (mobile + email) • Information sessions
Federal Government Departments and representative/s	• f2f meetings • Email / letter / phone calls / factsheet / newsletter updates / website / direct contact line (mobile + email)
State Government Agencies, Departments, and representative/s	• f2f meetings or remote/virtual • Email / letter / phone calls / factsheet / newsletter updates / website / direct contact line (mobile + email)
Community Organisation and Local Action Groups	• Emails / factsheet + Project updates / website / direct contact line (mobile + email) • Information sessions

6 ASSESSMENT OF IMPACTS

This section outlines matters requiring further assessment in the EIS and the level of assessment that will be undertaken for each aspect.

6.1 Aspect Categorisation

Appendix A provides a list of all potential environmental and social issues which have been identified in relation with the Scoping Report Guidelines.

Each aspect has been considered in relation to the project description at **Section 3.2** and allocated a relevant level of assessment.

The key matters requiring more detailed assessments have been identified on a preliminary assessment of the Project Area and by taking into consideration other wind farm developments in NSW.

6.2 Visual and Lighting

A Preliminary Visual and Lighting Impact Assessment (PLVIA) has been prepared by Moir Landscape Architecture Pty Ltd (MLA) and is included in full at **Appendix C**. Relevant guidelines and policies are listed at **Appendix A**.

A summary of the key background, preliminary assessment and EIS assessment approach is provided below.

6.2.1 Preliminary Assessment

The PLVIA Study Area includes the Project Area and surrounding land up to 15 km from the nearest WTG which requires assessment. The closest landmarks include the towns of Hay and Booroorban, South West Woodlands Nature Reserve and Oolambeyan National Park (refer to **Figure 1.1**).

The following has been undertaken to develop the PVIA:

- Desktop Assessment:
  - Application of Preliminary Assessment Tools to determine receivers with potential sensitivity;
  - Preparation of a preliminary Zone of Visual Influence (ZVI) to establish a theoretical zone of visibility of the Project;
  - Identification of key viewpoints and landscape features using available mapping and background documents;
- Site Inspection:
  - Photographic survey work for the assessment was undertaken in February 2023 to carry out a preliminary assessment of the existing landscape character from publicly accessible land within the Study Area. The findings of the site inspection have been included in the PLVIA and will form the basis for discussion with the community in the EIS Phase of the Project; and
- Community Consultation:
  - Community consultation has been undertaken through the scoping phase of the Project. Results of the community consultation have also been utilised to gain perspective on the landscape values held by the community to inform the PLVIA.

6.2.2 Background

The following section provides an overview of the key features identified within and around the Study Area. **Figure 1.2** illustrates key features of the Project.

Creeks, swamps and dry lakes

Given the dry and arid conditions of the region, the lakes and creek lines remain dry through most of the year. The most significant hydrological features in close proximity of the Project Area include Nyangay Creek, Eurolie Creek, Werkenbergal Swamp, Burra Burroon Swamp and Longbottoms Dam.

Lakes or depressions are generally shallow and defined by low-storey, scrubby vegetation such as saltbush and canegrass species (Environment NSW, 2011). These areas have the capacity to hold water and are generally favoured for sheep and emu grazing. Creek floodplains, on the other hand, are defined by a denser vegetation character with scattered clumps of belah trees, saltbush, speargrass and forbs (Environment NSW, 2011). The region also presents swamps and pans with dillon bush, canegrass and nitre goosefoot spread across extensive grey clays (Environment NSW, 2011).

Lack of availability of fresh water sources has led to the prominence of native grazing pastures with occasional modified pastures and dryland cropping.

Geology and landform

The region is made up of Quaternary alluvial sediments with shallow and small depressions that are as deep as 2 m (Environment NSW, 2011). These depressions form a number of dry lakes studded in the landscape. In some areas these depressions form large scale swamps. The landform is also characterised by isolated low rises formed by aeolian processes, i.e., through wind action (Environment NSW, 2011). Landform is generally flat with dry distributary channels and floodplains (NPWS, 2003).

Vegetation character

Lack of water and dry, arid conditions support scattered stands of belah trees, saltbush and speargrass communities (NPWS, 2003). A number of saltbush and cottonbush varieties dominate the region with very sparse tree communities, thus yielding clear, open views of the expanse. The lack of tall canopy species allows higher wind speeds with continual wind actions on the landscape. Mid-canopy species such as lignum and nitre goosefoot are occasionally visible in the landscape and are favoured for emu grazing. Predominance of low-storey vegetation allows easier grazing opportunities for sheep, thus rendering the area favourable for livestock grazing. Most canopy cover is prominent within the extents of the Oolambeyan National Park and South West Woodlands Nature Reserve extents.

Nature Reserves, State Conservation Area and National Park

Significant ecological, cultural and historic associations have been identified for the Oolambeyan National Park which is located over 5 km north east of the Project Area. The region also has significant historic and cultural associations such as Aboriginal sites, hearths, and stone artefacts along with colonial associations such as a former merino stud property of the western Riverina (NPWS, 2014a). Although the Park's prominent hydrological features have been modified and regulated especially in the eastern parts, it boasts a variety of biodiversity and landscape values which make it a unique representation of the Hay Plains character in south west NSW.

South West Woodland Nature Reserve is characterised by fragmented parcels of woodlands that are spread across areas closer to Coleambally and Steam Plains. The Reserve protects a number of significant endangered ecological communities and is known for educational and recreational associations such as bushwalking, birdwatching and research (NPWS, 2014b).

Campgrounds and Points of Interest

Points of interest include the Oolambeyan Homestead Picnic Area which is located approximately 21 km north east of the Project. It comprises of a cricket pitch, an orchard, shearing and ram shed complexes that are surrounded by Sandhill Pine Woodlands (NPWS, 2014a).

A key Public Viewpoint identified within the Study Area includes the 16 Mile Gums Rest Area and the Booroorban Pub/Hotel.

Recreational associations occur mostly within the extents of Hay and along the Murrumbidgee River to the north of the Project Area. Recreational facilities include campgrounds, ovals, parks and Bidgee Riverside Walk along the Murrumbidgee River.

Consultation

Community consultation has been undertaken by Lecroma between Q4 2022 and Q1 2023. A questionnaire was distributed to both associated and non-associated landholders.

Below provides a summary of responses received through the preliminary Community Consultation:

> *"No views of significant value identified outside of a general value for the expansive flat Hay plains (noting this was not mentioned frequently at all). Most of the landscape has been heavily altered through multi-generational broad acre farming operations. The area is highly exposed to the effects of climate (especially droughts) which we were cited as severely impacting farming operations during extended drought periods, creating economic and mental health hardship.*
>
> *Most of the project neighbours have already signed on with competing renewable energy project developers, and noted their general support for renewable energy project developments in their area (i.e. no objecting neighbour groups to renewable energy projects have been identified at this stage).*
>
> *In general, it is the protection of local endangered species (plains wanderer) that appears to be of most concern to project neighbours when asked about what they value most and might be impacted on by renewable energy development projects.*
>
> *Local employment opportunities were another frequently mentioned value to project neighbours, as there are sparse opportunities for employment outside of large broad acre farming operations (and ancillary support services)."*

The only visual impact concern cited is the risk that projects could spoil their "big sky" for which the Hay Plains is famous with photographers and tourists, particularly on the drive from Deniliquin to Hay.

Engagement with the nearby private receivers indicated concerns were raised in relation to protection of local endangered species, protection of local Heritage and Aboriginal Artefacts and regarding local employment opportunities. Community's perspective towards the Project is generally positive. It is important to note that many of the surrounding landholdings have been engaged with other Renewable Energy Project Developers.

6.2.3 Results

The potential visual impacts of the Project have been assessed in accordance with the visual guidelines. Preliminary Assessment Tools involve the analysis of two key visual parameters:

- Visual Magnitude; and
- Multiple Wind Turbine Tool.

Dwellings identified through the application of the Preliminary Assessment Tools have been assessed in detail in the PLVIA.

6.2.3.1 Visual Magnitude

The Visual Magnitude Threshold is based on the height of the proposed WTGs to the tip of the blade and distance from dwellings or key public viewpoints. The proposed WTGs are based on a worst-case scenario with a tip height of 280 m. The 'black line' intersects at a distance of 3,750 m and the 'blue line' intersects at 5,500 m as shown on **Figure 6.1**.

For the purpose of the PLVIA, the Visual Magnitude thresholds are based on a 2D assessment of the Project alone. Further assessment indicates factors such as topography, relative distance and existing vegetation may minimise or eliminate the impacts of the Project from residences.

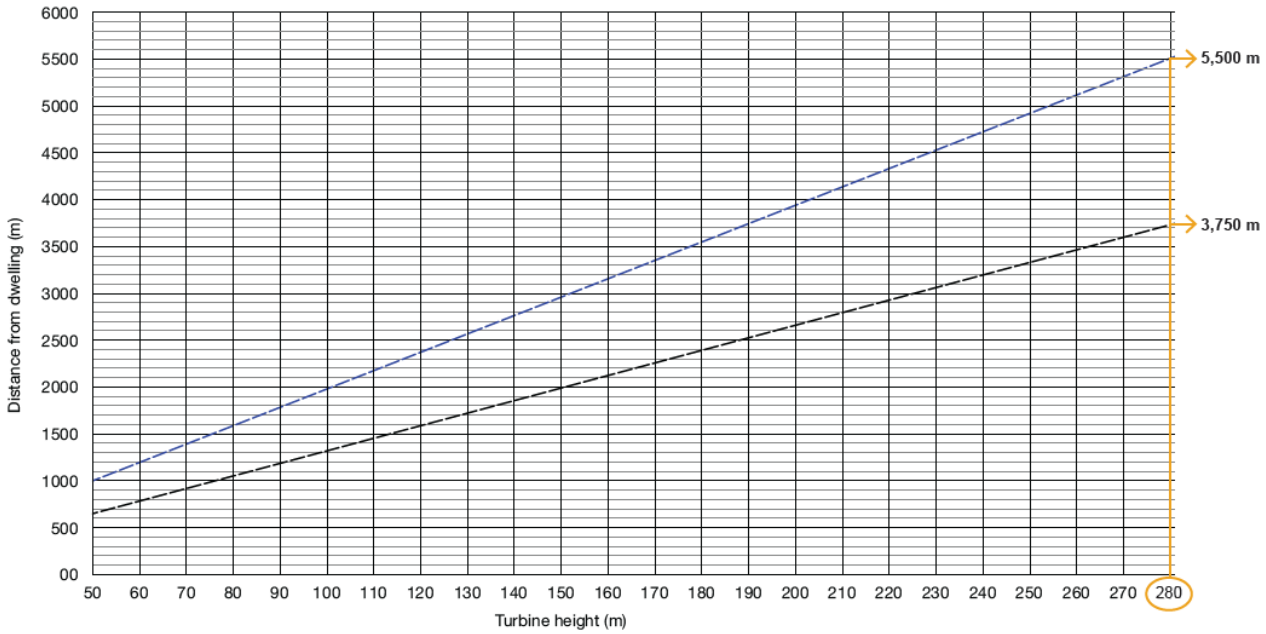


Figure 6.1 Visual Magnitude Thresholds

Application of the Preliminary Assessment Tools to the Project identified dwellings which require further assessment in accordance with the Bulletin. Non-associated dwellings identified within the Study Area and Visual Magnitude thresholds are shown on **Figure 6.2** and include:

- Two non-associated dwellings were identified within 3,750 m of the WTGs (within black line of visual magnitude). These are NAD_01 and NAD_02. These dwellings are associated with another Project;
- No non-associated dwellings have been identified within 5,500 m of the WTGs (within blue line of visual magnitude);
- Two non-associated dwellings have been identified within 8,000 m of the proposed WTG locations. These are NAD_03 and NAD_04. NAD_04 is associated with another Project; and
- Preliminary site assessment identified that existing vegetation would partially reduce visibility from all non-associated dwellings as described in **Appendix C**.

Further detailed assessment and site inspections of sensitive receivers to ground-truth this analysis will be undertaken during the EIS phase.

6.2.3.2 Multiple Wind Turbine Tool

Project Alone

The Multiple Wind Turbine Tool provides a preliminary indication of potential cumulative impacts arising from the proposed Project. To establish whether the degree to which dwellings or key public viewpoints may be impacted by multiple WTGs, the applicant must map into six sectors of 60° any proposed WTGs, and any existing or approved WTGs within 8 km of each dwelling or key public viewpoint.

No key public viewpoints were identified within 8,000 m of the nearest WTG.

When applied to the Project, the 2D Multiple Wind Turbine Tool identified that five dwellings that will view WTGs from with the Project. Of these:

- One non-associated dwelling will have views in up to six 60 degree sectors;
- One non-associated dwelling will have views in up to four 60 degree sectors; and
- The remaining three non-associated dwellings will view the WTGs within one 60 degree sector.

Dwellings located on the north western and north eastern side of the Study Area have the potential to view WTGs associated with the Project as well as The Plains Wind Farm and Bullawah Wind Farm. TPEP and BWF are in their preliminary planning stages.

The re-occurrence of renewable energy projects within a region has the potential to alter the perception of the overall landscape character irrespective of being viewed in a single viewshed. It is important to determine whether the effect of multiple wind farms and other major infrastructure within the region would combine to become the dominant visual element, altering the perception of the general landscape character.

The Project is located on flat terrain and is surrounded by isolated rural dwellings. Due to the flat topography of the region and lack of obtrusive elements, it is likely that there will be areas from which multiple Projects will be visible simultaneously.

An assessment of the cumulative impacts of these projects will be assessed in the EIS.

Existing screening factors (including vegetation and structures) may reduce visibility of the WTGs. This detailed assessment will be undertaken during the EIS phase.

6.2.3.3 Zone of Visual Influence

A Zone of Visual Influence (ZVI) diagram has been prepared for the Project to illustrate the theoretical visibility of the proposed WTGs from the blade tip height.

The ZVI usually presents a bare ground scenario - i.e. a landscape without screening, structures or vegetation, and is usually presented on a base map.

The ZVI has been determined through the use of digital topographic information and 3D modelling software *WindPro*. The ZVI has been assessed to approximately 30 km from the Project Area.

The following provides a summary of the ZVI diagrams prepared for the Preliminary Layout of the Project.

- Due to the relatively flat topography that characterises this landscape, the majority of WTGs associated with the Project are likely to be visible from most areas around the Project Area.
- Certain areas located on the south western and south eastern sides of the Project Area that are associated with creek corridors, swamps and floodplains have been identified in the ZVI to have limited views between them and the Project Area due to topographical differences.
- Views to the majority of WTGs associated with the Project are likely to be available for all dwellings within 8 km of the WTGs. This assessment is based on a consideration of topography alone and does not consider intervening elements such as vegetation and existing structures.

Detailed site investigations (in the form of a viewpoint analysis inventory and dwelling assessments) has been undertaken to ground-truth the. Preliminary viewpoint analysis (from 15 public locations) and assessment of five representative sensitive receivers have been included in **Appendix C**.

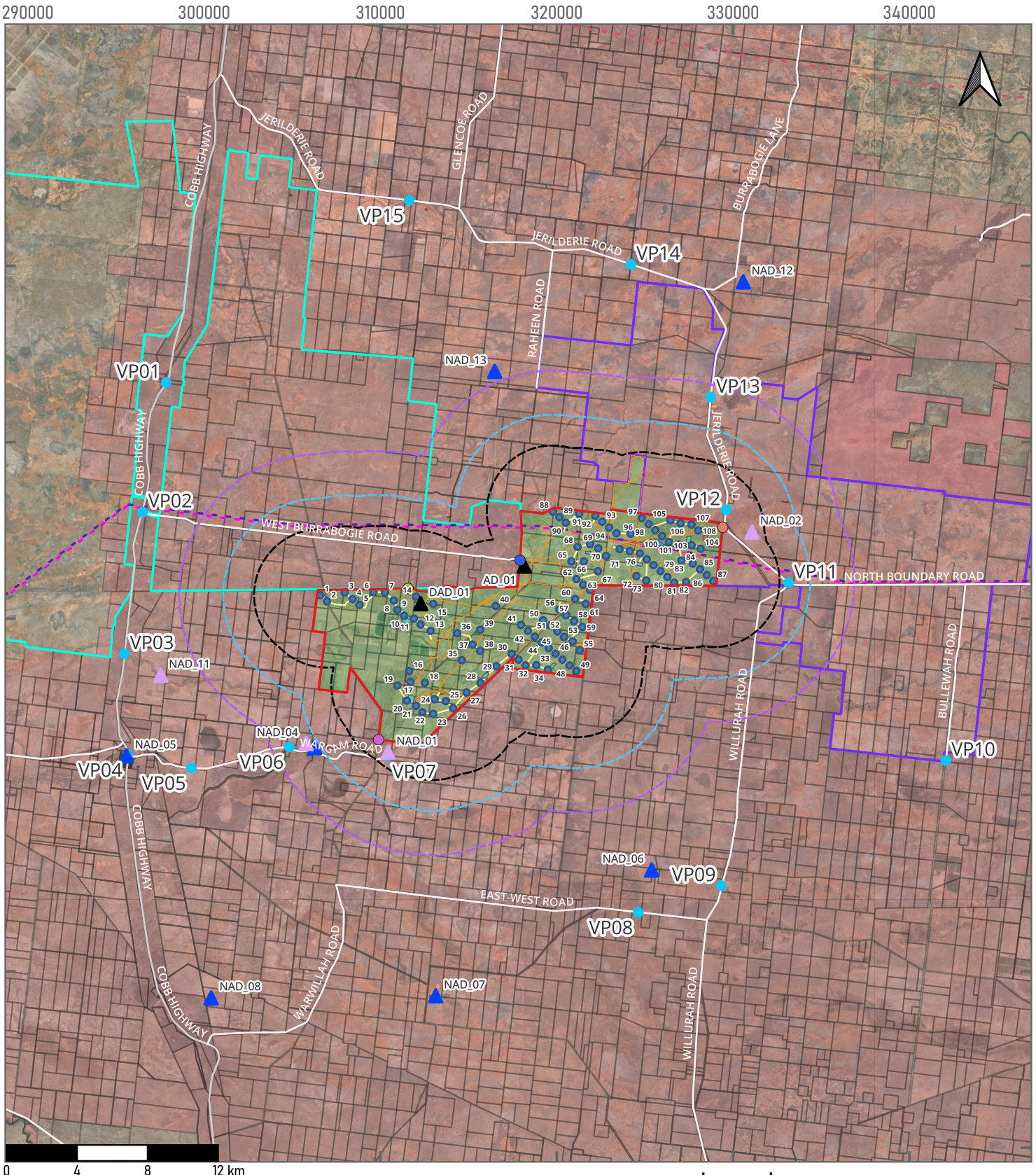
Further detailed assessment from areas identified in the ZVI will be undertaken in the EIS Phase of the assessment.

The PLVIA is a preliminary assessment based on worst case scenario that does not consider the impact of vegetation or structures. Ground-truthing during field work will ascertain potential visibility taking into account structures and vegetation, however, based on the preliminary assessments, it is likely that existing intervening vegetation surrounding non-associated dwellings is likely to reduce views of WTGs from a number of locations.

6.2.4 EIS Assessment Approach

The visual impact assessment will:

- Utilise the landscape character assessment to prepare a detailed Visual Baseline Study;
- Identify any additional key features, key viewpoints valued by the community through ongoing consultation;
- Refine the Landscape Character Units (LCUs) and allow the community to provide feedback on the relative scenic quality ratings of LCUs;
- Determine the ZVI of key viewpoints and assess against the objectives outlined in the Visual Bulletin;
- Ground-truthing of all identified non-associated dwellings;
- Site inspection and detailed dwelling assessment at sensitive non-associated dwellings;
- Assess each sensitive receptor in detail to take into account topography, vegetation and other screening factors;
- Determine the potential visual impact of each sensitive receptor and provide mitigation methods to reduce potential visual impacts;
- Prepare detailed assessment from areas identified as having potential visibility in the Preliminary ZVI;
- Include graphic representations of the Project using GIS technology including wire frame diagrams and photomontages; and
- Include assessment and justification for placement of WTGs in multiple, along with a description of the mitigation and management measures being employed to reduce impacts which may consider topography, relative distance and existing vegetation may minimise the impacts of the Project; and
- Detail mitigation and management measures.



Pottinger Wind Farm

Figure 6.2: Visual Magnitude Threshold Preliminary Assessment Locations

SOMEVA RENEWABLES

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 300000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, SixMaps NSW
Prepared By: EL Reviewed By: TS
Version: 2.2
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Cadastre and Land Ownership
- Associated
- Non-associated

Neighbouring Projects
- Bullawah Wind Farm Project Boundary
- The Plains Renewable Energy Park Project Boundary

Preliminary Visual Magnitude
- 3750m Buffer
- 5500m Buffer
- 8000m Buffer
- Preliminary Viewpoint Assessment Locations

Existing Infrastructure
- Existing 132 kV Transmission
- Existing 220 kV Transmission
- Project Energy Connect
- Highway
- Main Roads
- Existing Access Tracks

Dwellings
- Associated
- Non-Associated
- Non-Associated (Associated with other project)

6.3 Noise and Vibration

A Preliminary Noise Impact Assessment (PNIA) has been prepared by Sonus Pty Ltd and is included in full at **Appendix D**. Relevant guidelines and policies are listed at **Appendix A**.

A summary of the key background, preliminary assessment and EIS assessment approach is provided below.

6.3.1 Background

The Project Area is located within a rural setting and the associated background noise levels are expected to be largely from road traffic on the Cobb Highway and from agricultural activities. There is one associated and five non-associated dwellings located within the Project Area as described in **Section 2.3.2.2**.

6.3.2 Preliminary Assessment

6.3.2.1 Wind Turbines

The Noise Bulletin provides criteria based on the higher of 35 dB(A) or 5 dB(A) above the background noise level at each integer wind speed for non-associated residences. The PNIA is based on the baseline criteria of 35 dB(A). Background noise monitoring will be conducted as part of the NIA for the EIS may result in an increase in the criteria above the baseline.

The PNIA was conducted assuming a maximum sound power level (SPL) of 107 dBA (including an addition for uncertainty) which is a worst-case conservative assumption.

The highest predicted noise from a WTG (corresponding to hub height wind speeds of 10 m/s and above) is detailed for each dwelling in **Table 15**. **Figure 6.3** shows the predicted 35 dB(A) and 40 dB(A) noise contours.

Table 15 contains the preliminary results of the NIA at each the associated, non-associated and non-associated (but associated with another project) dwellings in relation to the nearest WTGs. It also indicates distance to closest WTG and predicted noise levels.

The Noise Bulletin criteria is predicted to be met at all non-associated receivers.

Table 15 WTG Noise Impact Predictions

Residence ID	Dwelling coordinates		Category	Nearest WTG	Distance to Nearest WTG (m)	Predicted Level (dB(A))
	Easting	Northing				
AD_01	318158	6142984	Associated	WP65	2,692	33
NAD_01	310438	6132425	Non-Associated (Associated with another project)	WP22	2,981	29
NAD_02	331081	6144917	Non-Associated (Associated with another project)	WP108	3,057	30
NAD_03	306264	6132699	Non-Associated	WP20	5,858	23
NAD_04	305792	6132922	Non-Associated (Associated with another project)	WP19	6,123	22
DAD_01	312290	6140850	Associated	WP14	473	44

6.3.2.2 Ancillary Infrastructure

Ancillary infrastructure was modelled based on the CONCAWE noise propagation model as implemented in SoundPLAN noise modelling software. Assumptions included a BESS (SPL 120 dB(A)) and transformers (SPL each of 100 db(A). A conservation assumption was made that equipment will result in a total correction being applicable at the receivers. This ancillary infrastructure is also considered consistently in the separate solar farm NIA.

Predictions under 'worst case' noise enhancing weather conditions confirmed compliance with the minimum intrusiveness and amenity noise criteria of 35 dB(A). Predictions at the closest non-associated receivers were 24 dB(A) at AD_01 and 29 dB(A) at NAD_02.

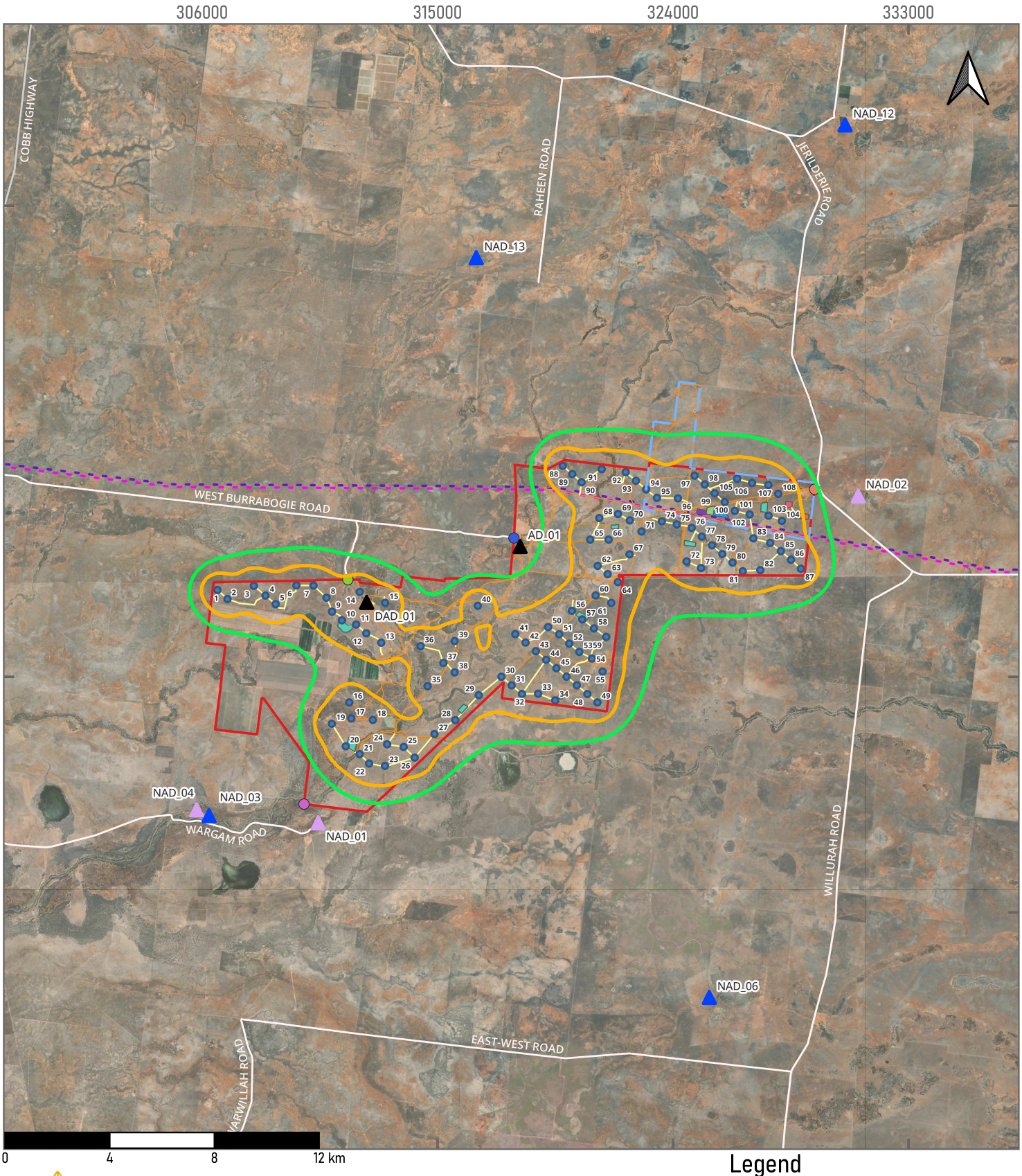
6.3.3 EIS Assessment Approach

A detailed NIA will be prepared for inclusion in the EIS according to the guidelines outlined in **Appendix A**.

The NIA will include:

- 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 WTGs and ancillary infrastructure;
- A construction noise assessment and framework for a management plan, if required;
- A traffic noise assessment;
- Commentary on vibration impacts; and
- Noise reduction measures where the relevant operational or construction assessment criteria are not achieved.

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



Legend

Project Infrastructure

- Project Area
- Dual Application Area with Pottinger Solar Farm (subject of separate application)
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure

- Existing 220 kV Transmission
- Project Energy Connect
- Highway
- Main Roads
- Existing Access Tracks

Wind Turbine Noise Contours

- 35.00 dB(A)
- 40.00 dB(A)

Dwellings

- Associated
- Non-Associated
- Non-Associated (Associated with other project)

SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 6.3: Noise Contours

Date: 15/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 200000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services, SixMaps NSW
Prepared By: TS
Version: 2.2
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

6.4 Biodiversity

A Preliminary Biodiversity Development Assessment Report (PBDAR) has been prepared by Biosis Pty Ltd and is included in full in **Appendix E**. Relevant guidelines and policies are listed at **Appendix A**.

This PBDAR describes the biodiversity values and constraints associated with the Project, within the subject land (Project Area and solar farm area) and "wind farm corridor" (preliminary footprint of wind farm and associated infrastructure).

A summary of the key background, preliminary assessment and EIS assessment approach is provided below.

6.4.1 Background

The following has been undertaken to develop the PBDAR:

- Database searches;
- Literature review and regulator consultation;
- Land category and desktop vegetation mapping assessment;
- Field investigation, State Vegetation Type Mapping, validation and summer bird and bat utilisation surveys;
  - A rapid field validation survey of the subject land between was completed between 15-17 February 2023 which included preliminary vegetation mapping of PCTs and TECs, undertaking opportunistic surveys for threatened species, preliminary habitat assessment to determine the potential for threatened species, indicative mapping of ecological constraints, and a flora and fauna species inventory;
  - The first seasonal bird and bat utilisation surveys (BBUS) and summer surveys were completed between 20-24 February 2023.
- Biodiversity constraints mapping
  - Landscape features and mapped biodiversity values present outside the subject land were considered to ensure the influence of any values beyond the site were captured. Further detail is provided at **Section 3.5.5.**

6.4.2 Preliminary Assessment

The subject land contains areas conducive to semi-arid chenopod dominated landscapes with grasslands areas supporting various densities of woody shrubs interspersed with open Pine and Myall woodlands, with Black Box woodland/wetlands and Lignum / Nitre Goosefoot wetlands present in areas more frequently inundated. The subject land predominantly supports native vegetation, with only highly disturbed areas, a result of ongoing agricultural uses, devoid of native species. Native vegetation and habitat occur in a range of condition states, however the majority is considered to be on moderate ecological condition, with areas occurring in a more natural state and others being more degraded by historical land management practices.

6.4.2.1 Land Category Assessment

The assessment identified potentially 1,400 ha of land within the subject land as Category 1 exempt land. The majority of the Category 1 exempt land with the subject land is associated with cropping land in western portion of the site. Another large area occurs along the northern site boundary west of Nyangay Creek, which has recently been subject to large scale replanting of eucalypts in windrows over an area of approximately 250 ha. Three smaller patches of Category 1 exempt land exist near the homestead (in areas excluded from potential development), associated with the large irrigation dam off the Coleambally Outfall Drain and a very small area adjacent to Nyangay Creek.

These areas are exempt from further assessment in the BAM with exception to prescribed impacts as stated in section 6.3 of the BC Act, however there is currently very little development proposed for these areas.

6.4.2.2 Vegetation Communities

A total of 16 PCTs were confirmed as present during the field investigation, ranging from wetlands and woodland / wetlands to drier sandplain / sand hill woodlands, chenopod shrubland and grasslands.

Vegetation condition ranged from high condition in areas less subject to historical pressures such as clearing and grazing, to low condition in areas of ongoing disturbance from agricultural activities. The majority of the subject land's vegetation is considered as moderate ecological condition, subject to historical/ongoing disturbance but a generally lower level of current negative pressures such as exotic species infestations, erosion, overgrazing, trampling etc. However, this will be confirmed in the BDAR during the EIS phase.

A summary of ground validated PCTs and TEC within the subject land is provided in **Table 16** and their location shown in **Figure 6.4**. A number of 'modelled only' PCTs remain included as their presence (or potential presence) throughout the broader subject land provides background habitats and to the potential original PCTs in areas of derived grasslands/shrublands.

Table 16 Plant Community Types within the subject land

PCT No.	BC Act	EPBC Act	SAII
10	N/a	N/a	N/a
13	N/a	N/a	N/a
15	N/a	N/a	N/a
16	N/a	N/a	N/a
17	N/a	N/a	N/a
19	EEC - Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	N/a	N/a
23	EEC - Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	N/a	N/a
24	N/a	N/a	N/a
26	EEC - Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions	EEC - Weeping Myall Woodlands	N/a
28	EEC - Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	N/a	N/a
44	N/a	CEEC - Natural Grasslands of the Murray Valley Plains (potential)	N/a
45	N/a	CEEC - Natural Grasslands of the Murray Valley Plains (potential)	N/a
46	N/a	CEEC - Natural Grasslands of the Murray Valley Plains (potential)	N/a
58	N/a	N/a	N/a
153	N/a	N/a	N/a
157	N/a	N/a	N/a
159	N/a	N/a	N/a
160	N/a	N/a	N/a
163	N/a	N/a	N/a
164	N/a	N/a	N/a
165	N/a	N/a	N/a
216	N/a	N/a	N/a

6.4.2.3 Threatened Ecological Communities

A preliminary field investigation was performed to validate the PCTs (and TECs) present within the subject land and immediate surrounds.

There are two TECs under the BC Act and/or EPBC Act as identified with the PMST tool as likely to be present within the subject land:

- Natural Grasslands of the Murray Valley Plains (Critically Endangered) – potentially recorded within the subject land and wind farm corridor;
- Weeping Myall Woodlands (Endangered) – likely to be present within the subject land and wind farm corridor.

There are two TECs that are listed under the BC Act:

- *Acacia melvillei* Shrubland (EEC) – potentially recorded within the subject land;
- Sandhill Pine Woodland (EEC).

The two potential TECs require further assessment to confirm their presence.

6.4.2.4 Aquatic Habitats

Three main watercourses exist with Nyangay Creek and Eurolie Creek traversing the subject land in a north-east to south-west manner, flowing nearly in parallel through the central portion of the subject land, with Coleambally Outfall Drain, a concrete-lined irrigation channel, flowing generally east to west across the southern portion of the subject land, to its confluence with Eurolie Creek.

Two large naturally occurring wetland areas, dominated by Nitre Goosefoot shrublands, occur in the north eastern portion of the subject land. These wetlands were saturated during the field investigations undertaken in February 2023, and both were found to be providing habitat to a large number of waterbirds at the time.

A number of small to moderate sized farm dams occur across the subject land.

All native fish and aquatic invertebrates within all natural creeks, rivers, and associated lagoons, billabongs and lakes in the area are considered to be part of the FM Act listed threatened ecological community - *Aquatic ecological community in the natural drainage system of the lower Murray River catchment*.

6.4.2.5 Threatened Flora and Fauna Species

Based on the PCTs confirmed present and those additional modelled PCTs conservatively included in the BAM Calculator case, a total of 33 candidate species credit species and 36 predicted ecosystem credit species have a potential to occur within the subject land. **Table 17** lists each candidate species and provides the conservation status of each.

The results of a desktop search of the BioNet Atlas for threatened flora and fauna are presented in **Figure 6.5**.

Table 17 Preliminary List of Candidate Species

Scientific name	Common name	Conservation Status
Flora		
Austrostipa wakoolica	A spear-grass	Endangered (EPBC Act) Endangered (BC Act)
Brachyscome muelleroides	Claypan Daisy	Vulnerable (EPBC Act) Vulnerable (BC Act)
Brachyscome papillosa	Mossgiel Daisy	Vulnerable (EPBC Act) Vulnerable (BC Act)
Caladenia arenaria	Sand-hill Spider Orchid	Endangered (EPBC Act) Endangered (BC Act)
Calotis moorei	A burr-daisy	Endangered (EPBC Act) Endangered (BC Act)
Convolvulus tedmoorei	Bindweed	Endangered (BC Act)
Cullen parvum	Small Scurf-pea	Endangered (BC Act)
Eucalyptus leucoxylon subsp. *pruinosa*	Yellow Gum	Vulnerable (BC Act)
Lepidium monoplocoides	Winged Peppercress	Endangered (EPBC Act) Endangered (BC Act)
Leptorhynchos orientalis	Lanky Buttons	Endangered (BC Act)
Maireana cheelii	Chariot Wheels	Vulnerable (EPBC Act) Vulnerable (BC Act)
Pilularia novae-hollandiae	Austral Pillwort	Endangered (BC Act)
Sclerolaena napiformis	Turnip Copperburr	Endangered (EPBC Act) Endangered (BC Act)
Solanum karsense	Menindee Nightshade	Vulnerable (EPBC Act) Vulnerable (BC Act)
Swainsona murrayana	Slender Darling Pea	Vulnerable (EPBC Act) Vulnerable (BC Act)
Swainsona plagiotropis	Red Darling Pea	Vulnerable (EPBC Act) Vulnerable (BC Act)
Swainsona sericea	Silky Swainson-pea	Vulnerable (BC Act)
Fauna		
Ardeotis australis	Australian Bustard	Endangered (BC Act)
Burhinus grallarius	Bush Stone-curlew	Endangered (BC Act)
Calidris ferruginea	Curlew Sandpiper	Endangered (BC Act) Critically endangered (EPBC Act)
Haliaeetus leucogaster (Breeding)	White-bellied Sea-Eagle	Vulnerable (BC Act)
Hieraaetus morphnoides (Breeding)	Little Eagle	Vulnerable (BC Act)
Lathamus discolor	Swift Parrot	Endangered (BC Act) Critically endangered (EPBC Act)
Litoria raniformis	Southern Bell Frog	Endangered (BC Act) Vulnerable (EPBC Act)
Lophochroa leadbeateri (Breeding)	Major Mitchell's Cockatoo	Vulnerable (BC Act) Endangered (EPBC Act)
Lophoictinia isura (Breeding)	Square-tailed Kite	Vulnerable (BC Act)
Myotis macropus	Southern Myotis	Vulnerable (BC Act)
Ninox connivens (Breeding)	Barking Owl	Vulnerable (BC Act)
Pedionomus torquatus	Plains-wanderer	Endangered (BC Act)

Scientific name	Common name	Conservation Status
		Critically endangered (EPBC Act)
Phascolarctos cinereus	Koala	Endangered (EPBC Act) Endangered (BC Act)
Polytelis anthopeplus monarchoides (Breeding)	Regent Parrot (eastern subspecies)	Endangered (BC Act) Vulnerable (EPBC Act)
Polytelis swainsonii (Breeding)	Superb Parrot	Vulnerable (EPBC Act) Vulnerable (BC Act)
Tyto novaehollandiae (Breeding)	Masked Owl	Vulnerable (BC Act)

6.4.2.6 Bird and Bat Species with Potential Collision Risk

Threatened species, especially aerial species and migrating wetland species, may be subject to a higher risk from the Project due to WTG collision and movement corridor impacts, and areas of potential habitat have been subject to avoidance and minimisation from the outset of project design. Species with a higher risk of being impacted by wind farms are considered to be those with potential for ongoing population impacts during operation, such as:

- Raptors which may manoeuvre close to turbine blades to prey on carrion below. These species are at low density in the landscape and removal of even one breeding pair may be significant at a local level;
- Flocking birds e.g. Superb Parrot, Major Mitchell's Cockatoo may be subject to a large number of strikes in a single event that could impact local populations;
- Migrating or nomadic waterbirds, which may be less able to manoeuvre around operational turbine blades, and operational WTGs may also affect breeding viability, inclusive of large colonial nesting events; and
- Resident or colonial roosting bats that may fly within the rotor swept area.

Generally, most woodland birds and bats forage and move within or just above canopies, at lower than turbine height, and are considered a lower risk of collision. Impacts to more sedentary species are more likely able to be avoided early in the project design or assessed thoroughly to confirm that losses are negligible, or at the very least, acceptable.

Migratory and nomadic species represent an increased risk as one migratory movement through an operational wind farm may have a local population-level impact on the species.

Threatened and migratory species known or predicted to occur within the subject land, and preliminarily determined to be most at-risk, based on a moderate or greater likelihood of occurrence, combined with a predicted high collision risk, are listed below:

- Black Falcon (*Falco subniger)*;
- Brolga (*Grus rubicunda)*;
- Curlew Sandpiper (*Calidris ferruginea);*
- Dusky Woodswallow (*Artamus cyanopterus)*;
- Glossy Ibis (*Plegadis falcinellus)*;
- Grey Falcon (*Falco hypoleucos)*;
- Inland Forest Bat (*Vespadelus baverstocki)*;
- Little Eagle (*Hieraaetus morphnoides)*;
- Magpie Goose (*Anseranas semipalmata)*;
- Spotted Harrier (*Circus assimilis);*
- Square-tailed Kite (*Lophoictinia isura);*

- Superb Parrot (*Polytelis swainsonii)*;
- White-bellied Sea Eagle (*Haliaeetus leucogaster);*
- White-throated Needletail (*Hirundapus caudacutus);*
- Yellow-bellied Sheathtail-bat (*Saccolaimus flaviventris).*

None of the above listed species were recorded during the initial summer BBUS, with the final assessment of species considered to be at-risk of impact from the Project to be made following completion of the multi-seasonal BBUS work.

6.4.2.7 Matter of National Environmental Significance

Based on the results of a Protected Matters Search Tool run in March 2023, and the findings of the preliminary field investigations, MNES potentially of relevance to the Project are outlined below:

- Five Commonwealth listed TECs are predicted to occur within the subject land and/or 30 km buffer;
- 31 listed threatened species are predicted to occur within the subject land and 30 km buffer;
- 10 listed threatened species are predicted to occur within the subject land and 30 km buffer.

MNES listed above, along with any other MNES recorded or predicted as likely to occur within the subject land, will require consideration as part of ongoing ecological assessments. A referral of the Project to DCCEEW is planned and will provide a determination as to whether the Project is considered a Controlled Action under the EPBC Act. The above listed MNES will form the basis of potential impacts included in the Referral. The MNES search results are contained within the PBDAR in **Appendix E**.

6.4.2.8 Direct Impacts to Biodiversity Values

The indicative development footprint has been developed following initial efforts to avoid and minimise impacts to biodiversity values as outlined in **Table 18.**

Approximate direct impacts associated with the Project are outlined in **Table 18**.

Native vegetation disturbance is approximately 416 ha.

Preliminary TEC total impacts of 88.3 ha and SAII candidate species habitat impacts of up to 366.3 ha are predicted.

Table 18 Estimated Project Direct Impacts to Biodiversity

Biodiversity value	Estimated impacts
Native vegetation	
15 PCTs (based on rapid field validation survey)	416 ha
TECs	
• Myall Woodland (PCT 26) • Sandhill Pine Woodland (PCT 28) • Potential Natural Grasslands of the Murray Valley Plains (PCT 44, 45, 46)	• 7.9 ha • 14.9 ha • 65.5 ha
Potential SAII candidate species habitat	
• Plains Wanderer (*Pedionomus torquatus*) • Curlew Sandpiper (*Calidris ferruginea*) • Eastern Curlew (*Numenius madagascariensis*) • Bindweed (*Convolvulus tedmoorei*) • A burr-daisy (*Calotis moorei*)	• 4.9 ha of mapped important areas • 41.5 ha of low potential forage habitat • 41.5 ha of low potential forage habitat • 366.2 ha of potential habitat • Direct impacts not expected. Species associated with PCT 23, which does not occur within the indicative development footprint

6.4.3 EIS Assessment Approach

Higher risk areas are associated with wetland habitats present across the subject land, wooded PCTs associated with existing and former creek lines and sandhills, and TECs represented by both wooded and (potentially) grassland vegetation types. Ongoing application of the principles of avoid, minimise and mitigate will be essential in development of a project design with further detailed surveys to be completed as part of the BDAR.

There are however, opportunities to locate project infrastructure in areas considered to be of lower risk to biodiversity values, albeit generally still within areas of native vegetation.

Impacts within these areas will require further detailed assessment for direct and/or indirect impacts to Plains Wanderer in accordance with the assessment for serious and Irreversible impacts (SAIIs) on biodiversity values. This assessment would be required as part of the BDAR, with the consent authority (upon recommendation from BCD) making the final determination on whether a SAII is likely to occur.

Areas of additional high constraint occur in areas where activity is considered likely to be higher with birds and bats moving between habitats as part of regular flights, or areas where the operation of WTGs has the potential to result in ongoing disturbance to breeding or other important habitats. WTG exclusion areas within these buffer areas for a distance of 200 metres from the edge of the wetlands, and/or treed PCTs (often associated with watercourses) will be implemented where possible.

Assessment of collision risk is required, however the potential for significant risk and impact will be reduced and mitigated against.

6.4.3.1 BAM Assessment Pathway

The BAM assessment pathway will determine the presence of SAII species and communities within the subject land. SAII species and communities have the potential to occur within the subject land. These include:

- Plains Wanderer *(Pedionomus torquatus)*;
- Curlew Sandpiper *(Calidris ferruginea);*
- Eastern Curlew *(Numenius madagascariensis);*
- Bindweed *(Convolvulus tedmoorei);* and
- Burr-daisy *(Calotis moorei).*

The potential for SAIIs will be further investigated as part of the preparation of the BDAR.

6.4.3.2 Bird and Bat Adaptive Management Plan

Guided by the collision risk modelling and assessment as well as the WTG risk assessment, and importantly, additional baseline data, a detailed BBAMP is likely to be required to be developed prior to project approval (based on recent feedback from BCS on contemporary wind farm development application), in conjunction with relevant stakeholders, to inform adaptive management measures around the potential for collision mortality, barrier effects and behavioural displacement of resident, nomadic and migratory bird and bat species.

6.4.3.3 Targeted Surveys

The targeted survey will:

- Use methods appropriate for the species being targeted;
- Be performed at times of the year appropriate for identifying the species;
- Be based on a repeatable method for inclusion in any ongoing monitoring program post-approval.

Based on the outcomes of the targeted survey the BDAR will include:

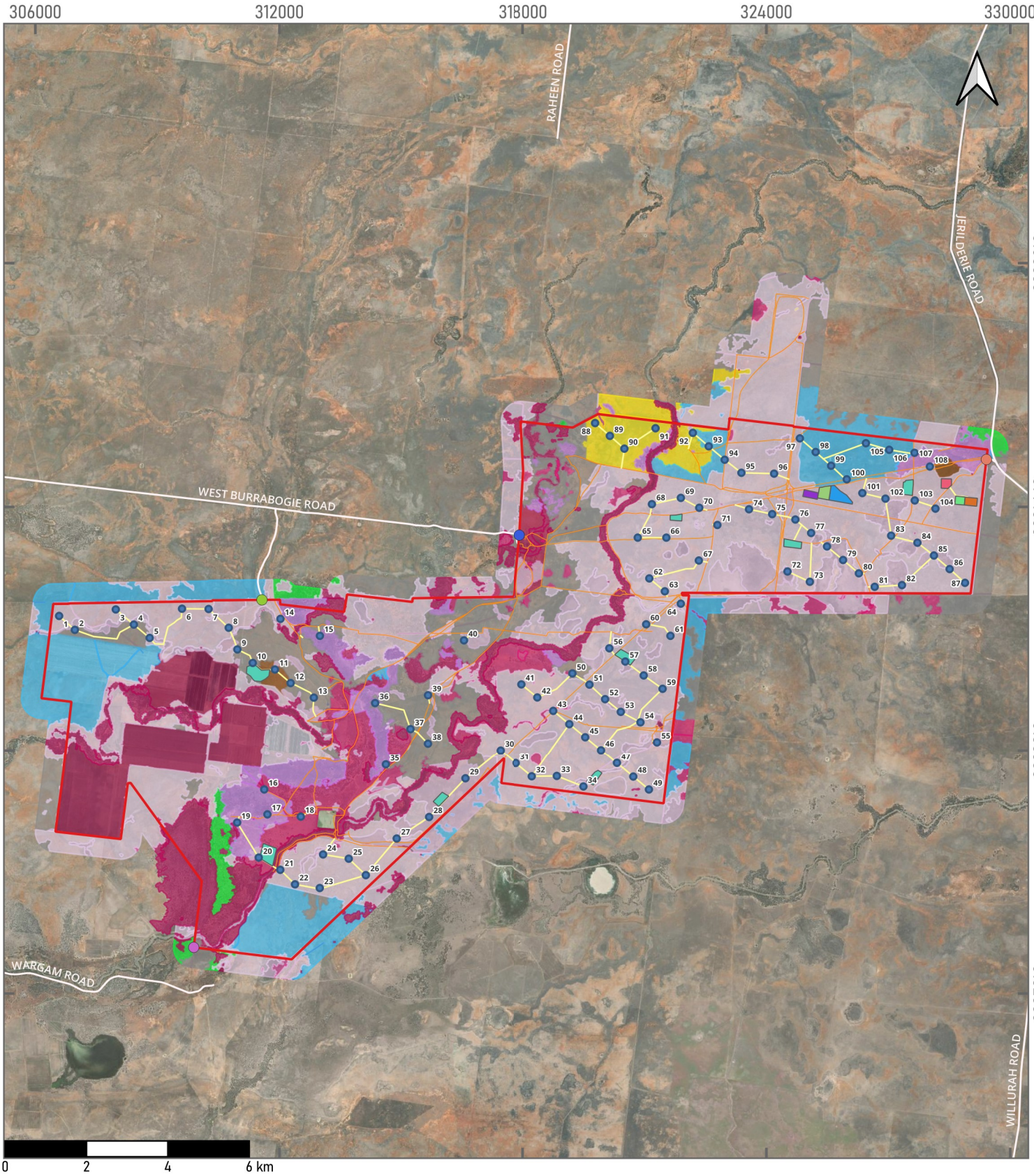
- Maps of the predicted and habitual flight paths for nomadic and migratory species likely to fly over the subject land;
- Maps of the likely habitat for resident threatened aerial and raptor species.

6.4.3.4 Biodiversity Development Assessment Report

As part of a BDAR, detailed ecological surveys, investigations and assessment will be undertaken including:

- Collection of floristic plot data;
- Confirmation of extent of all TECs present;
- Targeted surveys for candidate flora and fauna species;
- Full season bird and bat utilisation surveys;
- Assessment of all direct, indirect and prescribed impacts; and
- Offset planning for unavoidable residual impacts.

The BOS will apply to the assessment, generating an offset requirement for the Project. Establishment of an appropriate mechanism to satisfy the Project's offset credit obligation will be determined.



Pottinger Wind Farm

Figure 6.4: Vegetation PCT

SOMEVA RENEWABLES

Date: 15/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: NSW BioNet, NSW SVTM
Prepared By: EL Reviewed By: TS
Version: 4

Legend

Project Infrastructure

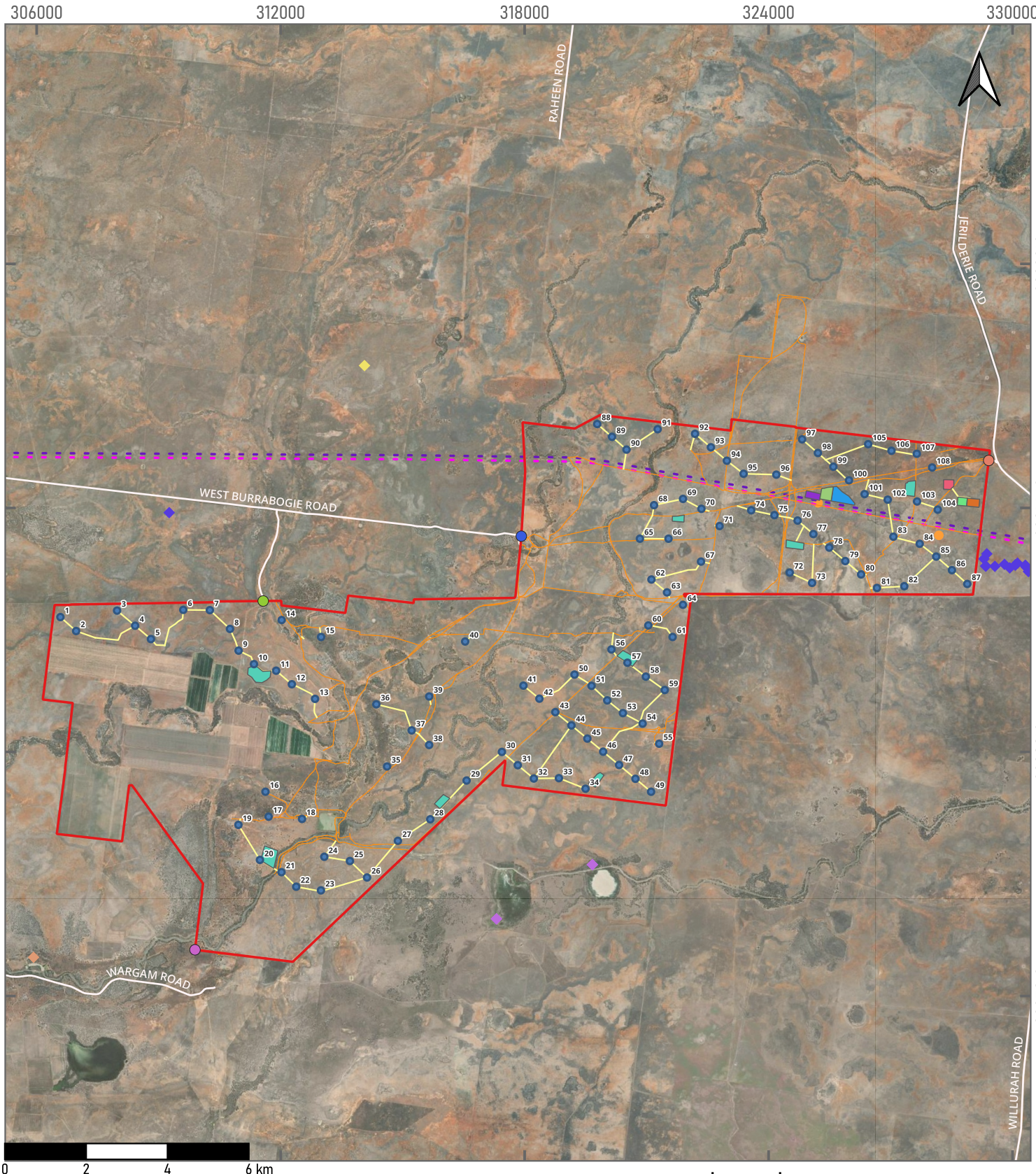
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure

- Main Roads
- Existing Access Tracks

Plant Community Types

- 0 - Not Native
- 10 - River Red Gum
- 13 - Black Box
- 15 - Black Box open woodland wetland
- 16 - Black Box grassy open woodland wetland
- 17 - Lignum shrubland wetland
- 24 - Canegrass swamp tall grassland wetland
- 159 - Old Man Saltbush shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon bush (Nitre bush) shrubland
- 164 - Cotton Bush open shrubland
- 216 - Black Roly Poly low open shrubland
- 19 - Cypress Pine woodland (BC)
- 23 - Yarran tall open shrubland (BC)
- 26 - Weeping Myall open woodland (EPBC and BC)
- 44 - Forb-rich Speargrass Windmill Grass - White Top grassland (EPBC)
- 45 - Plains Grass grassland (EPBC)
- 46 - Curly Windmill Grass - Speargrass - wallaby grass grassland (EPBC)
- 28 - White Cypress Pine open woodland (BC)



Pottinger Wind Farm

Figure 6.5: Flora and Fauna Ecology

SOMEVA RENEWABLES

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: NSW BioNet, NSW SVTM
Prepared By: EL Reviewed By: TS
Version: 4
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure

- Existing 220 kV Transmission
- Project Energy Connect
- Main Roads
- Existing Access Tracks

BioNet Atlas

Fauna Threatened Species

- Brown Treecreeper (eastern subspecies) - Vulnerable
- Plains-wanderer - Endangered
- Southern Bell Frog - Endangered
- Square-tailed Kite - Vulnerable

Flora Threatened Species

- Slender Darling Pea - Vulnerable

6.5 Aboriginal Heritage

6.5.1 Background

The Project Area is situated on the lands of Wiradjuri people within the Hay and Deniliquin LALCs. The Wiradjuri people occupied and settled along the current rivers, as well as ancient rivers that now exist as palaeochannels (i.e. rivers that have been filled with sediment). Records in the nearby Murray-Darling Basin, around 200 km north west of the Project Area, indicate some of the oldest dates of occupation indicating a long association with the land in this region.

The environmental context (including landscape features and landforms) of the region is important to understand in terms of identifying whether there is potential for Aboriginal archaeology. The Project Area is located within the Murrumbidgee subregion of the Riverina Bioregion, which comprises a natural flat landscape largely consisting of clays, silts and sands which historically has been subject to a consistent cycle of flooding (Martin, S., Beck, W. and Davidson, I., 2007).

Within the Murrumbidgee subregion, the Hay Plains is a region of vast alluvial plains and contains extensive Aboriginal cultural deposits in the form of mounded cultural deposits. Mounds contain archaeological material such as ash, charcoal, faunal remains stone tools and occasionally burials and represent former areas of congregation by Aboriginal people. Mounds are located across the Murrumbidgee subregion in vast quantities and vary in their height and length from centimetres to metres (Martin, S., Beck, W. and Davidson, I., 2007).

Previous studies indicate that the landscape features within the Project Area with archaeological potential include (Martin, S., Beck, W. and Davidson, I., 2007):

- Rivers – with the greatest concentration of potential archaeological sites were identified within close proximity to water courses (i.e. within 12 km of river channels, particularly those with sandy paleochannel features, and within 8 km of lakes);
- Open plains – in areas where wind and water erosion has stripped the topsoil along channelled plains and which may be associated with burials;
- Large (former) open water lakes – identified to have a higher than average artefact site density' and
- Mounds – characterised by material such as ash, charcoal, fauna remains and occasionally burials and which have been noted to be particularly dense along active and ancient streams within the Project Area.

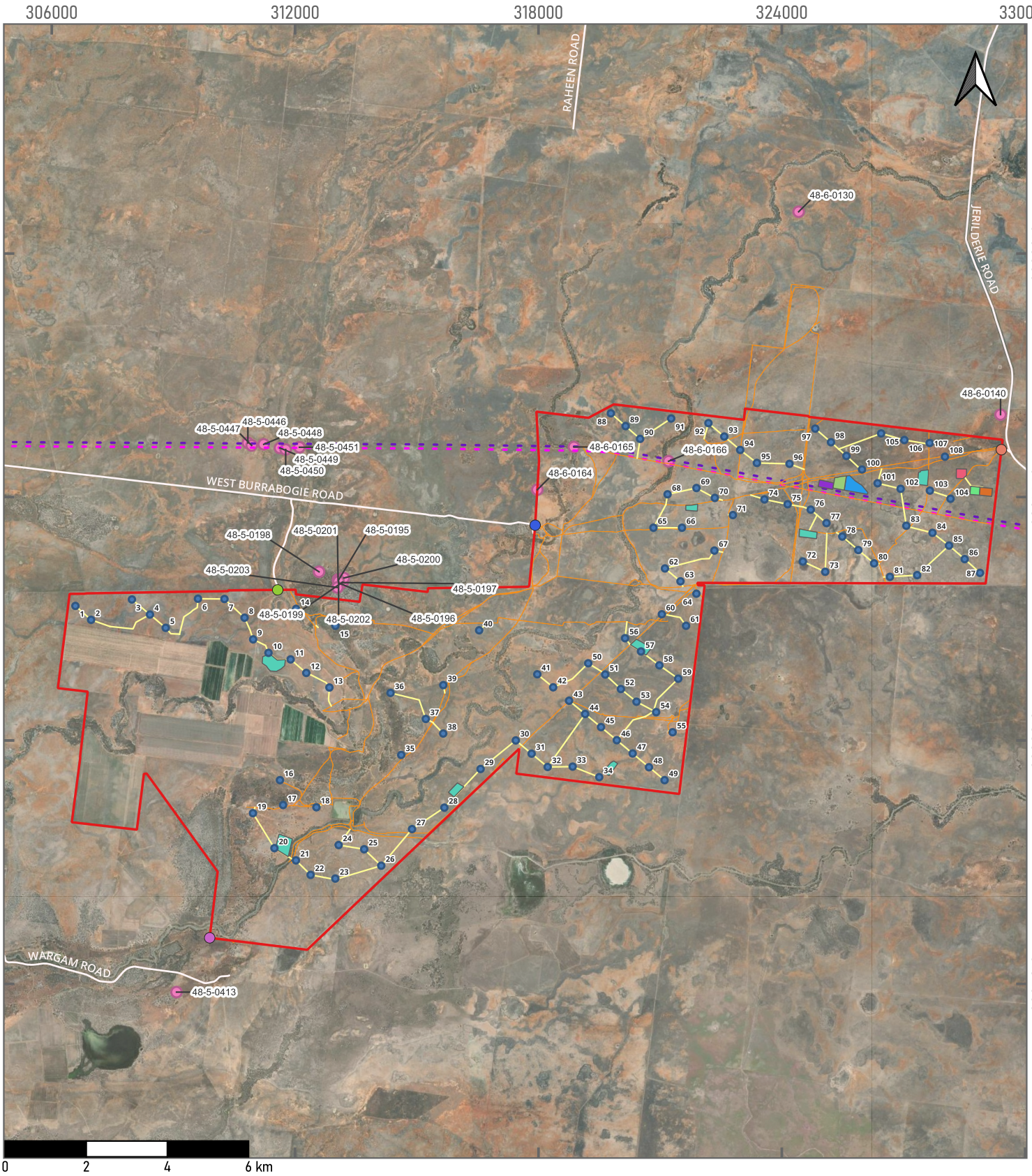
In addition to Aboriginal archaeological sites, it is also noted that there are significant cultural values associated with the land in the Murrumbidgee Province. Aboriginal Dreaming is inextricably linked to the land and common Dreaming sites along the Hay Plains may include landscape features such as bends in the river, waterholes, palaeochannels, lakes, hills, trees or other minor features (Martin, S., & Pardoe, C., 2001).

6.5.2 Preliminary Assessment

An extensive search of the Aboriginal Heritage Information Management System (AHIMS) database was carried out in February 2023 for the Project Area and a buffer of 15 km. Three AHIMS sites (comprising hearth, artefact scatters and culturally modified trees) were identified within the Project Area associated with the Project EnergyConnect.

Figure 6.6 shows the location of the AHIMS sites in relation to the Project Area.

A search of the National Native Title Tribunal database in February 2023 found that there are no Native Title claims currently registered in the Project Area.



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 6.6: Heritage

Date: 19/05/2023

CRS: GDA2020 / MGA zone 55

Main Map Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services Spatial Data Services
Prepared By: EL Reviewed by: TS
Version: 3.1
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure

- Existing 220 kV Transmission
- Project Energy Connect
- Main Roads
- Existing Access Tracks
- AHIMS Extant Site

6.5.3 EIS Assessment Approach

An Aboriginal Cultural Heritage Assessment Report (ACHAR) will be prepared to support the EIS in accordance with the 'Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW' (DCCEW, 2010a). It will consider the archaeological potential of the Project Area, and document environmental mitigation measures that would be implemented.

The ACHAR will include:

- Literature review and predictive model development (as required);
- Comprehensive investigation (including adequate pedestrian field survey, consultation with RAPs, sensitivity mapping, and results from any archaeological test excavation (if required)). Any required investigations will be undertaken in accordance with all relevant guidelines as outlined in **Appendix A**.
- Identification of Project impacts on items of Aboriginal heritage and cultural values; and
- Definition of any required management and mitigation measures in relation to the identified impacts; and
- As required by conditions of development consent, commitment to the preparation of an Aboriginal Cultural Heritage Management Plan (ACHMP) in consultation with RAPs to ensure appropriate management of any identified heritage.

6.6 Historic Heritage

6.6.1 Background

Early European exploration of the Murrumbidgee Region occurred in the early 1800s (Martin, S., & Pardoe, C., 2001). Non-Aboriginal history of the area is associated with exploration and transportation developments. Pastoralism has historically been the predominant land use in the region irrespective of changes in property boundaries and/or ownership. The first non-Aboriginal explorer to the region was Charles Sturt, who explored the route of the Murrumbidgee River in 1829 (Martin, S., & Pardoe, C., 2001).

The locality where Hay township developed was originally known by Europeans as Lang's Crossing place, which was the crossing on the Murrumbidgee River of a well-travelled stock-route (known as "the Great North Road") leading to the markets of Victoria. In 1859 the township was renamed Hay (Martin, S., & Pardoe, C., 2001). The Murrumbidgee District was subdivided into smaller pastoral allotments by 1860.

By 1923, mapping of the region indicates that larger sections of land were subdivided into small allotments. The majority of the landowners across the Project area had comprised of several individuals or companies who owned large areas of land. In addition to waterways, water bodies and roadways, features across the Project area include typical rural features such as wells, dams, tanks and travelling stock and cattle reserves, along with homestead complexes and woolsheds (Martin, S., & Pardoe, C., 2001).

6.6.2 Preliminary Assessment

6.6.2.1 Heritage Register Searches

Commonwealth Heritage List

The Commonwealth Heritage List includes natural, Indigenous and historical heritage places owned or controlled by the Australian Government. Items on the list have satisfied the Minister as having one or more Commonwealth Heritage values.

A search of the Commonwealth Heritage Register was conducted in February 2023.

There are no Commonwealth Heritage listed places within or in proximity to the Project Area.

National Heritage List

The Australian National Heritage List contains natural, historic, and Indigenous places deemed to be of outstanding heritage significance to Australia. Before a site is placed on the list, a nominated place is assessed against nine criteria by the Australia Heritage Council.

A search of the National Heritage List was conducted in February 2023.

There are not any National Heritage listed places within or in proximity to the Project Area.

State Heritage Register

A search of the NSW State Heritage Register (SHR) was conducted in February 2023.

No historic heritage listings have been identified for the Project Area. Proximate listings are outlined as follows:

- Royal Mail Hotel (located 18 km south west from the Project Area) (Hay Road, Booroorban, NSW, 2710) (LEP item #I3); and
- Black Swamp (located24 km south west from the Project Area) (LEP item #I9).

Section 170 Heritage Register

Section 170 of the *Heritage Act 1977* requires all NSW state agencies to identify, conserve and manage the heritage assets owned, managed and occupied by that agency. In order to facilitate this, Section 170 heritage registers were established for all NSW government agencies. These registers are held and maintained by each state agency and updated as assets are acquired, altered, or decommissioned.

A search of the Section 170 Heritage Register was conducted in February 2023.

No Section 170 heritage places are located within or in close proximity to the Project Area.

The Project Area is immediately adjacent several Travelling Stock Reserves (TSRs) (refer to **Figure 2.4**):

- Paradise (Crown Reserve Number: R56663) – Cat 2;
- Paradise (Crown Reserve Number: R1002549) – Cat 2;
- SR17 (Crown Reserve Number: R1002549) – Cat 2; and
- Small parcels all along the Cobb Hwy.

The travelling stock route (TSR) and reserves network in NSW is an extensive network of public land that was established for the droving of stock during early European colonisation, often along traditional Aboriginal pathways through the landscape. The National Parks Association of NSW is working to develop an application for National heritage listing of the TSR Network, based on its historical importance and connection to a range of history, culture, values and resources, with its usage declining in the early 1950s.

6.6.3 EIS Assessment Approach

This preliminary assessment did not identify any historic heritage items within the Project Area listed on National, State or Local statutory heritage registers. There remains the potential for historic heritage items to be present in the Project Area considering the continuous European presence since the 19th century. Further assessment is required to establish the historic archaeological potential for the Project Area. An Historic Heritage Impact Assessment will be prepared having regard to the 'Assessing heritage significance – a NSW Heritage Manual update' (DPIE, 2022d) to support the EIS and will include (but not be limited to):

- A desktop assessment;
- Site inspection to ground-truth desktop assessment;
- Significance assessment;
- Impact assessment; and
- Identification of any required mitigation and management for any items of significance.

The Historic Heritage Impact Assessment would align with the guidelines outlined in **Appendix A**.

6.7 Traffic and Transport

6.7.1 Background

Construction of the Project will result in increased volumes of traffic, both of light-duty vehicles used to transport workers and materials and heavy vehicle movements to transport components and other equipment.

Once construction of the Project has been completed, traffic associated with ongoing operations of the power station is minimal and generally involves only light vehicle movements operational personnel.

The Project Area is located approximately 380 km from Melbourne, 650 km from Adelaide, and 750 km from Sydney (by road). The major turbine components for the Project are anticipated to be delivered to a port and transported by road to the Project Area. The Project Area is serviced by the Sturt Highway and Cobb Highway, both of which are major highways which have the capacity to carry oversize and overmass (OSOM) vehicles to and from the Project Area.

Sturt Highway and Cobb Highway serve as important commuting corridors as they provide connection to the towns of Balranald, Hay, Wagga Wagga, Deniliquin and others. Minor road connections are provided by Willurah Road, Jerilderie Road and North Boundary Road.

The transport route of the WTG components and other Project related materials will be subject to a Port and Transport Route Assessment, which will be prepared as part of the EIS, the outcomes of which will be incorporated into the Traffic and Transport Impact Assessment (TTIA). This will identify a proposed transport route from the receiving port(s) to the Project Area, as well as any required road upgrades.

Whilst a port and transport route has not yet been determined, the ports of origin in **Table 19** will be refined, and/or the preferred route(s) confirmed in the EIS.

Table 19 Potential port options and distance to Project Area

Port	City and State	Approx. distance from Project Area (by road) (km)
Appleton Dock	Melbourne, VIC	400
Port of Geelong	Geelong, VIC	430
Port of Portland	Portland, VIC	620
Port Adelaide	Adelaide, SA	680
Port Botany	Sydney, NSW	770
Port of Newcastle	Newcastle, NSW	920
Port Kembla	Wollongong, NSW	740

6.7.2 Preliminary Assessment

The Project may require upgrades to roads along the transport route. The details and specifications of these upgrades will be dependent on the size of the vehicles and infrastructure required to be delivered to the Project Area and will be subject to assessment in a Transport Route Assessment.

In addition, the construction of access tracks will also be required throughout the Project Area to facilitate construction and to allow for maintenance to occur throughout the operational and decommissioning phases of the Project. The Cobb Highway and Sturt Highway are expected to be utilised for the Project and as such may require road upgrades and impacts on local roads and local traffic.

6.7.3 EIS Assessment Approach

As part of the EIS, a Transport Route Assessment included in the TTIA will be prepared, which will consider potential transportation routes for construction traffic and potential impacts of the size, loads, and volumes of vehicles on the road network. The TTIA will generally be prepared in accordance with the guidelines outlined in **Appendix A**.

The scope of the TTIA will likely involve:

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

6.8 Aviation

6.8.1 Background

Risks posed to aircraft from a wind farm potentially include:

- Physical obstruction – this is most notable for aircraft that are closest to the ground such as those during take-off;
- Interference with safe flight – the presence of excessively tall structures may present a hazard;
- Reduction of areas available for pilots to use in the event of forced landing, such as engine failure after take-off;
- Impact on use of emergency helicopter access;
- Additional wind turbulence – the effect of WTG-induced turbulence may affect aircraft that are smaller or lighter;
- Electrical transmissions interfering with technical equipment – the electromagnetic field generated by the transmission line and wind farm may cause interference with technical equipment; and
- Impact on nearby farmers that use aerial spraying to manage their agricultural businesses.

6.8.2 Preliminary Assessment

A review of known Aircraft Landing Areas (ALAs) and aerodromes within 30 nautical miles (55.6 km) of the Project Area was undertaken. Known ALAs include:

- Hay Airport – a regional airport located 40 km north of the Project Area that is operated by Hay Shire Council and services the Hay region;
- Ravensworth Airport – a small airport located 70 km north west of the Project Area that is likely only used for local transport and aerial application operations; and
- Deniliquin Airport – a regional airport located approximately 82 km south east of the Project Area that is operated by Edward River Council.

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

6.8.3 EIS Assessment Approach

An Aviation Impact Assessment (AIA) will be undertaken for the EIS, which will assess any potential impacts to aviation safety associated with the Project. The assessment will include consideration of:

- Potential impacts to aviation safety including wake / turbulence issues;
- Confirmation of any additional air strips or other ALAs;
- The need for any aviation safety lighting;
- Air traffic routes, heights procedures, Obstacle Limitation Surfaces, air space classification, radar and communications systems and navigation aids;
- Impacts on aerial emergency services, aerial firefighting, and aerial agricultural operations; and
- Mitigation and management measures for relevant impacts identified.

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

The AIA will address any aviation concerns raised during consultation with the community and key stakeholders, and identify relevant mitigation strategies to be implemented where required.

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

The AIA will generally be prepared in accordance with the guidelines in **Appendix A**.

6.9 Telecommunications

6.9.1 Background

The operation of a wind farm has the potential to interfere with the electromagnetic signals associated with nearby telecommunication services. Large structures such as WTGs that are located within or close to the telecommunication signal path may interfere with broadcast and point to point communications and any services that rely on these signals. Existing telecommunication services in the vicinity of the Project Area that may be affected include mobile phone services, radio communication services, television and radio broadcast services, and aircraft navigation services, which local residents and towns are reliant upon.

6.9.2 Preliminary Assessment

A search of the Australian Communication and Media Authority (ACMA) database carried out in February 2023 has identified 69 registered sites associated with licences and point to point links within 50 km of the Project Area. One link crosses the north west section of the Project Area. This link is a NSW Telco Authority (NSWTA) and Transgrid transmission line and will be assessed further in the EIS by the relevant specialist.

Other nearby sites are held by NSW Rural Fire Service (RFS), Murrumbidgee Council, and Telstra Corporation Limited.

6.9.3 EIS Assessment Approach

A Telecommunications (Electromagnetic Interference (EMI)) assessment will be undertaken which will consider the potential impacts of the Project on telecommunications services. The assessment will involve the preparation of a detailed desktop assessment of existing proximal electromagnetic services to the Project Area, and recommended measures to avoid or minimise potential impacts to telecommunications services during construction and operation of the Project.

It will identify any required suitable options to avoid potential disruptions to radio communication services from the Project. Consultation with operating services (at least NSWTA, Transgrid or the Department of Customer Service – Telco Authority) that may be impacted by the Project will be undertaken where necessary to understand potential EMI-related impacts to operations and services.

6.10 Water Resources

6.10.1 Background

Soils will be subject to disturbance during construction activities associated with site establishment, installation of infrastructure and replacement of soils for revegetation, and therefore the Project has a potential to result in impacts to downstream watercourses, in the absence of management and mitigation measures. Operational and maintenance activities require water use and may also lead to impacts on water resources, in the absence of management and mitigation measures.

6.10.2 Preliminary Assessment

The Project Area is located within the Murrumbidgee Catchment of the Murray Darling Basin. The Murrumbidgee Catchment covers an area if 84,000 km^2 and comprises 8% of the total area of the Murray-Darling Basin (MDBA, 2021).

The Project Area is located immediately south of the Murrumbidgee River. The dry and arid conditions of the region result in the lakes and creeklines remaining dry thorough most of the year. There are a number of creeks within the Project Area, these include Nyangay Creek and Eurolie Creek. The Coleambally Outfall Drain also lies within the Project Area which is an irrigation channel.

'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 (DPI, 2018b).

The Strahler stream orders for the watercourses within the Project Area are shown on **Figure 2.2** and include:

- Nyangay Creek – 2; and
- Eurolie Creek – 1.

Swamps and dams are also located within the Project Area, and include Wekenbergal Swamp, Burra Burroon Swamp and Longbottoms Dam.

The Project Area is located between 93 m ASL and 96 ASL. A search of the ePlanning portal in March 2023 did not indicate the Project Area was located on flood prone land. The surrounding LGAs of Hay and Edward River experience flooding from the Murrumbidgee River, Lachlan River and Mirool Creek. There have been 20 floods greater than 8.0 m since 1952, with the largest recorded in 1956 (8.99 m), 1974 (9.02 m), 2010 (8.48 m) and 2012 (8.99 m) (SES, 2014). Due to its topography, flooding can be wide-spread across the floodplain and can last several months due to poor natural drainage (SES, 2014).

WTGs 14 and 21 are in close proximity to minor watercourses. During project refinement during the EIS, micro-siting will be utilised to ensure all WTGs are at least 40 m from the bank of a stream. A different constraint is applied to the bank of this stream, as there is no mapped riparian wetland in these areas.

Due to the nature of the proposed construction works, there would be limited to no impact to groundwater. Standard mitigation measures would manage the small risk of contaminants into groundwater.

6.10.3 EIS Assessment Approach

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; and
  - 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 and groundwater dependent ecosystems (GDEs);
- Identification of any works within 40 m of the high bank of any waterfront land, impacts and required mitigation;
- A discussion of construction erosion and sediment control measures to ensure that impacts during excavation, road works, transport of machinery, etc. are adequately mitigated through avoidance, minimisation and management; and
- Measures to monitor, reduce and mitigate the impacts of the Project.

The water impact assessment will be generally undertaken in accordance with the guideline outlined in **Appendix A**.:

A groundwater assessment is not required for the Project and will only be addressed in the EIS in relation to proposed minor management measures as part of post-approvals' documentation.

6.11 Agriculture and Land Resources

6.11.1 Background

Soils will be subject to disturbance during construction activities associated with site establishment, installation of infrastructure and replacement of soils for revegetation. Operational and maintenance activities may also lead to impacts on land resources of the Project Area.

6.11.2 Preliminary Assessment

A preliminary review of the Soil and Land Capability Mapping data for NSW (DPIE, 2021a) suggests that there are three Land and Soil Capability (LSC) classes within the Project Area:

- LSC Class 6 – very severe limitations: land incapable of sustaining many land use practises (e.g. cropping, moderate to high intensity grazing and horticulture). Located through the central western portion of the Project Area and follows Nyangay and Eurolie Creek;
- LSC Class 5 – severe limitations: 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 on the western portion of the Project Area; and
- LSC Class 4 – moderate to severe limitations: land generally not capable of sustaining high impact land uses unless using specialised management practises with high level of knowledge, expertise, inputs and investment. Located across the south western to north eastern portion of the Project Area.

There is no mapped Biophysical Strategic Agricultural Land (BSAL) land or LSC Classes 1-3 present in the Project Area as shown on **Figure 6.7**.

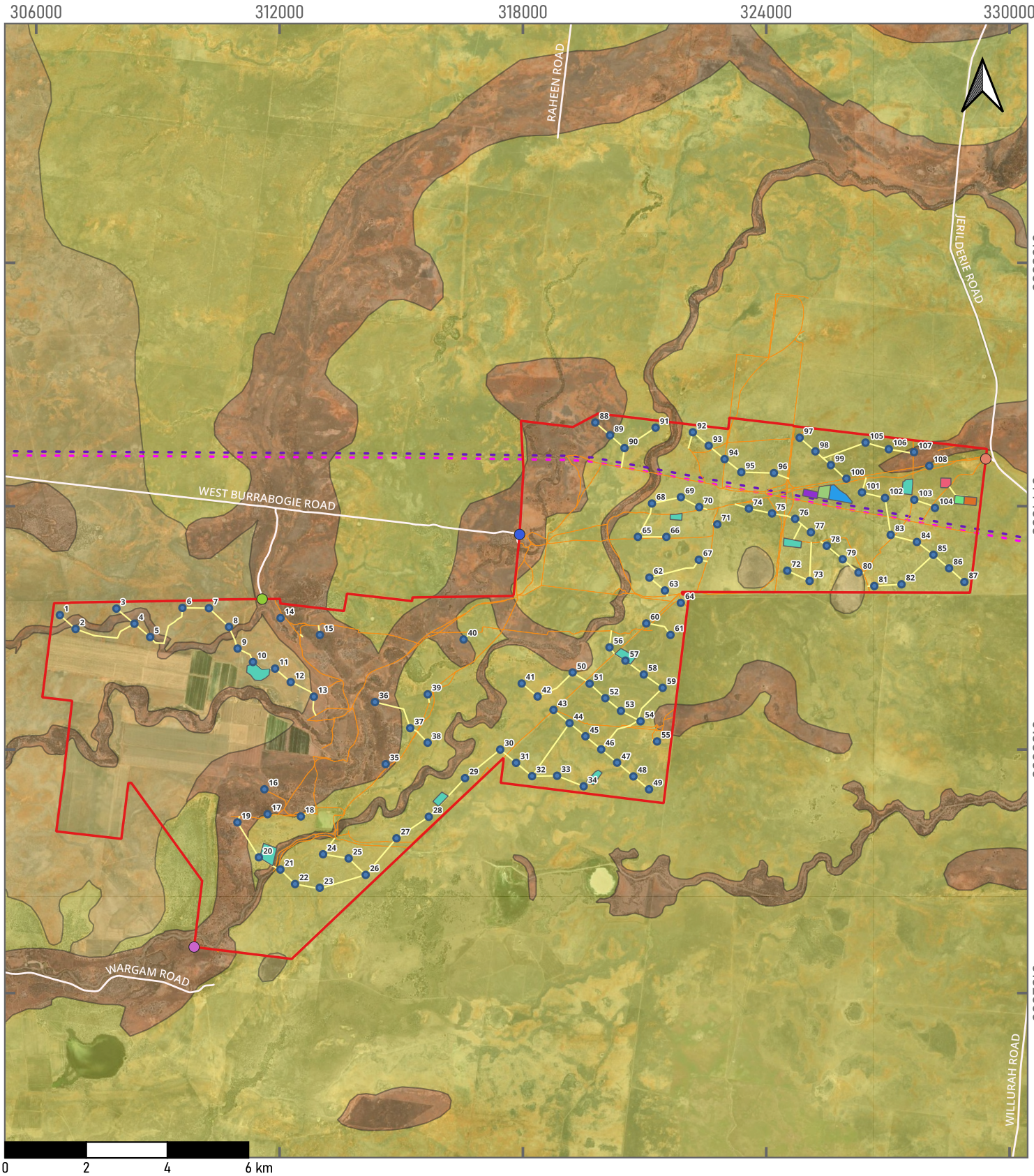
A search of the 'Australian Soil Classification (ASC) Soil Type Map of NSW' (DPIE, 2011) shows that the Project Area has the following soil orders:

- Vertosols (VE) – located across the majority of the Project Area;
- Rudosols (RU) located through the central western portion of the Project Area and follows Nyangay and Eurolie Creek; and
- Chromosol– (CH) - located through the central western portion of the Project Area and follows Nyangay and Eurolie Creek.

6.11.3 EIS Assessment Approach

An Agricultural and Soil Assessment will be undertaken for the EIS, which will primarily focus on assessing the Project impacts on the soil and LSC of the Project Area (including a minor soil survey to confirm desktop work), as well as the likely impacts on agricultural resources, enterprises and industries.

A Land Use Conflict Risk Assessment will be prepared. The assessment will also propose appropriate mitigation measures during construction and operation of the Project. The Agricultural and Soil Assessment will consider the requirements and guidelines outlined in **Appendix A**.



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 6.7: Soil and Land Capability

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services, DPE
Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
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- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure
- Existing 220 kV Transmission
- Project Energy Connect
- Main Roads
- Existing Access Tracks

Soil Capabillity DPE
- Class IV Moderate to severe limitations
- Class V Severe limitations
- Class VI Very severe limitations

6.12 Economics

6.12.1 Background

The employment status for Hay in 2021 indicates that 59.3% are full time workers, 30.4% are part time, and 4.0% are unemployed (ABS, 2021). Edward River (Deniliquin and surrounds) contains 59% fulltime workers, 31.5% work part-time, and 3.6% are unemployed.

The three largest employment industry sectors within Hay in 2021 (ABS, 2021) are sheep farming (7.5%), local government administration (4.0%) and primary education (3.8%). Compared to Edward River where the top industries of employment are social assistance services (4.5%), hospitals (3.7%) and sheep and cattle farming (3.3%).

The three most popular occupations in Hay are Managers (19.0%); Labourers (17.7%); Technicians and trade workers (14.8%). Within Edward River the top occupations are Managers (19.3%); Professionals (14.7%); Community and personal service workers (13.1%).

Further detail is provided on demographics relevant to economics are in **Section 6.14.2**.

6.12.2 Preliminary Assessment

During construction, the Project will involve the procurement of broad array of equipment, products and services, some of which may be procured from within the Hay and Edward River LGAs and broader NSW. Construction supplies and construction-related services, including local civil, labour and electrical businesses in particular are likely to benefit from the Project. Additionally, because of the inter-linkages between sectors, many indirect businesses would also benefit through increased economic activity.

The presence of the construction workforce would also increase demand for food, accommodation and other consumables in the local region, which would deliver a positive impact for existing retail, beverage, food and accommodation service providers in towns such as Hay, Deniliquin, Coleambally, and Conargo.

During operations, the Project would provide a long-term benefit to the local economy through employment and business opportunities, that would service the Project.

Additional benefits to the local economy will be delivered through the neighbour benefit sharing program and VPA that will be established for the Project.

6.12.3 EIS Assessment Approach

An Economic Assessment will be undertaken for the EIS, which will review the impacts or benefits of the Project for the region and State as a whole.

It will consider any increase in demand and impact on local and regional economy during construction and operation of the Project, as well as reduction in agricultural activity as a result of the Project development, and other economic issues such as potential impact on land values and regional wages, house prices, tourism, and cumulative impacts.

6.13 Capital Investment Value

The EIS will be supported by a CIV report prepared by an AIQS Certified Quantity Surveyor or RICS Chartered Quantity Surveyor in accordance with ‘Planning Circular PS 21-020: Calculation of Capital Investment Value’ (or latest version).

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

6.14 Social

6.14.1 Background

6.14.1.1 Introduction

This section provides the preliminary Social Impact Assessment (PSIA) undertaken for the Project, in accordance with the DPIE's Social Guidelines, Technical Supplement (DPIE, 2023*),* and Engagement Guidelines.

The PSIA was prepared by Greg Ley from Lecroma Pty Ltd (ABN 83 653 481 862). Greg Ley has a Bachelor of Arts majoring in Pacific Security Analysis (minor in Economics, Politics and Linguistics), and post graduate qualifications in National Security Policy. Greg has more than a decade of experience working with Australian Federal Government and in the private sector delivering complex stakeholder engagement processes, social science research projects and written advice – experiences well suited to social impact assessment for large-scale renewable energy development projects.

Greg's experience includes focused research and field work to develop written advice for informing: Australian foreign policy decisions in the Indo-Pacific region; international law enforcement strategy; and program design and evaluation activities for international development and national security sector initiatives for Australian Government. Greg is a member of the Australian Evaluation Society (since 2014) and continues to consult to Australian and foreign governments on matters of international development and national security.

In accordance with the Social Guidelines, the PSIA involves scoping and preliminary assessment, identifies the level of assessment to be applied, and sets further parameters for the second phase SIA (the assessment report to be appended to the EIS). Accordingly, the first phase SIA includes:

- Defining the Project's Social Locality;
- Describing the profile of the community in the preliminary social baseline, outlining the potential social impacts, and
- Outlining the approach that will be undertaken to complete the second phase SIA.

Someva Renewables is committed to an engagement process that is respectful and balances the interests of agriculture, economic development, and community cohesiveness through socially responsible renewable energy development.

A Community Engagement Strategy has also been prepared by the Applicant to ensure the following objectives are achieved:

- Produce clear information on the Project, potential impacts (positive and negative) and benefits for the environment, community, and region by delivering high- quality communication channels across all targeted channels;
- Ensure the Project has a positive impact on the region with clear demonstration of shared local and broader regional social, economic, and environmental benefits;
- Develop a sense of local ownership in the Project by identifying local advocates with an interest in the Project;
- Work together with the community in a collaborative way by identifying issues and likely mitigations throughout Project phases;
- Support an uplift in the regional economy and level of local prosperity via a regional economic assessment;
- Demonstrate sharing of Project benefits with a creation of a successful community led Community Benefit Scheme and VPAs with local councils; and
- Support and engage local capabilities, engaging several local suppliers including Aboriginal peoples owned suppliers.

This preliminary phase SIA has prioritised ensuring appropriate engagement with project neighbours, local Shire councils and local Aboriginal land councils to identify immediate issues and interests.

The Project is situated in a low population remote rural farming community and consultation fatigue was identified very early as a key risk for the Project to attempt to avoid. Targeted and meaningful engagement will be prioritised, however persistent engagement will be avoided to lessen community engagement fatigue.

6.14.1.2 Social Locality

The Project is situated in the rural locality of Booroorban, approximately 60 km south of Hay and 110 km north of Deniliquin (based on travel distance to the associated (host)-landowner's primary dwelling to the Project Area. The Project is within two LGAs: Hay Shire, and Edward River. The social locality includes:

- Associated host landowner and adjacent/near neighbour properties, including residents and local businesses;
- Localities likely to be impacted and/or benefit from the Project; and
- Localities likely to experience construction-related workforce, procurement, and traffic impacts.

In determining the Social Locality the following aspects were taken into consideration:

- Site location and Project layout, including proposed location of all project-related infrastructure in the Project Area;
- Location of the above Project components relative to project neighbours (nearby residential dwellings), major highways/transport routes, potential sensitive land uses and structures; and
- Construction and operation phase activities.

When considering these aspects and the general isolation of the Project Area relative to other proposed renewable energy projects in the surrounding region, it was determined the Project's Social Locality includes: the Project Area, haulage routes, and larger nearby centres (Hay; Deniliquin). This will be refined as the Project continues to evolve.

For the purposes of this PSIA, the Project's Social Locality comprises the following three components:

- The Project Area and immediate surrounding areas located within the Australian Bureau of Statistics (ABS) LGA references: LGA13850; LGA12730; and LGA15560. Data on these LGAs has been used provide an understanding of the broader and comparative social context;
- The transportation and haulage routes, including vehicular routes from the south and north east via the Cobb Highway, and from the east and west via Sturt Highway. Indicative travel distances and direction from each associated landowners' primary dwelling to the Project Area are provided in **Table 20**; and
- The surrounding towns and regional centres of Hay, Deniliquin, Swan Hill, and Griffith, which may provide construction and operations phase goods and services to support the Project.

Table 20 Distances to Project Area

Town/Regional Centre	Travel Distance and Direction
Hay (main centre)	North, 60 km
Deniliquin (main centre)	South, 110 km
Wanganella	South, 69 km
Coleambally	East, 90 km
Conargo	South, 100 km (using main roads)
Jerilderie	South east, 125 km
Swan Hill	South west, 191 km

6.14.1.3 Community Profile

The community profile presented in this section will inform the social baseline in the second phase SIA (part of the EIS) and is largely based on ABS 2021 census data.

Table 21 outlines the primary ABS datasets identified to provide key demographic data across the Project's Social Locality.

In addition to the above listed ABS datasets, the second phase SIA social baseline will be informed by a desktop review of sources from a range of publicly available information. Further, this data will be supplemented by primary data collected from the community through the administering of surveys (quantitative and qualitative data collection methods). Information relating to the economic profile of the Project Area is also provided by ABS 2021 Census data, with local and State government documentation providing guidance on policy priorities and regional challenges. Combined, this data will provide the primary source of understanding the potential social impacts of this project on the immediate Social Locality.

Table 22 draws on the ABS datasets noted above, providing a demographic overview focusing on data LGAs data within 10 km of the Project.

Table 21 Relevant ABS Datasets

Location	ABS Data Reference (Census)
Hay	LGA13850; UCL115075
Edward River, including Deniliquin and Surrounds	LGA12730; UCL114010
Murrumbidgee	LGA15560
Statistical Area Level 1 (SA1)	10902117711 (north of project site); 10903118311 (south of project site)
Griffith	LGA13450; UCL113007
Swan Hill	LGA26610; UCL213015
NSW	STE Code 1

Table 22 Area Profile Data on Key Locations within 10 km of the Project

Population statistics	Household data	Top industries of employment	Workforce Participation
Hay (ABS Area code: LGA13850)			
• 2882 (50.2% male, 49.8% female) • Median Age: 48 • 8.3% (238) identify as First Nations peoples • SEIFA (Percentile in NSW): 24	• Median weekly household income: $1236 • Median monthly mortgage repayments: $894 • Median weekly rent: $170 • Private dwelling count (occupied): 1134 (82.7%)	• Sheep farming (specialised; 7.5%) • Local government administration (4.0%) • Primary education (3.8%) • Supermarket and grocery stores (3.4%) • State Government Administration (3.1%)	• In the labour force (55.3%); not in the labour force (32.2%); not stated (12.3%) • Full time worker (59.3%), part time (30.4%), Unemployed (4.0%) • Top Occupations: Managers (19.0%); Labourers (17.7%); Technicians and trade workers (14.8%); Clerical and administrative workers (10.4%); Professionals (10.3%); Machinery operators and drivers (7.5%);
Edward River (Deniliquin and surrounds; ABS Area code: LGA12730).			
• 8456 (49.3% male, 50.7% female) • Median Age: 46 • 4.8% (410) identify as First Nations peoples • SEIFA (Percentile in NSW): 37	• Median weekly household income: $1240 • Median monthly mortgage repayments: $1083 • Median weekly rent: $220 • Private dwelling count (occupied): 3331 (86.4%)	• Social Assistance Services (4.5%) • Hospitals (3.7%) • Grain-sheep / Grain-beef Cattle farming (3.3%) • Primary Education (3.2%) • Supermarket and Grocery Stores (3.2%)	• In the labour force (56.2%); not in the labour force (34.2%); not stated (9.6%) • Full time worker (59%); part time (31.5%), unemployed (3.6%) • Top Occupations: Managers (19.3%); Professionals (14.7%); Community and personal service workers (13.1%); technicians and trades workers (12.6%); Labourers (12.0%); sales workers (7.9%); Machinery operators and drivers (6.7%)
Murrumbidgee (ABS Area code: LGA15560)			
• 3353 (52.2% male, 47.8% female) • Median Age: 45 • 8.6% (290) identify as First Nations peoples	• Median weekly household income: $1401 • Median monthly mortgage repayments: $869 • Median weekly rent: $190 • Private dwelling count (occupied): 1291 (86.7%)	• Grain Growing (9.6%) • Grain-sheep / Grain-beef Cattle farming (8.2%) • Local Government Administration (4.6%) • Poultry Processing (3.3%) • Sheep farming (specialised; 2.7%)	• In the labour force (61%); not in the labour force (28.9%); not stated (10.1%) • Full time worker (64.1%); part time (26.6%), unemployed (2.9%) • Top Occupations: Managers (29.8%); Labourers (13.5%); Clerical and Administrative Workers (11.4%); Technicians and Trades Workers (10.8%); Machinery Operators and Drivers (10.6%); Professionals (9.6%); Community and Personal Service Workers (8.3%); Sales Workers (4.3%)

Population statistics	Household data	Top industries of employment	Workforce Participation
10902117711 (north of Project area)			
• 222 (56% male, 44% female) • Median age: 45 • 5.9% (13) identify as First Nations peoples	• Median weekly household income: $1,797 • Median monthly mortgage repayments: $1,792 • Median weekly rent: $462 • Private dwelling count (occupied): 73 (70.9%)	• Sheep Farming (Specialised) 24.1% • Beef Cattle Farming (Specialised) 13% • Sheep-Beef Cattle Farming 6.5% • Cotton Growing 5.6% • Site Preparation Services (5.6%)	• In the labour force (62.4%); not in the labour force (21.9%); not stated (18.5%) • Full time worker (71.2%); part time (17.1%), unemployed (3.6%) • Top Occupations: Managers (48.1%); Labourers (17.6%); Clerical and Administrative Workers (11.1%); Professionals (8.3%); Machinery Operators and Drivers (7.4%); Technicians and Trades Workers (4.6%); Community and Personal Service Workers (2.8%).
SA1 10903118311 (south of Project area)			
• 280 (56.5% male, 43.5% female) • Median age: 47 • 1.8% (5) identify as First Nations peoples	• Median weekly household income: $1,412 • Median monthly mortgage repayments: $1,590 • Median weekly rent: $120 • Private dwelling count (occupied): 97 (73.5%)	• Sheep Farming (Specialised) 24.2% • Grain-Sheep or Grain-Beef Cattle Farming (13.4%) • State Government Administration (8.7%) • Sheep-Beef Cattle Farming 8.1% • Beef Cattle Feedlots (Specialised) 3.4%	• In the labour force (66.7%); not in the labour force (23%); not stated (9.5%) • Full time worker (70.9%); part time (27%), unemployed (2%) • Top Occupations: Managers (53.7%); Labourers (20.8%); Clerical and Administrative Workers (5.4%); Community and Personal Service Workers (4.7%); Technicians and Trades Workers (3.4%); Machinery Operators and Drivers (3.4%); Professionals (2%); Sales Workers (2%).

6.14.1.3.1 Initial Insights to From Desktop Analysis

The population (neighbours/ dwellings) surrounding the Project Area (red boundary) is very low, with only four identified non-associated dwellings within 8 km of the Project Area. Three of these four non-associated dwellings are associated with other largescale renewable energy projects. There is only one other non-associated dwellings between 8-12 km of the nearest WTG, who is also associated with another largescale renewable energy project. The next identified dwellings are between 12-21 km from the Project Area, with around 10 non-associated dwellings identified.

The regional community around the Project Area appears to rely heavily on the provision of essential services from nearby regional centres, of which Hay/Deniliquin are closest. Hay (~2,400 people) is a relatively smaller regional centre compared to Deniliquin (~7,900 people), with both having (on average) relatively older population groups (averaging >45 years old).

Analysing the Statistical Area data captured above, the agrarian nature occupations and industry around the immediate Project Area becomes even more apparent. The top industries and workforce participation data suggests most workers are in agriculture or related economic fields. This region is highly exposed to risks of climate change and natural disasters (e.g. bushfires, droughts, flooding). Further, the hardship experienced by these communities during prolonged drought and bushfire events is well documented.

Both community centres (Hay/Deniliquin) appear to have a highly engaged workforces with low unemployment (>4%). Cost of living (rent/mortgage) is considerably lower than the national average (50% less), with median weekly household income being only 10% below the national average. The top industry of employment, being agriculture, is seconded by a range of professional, trade and technical services. Going by ABS data (LGA data only), this area appears to also be a relatively lower income earning community compared to the national average.

Hay area (closest to the Project Area) has a large population of people who identify as having Aboriginal heritage in community (of around 8.3%), especially when compared to the national average (around 3.3%). The Nari-Nari people of the Lower Murrumbidgee and the Wiradjuri people who inhabit the vast region in central-western inland NSW, are two significant recognised groups in the area. The defining geographic features being investigated here include the Nyangay Creek and Coleambally Outfall Drain, which run through the centre of the host landowners farm and Project Area.

Deniliquin appears to have the stronger business service centre, especially for civil works and construction services/suppliers, and appears to be the primary hub for technicians, construction suppliers and trades services for the surrounding area (within 35+ km). There does not appear to be an established renewable energy service sector, with most suppliers/traders/installers operating from Albury and/or Wagga Wagga centres (280 km+ away).

Housing and accommodation: Hay or Deniliquin are the most likely areas to support increased demand on local housing requirements for the project workforce (should an onsite accommodation or other project's approved temporary accommodation not be relied upon for the Project). To minimise the impact on the local surrounding communities, the SIA will seek to fully understand:

- Current housing and accommodation availability, and requirements of the workforce during construction and sustained future operations. Accommodation sharing options for workers and support staff will be explored to reduce demand impacts on local housing, including liaison with local real estate providers to seek further advice;
- Community sentiment towards a significant increase in proposed largescale renewable energy development projects; and
- Early consultation with other local industry activities and businesses in the area, especially agribusinesses, to discuss overlapping periods of peak employment will be important.

6.14.2 Preliminary Assessment

6.14.2.1 Social Infrastructure Overview

Social infrastructure typically comprises schools and other education institutions, medical services, emergency services, recreational facilities, and community organisations. Some commercial services are also listed under social infrastructure, such as childcare facilities.

The Project Area is within an important regional and national transport node, located midway between Sydney and Adelaide at the junction of the Sturt, Cobb and Mid-Western Highways. The nearby town of Hay itself is built beside the Murrumbidgee River, part of the Marray-Darling river system; Australia's largest.

The primary use of land in this area is for agriculture (broadacre farming, including cropping and livestock) and the landscape is relatively flat. The Project is in the area of 'Wanganella' (a remote rural community), under the Edward River Council area along the Cobb Highway. Wanganella has a population of 86 people, it has a café and general store, Wanganella Fisherman Cottage and a Creek Camp Park. Booroorban and Pretty Pine are also nearby small communities to the Project Area, however most communities and businesses in this area rely on Deniliquin or Hay for all essential and community support services.

Within Hay, they have a small general hospital which provides 24hr Accident and Emergency support. Emergency services include NSW Police, Ambulance NSW, NSW RFS and State Emergency Service (SES). Hay has four primary schools (Booligal Public School, Hay School of the Air, Hay Public School, and Saint Mary's Primary School), one high school (Hay War Memorial High School), a pre-school (Hay Preschool) and a range of further education facilities (Hay Isolated Children's Parents' Association (ICPA), Hay Inc, Home-Start Riverina, and TAFE NSW – Hay). Hay essential stores for residents include: a food works, IGA, Hills Corners Store, Mackers Meat and Maude General Store, among many others.

Hay also has a private airport, providing agricultural, aircraft maintenance and firefighting services to the community. For commercial flights, Hay residents will need to travel to Melbourne, Griffith, Mildura, Albury, or Wagga Wagga.

The Cobb Highway connects Hay and Deniliquin together. The regions of Wanganella, Booroorban, and Pretty Pine are located on this Highway and have very small populations and limited accommodation and service support options. The Cobb Highway would be used throughout the Project to be the primary connection between nearby town centres and the Project Area. Secondary connection is possible from Jerilderie Rd and Willurah Rd to the east of the Project Area.

Deniliquin is the larger regional centre compared to Hay. Deniliquin has large regional hospital with over 41 beds and connections to other hospitals such as Melbourne Hospital for critical care. 24hr emergency services are offered in Deniliquin (Fire/ Ambulance/ Police/ SES).

Deniliquin has a broad range of pre-schools (Gulpa Pre School, Deniliquin Children's Care, Goodstart Early Learning), primary schools (Edward Public School, Deniliquin South Public School, St Michaels Primary School, and Mayrung Public School), high school (Deniliquin High School) and further education facilities (Riverina Community College Inc., South West Music Conservatorium, and TAFE NSW Deniliquin and Deni Driver Training). Deniliquin also has a local airport with similar rural operating conditions and service limitations to Hay.

The Project will employ 450 FTE employees throughout the construction stage. Temporary workers' accommodation may be located within the Project Area or located offsite if it is determined to be required.

During operation, approximately 40 FTE permanent staff will be employed.

6.14.2.2 Potential Social Impacts

This PSIA includes identification of the Project's social locality (**Section 6.14.1.2**), a high-level overview of social conditions, and social impact scoping. It is intended to provide initial insight into the Project's social context and its likely social impacts. Further in-depth assessment will be undertaken as part of the SIA within the EIS phase.

The SIA has been undertaken by Lecroma Pty Ltd on behalf of the Applicant as a desk-top analysis supplemented by two in-region visits and remote engagements. The report has been further informed by Project information provided by the Applicant, engagement findings to date, internet searches of available information relating to the Project and the broader socio-economic context, comparative studies, and publicly available data obtained from government websites, e.g., the ABS. All population and demographic data presented in this section are from the ABS 2021 Census unless otherwise stated.

This analysis has been undertaken in line with the SIA. As such, potential impacts and opportunities have been evaluated across the following eight categories: way of life, community, accessibility, culture, health and wellbeing, surroundings, livelihoods, and decision-making systems using the DPIE 'Social Impact Scoping Worksheet' as shown in **Appendix F**.

It is likely that several key potential positive and negative impacts will primarily occur during the construction phase of the Project, including:

- Positive impacts include potential benefits for the local workforce, services, supply chains and accommodation providers through directly generating employment and an increase in economic activity. Several stakeholders, including both local councils, noted the value of exploring 'Local Content' targets (i.e. prioritising supply from local goods/services first, where appropriate) for the Project, and the value of collaborating with nearby renewable energy development projects on the design of Community Benefit Funds (CBF) and potential shared construction phase accommodation opportunities. Other potential benefits include the diversification of income streams for host and neighbouring landholders, as well as upgraded road and electricity network infrastructure.
- Potential negative impacts during the construction phase include pressures on: housing and short-term accommodation, the local workforce, and local social and community infrastructure; as well as changes to the composition of the local community from an influx of non-resident construction workers. Intensive construction activity is also likely to generate traffic, access, noise, health and wellbeing, and way of life impacts for nearby residents and local communities.

There are also potential negative impacts across the Project lifecycle and possible cumulative impacts. Potential impacts on the landscape and visual amenity were identified during consultation, though both are a minor concern to most stakeholders consulted to date. Stakeholders also reported concerns about negative impacts on project neighbour cohesion and the potential for disharmony if the large number of renewable energy development projects proposed and to be hosted by project neighbours (non-associated dwellings to this Project) do not proceed to construction.

A summary of findings from this preliminary social impact analysis is included in **Table 23**, and in the 'SIA Scoping Worksheet' include at **Appendix F**, which presents the key social impacts and benefits that will be assessed in more detail within the SIA in the EIS phase.

Table 23 Preliminary Social Impact Assessment

Description of Impact	Impact Type and Categories	Project Phase	Level of Assessment	Justification
Potential impacts in relation to change in the natural environment and visual amenity may lead to impacts on the perceived quality, use and aesthetics of the landscape in the Social Locality.	Community. Negative	Construction of WTGs	Detailed	Negative impacts observed to date in NSW from largescale renewable energy projects, though this hasn't been raised as an issue of concern for project neighbours. Cumulative impacts may apply. This may require more specific consideration in the SIA, especially when consultation is expanded.
Potential impacts on social cohesion between community members (for/against renewable energy and/or the Project) in the Social Locality.	Community. Negative	Construction of WTGs	Detailed	Negative impacts observed to date in NSW from largescale renewable energy projects, though this hasn't been raised as an issue of concern for stakeholders in the Social Locality. Cumulative impacts may apply. This may require more specific consideration in the SIA.
In the Social Locality: potential for increased pressure on limited local accommodation from construction and operational work force (for limited period of construction). Potential for increased pressure on local work force, negatively impacting local businesses with labour competition and wage increases. Perceived impacts on land/property values (price increases), adding further pressure on local housing/ accommodation. Topic was raised during initial consultation.	Way of Life. Negative	Construction phase	Detailed	Negative impacts observed to date in NSW from largescale renewable energy projects. Cumulative impacts may apply. This may require more specific consideration in the SIA.
Alteration of landscape: potential impact to tangible and intangible Aboriginal heritage In the Social Locality.	Way of Life. Negative	Construction phase	Detailed	Negative impacts not observed to date for this project but have been observed elsewhere in NSW.
Diversification of income streams for involved landowners and nearby neighbours, which will in turn provide flow on economic benefits for the surrounding community.	Livelihoods Positive	Operating life of the Project	Detailed	Positive impacts have been observed to date from nearby major renewable energy projects. Cumulative impacts may apply.
Potential upgrades to local infrastructure (road network and electricity grid) to facilitate the project in the Social Locality.	Access. Positive	Construction phase and operating life of the Project.	Detailed	Positive impacts have been observed to date from nearby major renewable energy projects. Cumulative impacts may apply.

Description of Impact	Impact Type and Categories	Project Phase	Level of Assessment	Justification
Potential impacts and disruptions to host landowners, near neighbours and local traffic during construction from increased traffic, noise and dust and oversized loads during construction in the Social Locality.	Access Negative	Construction phase of the project.	Detailed	Negative impacts observed to date from nearby major renewable energy projects. Cumulative impacts may apply. This may require more specific consideration in the SIA.
Increased demands for local goods and services in the Social Locality. Broader community - employment and contracting opportunities during the construction and operation period. Also flow on economic benefits for regional community. Topic was raised during initial consultation.	Way of Life Positive	Construction phase of the project, and then support for operating life of the project.	Detailed	Positive impacts have been observed to date from nearby major renewable energy projects. Cumulative impacts may apply.
Perceived health impacts of wind turbines (noise or otherwise) in the Social Locality.	Health and Wellbeing. Negative	Construction phase and operating life of the project.	Detailed	Negative impacts not observed to date for this Project nor other renewable energy projects elsewhere in NSW. Cumulative impacts may apply.
Stakeholders in the Social Locality are unable to make informed decisions; do not have influence on project design or decisions; to not have influence on the project benefits programs (neighbour or community programs); and are unable to access enquiry and complaint processes.	Community. Negative	Majority of project activities, project delivery and operation phases.	Detailed	Negative impacts observed to date from nearby major renewable energy projects. Cumulative impacts may apply. This may require more specific consideration in the SIA.
Potential impacts during future project decommissioning (or re-energising/ replacement). Topic was raised during initial consultation.	Surroundings. Negative	Project decommissioning or replacement phase	Detailed	Negative impacts not observed to date for this project nor other renewable energy projects elsewhere in NSW. This may require more specific consideration in the SIA.

6.14.3 EIS Assessment Approach

This section outlines the plan for developing the second phase SIA alongside the EIS process, in accordance with the requirements of the SIA Guidelines.

The SIA will allow for a more comprehensive understanding of the potential social impacts and benefits of the Project. The SIA prepared to support the EIS will also examine any other social issues perceived by the community to be of concern that are raised during further Project engagement as described in **Section 6.14.1.2**. Cumulative impacts of other proposed developments in the area will also be considered. Where significant impacts are found, mitigation and enhancement measures will be developed, and expected residual impacts post-application of these measures will be described.

An advertisement campaign and community drop-in sessions are planned to commence following the issuing of SEARs, to initiate broader community engagement and Project awareness.

Accordingly, the second phase SIA will be structured according to the following sections:

- Introduction, Project Description, Regulatory Context: more detailed overview of the information provided to date including applicable legislative and regulatory frameworks;
- Social Locality and Stakeholder Identification: more detailed analysis on the Project's Social Locality and stakeholder feedback;
- Methodology: will follow the DPE's Social Impact Significance matrix;
- Stakeholder Engagement for SIA: details of relevant stakeholder engagement to date in accordance with the Community Engagement Strategy, noting it is a live document and will be updated in accordance with stakeholder feedback and monitoring of other Project data;
- Social Baseline: more detail provided and updated in accordance with stakeholder feedback;
- Expected and Perceived Impacts: more detail on expected and perceived impacts;
- Impact Assessment and Prediction: pre and post mitigation efforts will be detailed in relation to social impacts informed by stakeholder engagement;
- Social Impact Enhancement, Mitigation, and Residual Impacts: a summary of all impacts and mitigation measures taken throughout all phases of the Project, with residual impacts noted;
- Monitoring and Management Framework: overview of monitoring and social impact management measures to be implemented covering all phases of the Project;
- References: all references will be cited in the SIA; and
- Appendices: will include all community profiles and supporting materials used.

6.15 Hazards

This section provides a preliminary assessment of hazards and risks that could arise during the construction and operation of the Project. Specifically, it considers hazards and risks associated with hazardous materials, bushfire, blade throw and Electromagnetic Field (EMF).

6.15.1 Preliminary Hazard Analysis

A Preliminary Hazard Assessment (PHA) is required where potentially hazardous or offensive development under Resilience and Hazards SEPP. Clause 3.2 of the Resilience and Hazards SEPP defines a potentially hazardous industry is 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, 2011) lists the industries that may fall within the Resilience and Hazards SEPP (former SEPP 33), which do not include wind farms or energy storage facilities. However, the BESS facility proposed for the Project is likely to utilise lithium-ion batteries, which are listed as *Class 9 – Miscellaneous dangerous goods*. While Class 9 materials are excluded from the SEPP 33 screening test, the hazards related to these materials should be considered in accordance with the Resilience and Hazards SEPP guidelines.

Batteries can be a serious safety risk for occupants and installers, potentially leading to electric shock, fire, flash burns, explosion or exposure to hazardous chemicals or gases. The installation of the BESS will be assessed as per the guidelines stated in **Appendix A**.

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

6.15.2 Bushfire

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

A review of the NSW RFS Bushfire Prone Land mapping shows that the Project Area in relation to bushfire prone land as shown in **Figure 6.8**.

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

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

- Vegetation Category 3 is medium bushfire risk vegetation. It is higher in bushfire risk than category 2 (and the excluded areas) but lower than Category 1. It is represented as dark orange on a Bush Fire Prone Land map.

Most of the southern part of the Project Area is generally mapped as Vegetation Category 3 with some vegetation buffer areas along creek lines (i.e. medium bushfire risk). The northern area of the Project Area has not been mapped.

The EIS will include a Bushfire Risk Assessment and will aim to identify potential hazards and risks associated with bushfires / use of bushfire prone land.

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

- Fuels, weather, topography, predicted fire behaviour and local bushfire history;
- Suppression resources, access (roads, tracks) and water supply; and
- Values and assets.

Mitigation will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the Project and the community.

The assessment will aim to demonstrate that the Project can be designed, constructed and operated to minimise ignition risks and provide for asset protection consistent with the guidelines outlined in **Appendix A**.

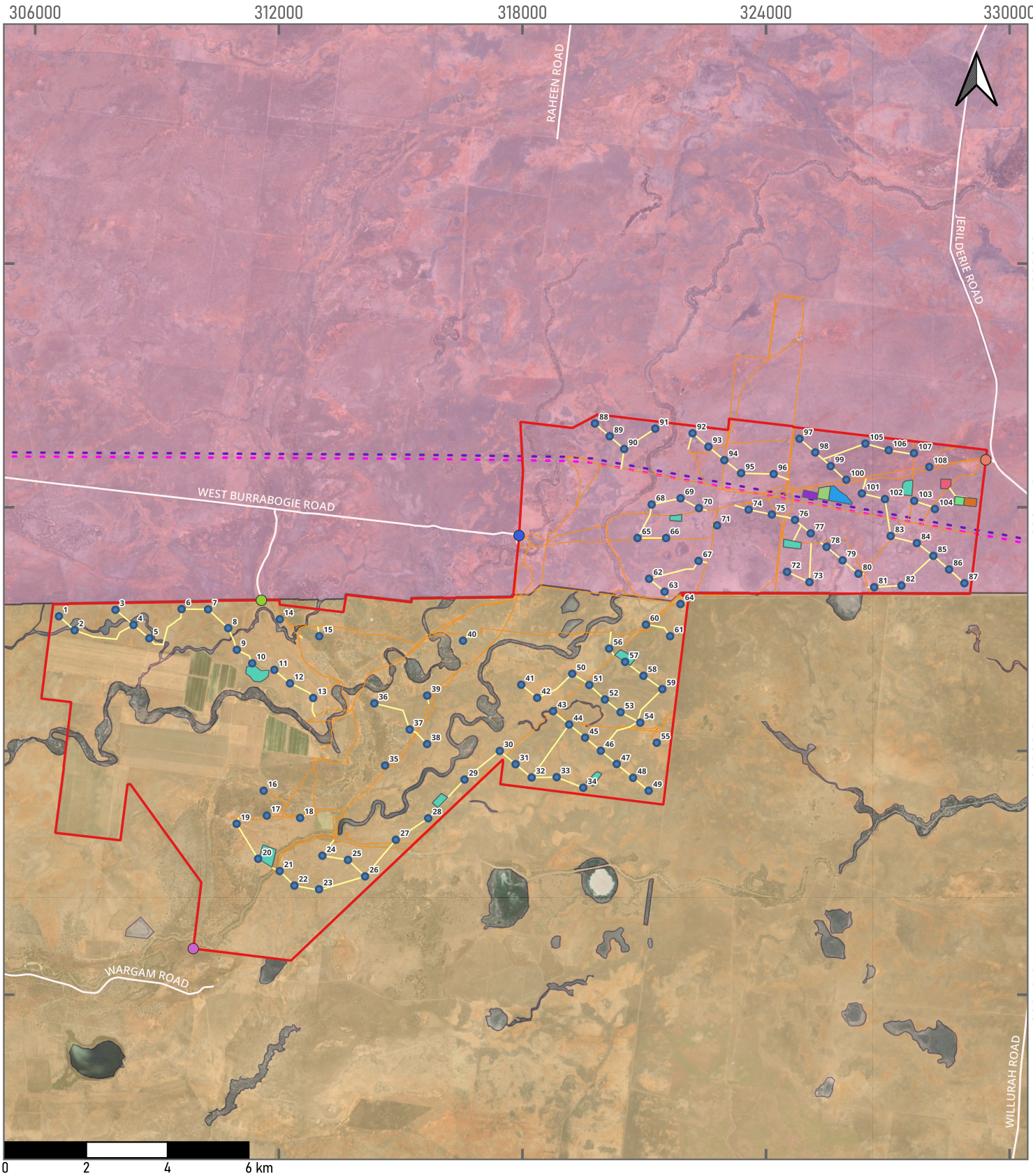
6.15.3 Blade Throw

Blade throw refers to the risk of wind turbine blades breaking during operation, which may result in human injury or potential damage to infrastructure. Blade throw is generally considered to be a low risk during the operation phase of the Project, which will utilise wind turbine technology that has been proven to be both safe and reliable. The nearest non-associated dwelling (NAD_01) is located over 2.9 km from the turbine (WTG WP22).

A Blade Throw Risk Assessment will be prepared as part of the EIS, which will describe the potential impacts associated with blade throw to nearby residential receptors during operation of the Project. The assessment will be undertaken having consideration of applicable international standards concerning the design of WTG components.

The Blade Throw Risk Assessment will likely include the following scope of works:

- Assessment of the likelihood of occurrence for a blade throw event;
- Assessment of theoretical distance radii for a blade throw event;
- Review of distances between turbines and nearby dwellings;
- Review of historical blade throw occurrences in Australian wind farms; and
- Provision of relevant mitigation measures for Project implementation.



Pottinger Wind Farm

Figure 6.8: Bushfire Prone Land

SOMEVA RENEWABLES

Date: 04/05/2023

CRS: GDA2020 / MGA zone 55

Scale: 130000

Basemap: ESRI Satellite (2022)

Data Sources: Spatial Services, DPE, NSWRFS
Prepared By: EL Reviewed By: TS
Version: 4
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Additional Internal Access Roads
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Existing Infrastructure
- Existing 220 kV Transmission
- Project Energy Connect
- Main Roads
- Existing Access Tracks

Bushfire Prone Land NSWRFS
- Vegetation Buffer
- Vegetation Category 3
- Not Mapped

6.15.4 Electromagnetic Field

EMF is potentially 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). Electric fields and magnetic fields are independent of one another and, in combination, cause energy to be transferred along electric wires.

The Project will involve the generation of EMFs during operation from the proposed transmission lines and substations. Over the past 50 years, concerns have been expressed that the EMFs associated with electrical equipment might have adverse health effects. There are well-known health effects where there are very high levels of EMFs and health standards have been established to protect against these effects.

However, the World Health Organisation (WHO) recognises that no adverse health effects from long-term exposure to Extremely Low Frequency (ELF) and EMF have been confirmed (WHO, 2020).

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

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

6.16 Air Quality and Greenhouse Gas

6.16.1 Background

Land uses in the areas surrounding the Project Area are predominantly agricultural, and this is likely to influence the local 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.

Existing sources of air pollution are likely sourced from dust, vehicle, and machinery from agricultural production, and vehicle exhaust emissions from traffic along the Cobb Highway and the Sturt Highway. Background air quality and other meteorological matters are described at **Section 2.3.1.3**.

6.16.2 Preliminary Assessment

The Project is not expected to have significant impacts on air quality in the region.

Emissions to the atmosphere from the Project are anticipated to be predominantly associated with construction phase activities which will be temporary and limited to:

- Localised dust emissions generated by land disturbance; and
- Exhaust emissions of civil construction and vehicle, plant and machinery.

During the temporary construction phase, dust particles and other air quality emissions could potentially be released from activities including:

- Construction of new / upgraded access tracks and roads;
- Vegetation clearing and creation of open exposed areas;
- Excavation works and stockpile management;
- Mobile concrete batching plants and rock crushing;
- Transport of material and equipment;
- Processing and handling of material;
- Construction activities and associated earthmoving and construction equipment;
- Transfer points;
- Loading and unloading of material; and

- Haulage activities along unsealed roads.

During operations, the Project will generate electricity without directly emitting air pollutants that are known to affect the climate and human health.

The Project will contribute to the improvement of air quality through the displacement of emissions that would otherwise be generated through the burning of fossil fuels used to generate electricity from traditional coal fired power stations.

6.16.3 EIS Assessment Approach

The EIS will quantitatively consider the potential impacts to air quality and stipulated appropriate management and mitigation measures during the construction, operations and decommissioning phases of the Project.

Beneficial GHG savings as a result of the Project will also be described.

Air quality and dust management will generally be assessed in accordance with relevant guidelines and policies as outlined in **Appendix A**.

6.17 Waste Management

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 follow the general principals of: manage, reuse, recycle and safe disposal.

Relevant management and mitigation will be identified as required.

Relevant guidelines to inform the assessment are outlined in **Appendix A**.

7 ACRONYMS AND ABBREVIATIONS

Term	Definition
KEY TERMINOLOGIES	
Project	A wind farm as described in **Section 3** to which this Application applies
Project Area	Red boundary shown on key figures to which the Application applies (unless otherwise stipulated)
The Applicant	Someva Pty Ltd
Application	Application for Development Consent under Part 4.7 of the EP&A Act; and Determination under Part 9 of the EPBC Act
Associated dwelling	Habitable dwelling which does have any agreement with the Project
Non-associated dwelling	Habitable dwelling which does not have an Agreement with the Project
Non-associated dwelling (associated other Project)	Habitable dwelling which does not have an Agreement with the Project, however does have an Agreement with another Project
Pottinger Energy Park	Combination of the Solar Farm and Wind Farm projects for which separate Applications will be made
Receiver	Assessment location
Preliminary Disturbance Footprint	Preliminary area of Project-related disturbance determined for use in Scoping Report phase, which will be refined for the EIS
OTHER TERMINOLOGIES	
°C	Degrees Celsius
ABN	Australian Business Number
ABS	Australian Bureau of Statistics
ACCU	Australian Carbon Credit Unit
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACMA	Australian Communication and Media Authority
AD	Associated dwelling
AEMO	Australian Energy Market Operator
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AIA	Aviation Impact Assessment
AL Act	*Aboriginal Land Rights Act 1983*
ALA	Aircraft Landing Areas
APZ	Asset Protection Zone
AQC	Air Quality Category
ASC	Australian Soil Classification
ASL	Above Sea Level
AWA	Australian Wind Alliance
BBUS	Bird and Bat Utilisation Surveys
BC Act	*Biodiversity Conservation Act 2016*
BESS	Battery and Energy Storage System
BOM	Bureau of Meteorology
BSAL	Biophysical Strategic Agricultural Land
CASA	Civil Aviation Safety Authority
CBF	Community Benefit Funds
CH	Chromosols
CHMP	Cultural Heritage Management Plan
CIV	Capital Investment Value

Term	Definition
CL Act	*Crown Land Management Act 2016*
Climate Change Act	*Climate Change Act 2022*
CMS Act	*Coal Mine Subsidence Compensation Act 2017*
Conargo LEP	Conargo Local Environmental Plan 2013
Conveyancing Act	*Conveyancing Act 1919*
COP	Conference of the Parties
CSP	Community Strategic Plan
Cwlth	Commonwealth
DA	Development Application
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCP	Development Control Plans
Deniliquin LEP	Deniliquin Local Environment Plan 2013
DP	Deposited plan
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
ELF	Extremely Low Frequency
EMF	Electromagnetic Field
EMI	Electromagnetic Interference
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
FM Act	*Fisheries Management Act 1994*
FTE	Full Time Equivalent
GDE	Groundwater dependent ecosystem
GWh	Giga Watt Hour
Ha	Hectares
Hay LEP	Hay Local Environmental Plan 2011
Hazards SEPP	State Environmental Planning Policy (Resilience and Hazards) 2021
Heritage Act	*Heritage Act 1977*
ICPA	Isolated Children's Parents' Association
kV	Kilovolt
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
LGCs	Large-scale generation certificates
LiDAR	Light Detection and Ranging
LLS Act	*Local Land Services Act 2013*
LRET	Large-scale Renewable Energy Target
LSC	Land and Soil Capability
LSPS	Local Strategic Planning Statements
MLA	Moir Landscape Architecture Pty Ltd
MNES	Matters of National Environmental Significance
MP	Member of Parliament
Mtpa	Metric tonnes per annum
MW	Megawatt

Term	Definition
NAD	Non-associated dwelling
NEM	National Energy Market
Net Zero Plan	Net Zero Plan Stage 1: 2020-2030
NIA	Noise Impact Assessment
NPW Act	*National Parks and Wildlife Act 1974*
NSW RFS	NSW Rural Fire Service
NSW Strategy	NSW Electricity Strategy
NSWTA	NSW Telco Authority
NT Act	*Native Title Act 1993*
O&M	Operations and Maintenance
OSOM	Oversize and Overmass
PBDAR	Preliminary Biodiversity Development Assessment Report
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021
PLVIA	Preliminary Landscape and Visual Impact Assessment
PM	Particulate Matter
POEO Act	*Protection of the Environment Operations Act 1997*
QLD	Queensland
RAAF	Royal Australian Air Force
RAPs	Registered Aboriginal Parties
Regional Plan	Riverina Murray Regional Plan 2041
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RF Act	*Rural Fires Act 1997*
RIS	Renewable Integration Study
Roadmap	NSW Electricity Roadmap
Roads Act	*Roads Act 1993*
RPS	RPS Group AAP Consulting Pty Ltd
RU	Rudosols
SA	South Australia
SDGs	Sustainable Development Goals
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SES	State Emergency Service
SGRE	Siemens Gamesa Renewable Energy
SHR	State Heritage Register
SIA	Social Impact Assessment
South West REZ	South West Renewable Energy Zone
SSD	State Significant Development
TAFE	Technical and Further Education
TAS	Tasmania
TEC	Threatened Ecological Communities
Transmission Strategy	NSW Transmission Infrastructure Strategy
TSR	Travelling Stock Reserves
TTIA	Traffic and Transport Impact Assessment
UN	United Nations

Term	Definition
VE	Vertosols
VPA	Voluntary Planning Agreement
VRE	Variable Renewable Energy
WHO	World Health Organization
WM Act	*Water Management Act 2000*
WP	Wind Pioneers
WTGs	Wind Turbine Generators
ZVI	Zone of Visual Influence

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Appendix A Scoping Summary Table

Level of Assessment	Aspect	Scale of impact	Nature of impact	Cumulative Impact	Engagement*	Relevant government plans, policies and guidelines	Section where Addressed
Detailed Technical	Visual and Lighting	Moderate	Direct Cumulative Perceived	Yes	Specific	• 'NSW Wind Energy: Visual Assessment Bulletin' (DPE, 2016c)	6.2
Detailed Technical	Noise and Vibration	Moderate	Direct Cumulative Perceived	Yes	Specific	• 'NSW Wind Energy: Noise Assessment Bulletin' (DPE, 2016b) • '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)	6.3
Detailed Technical	Biodiversity	Moderate-High	Direct Indirect Cumulative	Yes	Specific	• 'Biodiversity Assessment Method (BAM)' (DPIE, 2020b) • 'Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance' (Commonwealth of Australia, 2013a) • 'Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species' (DCCEEW, various) • 'Policy and Guidelines for Fish Habitat Conservation and Management' (DPI, 2013) • 'Guidelines for Fish Friendly Water Crossings' (DPI, unknown)	6.4
Detailed Technical	Aboriginal Heritage	Moderate	Direct Indirect Cumulative Perceived	Yes	Specific	• 'Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW' (OEH, 2011) • 'Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW' (DECCW, 2010a) • 'Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010' (DECCW, 2010b)	6.5
Standard Technical	Historic Heritage	Low	Direct Indirect	No	General	• 'Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance' (Commonwealth of Australia, 2013a) • 'Commonwealth EPBC 1.2 Significant Impact Guidelines – Actions on, or Impacting upon, Commonwealth Land and	6.6

Level of Assessment	Aspect	Scale of impact	Nature of impact	Cumulative Impact	Engagement*	Relevant government plans, policies and guidelines	Section where Addressed
						Actions by Commonwealth Agencies' (Commonwealth of Australia, 2013b) • 'NSW Skeletal Remains: Guidelines for Management of Human Remains' (Heritage Office, 1998) • Criteria for the Assessment of Excavation Directors' (NSW Heritage Council, 2011) • 'Assessing heritage significance – a NSW Heritage Manual update' (NSW Heritage Manual – Assessing Heritage Significance' (DPIE, 2022d) • 'Historical Archaeology Code of Practice' (Heritage Council, 2006)	
Detailed Technical	Traffic and Transport	Moderate	Direct Indirect Cumulative	Yes	Specific	• 'Guide to Traffic Generating Developments' (RTA, 2002) • 'Guide to Traffic Management' (Austroads, 2020) • 'Guide to Road Design' (Austroads, 2021)	6.7
Detailed Technical	Aviation	Moderate	Direct	No	Specific	• 'National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft' (DITRDCA, 2019)	6.8
Detailed Technical	Telecommunications	Moderate	Direct	No	Specific	• 'NSW Wind Energy Guideline for State Significant Wind Development' (DPIE, 2016) • 'Best Practice Charter for Renewable Energy Projects (Clean Energy Council, 2021)	6.9
Standard Technical	Water Resources (flooding and hydrology)	Low	Direct Indirect	No	General	• 'Managing Urban Stormwater; Soils & Construction' (Landcom, 2004) • '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)	6.10

Level of Assessment	Aspect	Scale of impact	Nature of impact	Cumulative Impact	Engagement*	Relevant government plans, policies and guidelines	Section where Addressed
						• '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)	
Detailed Technical	Agriculture and Land Resources	Low-Moderate	Direct Indirect	No	General	• 'Soil and Landscape Issues in Environmental Impact Assessment' (OEH, 2000) • 'Land Use Conflict Risk Assessment Guide' (DPI, 2011) • 'Large Scale Solar Energy Guideline' (DPE, 2022) • 'Landslide Risk Management Guidelines' (AGS, undated) • 'Site Investigations for Urban Salinity' (OEH, 2002) • 'Guidelines for surveying Soil and Land Resources' (NJ McKenzie, 2008) • 'The Australian Soil Classification' (Isbell N. C., 2016) • 'Australian Soil and Land Survey Field Handbook' (NCST, 2009) • 'The land and soil capability assessment scheme' (Office of Environment and Heritage, 2012) • 'Interpreting Soil Test Results – What do all the numbers mean?' (Hazelton, 2007) • 'Managing Urban Stormwater: Soils and Construction' (Landcom, 2004)	6.11
Standard Technical	Economic	Moderate	Direct Indirect Cumulative	Yes	General	None	6.12
Standard Technical	Social	Moderate	Direct Indirect Cumulative Perceived	Yes	Specific	• 'Social Impact Assessment Guideline for State Significant Projects' (DPIE, 2023a) • 'Technical Supplement' (DPIE, 2023b) • 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2022c)	6.14

Level of Assessment	Aspect	Scale of impact	Nature of impact	Cumulative Impact	Engagement*	Relevant government plans, policies and guidelines	Section where Addressed
Standard Technical	Hazards and Risks – Preliminary Hazard Assessment	Moderate	Direct Indirect Perceived	No	Specific	None	6.15.1
Standard Technical	Hazards and Risks – Bushfire	Moderate	Direct Indirect	No	Specific	• 'Planning for Bushfire Protection' (RFS, 2019)	6.15.2
Standard	Hazards and Risks – Blade Throw	Low	Direct	No	General	Relevant international studies and standards for design of wind turbine components and blade throw	6.15.3
Standard	Hazards and Risks – Electromagnetic Field	Low	Direct Perceived	No	General	• 'Guidelines - for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields' (ICNIRP, 1998) •	6.15.4
Standard	Air Quality and Greenhouse Gases	Low	Direct Indirect	No	General	• 'National Greenhouse Accounts Factors' (Australian Government, 2022) • 'NSW Climate Change Policy Framework' (OEH, 2016) • 'Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales' (NSW EPA, 2022)	6.16
Standard	Waste Management	Low	Direct Indirect	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)	6.17

** "community " in the guidelines is taken to also include regulatory.*

Appendix B Scoping Report Guidelines and Where Addressed

Requirement	Section Where Addressed
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.	Whole report
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	Whole report
Use the following coordinate system details: Datum: GDA 1994, Projection: GCS GDA 1994	Whole report
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.	Whole report
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:	Whole report
• be provided as accessible PDF files (commonly referred to as “tagged” PDF files) • have a navigable table of contents • present information in a linear and easy to follow format • use headings (in Microsoft Word this means using heading styles, e.g. Heading 1, Heading 2, Normal) • use captions for tables, pictures and figures • include a header row in any tables • provide alternate text descriptions for all images preferably under 100 characters, except for images that are decorative • use text to convey information rather than, or in addition to, images where possible • use a contrast ratio of 3:1 for large text (18+ points or 14+ points bold) and at least 4.5:1 for text and images of text • not rely on colour to convey information and instead use text labels, patterns and symbols to supplement colour • use hyperlinks to assist with navigation through the document	Whole report
1. Introduction	
Include the applicant’s details, including ABN and address.	1.2
Include: a statement of the project objectives, site information including address and lot details, how the site was selected, and a map of the site in its regional setting.	1.4 1.6
Include the background to the project, including: any relevant history, key strategies that will be adopted to avoid, minimise or offset the impacts of the project to the extent known at the scoping stage.	1.4
Include a description of any related development, including any: • existing or approved development (including any existing use rights or continuing use rights) • development that is required for the project but would be subject to a separate assessment (e.g. upgrades to ancillary infrastructure, approvals for subsequent stages of the project).	1.5
2. Strategic context	
Identify at a high level the key strategic issues that are likely to be relevant to the project and will be investigated in more detail in the EIS.	2
Level of detail should be proportionate to the importance of the strategic context to the project and tailored towards informing the setting of the SEARs.	2

Requirement	Section Where Addressed
Key strategic issues may include: the justification of the project, relevant plans that establish a regional or local land use planning context for the project, key features of the site or surrounds that could affect or be affected, whether the project is likely to generate cumulative impacts with other relevant future projects in the area, and identifying whether the applicant has entered into any agreements with other parties to mitigate or offset the impacts of the project	2.1 2.2 2.3
3. Project	
Overview of the project including: • the project area, including the area likely to be physically disturbed by the project • the conceptual physical layout and design of the project • the main uses and activities that would be carried out on site as well as the materials and products that would be transported to and from the site • the likely timing of the delivery of the project, including staging, phases (e.g. construction, operations, decommissioning) or sequencing of staging	3
Identify aspects of the projects where some flexibility may need to be incorporated into the design to allow the final design to be refined or changed over time without further approval.	3
Identify any restrictions or covenants that apply to the land.	4
Include a high-level analysis of feasible alternatives considered and rejected, including the consequences of not carrying out the development.	3.5
4. Statutory context	
This section should provide an overview of the key statutory requirements for the project, having regard to: • the EP&A Act and EP&A Regulation. • other relevant legislation • relevant environmental planning instruments • relevant approvals (e.g. concept plan approvals, staged DA consents).	4.1 4.2 4.3 4.4
The statutory requirements should be summarised in a table under the following headings: Power to grant consent, Permissibility, Other approvals, Pre-conditions to exercising the power to grant consent, and Mandatory matters for consideration.	4.1 4.2 4.3 4.4
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 • any actions taken by the applicant to inform, consult or engage with the community during the development of the project or preparation of the scoping report Engagement should also be undertaken having regard to the community participation objectives in the Department's Undertaking Engagement Guidelines for State Significant Projects.	5.4
Summarise the key findings of any community engagement carried out and give an early indication of community views on the project using suitable maps, graphics and tables.	5.5
Identify the likely level of community interest in the project and the geographic extent of this interest (e.g. local: < 5 km from the site; regional: 5-100 km from the site or state: > 100 km from the site).	5.5
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	5.5

Requirement	Section Where Addressed
• 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	
Summarise the community engagement that will 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 will be known at the scoping stage • describe what actions will be taken to identify and engage with other interested stakeholders during the preparation of the EIS • describe the key actions that will 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 will be monitored, reviewed and adapted over time to encourage community participation in the project.	5.6
6. Proposed assessment of impacts	
Matters that should be considered by the project: access (e.g. traffic and transport), air quality, amenity (e.g. noise, visual), biodiversity, built environment, economic, hazards and risk (e.g. bushfire, flooding, waste), heritage (Aboriginal and non-Aboriginal), land, social, water. These specific matters can be divided further into different components of the specific matter, where relevant.	6
Key factors that should be considered for each matter: • the scale and nature of the likely impacts of the project and the sensitivity of the receiving environment • whether the project is likely to generate cumulative impacts with other relevant future projects in the area • the ability to avoid, minimise and/or offset the impacts of the project, to the extent known at the scoping stage • the complexity of the technical assessment of the project It is important to note that the applicant is not required to carry out a detailed assessment of each factor and document this assessment in the scoping report. This should be done in the detailed assessment of the project in the EIS.	6
Appendix A	
Include a scoping summary table which groups the matters requiring further assessment in the EIS by the level of assessment required, and identify: • whether any cumulative impact assessment is required, and the likely level of this assessment (e.g. standard or detailed) • whether any specific community engagement will be carried out on the matter during the preparation of the EIS • the relevant government plans, policies and guidelines that will 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 Landscape and Visual Impact Assessment

Pottinger Energy Park Wind Farm

Preliminary Visual Impact Assessment

moir
landscape architecture

Pottinger Energy Park Wind Farm

Preliminary Visual Impact Assessment

Prepared for
Someva Pty Ltd

Issue
D

Date
10.05.2023

Project Number
2284

Revision	Date	Author	Checked	Comment
A	17.03.2023	AL	MED	Draft for review
B	24.03.2023	AL	MED	Draft for review
C	29.03.2023	AL	MED	For review
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Contents

Figures:

Appendix A: Preliminary Dwelling Assessments

Appendix B: Preliminary Public Viewpoint Assessments

1.0 Introduction

1.1 Introduction

Moir Landscape Architecture (Moir LA) has been commissioned by Someva Renewables (the Applicant) to prepare a Preliminary Visual Impact Assessment (PVIA) for proposed Pottinger Energy Park. This report addresses the potential visual impacts of the Pottinger Energy Park Wind Farm (the Project).

The PVIA for the Project has been prepared in accordance with the *Wind Energy: Visual Assessment Bulletin December 2016* (referred to hereafter as 'the Bulletin'). The PVIA will form part of the Scoping Report seeking the Secretary's Environmental Assessment Requirements (SEARs).

1.2 Relevant Experience

The Bulletin states: *the proponent is expected to engage professionals from relevant natural resource management and design professions (for example environmental planners, geographers, landscape architects, or other visual resource specialists), with demonstrated experience and capabilities in visual assessment to carry out a wind energy project visual assessment*.

Moir LA is a professional design practice and consultancy specialising in the areas of Landscape Architecture, Landscape Planning and Landscape and Visual Impact. Our team has extensive experience in undertaking Landscape and Visual Impact Assessments for large-scale infrastructure projects, including the mining industry, sustainable energy sector and commercial developments in visually sensitive areas. In the context of our experience and with guidance from the Bulletin we have developed methodologies to ensure a comprehensive quantitative and qualitative assessment of the Project.

Relevant experience includes the preparation of PVIAs and LVIAs for the following Wind Energy Projects:

- *Uungula Wind Farm LVIA (Wellington, NSW)*
- *Hills of Gold Wind Farm LVIA (Nundle, NSW)*
- *Thunderbolt Energy Hub Stage 1 (Kentucky, NSW)*
- *Valley of the Winds Wind Farm LVIA (Coolah, NSW)*
- *Jeremiah Wind Farm PVIA (Gundagai, NSW)*
- *Barneys Reef Wind Farm PVIA (Gulgong, NSW)*
- *Winterbourne Wind Farm LVIA (Walcha, NSW)*
- *Paling Yards Wind Farm PVIA (Paling Yards, NSW)*
- *Burrawong Wind Farm PVIA (Balranald, NSW)*
- *Keri Keri Wind Farm PVIA (Keri Keri, NSW)*

1.3 Overview of Preliminary Visual Impact Assessment

The purpose of this PVIA is to provide a preliminary assessment of the potential visual impacts of the Project and has been prepared in accordance with the Bulletin.

The Bulletin process is broken into two main stages (see **Figure 1**):

Phase 1: Preliminary Environmental Assessment and
Phase 2: Environmental Impact Statement

This PVIA forms a part of *Phase 1: Preliminary Environmental Assessment* to be submitted to the Department of Planning and Environment (DPE) together with the Scoping Report for the request for SEARs.

The requirements of Stage 1: Preliminary Environmental Assessment are as follows:

At the Preliminary Environmental Assessment stage, a process consisting of community consultation regarding key landscape values and application of preliminary assessment tools has been developed. The tools include consideration of the potential impact of the proposals on dwellings and key public viewpoints.

The preliminary assessment tools have been designed to assist proponents to drive better outcomes. They will assist in identifying, early in the process, the locations where wind turbines may have impacts that warrant further consideration. This in turn provides an opportunity to refine the proposed wind turbine layout to avoid or minimise impacts or justify the proposed design prior to lodgement of the application.

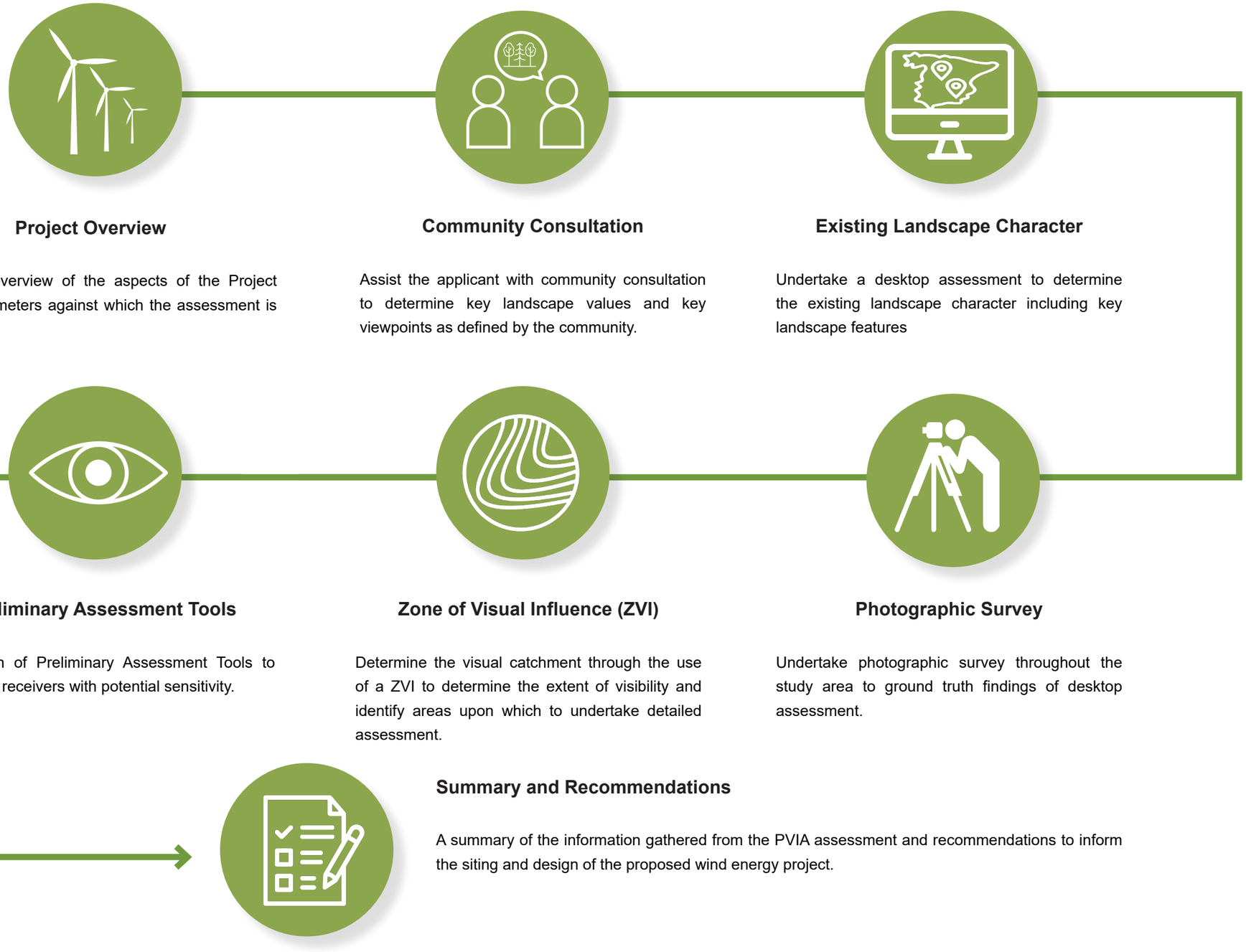
Proponents will be required to submit, with the request for SEARs, a Preliminary Environmental Assessment that includes a map with key information, results of community consultation and the application of the preliminary assessment tools. This will form the basis for the issue of the SEARs that will identify the matters that must be addressed in the EIS.

Figure 1 Steps in Visual Impact Assessment
(Source: Wind Energy: Visual Assessment Bulletin, 2016)

2.0 Study Method

2.1 Study Method

The following has been undertaken to develop the PVIA:



The following has been undertaken to develop the PVIA:

Desktop Assessment:

- Application of Preliminary Assessment Tools to determine receivers with potential sensitivity.
- Preparation of a preliminary Zone of Visual Influence (ZVI) to establish a theoretical zone of visibility of the Project.
- Identification of key viewpoints and landscape features using available mapping and background documents.

Site Inspection:

Photographic survey work for the assessment was undertaken in February 2023 to carry out a preliminary assessment of the existing landscape character from publicly accessible land within the Study Area (as defined in **Section 3.3**). The findings of the site inspection have been included in the PVIA and will form the basis for discussion with the community in the EIS Phase of the Project.

Community Consultation:

Community consultation has been undertaken through the scoping phase of the Project. Results of the community consultation have also been utilised to gain perspective on the landscape values held by the community to inform the PVIA.

Community consultation will be continued through the EIS phase of the Project.

2.2 Report Structure

The following table provides an overview of the requirements of the Bulletin and where these have been addressed in the PVIA:

Preliminary Visual Impact Assessment Report Structure:	
PVIA Report:	**Bulletin Requirements:**
Refer to Section 3.0: Project Overview	
Refer to Section 4.0: Community Consultation	*Undertake community consultation to establish key landscape features valued by the community, key viewpoints in the area (both public and private) along with information about the relative scenic quality of the area.*
Section 5.0 : Existing Landscape Character	*Production of a map detailing key landscape features (informed by community consultation and any ground-truthing undertaken), the preliminary wind WTG layout, the location of dwellings and key public viewpoints, and an overlay of the wind resource.*
Section 6.0: Preliminary Assessment Tools	*Results of the preliminary assessment tools for both the visual magnitude and multiple wind WTG parameters.*
Section 7.0: Preliminary Zone of Visual Influence	*The use of Geographic Information Systems (GIS) to facilitate the application of the tools will streamline the evaluation phase of a project during the pre-lodgement stage. Most GIS systems can establish the theoretical 'zone of visual influence' of the proposal (the area from which the proposal is theoretically visible or the 'visual catchment').*
Section 8.0: Preliminary Dwelling and Viewpoint Assessment	*The visual assessment will involve the combination of desktop and field evaluations of the proposed wind energy project and its various components, WTGs and ancillary facilities. The visual performance objectives form the principal framework and guide for assessing the proposed wind energy project when applied to individual viewpoints. All key public viewpoints and individual dwellings within the visual catchment should be identified and assessed.*
Section 9.0: Cumulative Visual Impacts	*Address potential cumulative impacts of wind energy projects in the region (the proposed wind energy project, as well as existing and approved projects)*
Section 10.0: Summary and Recommendations	

Table 1 Overview of Report Structure

3.0 Project Overview

3.1 Regional Context

The Project is located approximately 60 km south of Hay in south-west NSW. Majority of the Project is located within the extents of the Hay Shire Council LGA and a small part of the Project is located within the Edward River Council LGA. The Project can be accessed via Cobb Highway, Jerilderie Road and Booroorban-Tchelery Road (refer to **Figure 2**).

The Project is located within the South-West Renewable Energy Zone (REZ). The NSW Government has finalized the geographical extent of this REZ and has highlighted that an abundance of high quality wind and solar resources are available in the area. The intended transmission capacity for this REZ is 2.5 GW (EnergyCo, 2022). The Project is therefore strategically located in a broad area identified as suitable for a renewable energy project.

The development of this REZ will also involve an upgrade to the existing 220kV transmission line to a 330 kV transmission line (Energy NSW, 2022). The existing 220kV transmission line currently runs east-west with majority of the Project on the northern side of this transmission line (refer to **Figure 2**). It is anticipated that a new 330kV electrical transmission line will be built as a part of Project EnergyConnect to upgrade the transmission capacity of the region (EnergyCo, 2022).

3.2 The Project Area

The Project Area encompasses an area of approximately 14,000 ha. It is defined as the land encompassed by the Project Area boundary shown in **Figures 2 and 3**. The properties within the Project Area are primarily utilised for sheep and cattle grazing activities.

3.3 The Study Area

The PLVIA Study Area includes the Project Area and surrounding land up to 15 kilometres (km) from the nearest WTG which requires assessment. Closest landmarks include the towns of Hay and Booroorban, South West Woodlands Nature Reserve and Oolambeyan National Park (refer to **Figure 3**).

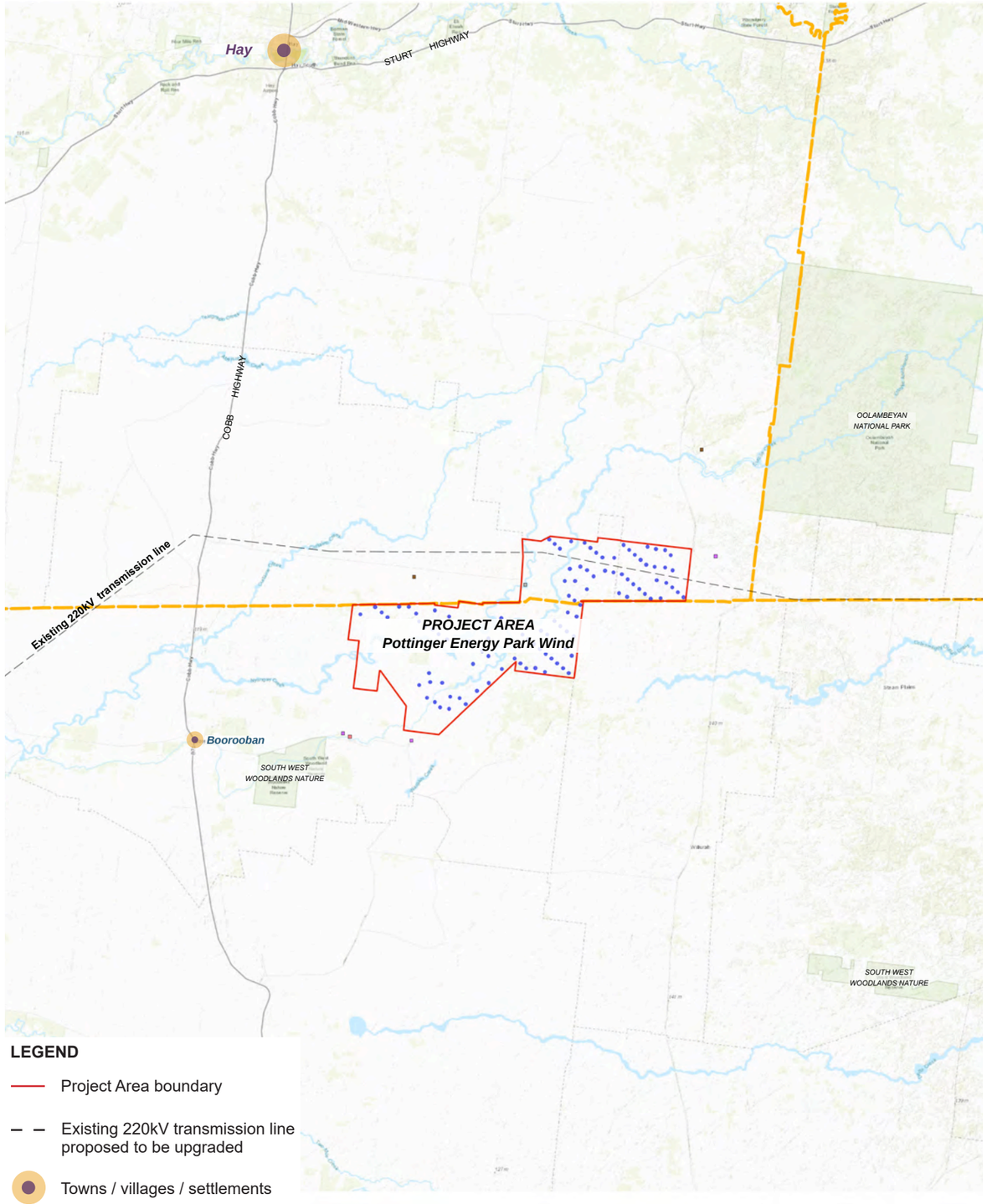


Figure 2 Regional Context (Map Source: ESRI Topographic Map, 2022)

3.4 The Project

The Project includes the construction and operation of approximately 108 wind WTGs spread across an area of up to 14,000 ha. Associated infrastructure includes operation and maintenance (O & M) facilities, battery storage, internal access roads, civil works and electrical infrastructure (including on-site substations/switching stations/reactive plant) required to connect to the existing electricity transmission network.

The Project will have a maximum capacity of approximately 750 megawatt (MW). The Project also includes the installation of a battery energy storage system (BESS) with a capacity of up to 500 MW / 2 GWh to allow for the capture and storage of dispatchable energy.

The point of connection into the grid is expected to be via the existing 220 kV electricity transmission line which is proposed to be upgraded to a 330 kV transmission line (EnergyCo, 2022). The preliminary layout for the Project (refer to **Figure 3**) has been prepared to locate the WTGs within areas identified as having high wind resources.

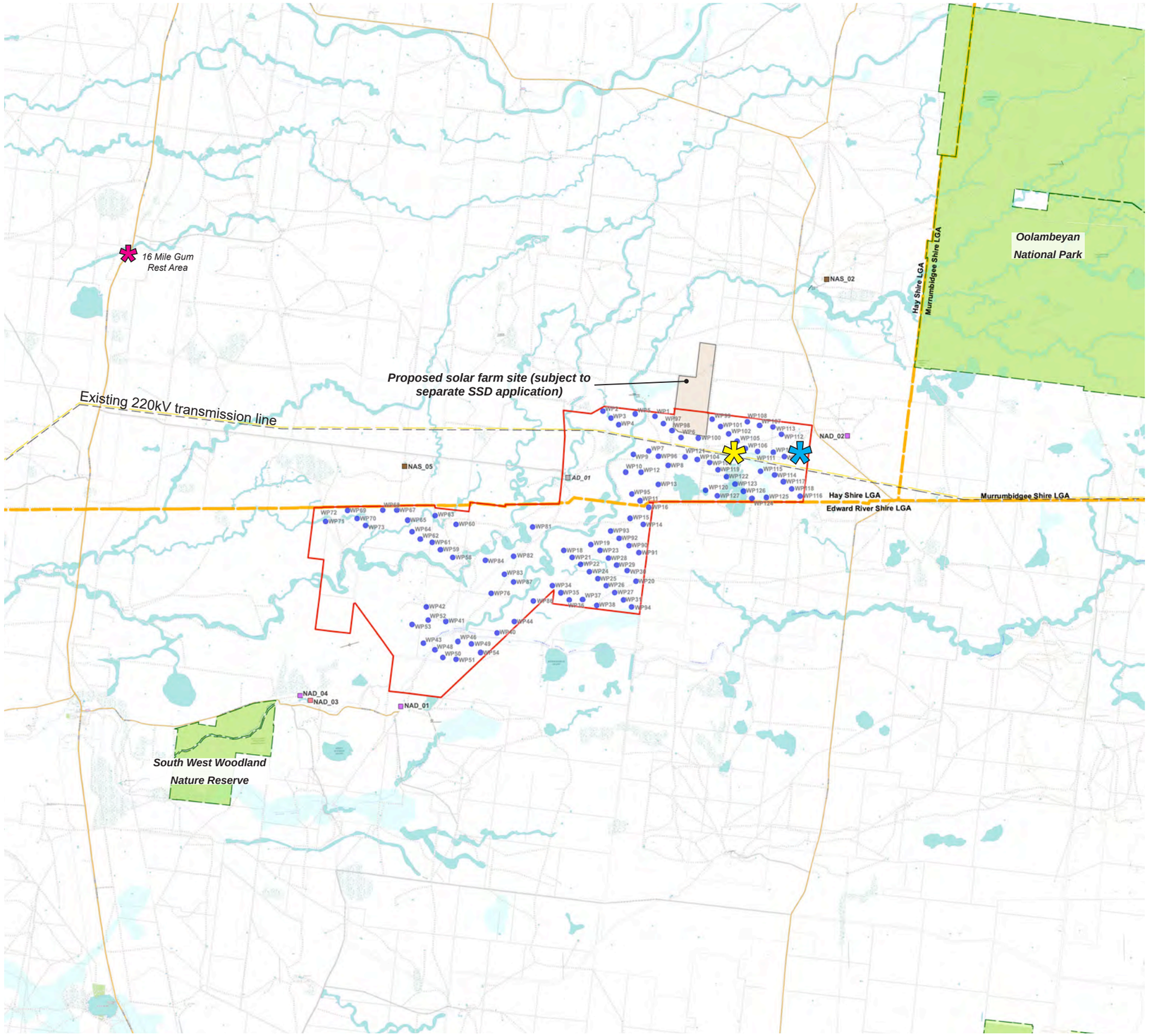
An original layout of 128 WTGs was considered for the project. This layout was revised, primarily in response to biodiversity constraints, to reduce impacts of the project. An optimised layout of 108 WTGs has been assessed for the Scoping Report.

This preliminary layout will be progressively refined during the EIS phase of the Project, having regard to the physical and environmental constraints of the site and the key landscape values of the Study Area. **Figure 3** also includes the locations of associated and non-associated dwellings mapped from aerial photographs. These locations are subject to further ground-truthing.

Key components of the Project include:

- Approximately 108 (3 blade steel) wind WTGs with a total maximum height (tip height) of 280m AGL.
- Power infrastructure providing connection to the proposed 330 kV transmission line, i.e. at least one (1) on-site 330kV substation with switchroom.
- Internal electrical reticulation network, access roads and upgrades to existing access roads and access points from public roads.
- Temporary and permanent meteorological monitoring masts.
- Temporary infrastructure including construction compound and site office buildings, storage areas, concrete batching plants, crushing facilities, gravel/borrow pits and construction laydown areas.
- Hardstand and laydown areas used for wind WTG installation and storage of wind WTG components.
- Operation and maintenance building
- A single grid-scale BESS.

The proposed infrastructure would be contained within the Project Area including all WTG rotor sweep paths. The proposed disturbance footprint will be confirmed during EIS phase. The Project is in the preliminary stages of design and Moir LA will provide input and recommendations in regard to visual impacts to assist in refining the design layout.



Project Layout

Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- Proposed 280 m WTG Location
- Proposed solar farm (subject to separate SSD application)
- Proposed BESS facility location
- Proposed O&M facility location
- AD_1 — Associated dwellings
- NAD_17 — Non-associated dwellings
- NAD_17 — Non-associated dwellings (Associated with other Project)
- Existing 220kV transmission line
- Proposed 330kV transmission line (Project EnergyConnect)
- Main Road
- Minor Road
- National Park / Nature Reserve
- LGA Boundary
- 16 Mile Gum Rest Area

N

0 2 4 6 8 10km

Figure 3 Project Layout (Map Source: Six Maps, 2020)

4.0 Community Consultation

4.1 Overview of Community Consultation Process

In accordance with the Bulletin: *community consultation at this early stage may be broad, but should include discussions about the proposed project area, likely corridors of development, or preliminary turbine layouts and must involve people from the visual catchment.*

The purpose early Community Consultation was to identify key features valued in the area by that community. Community engagement will continue through the EIS Phase and provide the community with further opportunities to provide input into the Visual Baseline Study of the LVIA.

4.2 Results of Preliminary Community Consultation

Understanding of the community perception towards the proposed development is an intrinsic component of the Landscape and Visual Impact Assessment process. A CSIRO study published in 2012: *Exploring community acceptance of rural wind farms in Australia* provides a snapshot of community acceptance levels regarding Australian wind farms from a variety of stakeholder perspectives. It found levels of acceptance among the public are highly subjective and can differ depending on location, local context and place attachment.

In accordance with the Bulletin ongoing community consultation has been undertaken by Lecroma between Q4 2022 and Q1 2023. A questionnaire was distributed to both associated and non-associated landholders.

The question ***'what do you value most about your local area?'*** was asked to gain the Community's perspective on key features of value within the local area. Below provides a summary of responses received through the preliminary Community Consultation.

No views of significant value identified outside of a general value for the expansive flat Hay plains (noting this was not mentioned frequently at all). Most of the landscape has been heavily altered through multi-generational broad acre farming operations. The area is highly exposed to the effects of climate (especially droughts) which we were cited as severely impacting farming operations during extended drought periods, creating economic and mental health hardship.

Most of the project neighbours have already signed on with competing renewable energy project developers, and noted their general support for renewable energy project developments in their area (i.e. no objecting neighbour groups to renewable energy projects have been identified at this stage).

In general, it is the protection of local endangered species (plains wanderer) that appears to be of most concern to project neighbours when asked about what they value most and might be impacted on by renewable energy development projects.

Local employment opportunities were another frequently mentioned value to project neighbours, as there are sparse opportunities for employment outside of large broad acre farming operations (and ancillary support services).

Only visual impact concern cited is the risk that projects could spoil their "big sky" for which the Hay Plains is famous with photographers and tourists, particularly on the drive from Deniliquin to Hay.

Engagement with the nearby private receivers indicated concerns were raised in relation to protection of local endangered species, '*unappealing fields of glass-looking panels',* protection of local Heritage and Aboriginal Artefacts and regarding local employment opportunities. Community's perspective towards the Project is generally positive. It is important to note that many of the surrounding landholdings have been engaged with other Renewable Energy Project Developers.

5.0 Existing Landscape Character

5.1 Overview of Bioregion

The Project sits within the Riverina Bioregion (see **Figure 4**) in southwest NSW. The area is characterised by extensive saltbush plain with small depressions and isolated low rises.

Topography is generally flat with very minor and isolated rises of coarse-textured aeolian material (land system, 2016). Grey cracking clays, red brown earths and compact brown clays are predominant in the region (NPWS, 2003). The plains are dominated by saltbush and bluebush with old man saltbush, cottonbush, myall and grasses. Vegetation communities on channels and swamps include black box (*Eucalyptus largiflorens*) and lignum (*Muehlenbeckia florulenta*). **Images 1 - 2** illustrate the typical character of the landscape within the Study Area.

Image 1 *Typical character of Riverina saltbush and bluebush plains*

Image 2 *The Hay plains are typically characterised by intermittent stands of Black box and Lignum trees with saltbush and grasses.*

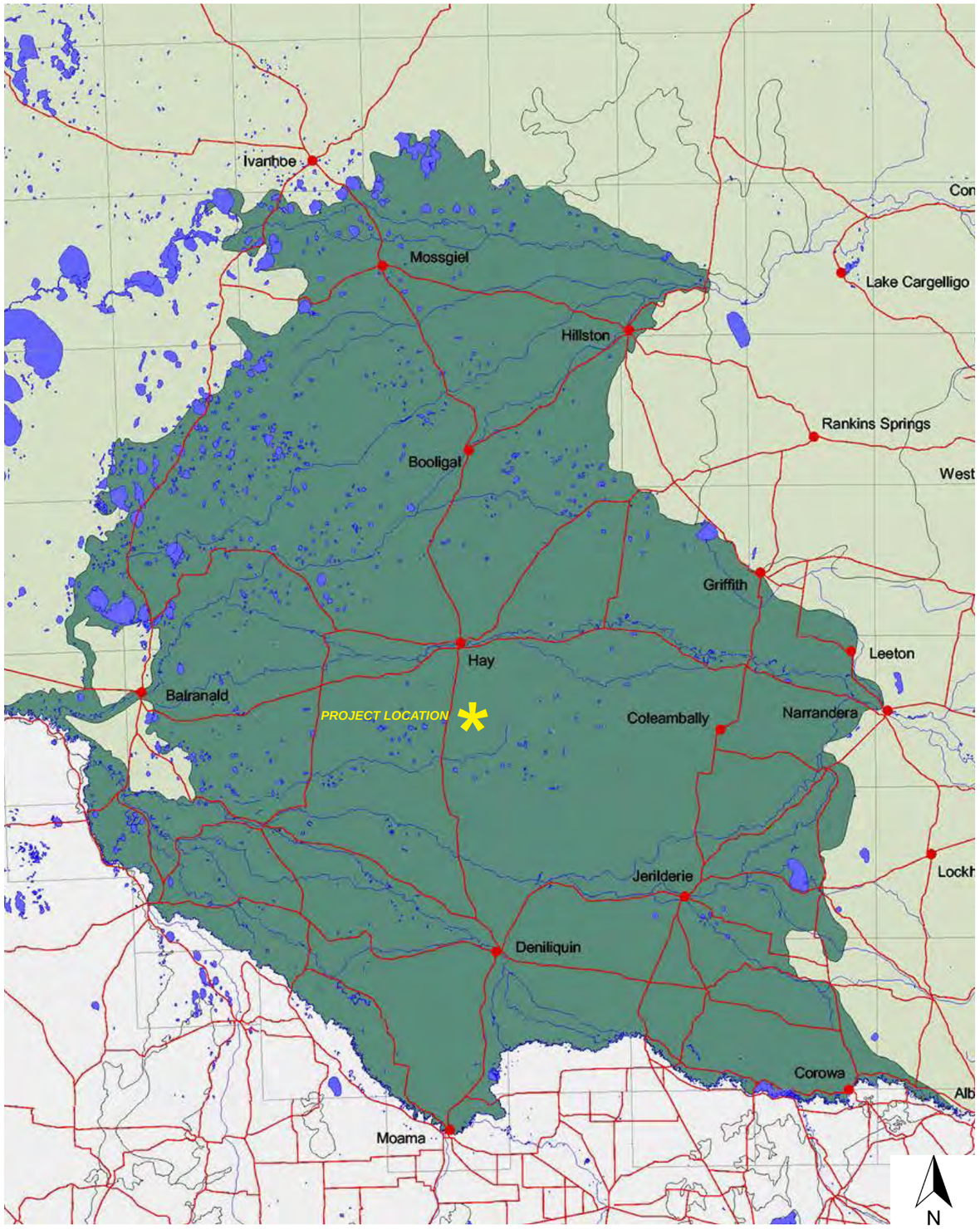


Figure 4 NSW Riverina Bioregion (Source: NPWS, 2016)

5.2 Land Use

5.2.1 Land Use Zoning

The northeastern part of the Project is located within the extents of the Hay Shire Council and the southwestern part in Edward River Council. The Edward River Council utilises three different Local Environment Plans (LEPs) of which Conargo LEP 2013 is applicable to the Project. The Hay Shire Council utilises the Hay LEP 2011 in its administration. The following gives an overview of the main land use zoning within the Study Area (see **Figure 5**):

RU1 - Primary Production

The Project and majority of the surrounding land is zoned *RU1 - Primary Production*. Generally, the objectives of all LEPs relevant to the Project Area and to visual impact assessment are as follows:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*

C1 - National Parks and Nature Reserves

Oolambeyan National Park falls within the extents of land that is categorised as C1- National Parks and Nature Reserves. The National Park is located within the extents of Murrumbidgee Council. The nearest WTG is approximately 7 km southwest of the National Park. No development is proposed within the boundaries of the National Park.

According to the Oolambeyan National Park Plan of Management, the region is characterised by *'expansive horizons of the Hay Plains which are one of the flattest in the world (...) and a sample of riverine plain geomorphological features of Quarternary age such as prior streams, ancestral rivers, sand dunes and level alluvial plains'* (NPWS, 2014a). The National Park's landscape, biological, and cultural values are as follows (NPWS, 2014a; NPWS, 2000):

- *The area is known for nationally threatened plains-wanderer and extensive native grasslands known to provide habitat to species specific to this region. Rich biodiversity presented in the National Park includes ephemeral wetlands of canegrass, the slender Darling pea, and the plains-wanderer and superb parrot which are threatened animal species.*

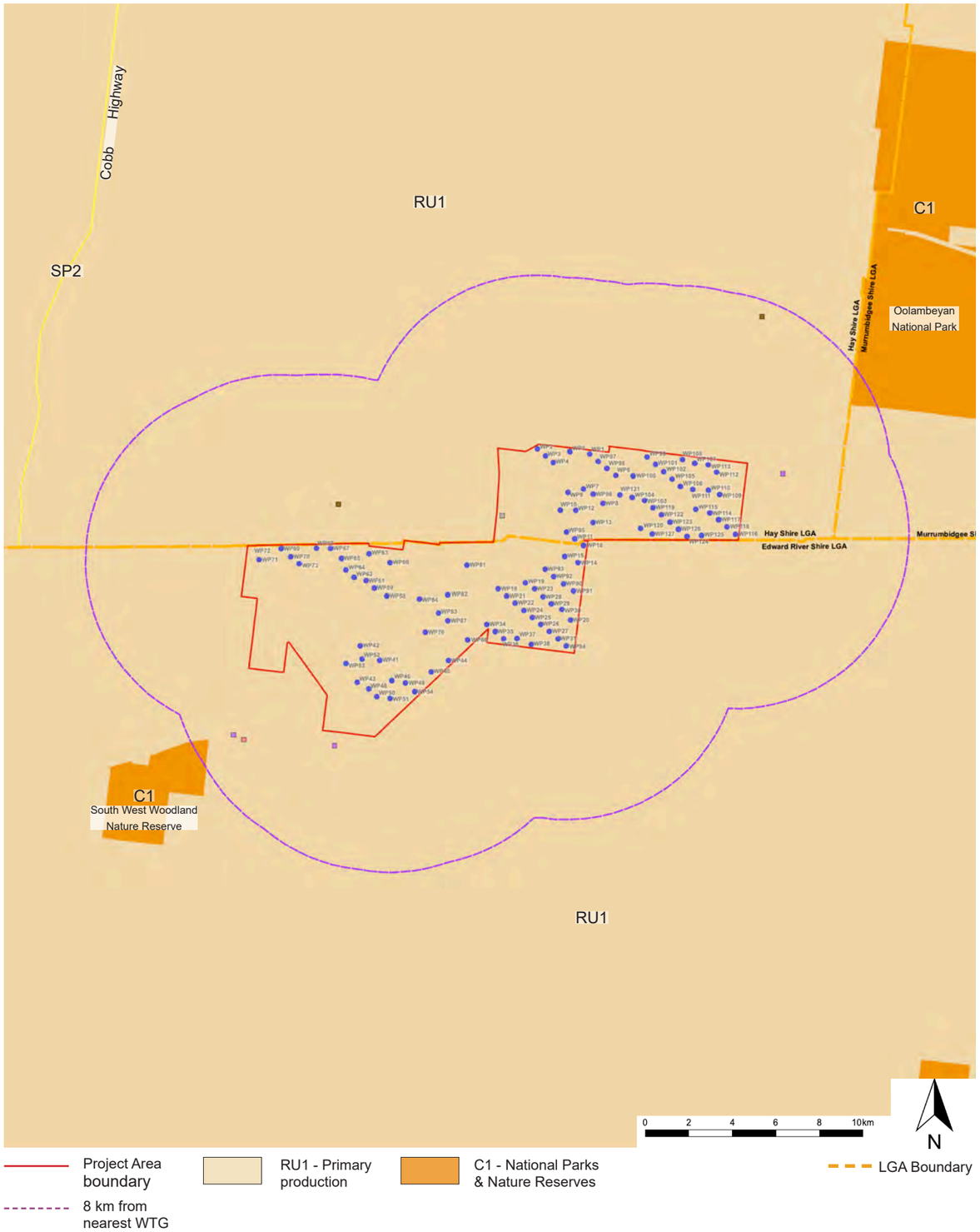


Figure 5 Land Use Zoning (Source: Hay Shire LEP 2011, Edward River LEP 2013)

• Prominent and endangered ecological communities include Weeping Myall Woodland communities and Sandhill Pine Woodland communities.

• The area also presents itself as a rare sample of riverine plain geomorphological features of Quaternary Age with open plains, swamps, slowly draining linear depressions and gently undulating sand ridges.

• A number of Aboriginal sites and places, campsites, burial sites, scarred trees, hearths and stone artefacts have been detected within the extents of the Park. The National Park also presents an example of a former merino stud property of western Riverina, a homestead, shearing shed and associated infrastructure.

The South West Woodland Nature Reserve is located approximately 10 km southwest of the Project Area. It is categorised as *C1-National Parks and Nature Reserves.* The South West Woodland Nature Reserve Statement of Management Intent outlines that the reserve protects endangered ecological communities such as the Inland Grey Box Woodland and Sandhill Pine Woodlands (NPWS, 2014b).

5.2.2 Land Use

Land use within and around the Project Area predominantly comprises agricultural production activities. The Project will be situated in areas that are currently dedicated largely to native grazing pastures (see **Figure 6**). Oolambeyan National Park and South West Woodland Nature Reserve are subjected to minimal use due to their significant natural, landscape, cultural and educational values. It's immediate surrounds consist of natural or improved pastures, dryland and irrigated cropping.

Traces of irrigated cropping and pastures are also prevalent on the outer edges of the Project Area and are flat and open. Creeklines and dry lakes create floodplains that are fertile and suitable for agricultural activities. All water channels remain dry and exhibit vegetation characteristics that are unique to the Riverina region.

Sturt Highway and Cobb Highway serve as important commuting corridors as they provide connection to the towns of Balranald, Hay, Wagga Wagga, Deniliquin and others. Minor road connections are provided by Willurah Road, Jerilderie Road and North Boundary Road.

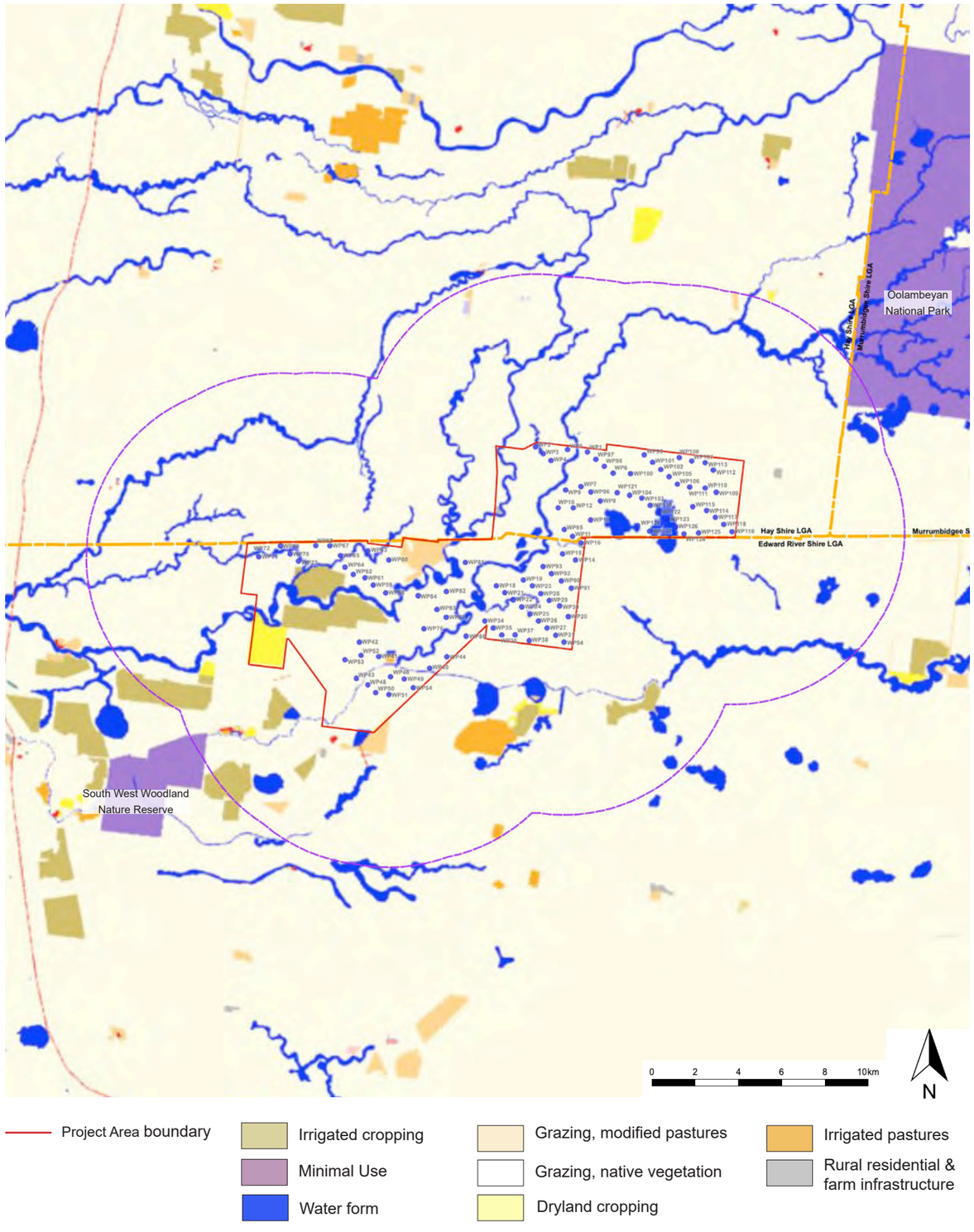


Figure 6 Land Use (Source: eSpade 2022)

5.3 Key Landscape Features & Viewpoints

The Bulletin states: *proponents must identify key landscape features, dwelling locations and key public viewpoints*. The following section provides an overview of the key features identified within and around the Study Area. Refer to **Figure 7.**

Creeks, swamps and dry lakes

Given the dry and arid conditions of the region, the lakes and creeklines remain dry through most of the year. The most significant hydrological features in close proximity of the Project Area include Nyangay Creek, Eurolie Creek, Werkenbergal Swamp, Burra Burroon Swamp and Longbottoms Dam.

Lakes or depressions are generally shallow and defined by low-storey, scrubby vegetation such as saltbush and canegrass species (Environment NSW, 2011). These areas have the capacity to hold water and are generally favoured for sheep and emu grazing. Creek floodplains, on the other hand, are defined by a denser vegetation character with scattered clumps of belah trees, saltbush, speargrass and forbs (Environment NSW, 2011). The region also presents swamps and pans with dillon bush, canegrass and nitre goosefoot spread across extensive gray clays (Environment NSW, 2011).

Lack of availability of fresh water sources has led to the prominence of native grazing pastures with occasional modified pastures and dryland cropping.

Geology and landform

The region is made up of Quaternary alluvial sediments with shallow and small depressions that are as deep as 2 m (Environment NSW, 2011). These depressions form a number of dry lakes studded in the landscape. In some areas these depressions form large scale swamps. The landform is also characterised by isolated low rises formed by aeolian processes, i.e., through wind action (Environment NSW, 2011). Landform is generally flat with dry distributary channels and floodplains (NPWS, 2003).

Vegetation character

Lack of water and dry, arid conditions support scattered stands of belah trees, saltbush and speargrass communities (NPWS, 2003). A number of saltbush and cottonbush varieties dominate the region with very sparse tree communities, thus yielding clear, open views of the expanse. The lack of tall canopy species allows higher wind speeds with continual wind actions on the landscape. Mid-canopy species such as lignum and nitre goosefoot are occasionally visible in the landscape and are favoured for emu grazing. Predominance of low-storey vegetation allows easier grazing opportunities for sheep, thus rendering the area favourable for livestock grazing. Most canopy cover is prominent within the extents of the Oolambeyan National Park and South West Woodlands Nature Reserve extents.

Nature Reserves, State Conservation Area and National Park

Significant ecological, cultural and historic associations have been identified for the Oolambeyan National Park which is located over 5km northeast of the Project Area. The region also has significant historic and cultural associations such as Aboriginal sites, hearths, and stone artefacts along with colonial associations such as a former merino stud property of the western Riverina (NPWS, 2014a). Although the Park's prominent hydrological features have been modified and regulated especially in the eastern parts, it boasts a variety of biodiversity and landscape values which make it a unique representation of the Hay Plains character in south-west NSW.

South West Woodland Nature Reserve is characterized by fragmented parcels of woodlands that are spread across areas closer to Coleambally and Steam Plains. The Reserve protects a number of significant endangered ecological communities and is known for educational and recreational associations such as bushwalking, birdwatching and research (NPWS, 2014b).

Campgrounds and Points of Interest

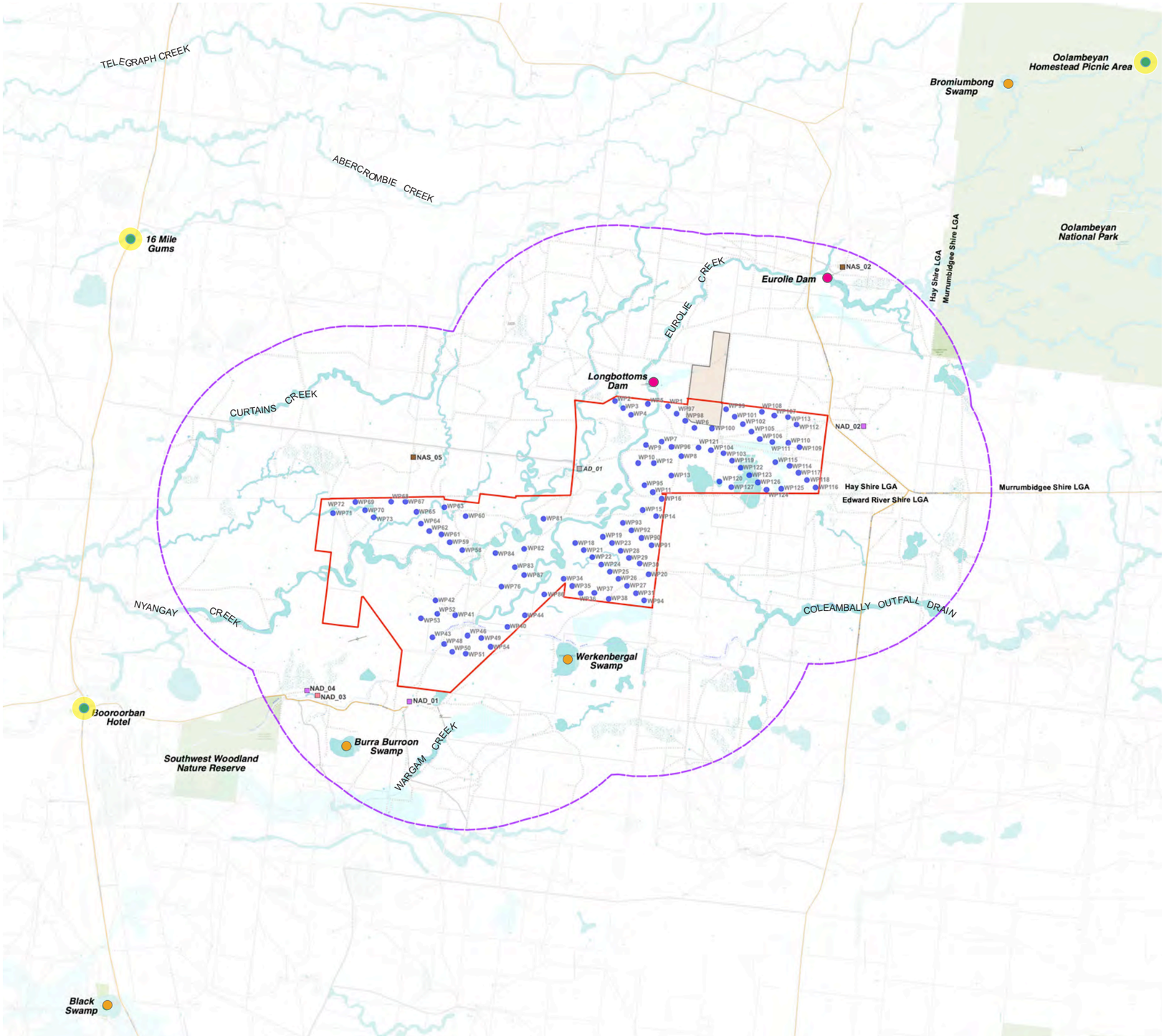
Points of interest include the Oolambeyan Homestead Picnic Area which is located approximately 21 km northeast of the Project. It comprises of a cricket pitch, an orchard, shearing and ram shed complexes that are surrounded by Sandhill Pine Woodlands (NPWS, 2014a). An assessment of potential impacts on a representative viewpoint has been included in **Appendix B**.

A key Public Viewpoint identified within the Study Area includes the 16 Mile Gums Rest Area and the Booroorban Pub/Hotel.

Recreational associations occur mostly within the extents of Hay and along the Murrumbidgee River to the north of the Project Area. Recreational facilities include campgrounds, ovals, parks and Bidgee Riverside Walk along the Murrumbidgee River.

Existing Landscape Features

Pottinger Energy Park Wind Farm



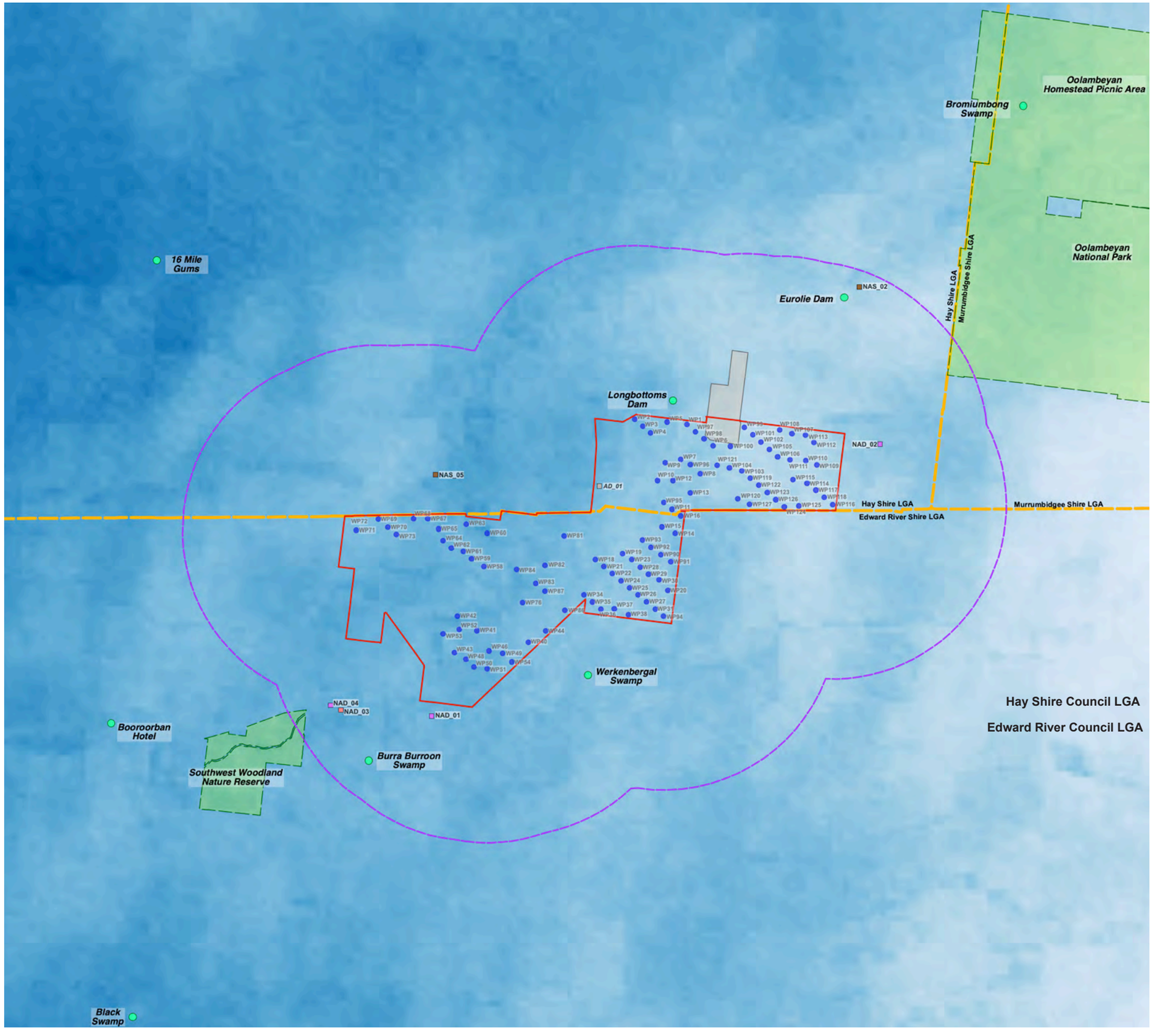
LEGEND

- Project Area boundary
- AD_1 — Associated dwellings
- NAD_17 — Non-associated dwellings
- NAD_17 — Non-associated dwellings (Associated with other Project)
- Main Road
- 8,000 m from nearest WTG
- Points of Interest
- Swamps and Lagoons
- Dams
- Rivers, creeks and channels

N

0 2 4 6 8 10km

Figure 7 Existing Landscape Features (Map Source: Six Maps, 2020)



Relative Wind Resource

Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- AD_1 — Associated dwellings
- NAD_17 — Non-associated dwellings
- NAD_17 — Non-associated dwellings (Associated with other Project)
- Main Road
- 8,000 m from nearest WTG
- Points of Interest
- Swamps and Lagoons
- Dams
- Rivers, creeks and channels

Relative Ranges of Average Wind strength in metres per second at the height of 150 m

- 7.5942
- 7.6741
- 7.7540
- 7.8340
- 7.9139
- 7.9938
- 8.0737
- 8.1475
- 8.2090

N

0 2 4 6 8 10km

Figure 8 Wind Resource (Map Source: Badger et al. 2019)

5.4 Preliminary Landscape Character Units and Scenic Quality Rating

The Bulletin states: *the baseline study inputs, including key landscape features and sensitive land use designations, should lead to the identification of Scenic Quality Classes. Scenic quality refers to the relative scenic or aesthetic value of the landscape based on the relative presence or absence of key landscape features known to be associated with community perceptions of high, moderate or low scenic quality. It is both a subjective and complex process undertaken by experts in visual impact assessment, taking into account community values identified in early community consultation*.

In accordance with the Bulletin, a Scenic Quality 'frame of reference' has been formulated by Moir Landscape Architecture (Moir LA) (**Table 2**) utilising *An approach to landscape sensitivity assessment* by Natural England. The preliminary frame of reference developed for the Project is in keeping with the example frame of reference provided in the Bulletin.

Each category of the 'frame of reference' has been quantified for each Landscape Character Unit to determine a Scenic Quality Rating of **low**, **moderate** or **high.** The resulting *Scenic Quality Rating* is used during the EIS phase to assist in defining the Visual Influence Zones in accordance with the Bulletin.

SCENIC QUALITY RATING		
Description	LOW	MODERATE / HIGH
Landform	- Flat Topography - Absence of Landscape Features - Open, broad extents of spaces	- Diversity in Topographical Range - Unique Landscape Features - Intimate spaces
Waterforms	- Absence of Water	- Presence of Water - Visually prominent lakes, reservoirs, rivers streams and swamps.
Vegetation	- Absence of vegetation - Lack of diversity - Land cleared of endemic vegetation - Low level of connection between vegetation and landscape / topography	- Abundant vegetation - High diversity - High retention of endemic vegetation. - High level of connectivity between natural landscape and landforms.
Human Influence	- High population. - High density in settlement - High presence of Infrastructure - High levels of landscape modification	- Low / dispersed population - No settlement - Absence of infrastructure - Landscape in natural state
Activity	- High levels of traffic movement - Presence of freight and passenger transport networks - Presence of production or industry.	- Low traffic movement - Absence of freight and passenger transport - Absence of production or industry
Rarity	- Typical landscape within a local and regional context	- Unique combination of landscape features in a local and regional context
Relationship with Adjoining Landscapes	- Low visible connection with adjoining landscapes - Low variability between adjoining landscapes. - Landscape features do not contribute to amenity from adjoining landscapes	- High visibility with adjoining landscapes. - High variability and contrast with adjoining landscapes - Landscape features contribute significantly to amenity of adjoining landscapes

Table 2 Scenic Quality Class Frame of Reference

5.4.1 Preliminary Landscape Character Unit Assessment

An assessment of existing land use and landscape features suggests that the Project Area and its surrounds exhibit a strong agricultural history of grazing and cropping along with ecological associations of Nyangay Creek, Telegraph Creek and Abercrombie Creek. A number of Landscape Character typologies exist within the Study Area (refer to **Figure 9**). As part of the Preliminary Landscape Character Assessment, a total of five (5) Landscape Character Units (hereafter referred to as 'LCUs') have been identified.

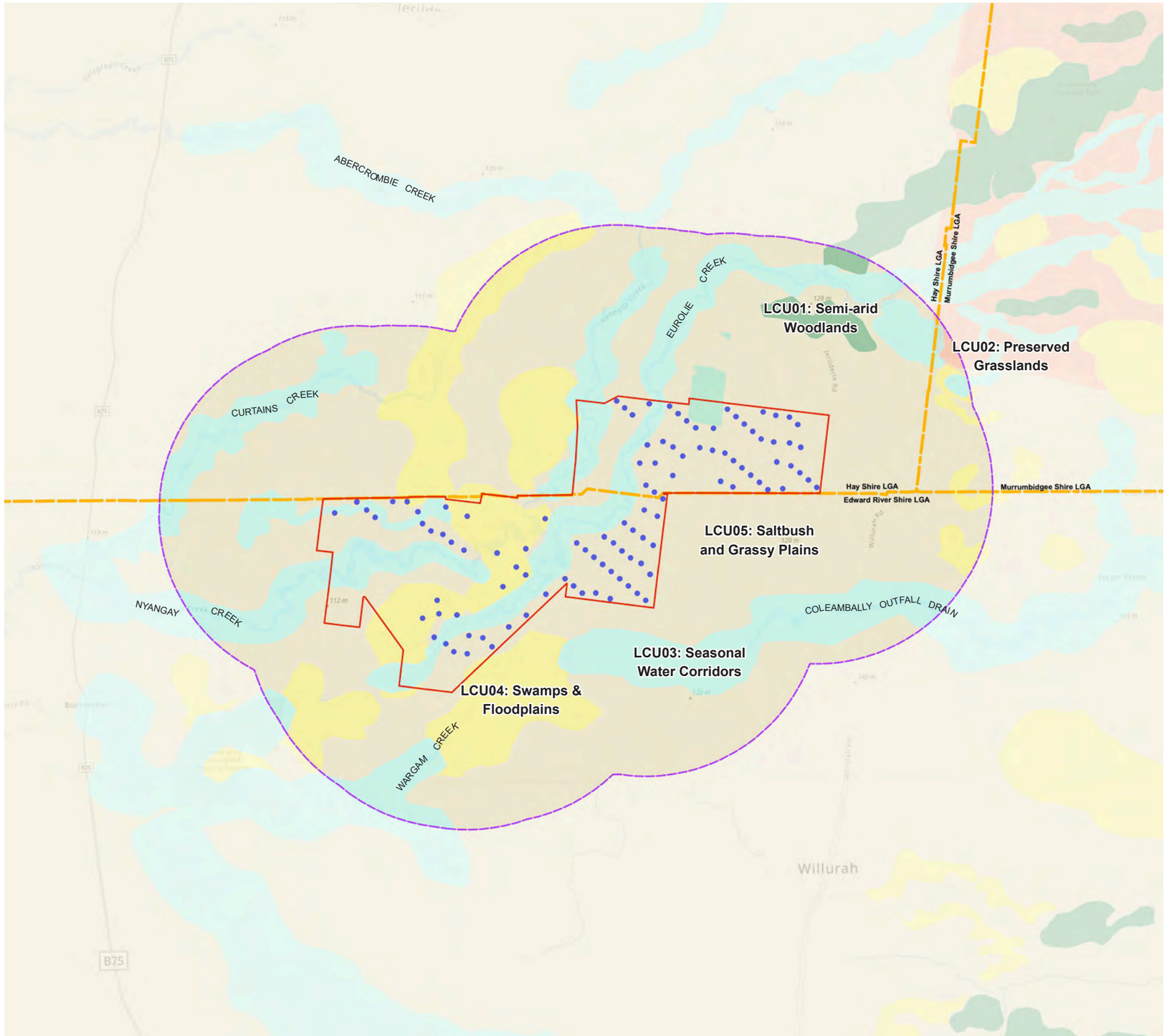
Table 3 provides an overview of the LCUs and preliminary Scenic Quality Ratings applied. These ratings have been developed using a standard frame of reference provided in the Bulletin. The LCUs and Scenic Quality Ratings will be refined in the EIS Phase of the Project to reflect input provided by the community during ongoing consultation.

Table 4 provides a brief overview of the potential visibility of the Project from each of the LCUs.

Landscape Character Units

LCU:	Name:	General Character:	Preliminary Scenic Quality Rating:
LCU01	**Semi-arid Woodlands**	*Comprises of dense woodlands of boree and black box trees that are spread across the extents of Oolambeyan National Park and other areas in its immediate vicinity.*	**Low**
LCU02	**Preserved Grasslands**	*Grassy plains within the Oolambeyan National Park that are preserved and managed. Consists of low-growing and regenerating grasses and cottonbush.*	**Low**
LCU03	**Seasonal Water Corridors**	*Moderately vegetated seasonal creeks and drainage channels that run across intermittently. Very shallow embankments, almost minor depressions in some areas.*	**Moderate**
LCU04	**Swamps and Floodplains**	*Flat, sub-circular, shallow depressions characterised by water-loving grasses and forbs. These also act as wildlife refuges because they hold overflows from the creeks and drainage corridors.*	**Low**
LCU05	**Saltbush and Grassy Plains**	*Clear, flat and open areas used for grazing or cropping. Most prominent character of the region with minor to no elevation changes.*	**Low**

Table 3 Overview of Preliminary Landscape Character Units



Preliminary Landscape Character Units

Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- Main Road
- Minor Road
- 8,000 m from nearest WTG
- LCU01: Semi-arid Woodlands
- LCU02: Preserved Grasslands
- LCU03: Seasonal Water Corridors
- LCU04: Swamps and Floodplains
- LCU05: Saltbush and Grassy Plains

N

0 2 4 6 8 10km

Figure 9 Preliminary Landscape Character Units (Map Source: Six Maps, 2020)

LCU01: Semi-arid Woodlands

This LCU is characterised by open woodlands within the extents of the Oolambeyan National Park. Land is subjected to minimal use and represents vegetation including dense boree and black box woodlands with a grassy understorey on flat topography.

Scenic quality rating: Low

See Images 3 and 4.

Image 3

View of the Oolambeyan National Park semi-arid woodlands. Typical character comprises of clumps of trees and shrubs with grassy understorey.

Image 4

Remnant tracts of semi-arid woodlands and grassy understorey as seen around the eastern side of the National Park.

LCU02: Preserved Grasslands

The Preserved Grasslands LCU comprises of flat land parcels that are within the extents of the Oolambeyan National Park. Isolated stands of tree cover are interspersed around the grasslands. No recreational associations were identified with this LCU and it falls in the minimal land use category. Views in the LCU are generally open and expansive due to lack of intervening elements.

Scenic quality rating: Low

See Images 5 and 6.

Image 5

Oolambeyan National Park's grasslands characterised by tracts of cottonbush and grasses on flat topography.

Image 6

Aerial view of grasslands. Typical vegetation communities includes grasses, cottonbush and isolated stands of black box trees, lignum and nitre goosefoot species.

LCU03: Seasonal Water Corridors

The Seasonal Water Corridors LCU is defined by flat to gently undulating vegetation corridors. They are characterised by shallow depressions or elevation changes that are covered with speargrass, forbs and saltbush, and dense clumps of black box, nitre goosefoot and lignum. The density of trees varies in different locations. These also act as important wildlife refuges and distribute water across the region to support agricultural activity.

Scenic quality rating: Moderate

See Images 7 and 8.

Image 6

View of vegetation corridor associated with the Nyangay Creek as seen in close proximity to the Project Area.

Image 8

View of Eurolie Creek characterised by dense clumps of black box, boree, lignum, saltbush, grasses and forbs in gently undulating to flat tracts of lands.

LCU04: Swamps and Floodplains

The LCU is defined by flat, shallow sub-circular depressions that accommodate water flows. Edges of the LCU are utilised for dam construction due to topographical changes that favour water collection. Characterised by dry, grey cracking clays with water-loving grasses, groundcovers and forbs. Prominent vegetation includes stands of nitre goosefoot and lignum shrubs, saltbush, canegrass and dillonbush.

Scenic quality rating: Low

See Images 9 and 10.

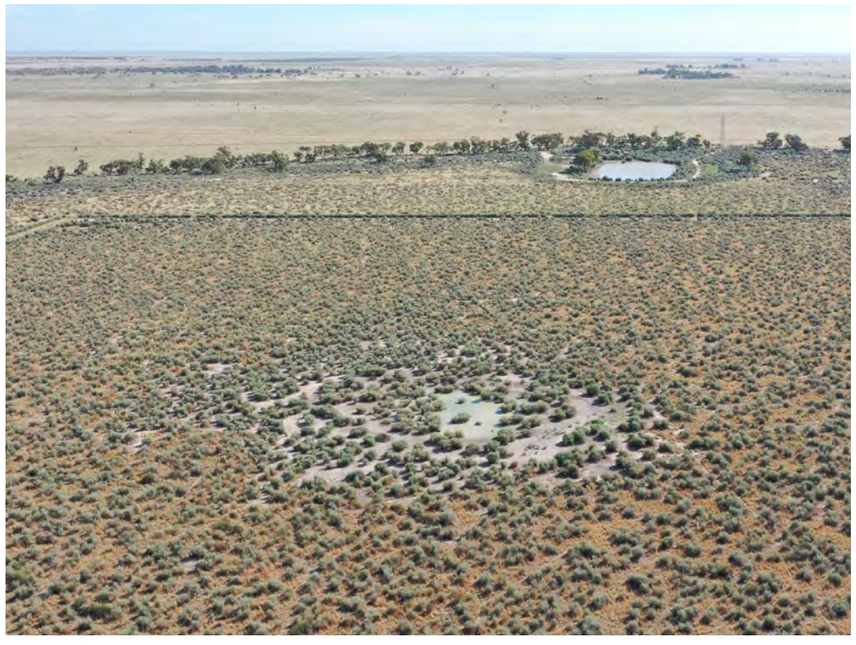


Image 9

Open, generally flat land parcels with saltbush and water-loving grasses and forbs typical of the LCU.

Image 10

Stands of trees along the Coleambally Outfall Drain segregates the landscape unit from surrounding parcels of grasses and saltbush.

LCU05: Saltbush and Grassy Plains

The Saltbush and Grassy Plains LCU is defined by vast, open land parcels that are utilised for sheep, cattle, emu and kangaroo grazing. The LCU forms the most dominant character in the region. It comprises of open plains with scattered or no tree cover and vast extents of saltbushes, speargrass, and forbs. Common land uses include grazing, dryland cropping, modified and irrigated pastures.

Scenic quality rating: Low

***See Images 11 and 12*.**

Image 11

Large, open expanses of saltbush and grassy communities with isolated stands of trees over flat land parcels define the LCU's typical character.

Image 12

View of land parcels within and around the Project Area typically represent grazing pastures with saltbush varieties.

Landscape Character Units		
LCU:	**Name:**	**Preliminary Visual Impact Assessment**
LCU01	**Semi-arid Woodlands**	Views from this LCU are often filtered by the vegetation that defines this LCU. Despite the flat topography, dense woodlands will help reduce and mitigate views towards the Project.
LCU02	**Preserved Grasslands**	Views towards the Project will be available within this LCU because of the relatively flat topographic character and elevated position of the WTGs. Patches of vegetation in some areas may, however, help limit views in certain areas.
LCU03	**Seasonal Water Corridors**	The LCU's vegetation character acts as an effective visual barrier. Views from within the LCU are likely to be limited due to riparian vegetation. It plays an important role in limiting views from dwellings that are located in close proximity of this LCU.
LCU04	**Swamps and Floodplains**	Views of the Project from the Swamps and Floodplains LCU are likely to be available from most locations. The flat, low-lying character allows open views. Existing shrubs may help reduce the visual impact in certain areas.
LCU05	**Saltbush and Grassy Plains**	This LCU is the most prominent character of the region. Isolated dwellings are scattered across grassy plains. Agricultural activities include grazing pastures and dryland cropping. Views are generally open with limited obtrusive elements.

Table 4 Overview of Preliminary Visual Impact Assessment of LCUs

6.0 Preliminary Assessment Tools

6.1 Overview of Preliminary Assessment Tools

To assist in defining the visual catchment, preliminary assessment tools have been developed as part of the Bulletin. In accordance with the Bulletin, the purpose of the preliminary assessment tools are: *to provide an early indication of where turbines require careful consideration because of potential visual impacts. The tools apply to both dwellings and key public viewpoints in the study area. The tools provide an early indication of where placement of turbines will require further assessment and justification, and where consultation with potentially affected landowners needs to be focused – including discussions for landholder agreements.*

The preliminary assessment tools involve analysis of two key visual parameters:

1. Visual Magnitude (**Refer to Section 6.2**)
2. Multiple Wind Turbine Tool (**Refer to Section 6.4**)

Once the potential visual catchment is defined, the Bulletin states: *Further assessment and justification for placement of turbines located in these sensitive areas in the EIS will be required, along with a description of mitigation and management measures being employed to reduce impacts. This assessment may identify that factors such as topography, relative distance and existing vegetation may minimise or eliminate the impacts of the project.*

Dwellings identified through the application of the Preliminary Assessment tools have been assessed in detail in **Appendix A** of this PVIA.

6.2 Preliminary Assessment Tool 1: Visual Magnitude

The Visual Magnitude Threshold is based on the height of the proposed WTGs to the tip of the blade and distance from dwellings or key public viewpoints as shown in **Figure 10.**

In accordance with the Bulletin: *proposed turbines below the black line must be identified along with the dwellings or key public viewpoints as part of the request for SEARs.* The proposed WTGs are based on a worst case scenario with a tip height of *280 metres*. The 'black line' intersects at a distance of *3,750 metres* and the 'blue line' intersects at *5,500 metres*.

For the purpose of the Preliminary Assessment, the Visual Magnitude thresholds are based on a 2D assessment of the Project alone. Further assessment indicates factors such as topography, relative distance and existing vegetation may minimise or eliminate the impacts of the Project from residences.

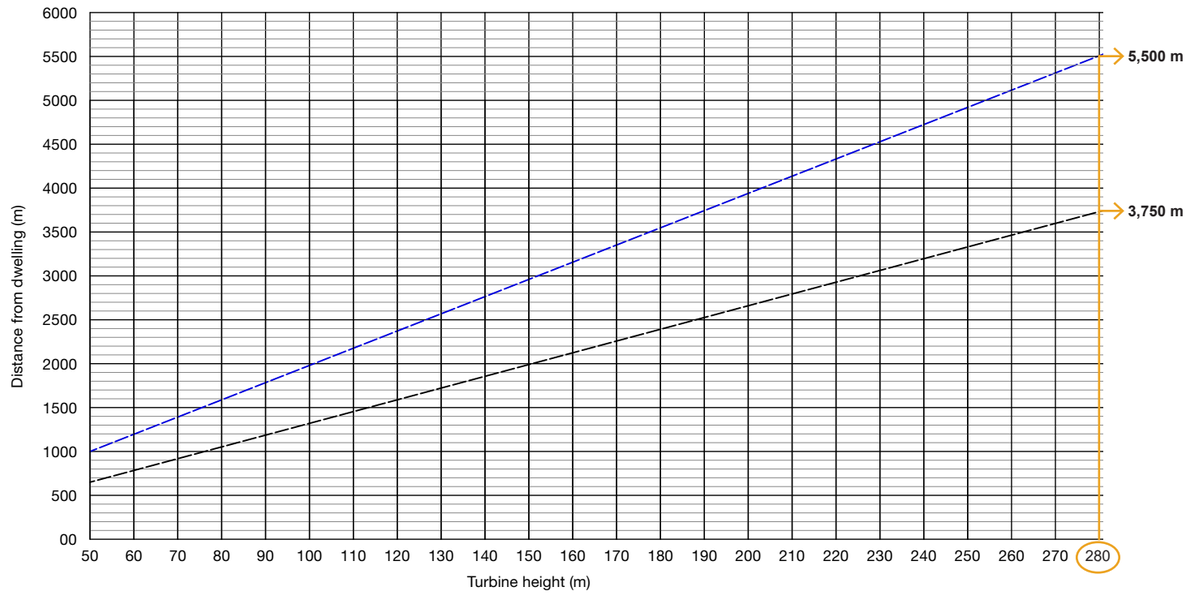
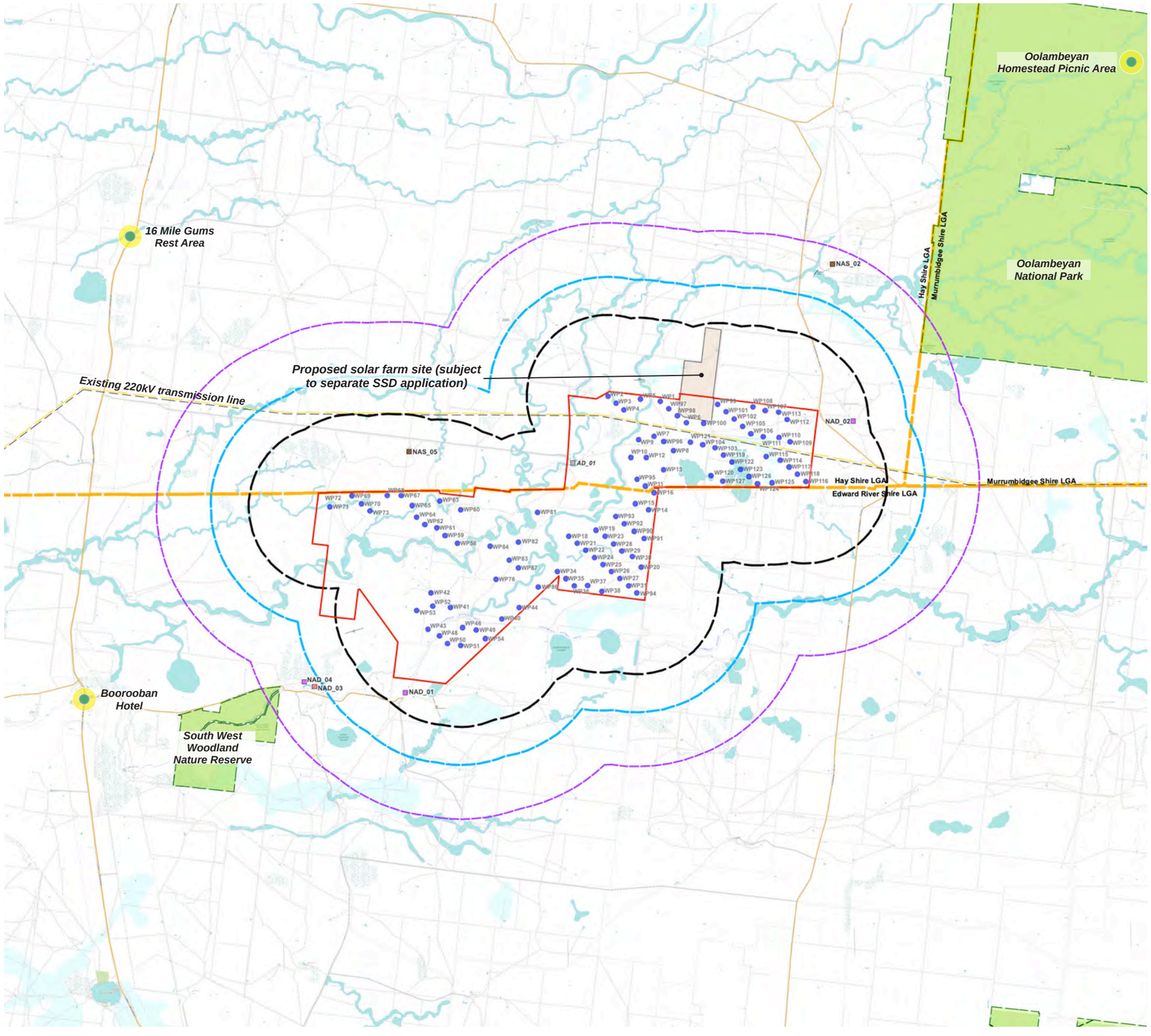


Figure 10 Visual Magnitude Thresholds for Pottinger Energy Park Wind Farm
(Adapted from Visual Assessment Bulletin)

6.3 Results of Preliminary Assessment Tool 1: Visual Magnitude

Application of the Preliminary Assessment Tools to the Project identified dwellings which require further assessment in accordance with the Bulletin. Non-associated dwellings identified within the Study Area are shown on **Figure 11.**

- Two (2) non-associated dwellings were identified within 3,750 metres of the proposed wind WTG locations (within black line of visual magnitude). These are NAD_01 and NAD_02. These dwellings are associated with another Project.
- No non-associated dwellings have been identified within 5,500 metres of the proposed wind WTG locations (within blue line of visual magnitude).
- Additionally, two (2) non-associated dwellings have been identified within 8,000 metres of the proposed WTG locations. These are NAD_03 and NAD_04. NAD_04 is associated with another Project.
- Preliminary site assessment identified that existing vegetation would partially reduce visibility from all non-associated dwellings. Preliminary assessments of these four (4) non-associated dwellings has been included in ***Appendix A***. Further detailed assessment and site inspections of sensitive receivers to ground-truth this analysis will be undertaken during the EIS phase.



Visual Magnitude

Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- Proposed 280 m WTG Location
- NAD_14 Non-associated dwellings
- AD_1 Associated dwellings
- NAD_17 Non-associated dwellings (Associated with other Project)
- Proposed solar farm (subject to separate SSD application)
- Key public viewpoint
- Main Road
- Minor Road
- 3,750 m from nearest WTG
- 5,500 m from nearest WTG
- 8,000 m from nearest WTG
- LGA Boundary
- Existing 220kV transmission line
- Proposed 330kV transmission line (Project EnergyConnect)
- National Park / Nature Reserves

Note:

Preliminary Assessment Tool 1: Visual Magnitude is based on a 2D Assessment alone and does not take into account topography, vegetation or other screening factors which may reduce the potential for viewing WTGs.

N

0 2 4 6 8 10km

Figure 11 Preliminary Assessment Tool 1: Visual Magnitude (Map Source: Six Maps, 2020)

6.4 Preliminary Assessment Tool 2: Multiple Wind Turbine Tool

The Multiple Wind Turbine Tool provides a preliminary indication of potential cumulative impacts arising from the proposed Project. To establish whether the degree to which dwellings or key public viewpoints may be impacted by multiple WTGs, the applicant must map into six sectors of 60° any proposed WTGs, and any existing or approved WTGs within eight (8) kilometres of each dwelling or key public viewpoint. No key public viewpoints were identified within 8,000 m of the nearest WTG. **Figure 12** provides examples of where a dwelling or key public viewpoint may have views to WTGs in multiple 60° sectors.

In accordance with the Bulletin: *Where wind turbines are visible within the horizontal views of the dwelling or key public viewpoints in three or more 60° sectors, the proponents must identify the turbines, relative dwelling and key public viewpoint, along with the relative distance and submit these to the Department as part of the request for SEARs.* These WTGs will become a focus for assessment in the EIS.

Figure 13 provides an overview of the number of 60º sectors visible from each of the dwellings identified within eight (8) kilometres.

6.5 Results of Preliminary Assessment Tool 2: Multiple Wind Turbine Tool

When applied to the Project, the 2D Multiple Wind Turbine Tool (see **Figure 12**) identified a total of four (4) dwellings that will view WTGs associated with the Project. Of these, one (1) non-associated dwelling will have views in up to six (6) 60 degree sectors and the remaining three (3) non-associated dwellings will view the WTGs within one (1) 60 degree sectors which is deemed an acceptable level in accordance with the Bulletin (see **Table 5**).

The Plains Wind Farm (TPWF) and Bullawah Wind Farm (BWF) are in their preliminary planning stages. The dwelling located on the northeastern side of the Study Area has the potential to view WTGs associated with the Project as well as BWF. A preliminary assessment of the cumulative impacts of these projects has been discussed in **Section 9.0** of this report.

Further assessment of all dwellings using 3D topographic mapping has delivered the same results. This has been discussed further in **Appendix A**.

Existing screening factors (including vegetation and structures) may reduce visibility of the WTGs. This detailed assessment will be undertaken during the EIS phase.

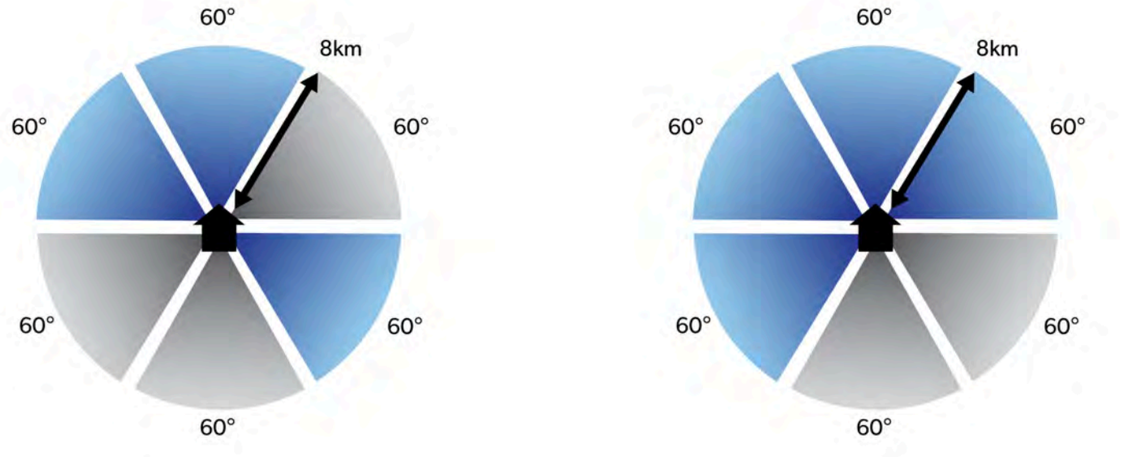
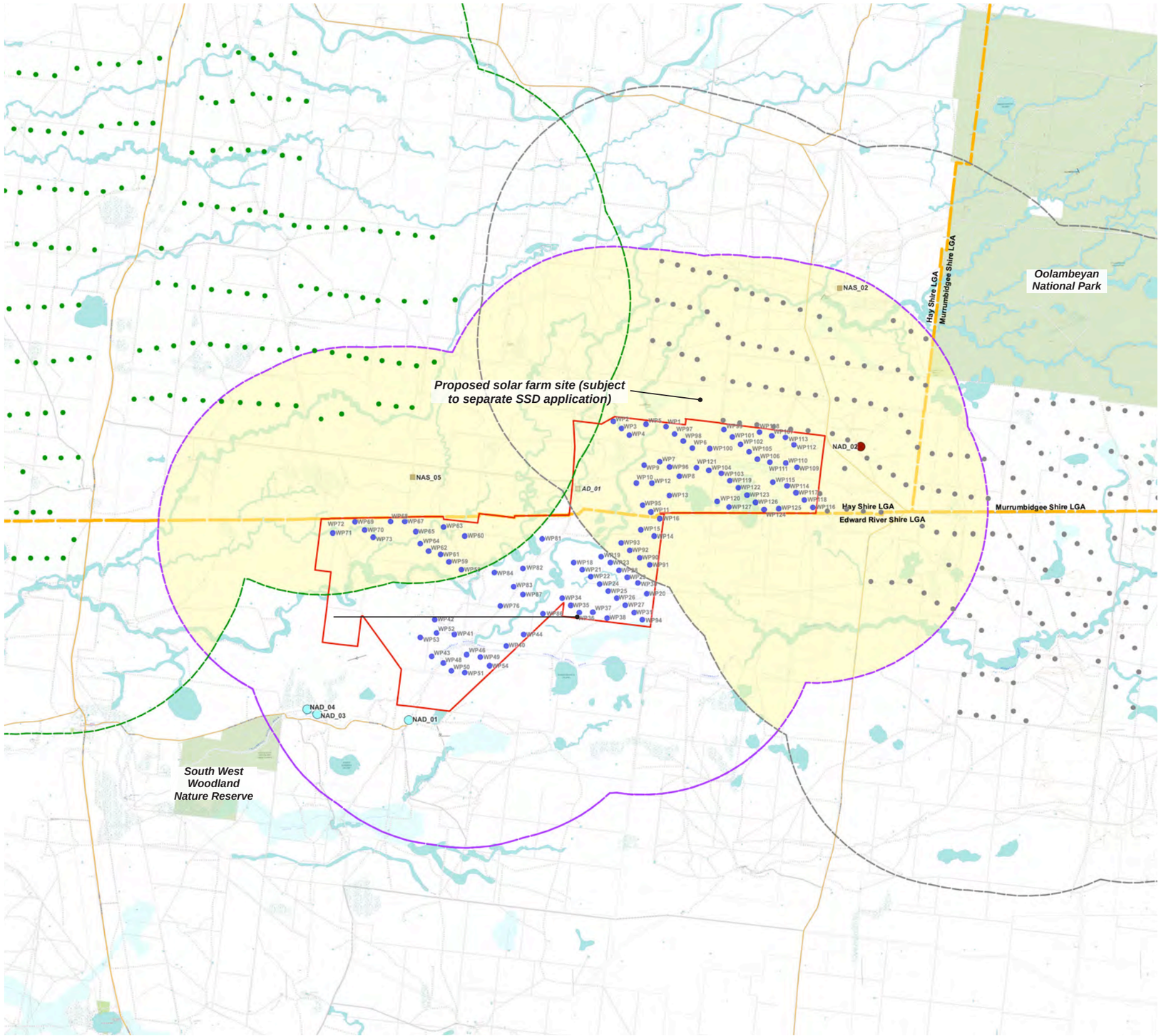


Figure 12 Multiple Wind Turbine Tool
(Source: Visual Assessment Bulletin)

Dwelling ID	Distance to nearest WTG:	Number of 60º Sectors (Based on a 2D Assessment):	Number of 60º Sectors associated with the Project:	Screening Factors:
NAD_01	**2.97 km**	One (1) 60º Sector (up to 60º)	One (1) 60º Sector (up to 60º)	*Existing intervening vegetation. Refer to Appendix A.1.*
NAD_02	**3.06 km**	Six (6) 60º Sectors (up to 60º)	Two (2) 60º Sectors (up to 60º)	*Existing scattered vegetation. Refer to Appendix A.2.*
NAD_03	**5.87 km**	One (1) 60º Sector (up to 60º)	One (1) 60º Sector (up to 60º)	*Existing intervening vegetation. Refer to Appendix A.3.*
NAD_04	**6.11 km**	One (1) 60º Sector (up to 60º)	One (1) 60º Sector (up to 60º)	*Existing intervening vegetation and structure. Refer to Appendix A.4.*

Table 5 Overview of results of Multiple Wind Turbine Tool on non-associated dwellings



Multiple Wind Turbine Tool

Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- 280 m Pottinger Energy Park Wind Farm WTG Location
- 280 m The Plains Wind Farm (TPWF) WTG Location
- 300 m Bullawah Wind Farm (BWF) Location
- Proposed solar farm (subject to separate SSD application)
- 8000 m from proposed Pottinger wind WTGs
- 8000 m from proposed The Plains wind WTGs
- 8000 m from proposed Bullawah wind WTGs
- Area and dwellings within 8,000m of TPWF & BWF WTGs

MWTT Results for Non-associated Dwellings & key viewpoints:

- Dwellings or viewpoints in excess of 8,000 m
- One (1) 60º Sector (60º)
- Up to two (2) 60º Sectors (120º)
- Up to three (3) 60º Sectors (180º)
- Up to four (4) 60º Sectors (180º)
- Up to five (5) 60º Sectors (180º)
- Up to six (6) 60º Sectors (180º)

Note:

Preliminary Assessment Tool 2: Multiple Wind Turbine Tool is based on a 2D Assessment alone and does not take into account topography, vegetation or other screening factors which may reduce the potential for viewing multiple WTGs.

N

0 2 4 6 8 10km

Figure 13 Preliminary Assessment Tool: Multiple Wind Turbine Tool (Map Source: Six Maps, 2020)

7.0 Preliminary Zone of Visual Influence

7.1 Overview of Preliminary Zone of Visual Influence

The Bulletin states *'the use of Geographic Information Systems (GIS) to facilitate the application of the tools will streamline the evaluation phase of the evaluation phase of a project during the pre-lodgement stage. This can also assist in refining the number of turbines and viewpoints that will ultimately need more detailed assessment.'*

A Zone of Visual Influence (ZVI) diagram has been prepared for the Project to illustrate the theoretical visibility of the proposed WTGs from the blade tip height. **Figure 14** depicts the areas of land from which the proposed development may be visible and provides an indicative number of WTGs based on the blade tip height of 280 metres.

The ZVI (also known as a Zone of Theoretical Influence Model) represents the area over which a development can theoretically be seen and is based on a Digital Terrain Model (DTM). The ZVI usually presents a bare ground scenario - ie. a landscape without screening, structures or vegetation, and is usually presented on a base map (Scottish Natural Heritage, 2017).

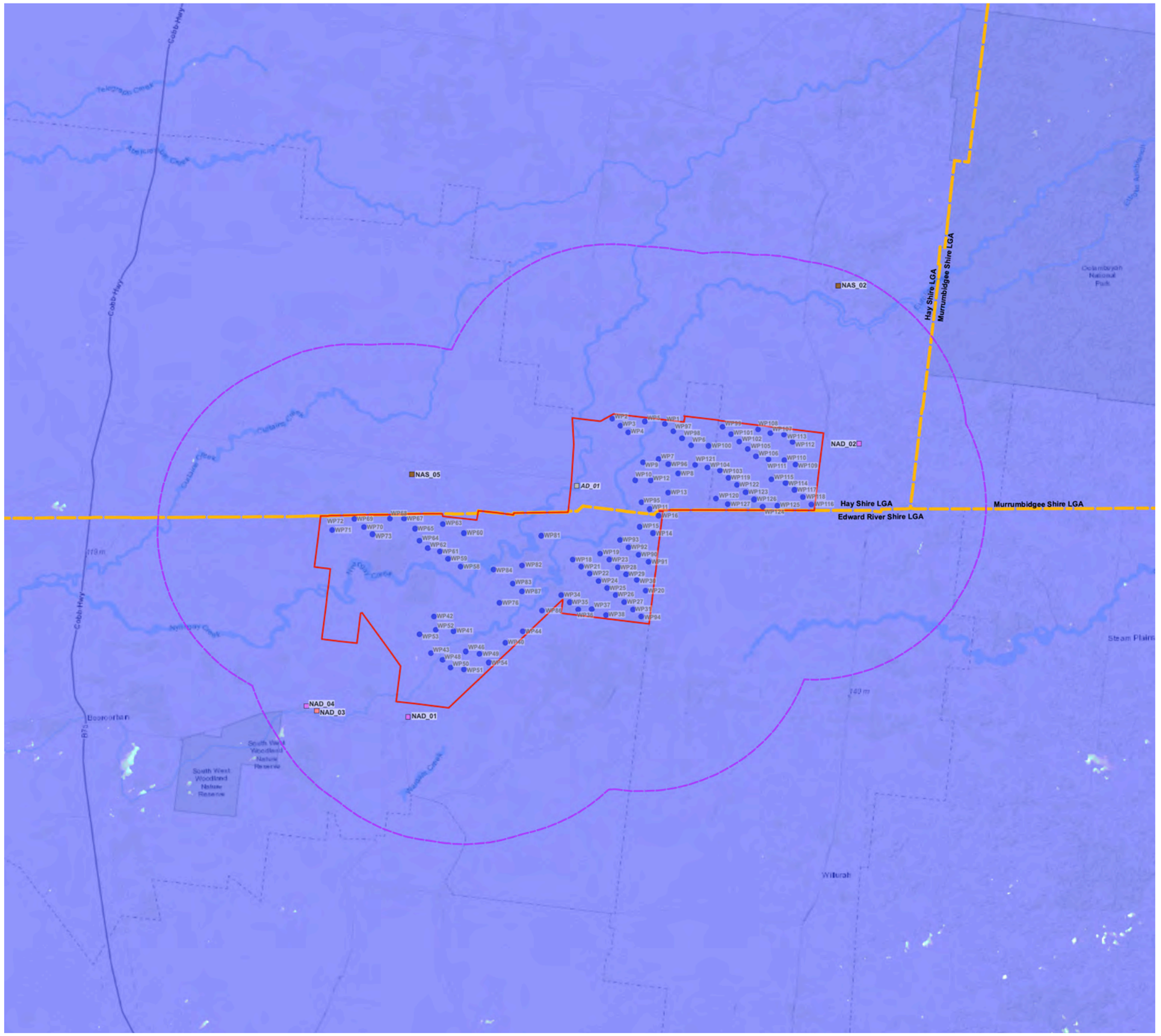
The ZVI has been determined through the use of digital topographic information and 3D modelling software *WindPro*. The ZVI has been assessed to approximately 30 km from the Project Area.

7.2 Summary of Preliminary Zone of Visual Influence

The following provides a summary of the ZVI diagrams prepared for the Preliminary Layout of the Project.

- Due to the relatively flat topography that characterises this landscape, the majority of WTGs associated with the Project are likely to be visible from most areas around the Project Area.
- Certain areas located on the southwestern and southeastern sides of the Project Area that are associated with creek corridors, swamps and floodplains have been identified in the ZVI to have limited views between them and the Project Area due to topographical differences.
- Views to the majority of WTGs associated with the Project are likely to be available for all dwellings within eight (8) kilometres of the wind WTGs. This assessment is based on a consideration of topography alone and does not consider intervening elements such as vegetation and existing structures.
- Following the development of the ZVI, detailed site investigations (in the form of a viewpoint analysis inventory and dwelling assessments) have been undertaken to ground-truth the findings (see **Appendix B**). Preliminary viewpoint analysis (from 15 public locations) and assessment of four (4) representative sensitive receivers have been included in **Appendix A** and **Appendix B**.
- Further detailed assessment from areas identified in the ZVI will be undertaken in the EIS Phase of the assessment.

It is important to reiterate that this is a preliminary assessment based on worst case scenario that does not consider the impact of vegetation or structures. Ground-truthing during field work will ascertain potential visibility taking into account structures and vegetation, however, based on the preliminary assessments in **Appendix A** and **Appendix B**, it is likely that existing intervening vegetation surrounding non-associated dwellings is likely to reduce views of WTGs from a number of locations.



Zone of Visual Influence
Blade Tip Height 280 m
Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- Proposed 280 m WTG Location
- NAD_14 Non-associated dwellings
- AD_1 Associated dwellings
- NAD_17 Non-associated dwellings (Associated with other Project)
- 8,000 m from nearest WTG

Number of visible WTGs (at tip height)
(Based on topography alone):

- 0
- 1 - <37
- 37 - < 74
- 74 and above

Note:

The ZVI is a preliminary assessment tool that represents a bare ground scenario - ie. a landscape without screening, structures or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. Therefore this form of mapping should be acknowledged as representing the worst case scenario.

N

0 2 4 6 8 10km

Figure 14 Zone of Visual Influence (Blade Tip 280 m) (Map Source: Six Maps, 2022)

8.0 Preliminary Dwelling & Viewpoint Assessment

8.1 Preliminary Assessment of Dwellings

Examples of the preliminary assessment tools applied to four (4) representative non-associated dwellings (as shown on **Figure 15**) within 8,000 m of the nearest WTG have been included in **Appendix A.**

The preliminary assessment identifies existing structures and vegetation surrounding majority of the dwellings which would reduce the potential visual impacts identified by the preliminary assessment tools and Zone of Visual Influence. Further detailed assessment and site inspections of sensitive receivers to ground-truth this analysis will be undertaken during the EIS phase.

The preliminary assessment identifies existing vegetation surrounding many of the dwellings which would reduce the potential visual impacts identified by the preliminary assessment tools and Zone of Visual Influence. A summary of these findings is provided in ***Table 6***.

8.2 Preliminary Assessment of Public Viewpoints

Appendix B provides preliminary assessments from public viewpoints. A total of 15 preliminary public viewpoints have been selected to illustrate the varying landscape character typologies throughout the Study Area and provide a preliminary assessment of the potential visibility of the Project (as shown on **Figure 15**).

Non-associated dwellings within 3,750 metres of nearest WTG (Black Line of Visual Magnitude)					
Dwelling ID:	**Location**	**Approx distance to nearest WTG (km)**	**Nearest WTG**	**Number of 60º sectors (Based on 2D Assessment)**	**Approx. number of potentially visible WTGs within 8000m (Based on ZVI)**
NAD_01	**Wargam Road, Booroorban**	**2.97 km**	**WP50**	**1**	**22**
	Views likely to be available to the northeast. Existing vegetation in the dwellings foreground in this direction will help fragment most views.				
NAD_02	**Jerilderie Road, Hay South**	**3.06 km**	**WP112**	**2**	**30**
	Views likely to be available to the southwest. Existing vegetation in the dwellings foreground in this direction will help fragment some of the views.				
Non-associated dwellings within 8,000 metres of nearest WTG					
NAD_03	**W Burrabogie Road, Boorooban**	**5.87 km**	**WP43**	**1**	**10**
	Views towards the Project are likely to be available in the northeast. Existing vegetation in the dwellings foreground in this direction is likely to fragment most views.				
NAD_04	**Wargam Road, Booroorban**	**6.11 km**	**WP53**	**1**	**9**
	Views towards the Project are likely to be available in the northeast. Existing vegetation in the dwellings foreground in this direction is likely to fragment most views.				

Table 6 Overview of Preliminary Assessment for non-associated dwellings

Preliminary Dwelling and Viewpoint Assessment Locations

Pottinger Energy Park Wind Farm

LEGEND

- Project Area boundary
- Proposed 280 m WTG Location
- Main Road
- Minor Road
- 3,750 m from nearest WTG
- 5,500 m from nearest WTG
- 8,000 m from nearest WTG
- National Parks / Nature Reserves
- Preliminary Dwelling Assessment locations **Refer to Appendix A.**
- Preliminary Viewpoint Assessment locations **Refer to Appendix B.**

N

0 2 4 6 8 10km

Figure 15 Preliminary Dwelling and Viewpoint Assessment Locations (Map Source: Six Maps, 2020)

9.0 Cumulative Visual Impact Assessment

9.1 Overview of Cumulative Visual Impacts

The Project is located within the central region of the South West Renewable Energy Zone (REZ). The REZ has been identified by the NSW Governments Electricity Strategy (refer **Figure 16**). The REZ is expected to play a vital role in delivery of affordable energy to the community across NSW (Energy NSW, 2021).

The existing landscape character of the region allows for optimum harvest of wind energy due to the flat terrain and large expanses of uninhabited land with minimal obstructions in the landscape. These characteristics are beneficial to the output of wind energy and as such, it is highly likely that over time this will be utilised for the development of wind farm projects. **Figure 16** shows the wind farms that are currently proposed within the extents of the REZ. Majority of these projects are in the central and eastern parts of the REZ near the towns of Hay, Balranald and Coleambally.

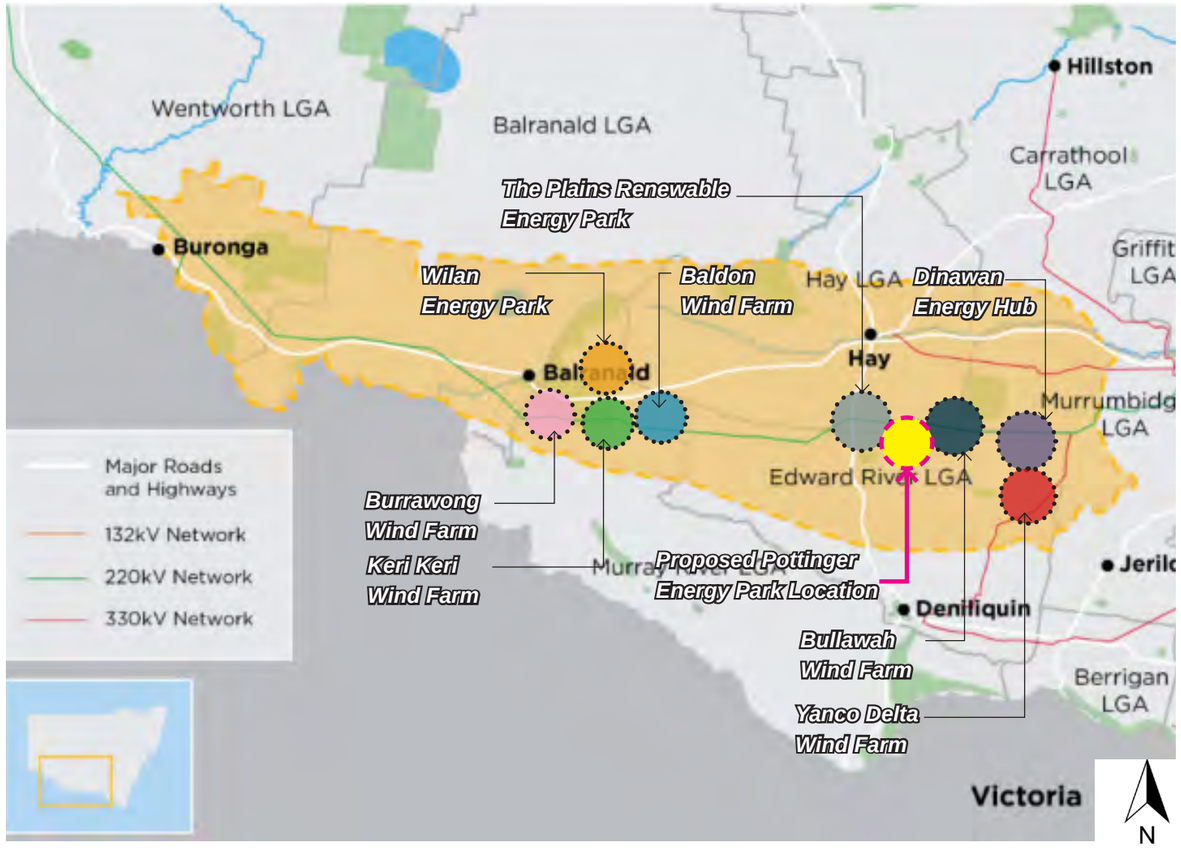


Figure 16 South West Energy Zone (Source: Energy NSW, 2022)

9.2 Nearby Renewable Energy Projects

To date, seven (7) other renewable energy projects have been proposed in the REZ (refer **Figure 17**):

- Yanco Delta Wind Farm ((SEARs issued in May 2022)
- Burrawong Wind Farm (SEARs issued in December 2021)
- Baldon Wind Farm (SEARs issued July 2022)
- Keri Keri Wind Farm (SEARs issued in April 2022)
- Bullawah Wind Farm (SEARS issued in December 2022)
- Dinawan Wind Farm (SEARS issued in December 2022)
- Dinawan Solar Farm (SEARS issued in December 2022)
- Wilan Wind Farm (Preliminary planning phase)
- The Plains Wind Farm (SEARs issued in December 2022)
- Pottinger Energy Park Solar Farm (Preliminary planning phase - as part of the overall Pottinger Energy Park Project)

Of these, three (3) proposed renewable energy projects are located approximately directly northwest and northeast of Pottinger Energy Park Wind Farm (refer ***Figure 16***). Consideration of cumulative impacts of Pottinger Energy Park Solar Farm, The Plains Wind Farm (TPWF) and Bullawah Wind Farm (BWF) is therefore, critical for the Project.

The Plains Wind Farm (TPWF):

TPWF's preliminary layout comprises of up to 226 WTGs with a maximum blade-tip height of up to 280m, spread across an area of 59,239 ha (ERM, 2022). TPWF would be potentially located directly to the northwest of the Project and shares a boundary. SEARs were issued for the TPWF Project in December 2022. The potential to view TPWF and the Project simultaneously exists and will be assessed and detailed during the EIS Phase.

Bullawah Wind Farm (BWF):

BWF's preliminary layout comprises of up to 170 WTGs with a maximum blade-tip height of up to 300m (BayWa r.e., 2022). BWF would be potentially located directly to the northeast of the Project and shares a project boundary. SEARs were issued for the TPWF Project in December 2022. The potential to view BWF and the Project simultaneously exists and will be assessed and detailed during the EIS Phase.

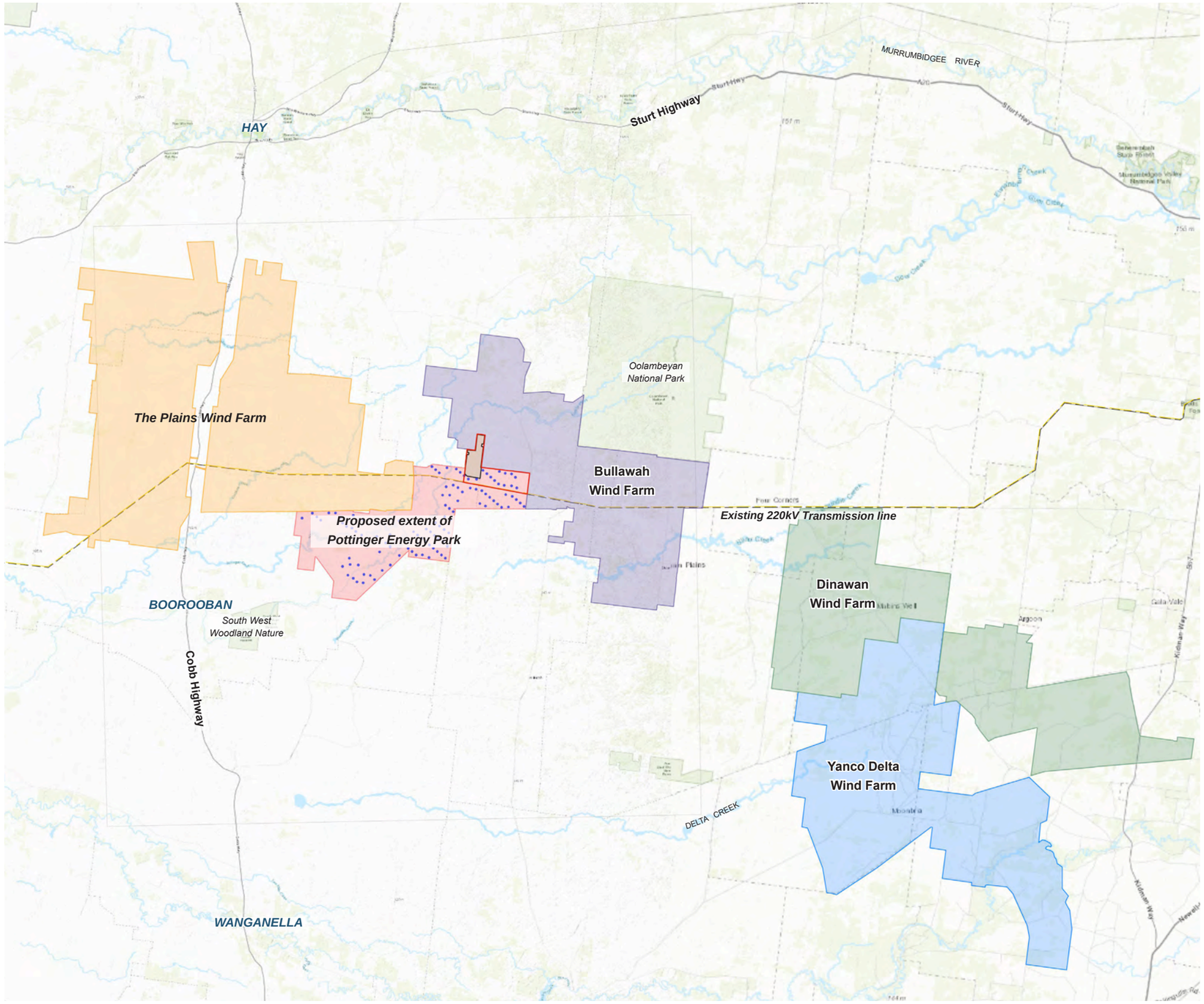
Other renewable energy projects:

Other renewable energy projects in the area that are currently preparing EIS's include the Yanco Delta Wind Farm, Dinawan Wind Farm, Dinawan Solar Farm, Wilan Wind Farm, Burrawong Wind Farm, Baldon Wind Farm and Keri Keri Wind Farm. These are located on either sides of the Project and are located at least 40 km away. The potential to view these wind farms simultaneously is likely to be limited, however due to the flat topography in the area, assessment of the potential cumulative impacts of these projects will be assessed in the EIS Phase.

9.3 Cumulative Impact on Broader Landscape Character

The re-occurrence of renewable energy projects within a region has the potential to alter the perception of the overall landscape character irrespective of being viewed in a single viewshed. It is important to determine whether the effect of multiple wind farms and other major infrastructure within the region would combine to become the dominant visual element, altering the perception of the general landscape character.

The Project is located on flat terrain and is surrounded by isolated rural dwellings. Due to the flat topography of the region and lack of obtrusive elements, it is likely that there will be areas from which multiple Projects will be visible simultaneously. Further assessment of the cumulative visual impact will be detailed in the EIS, along with a description of the mitigation and management measures being employed to reduce impacts.



Nearby Wind Farm Projects

Pottinger Energy Park Wind Farm

LEGEND

- Project Area (Pottinger Energy Park Wind Farm)
- Indicative Project Area of Proposed The Plains Wind Farm (TPWF)
- Indicative Project Area of Proposed Bullawah Wind Farm (BWF)
- Indicative Project Area of Proposed Dinawan Wind Farm (DWF)
- Indicative Project Area of Proposed Yanco Delta Wind Farm (YDWF)
- Proposed WTG Location (280 m high)
- Roads
- 8000 m from Pottinger Energy Park Wind Farm Park WTG
- Existing 220kV electrical transmission line
- Proposed 330kV transmission line (Project EnergyConnect)
- National Parks / Nature Reserves / SCA

N

0 4 8 12 16 20km

Figure 17 Nearby Wind Farm Projects (Map Source: ESRI Topographic Map, 2022)

10.0 Summary and Recommendations

10.1 Summary of Preliminary Visual Impact Assessment

This PVIA report has been undertaken in accordance with the Bulletin, and will be submitted with the Scoping Report in the request for SEARs. The following provides a brief summary of the PVIA and outlines the steps that will be undertaken in the EIS Phase of the Project.

10.1.1 Community Consultation

The report outlined the findings of community consultation to date which assisted in establishing the following:

- Key landscape features
- Defined areas of scenic quality and
- Identify key public viewpoints valued by that community.

Next Steps:

Community consultation will be ongoing through the Project. Ongoing input from the community will assist the preparation of the LVIA.

10.1.2 Existing Landscape Character

This PVIA provided a detailed assessment of the existing landscape character of the Study Area through the following:

- Identified land uses, key landscape features and key viewpoints,
- Categorisation of five (5) preliminary Landscape Character Units (LCUs),
- Application of preliminary scenic quality ratings to each of the LCUs ranging from Low - Moderate,
- A brief preliminary overview of the potential visual impacts has been provided for each LCU.

Next Steps:

- Utilise the landscape character assessment to prepare a detailed Visual Baseline Study.
- Identify any additional key features, key viewpoints valued by the community through ongoing consultation.
- Refine the Landscape Character Units and allow the community to provide feedback on the relative scenic quality ratings of LCUs.
- Determine the Visual Influence Zone of key viewpoints and assess against the objectives outlined in the Bulletin.

10.1.3 Application of the Preliminary Assessment Tools

The purpose of the Preliminary Assessment Tools in the PVIA is to identify ‘sensitive receivers’ for further assessment in the EIS Phase of the Project.

- The Multiple Wind Turbine Tool (MWTT) was applied to all four (4) non-associated dwellings within 8000 m of the nearest proposed WTG.
- The MWTT identified one (1) non-associated dwelling (NAD_02, associated with another project) with views in up to six (6) 60 degree sectors. The remaining three (3) dwellings (NAD_01, NAD_03 & NAD_04) have WTGs in up to one (1) 60 degree sector. NAD_01 and NAD_04 are associated with another project. A preliminary assessment of these dwellings has been included in **Appendix A**.
- Key viewpoints located in the area include the 16 Mile Gums Rest Area and the Oolambeyan Homestead Picnic Area. However, these two (2) viewpoints are located more than 15 km from the Project. An assessment of the potential visual impact on a representative viewpoints is discussed in **Appendix B**.

Next Steps:

- Ground-truthing of all identified non-associated dwellings.
- Undertake site inspection and detailed dwelling assessment at sensitive non-associated dwellings.
- The LVIA will assess each ‘sensitive receptor’ in detail to take into account topography, vegetation and other screening factors.
- Determine the potential visual impact of each sensitive receptor and provide mitigation methods to reduce potential visual impacts.

10.1.4 Zone of Visual Influence

A ZVI diagram has been prepared to illustrate the theoretical visibility of the Project and to assist in defining the visual catchment.

Next Steps:

- The LVIA will require further detailed assessment from areas identified as having potential visibility in the Preliminary ZVIs.
- Graphic representations of the Project using GIS technology including wire frame diagrams and photomontages will be provided in the EIS phase.

10.1.5 Cumulative Visual Impacts of Surrounding Renewable Energy Projects

The Project is located within the NSW South West REZ and is potentially located in close proximity to three (3) other renewable energy projects (Pottinger Energy Park Solar Farm, The Plains Wind Farm and Bullawah Wind Farm). It is important that the Project considers potential cumulative effects on the immediate and broader regional context that it forms a part of.

Next Steps:

Further assessment and justification for placement of WTGs in multiple sectors will need to be detailed in the EIS, along with a description of the mitigation and management measures being employed to reduce impacts. Such further assessment may identify that factors such as topography, relative distance and existing vegetation may minimise the impacts of the Project. Further assessment of the cumulative visual impact will be detailed in the EIS, along with a description of the mitigation and management measures being employed to reduce impacts.

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Maps and Figures:

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A

Preliminary Dwelling Assessment

Dwelling NAD_01 Wargam Road

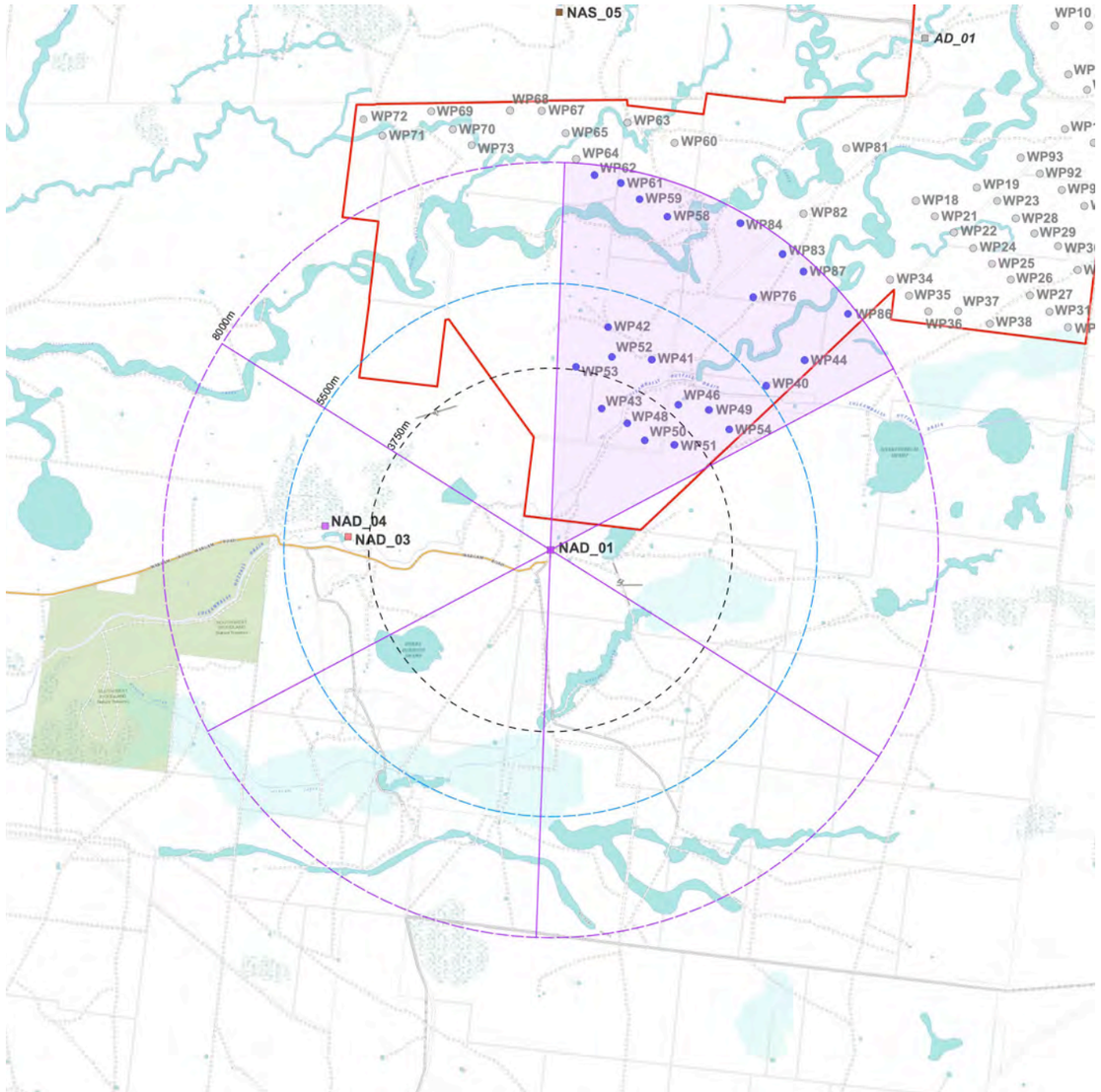
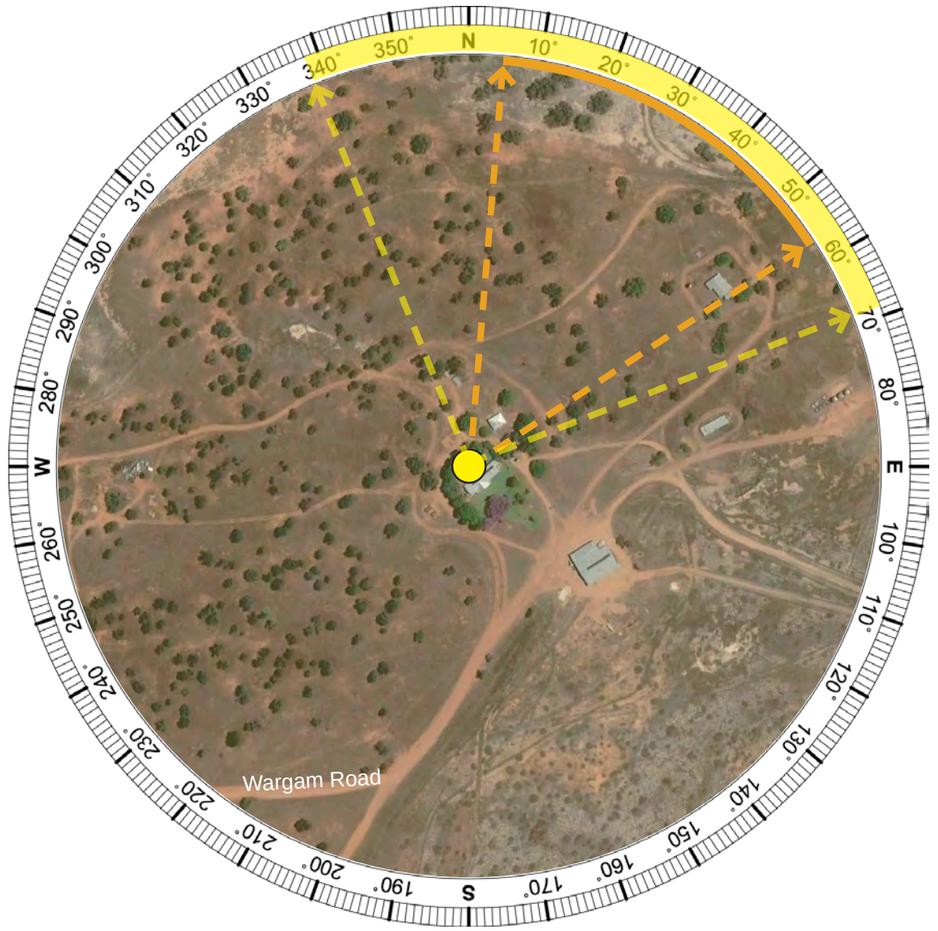


Figure A.1



Aerial Image Source: Google Earth (November 2020)

LEGEND

- Project Area
- Proposed Turbine Location
- Proposed Turbine in excess of 8,000 m from dwelling
- Non-Associated Dwelling
- Non-Associated Dwelling (Associated with other Project)
- 60º sector
- 3,750 m from nearest turbine (Black Line)
- 5,500 m from nearest turbine (Blue Line)
- 8,000 m from nearest turbine
- 60º sector with Pottinger Energy Park Wind Farm turbines within 8,000 m
- 60º sector with Bullawah Wind Farm turbines within 8,000 m
- 60º sector with The Plains Wind Farm turbines within 8,000 m
- 60º sector with Pottinger Energy Park Wind Farm and Bullawah Wind Farm turbines within 8,000 m

Dwelling NAD_01

LEGEND

- Direction of visible turbines
- Extent of visible turbines based on topography *(in excess of 8,000m)*
- Extent of visible turbines based on topography *(within 8,000m)*

Summary of Preliminary Assessment Tools	
Distance to Nearest Turbine:	2.97 km
Number of Proposed Turbines within the **Black Line** (3,750 m) of Visual Magnitude:	4
Number of Theoretical 60º Sectors: (*based on 2D assessment)*	One (1) Sector
Number of Potentially Visible Turbines within 8,000 m: (*based on topography alone)*	22 All at hub

Dwelling NAD_02 Jerilderie Road

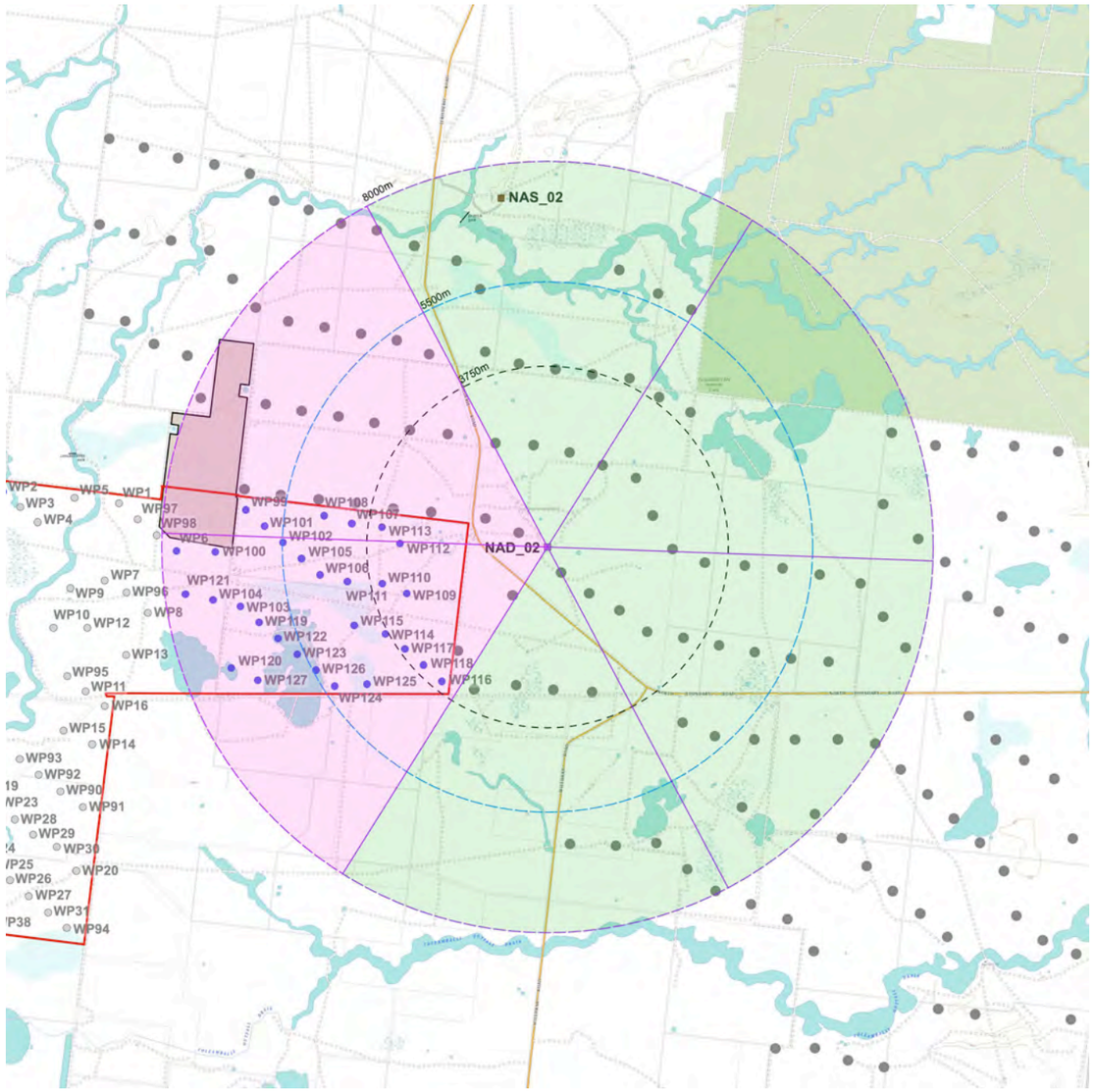
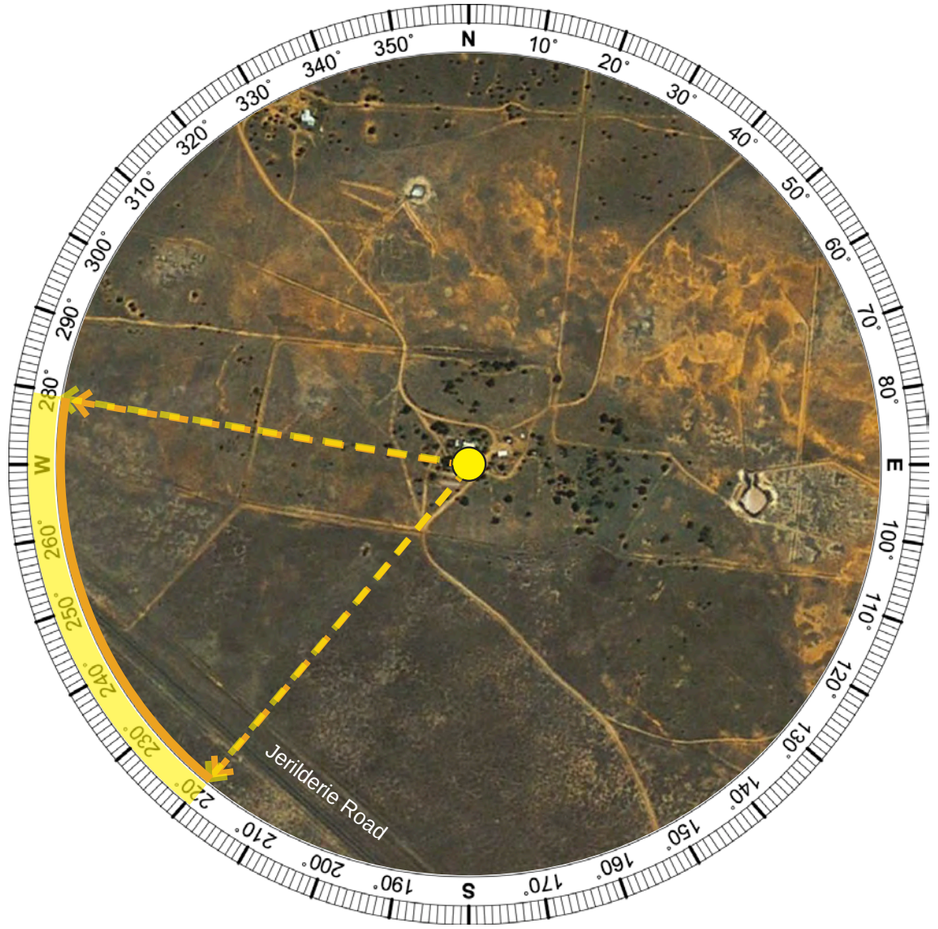


Figure A.2

LEGEND

- Project Area
- Proposed Turbine Location
- Proposed Turbine in excess of 8,000 m from dwelling
- Non-Associated Dwelling
- Non-Associated Dwelling (Associated with other Project)
- 60º sector
- Proposed Turbine Location (Bullawah)
- 3,750 m from nearest turbine (Black Line)
- 5,500 m from nearest turbine (Blue Line)
- 8,000 m from nearest turbine
- 60º sector with Pottinger Energy Park Wind Farm turbines within 8,000 m
- 60º sector with Bullawah Wind Farm turbines within 8,000 m
- 60º sector with The Plains Wind Farm turbines within 8,000 m
- 60º sector with Pottinger Energy Park Wind Farm and Bullawah Wind Farm turbines within 8,000 m



Aerial Image Source: Google Earth (March 2004)

Dwelling NAD_02

LEGEND

- Direction of visible turbines
- Extent of visible turbines based on topography *(in excess of 8,000m)*
- Extent of visible turbines based on topography *(within 8,000m)*

Summary of Preliminary Assessment Tools	
Distance to Nearest Turbine:	3.06 km
Number of Proposed Turbines within the **Black Line** (3,750 m) of Visual Magnitude:	7
Number of Theoretical 60º Sectors: (*based on 2D assessment)*	Two (2) Sectors [Pottinger Energy Park Wind Farm and Bullawah Wind Farm]; Four (4) Sectors [Bullawah Wind Farm]
Number of Potentially Visible Turbines within 8,000 m: (*based on topography alone)*	30 All at hub

Dwelling NAD_03 Wargam Road

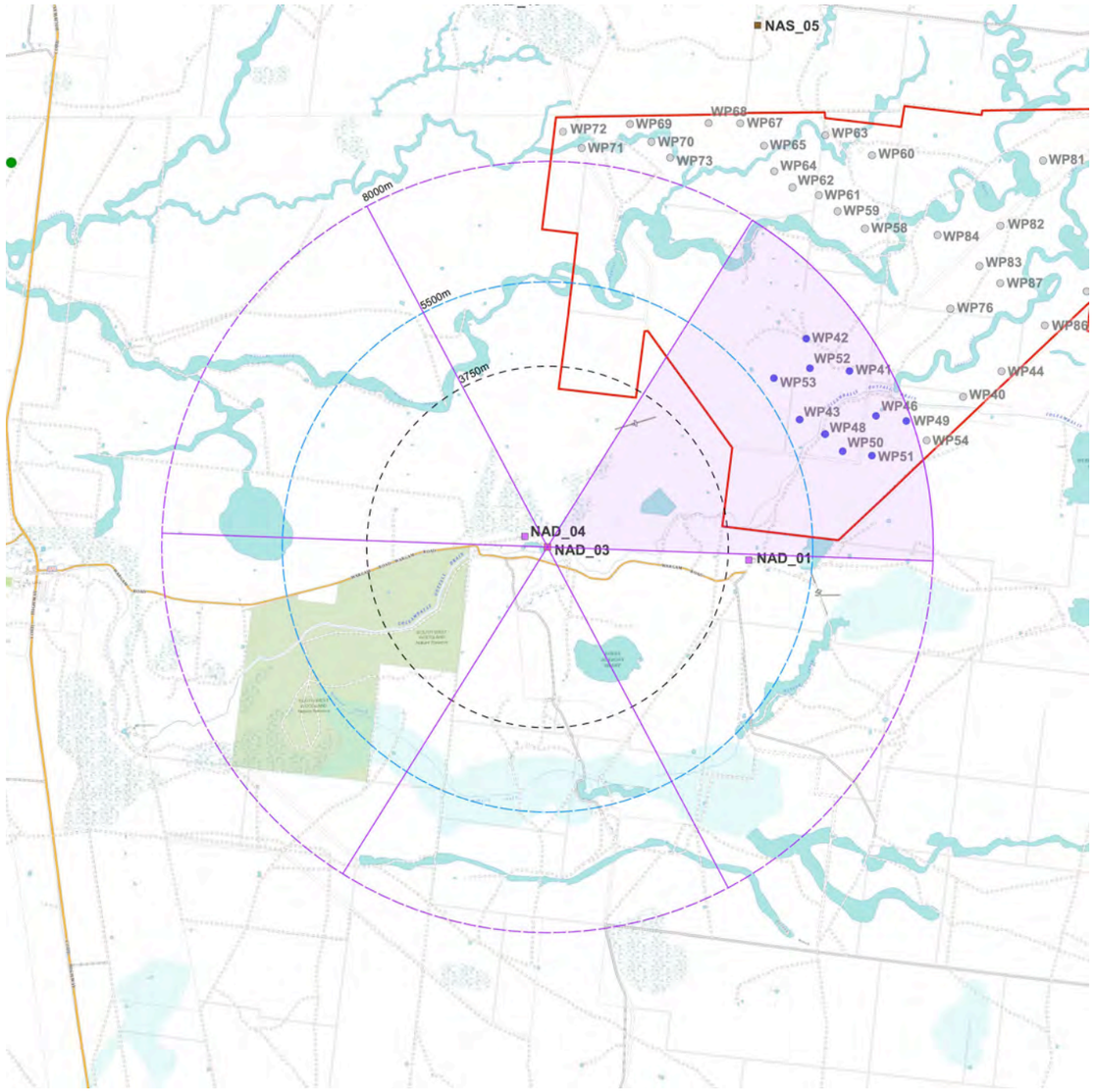
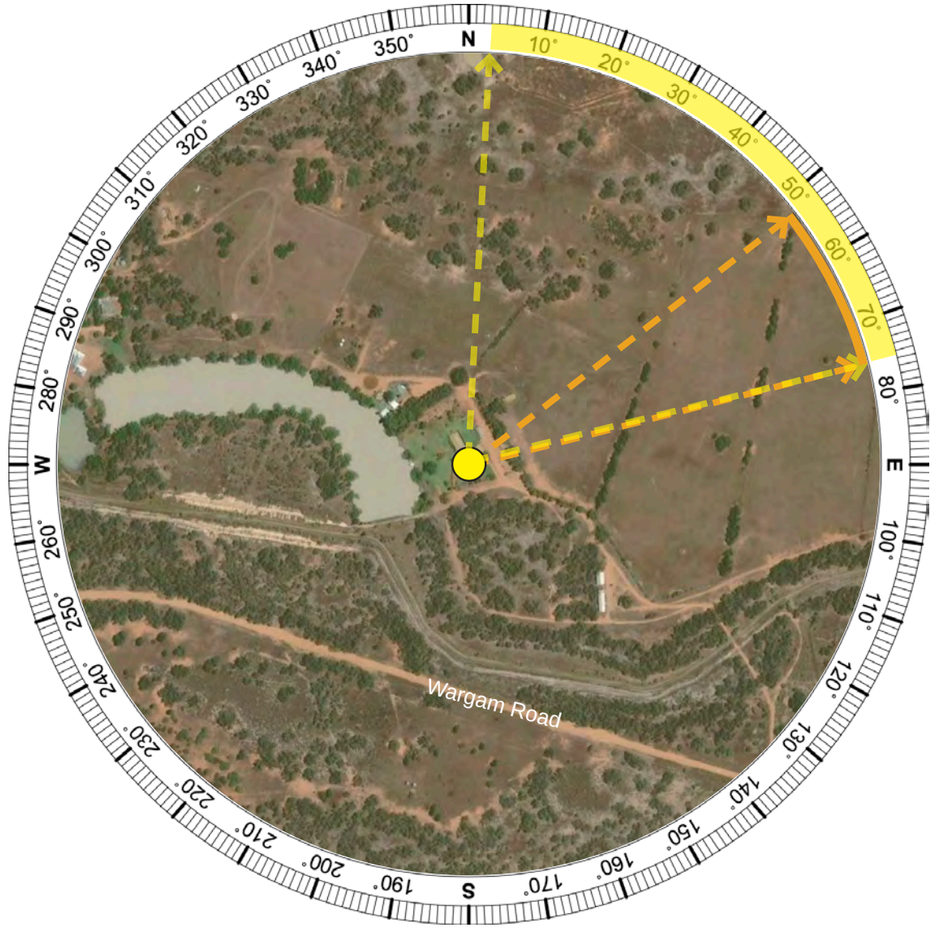


Figure A.3

LEGEND

- Project Area
- Proposed Turbine Location
- Proposed Turbine in excess of 8,000 m from dwelling
- Non-Associated Dwelling
- Non-Associated Dwelling (Associated with other Project)
- 60º sector
- Proposed Turbine Location (The Plains)
- 3,750 m from nearest turbine (Black Line)
- 5,500 m from nearest turbine (Blue Line)
- 8,000 m from nearest turbine
- 60º sector with Pottinger Energy Park Wind Farm turbines within 8,000 m
- 60º sector with Bullawah Wind Farm turbines within 8,000 m
- 60º sector with The Plains Wind Farm turbines within 8,000 m
- 60º sector with Pottinger Energy Park Wind Farm and Bullawah Wind Farm turbines within 8,000 m



Aerial Image Source: Google Earth (November 2020)

Dwelling NAD_03

LEGEND

- Direction of visible turbines
- Extent of visible turbines based on topography *(in excess of 8,000m)*
- Extent of visible turbines based on topography *(within 8,000m)*

Summary of Preliminary Assessment Tools	
Distance to Nearest Turbine:	5.87 km
Number of Proposed Turbines within the **Black Line** (3,750 m) of Visual Magnitude:	0
Number of Theoretical 60º Sectors: (*based on 2D assessment)*	One (1) Sector
Number of Potentially Visible Turbines within 8,000 m: (*based on topography alone)*	10 All at hub

Dwelling NAD_04 Wargam Road

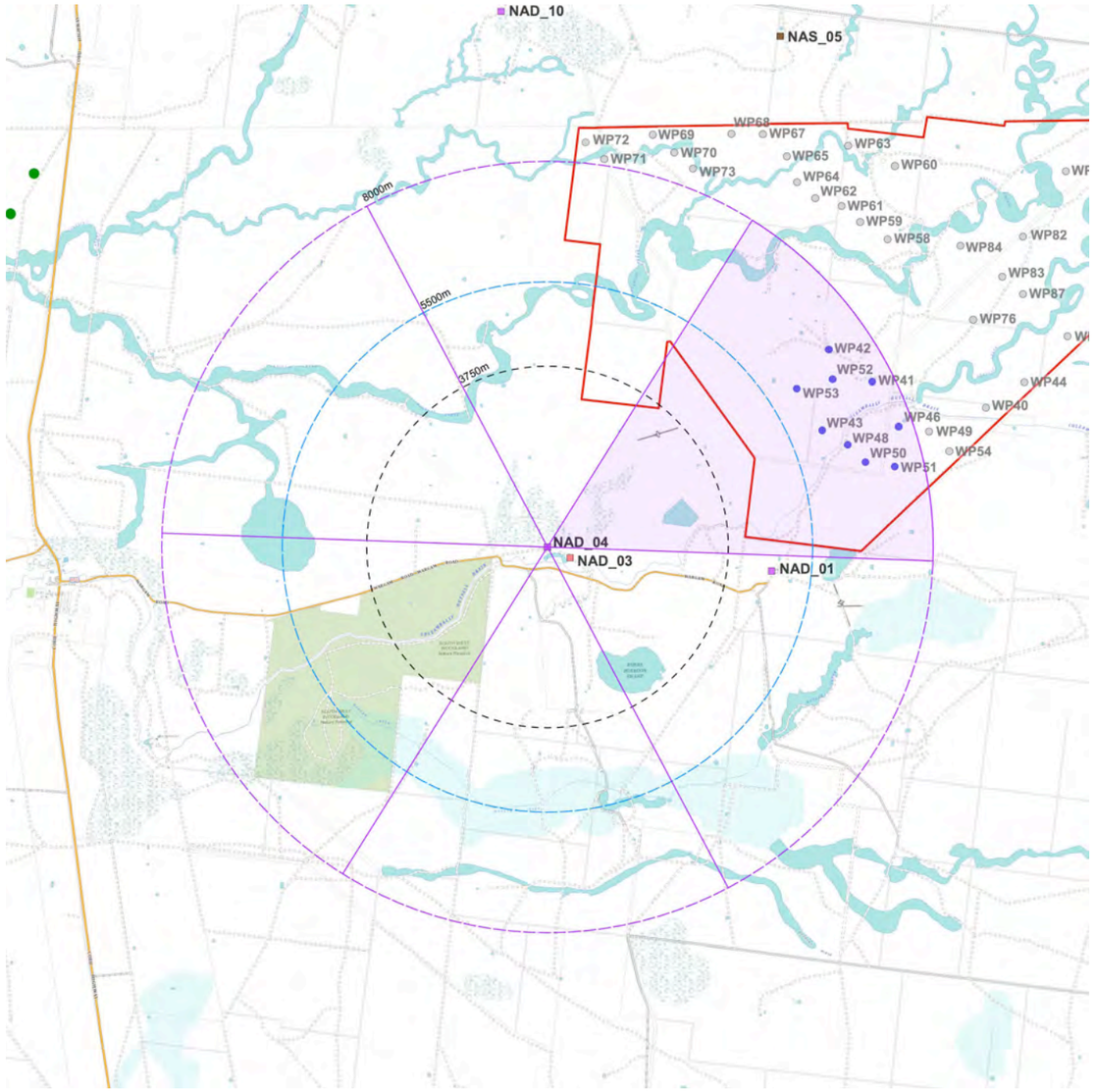
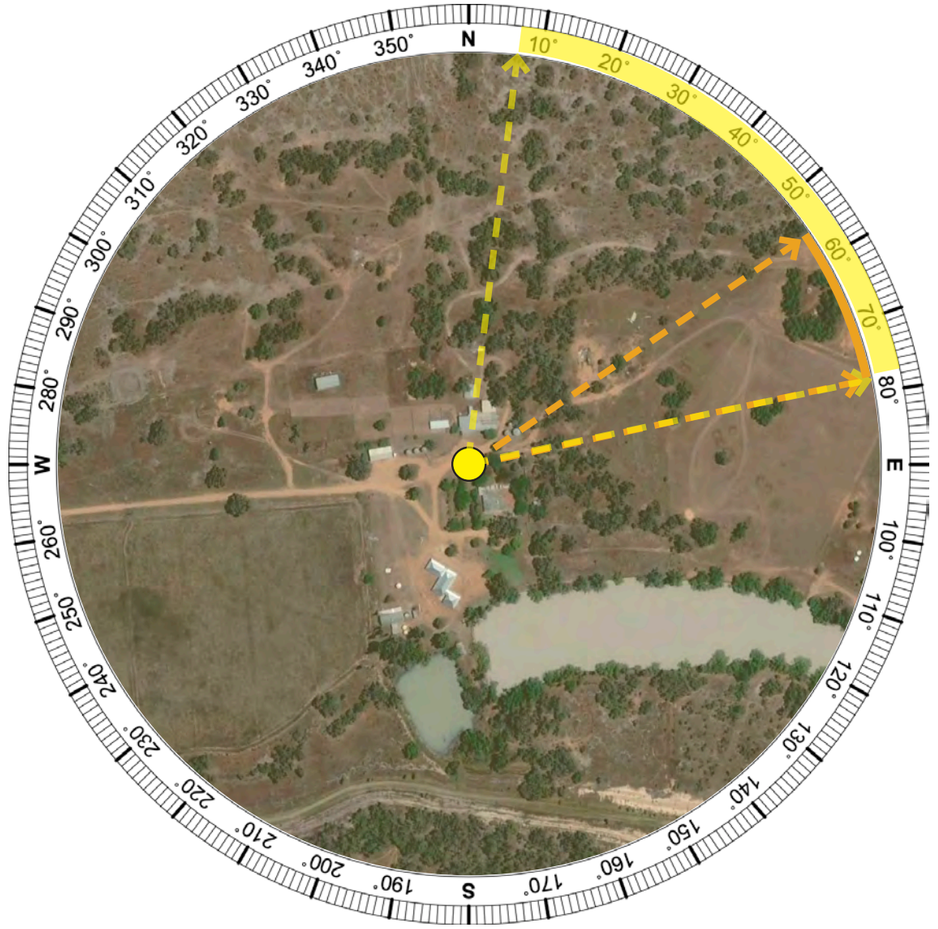


Figure A.4

LEGEND

- Project Area
- Proposed Turbine Location
- Proposed Turbine in excess of 8,000 m from dwelling
- Non-Associated Dwelling
- Non-Associated Dwelling (Associated with other Project)
- 60º sector
- Proposed Turbine Location (The Plains)
- 3,750 m from nearest turbine (Black Line)
- 5,500 m from nearest turbine (Blue Line)
- 8,000 m from nearest turbine
- 60º sector with Pottinger Energy Park Wind Farm turbines within 8,000 m
- 60º sector with Bullawah Wind Farm turbines within 8,000 m
- 60º sector with The Plains Wind Farm turbines within 8,000 m
- 60º sector with Pottinger Energy Park Wind Farm and Bullawah Wind Farm turbines within 8,000 m



Aerial Image Source: Google Earth (November 2020)

Dwelling NAD_04

LEGEND

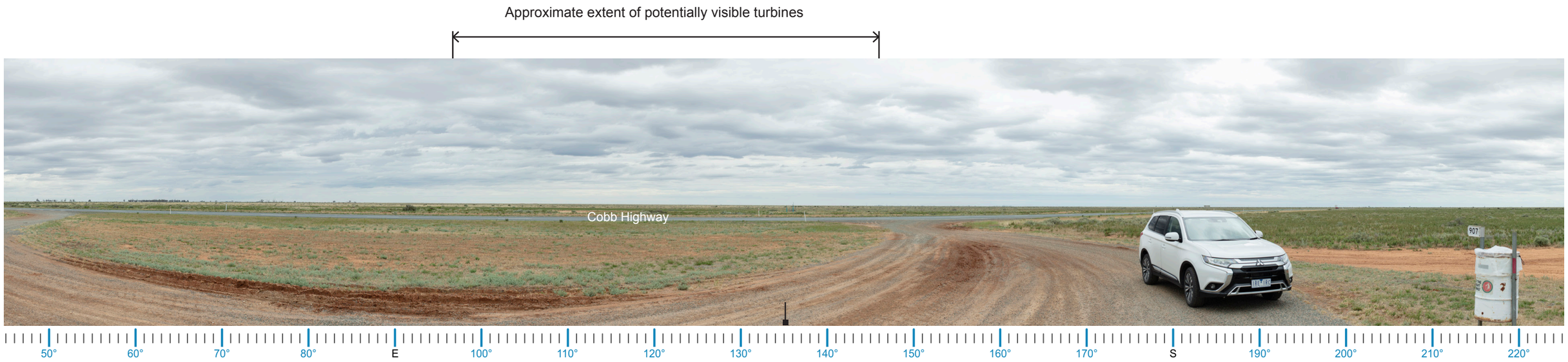
- Direction of visible turbines
- Extent of visible turbines based on topography *(in excess of 8,000m)*
- Extent of visible turbines based on topography *(within 8,000m)*

Summary of Preliminary Assessment Tools	
Distance to Nearest Turbine:	6.11 km
Number of Proposed Turbines within the **Black Line** (3,750 m) of Visual Magnitude:	0
Number of Theoretical 60º Sectors: (*based on 2D assessment)*	One (1) Sector
Number of Potentially Visible Turbines within 8,000 m: (*based on topography alone)*	9 All at hub

B

Public Viewpoint Analysis

VP01 16 Mile Gums Rest Area, Cobb Highway, Booroorban



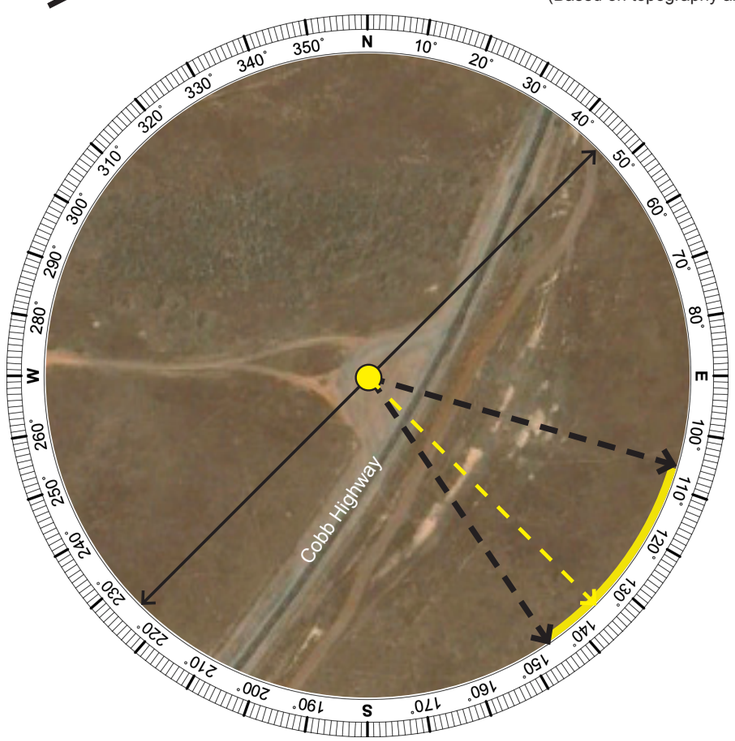
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP01

Viewpoint Summary:	
Location:	Elevation:
Cobb Highway, Booroorban	88 m
Coordinates:	Viewing Direction:
34°44’30.02”S 144°47’30.21”E	Southeast
Distance to nearest WTG:	Visibility Distance Zone:
14.90 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Major Road	**Moderate**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Existing Landscape Character Description:

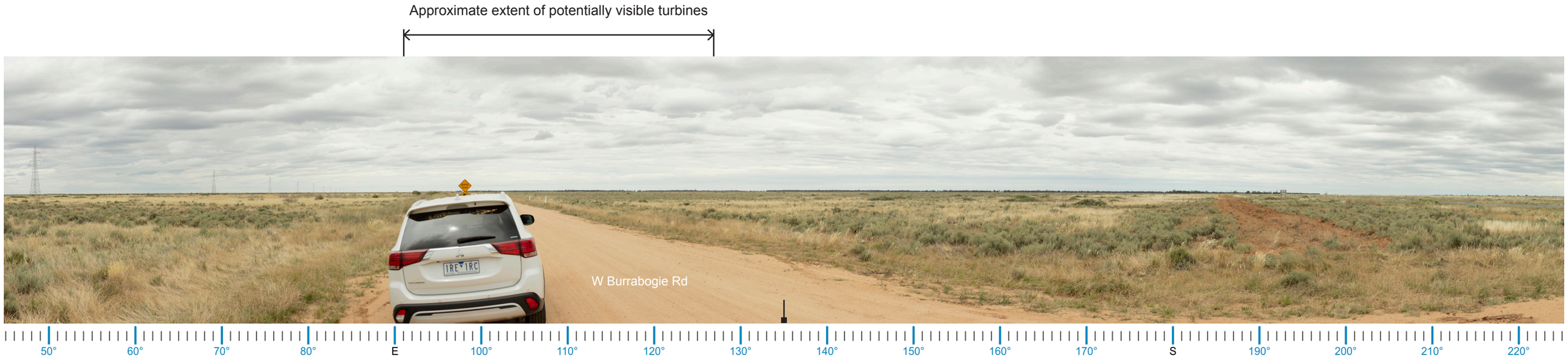
This viewport was taken from 16 Mile Gums stopping area on the Cobb Highway, Boorooban. This stopping area is part of ‘The Long Paddock’ touring route, which is a frequently used rest stop for motorists travelling between the towns of Hay and Deniliquin on the Cobb Highway. This viewpoint was taken looking towards the southeast. Adjacent lands are classified as grazing farmlands. The terrain is flat with open, expansive views, and minimal vegetation.

Potential Visual Impact:

Due to the flat topography and open and expansive views, the project will be partially visible from this location, however, only as distant objects in the landscape.

Aerial Image Source: Google Earth (11/2020)

VP02 W Burrabogie Rd, Booroorban



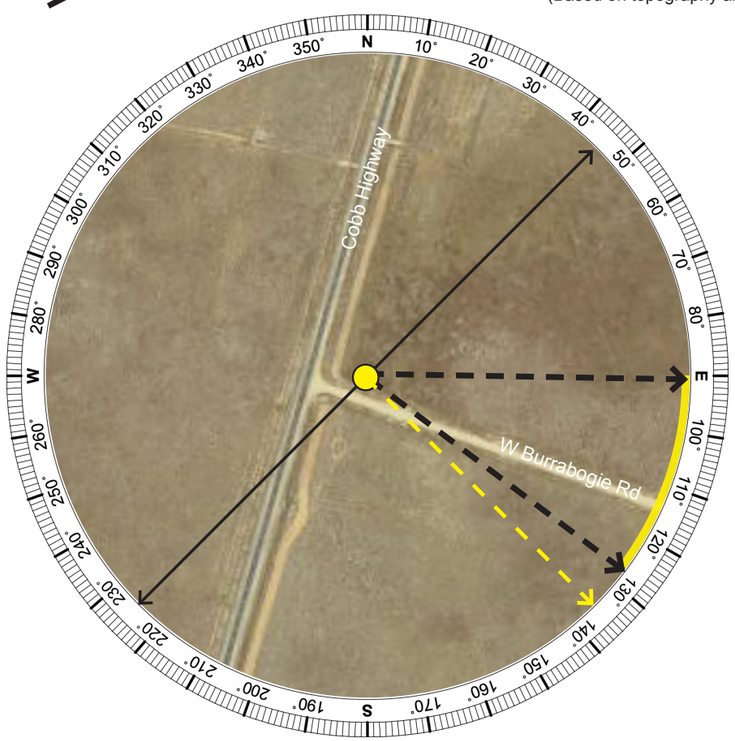
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP02

Viewpoint Summary:	
Location:	Elevation:
W Burrabogie Rd, Booroorban	86 m
Coordinates:	Viewing Direction:
34°48’27.17”S 144°46’31.53”E	Southeast
Distance to nearest WTG:	Visibility Distance Zone:
11 km	**Near Background (NB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Existing Landscape Character Description:

This viewpoint was taken from W Burrabgoie Road, Boorooban, just off the Cobb Highway, looking towards the southeast. Adjacent lands are classified as grazing farmlands. The terrain is flat with saltbush and scrubby groundcovers or low-growing bushes, allowing for open and expansive views. Transmission lines are visible to the east.

Potential Visual Impact:

Due to the flat topography and open and expansive views, the project will be partially visible from this location, however, only as distant objects in the landscape.

Aerial Image Source: Google Earth (11/2020)

VP03 Cobb Highway, Booroorban

Approximate extent of potentially visible turbines

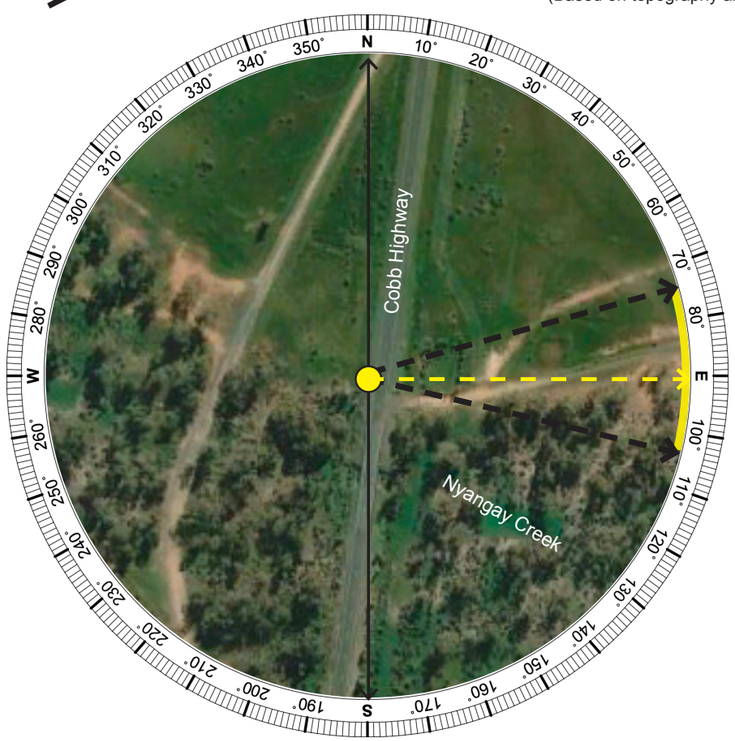
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP03

Viewpoint Summary:	
Location:	Elevation:
Cobb Highway, Booroorban	86 m
Coordinates:	Viewing Direction:
34°52'47.23"S 144°45'43.85"E	East
Distance to nearest WTG:	Visibility Distance Zone:
11.60 m	**Near Background (NB)**
Land Use:	Viewer Sensitivity Level:
Major Road	**Low**
LCU:	Scenic Quality Rating:
LCU02: Creeks & Corridors	**Moderate**

Multiple Wind Turbine Tool:

No turbines within 8000m

Existing Landscape Character Description:

The viewpoint is located on Cobb Highway near the entrance gate of 'Nyangay, East Loddon Merino Stud'. Adjacent land is classified as grazing farmlands with native vegetation. Surrounding terrain is generally flat with filtered views. Existing native tree cover associated with Nyangay Creek is visible in the foreground. Scattered trees can be seen on the horizon.

Potential Visual Impact:

Turbines may be visible towards the east of this location, however, this viewpoint is located beyond 10 km and it is likely that the existing vegetation along the Nyangay Creek will partially screen views of the Project. Any turbines visible will only be as distant objects in the landscape.

Aerial Image Source: Google Earth (11/2020)

VP04 Cobb Highway, Booroorban

Approximate extent of potentially visible turbines

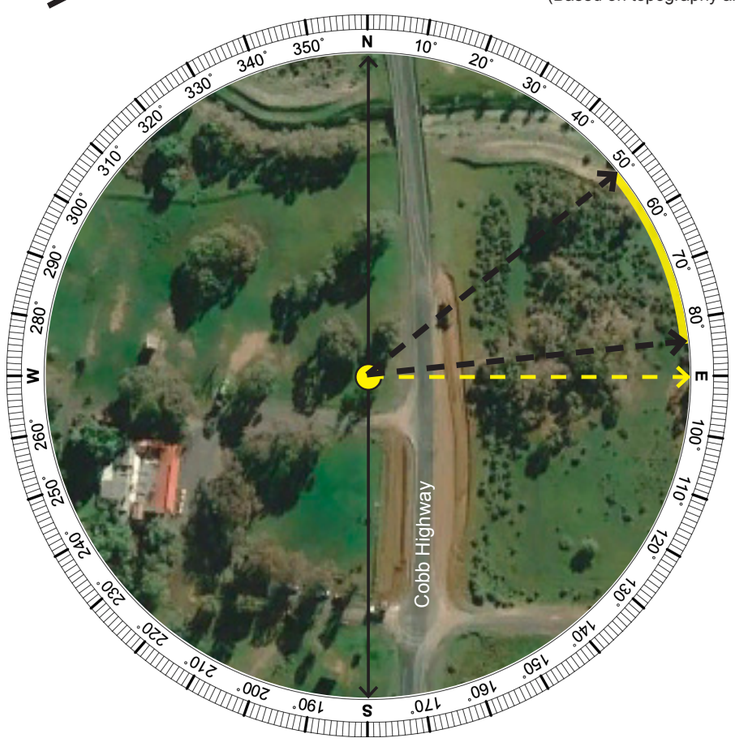
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP04

Viewpoint Summary:	
Location:	Elevation:
Cobb Highway, Booroorban	85 m
Coordinates:	Viewing Direction:
34°55'53.24"S 144°45'46.42"E	East
Distance to nearest WTG:	Visibility Distance Zone:
14.15 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Major Road	**Moderate**
LCU:	Scenic Quality Rating:
LCU02: Creeks & Corridors	**Moderate**

Multiple Wind Turbine Tool:

No turbines within 8000m

Existing Landscape Character Description:

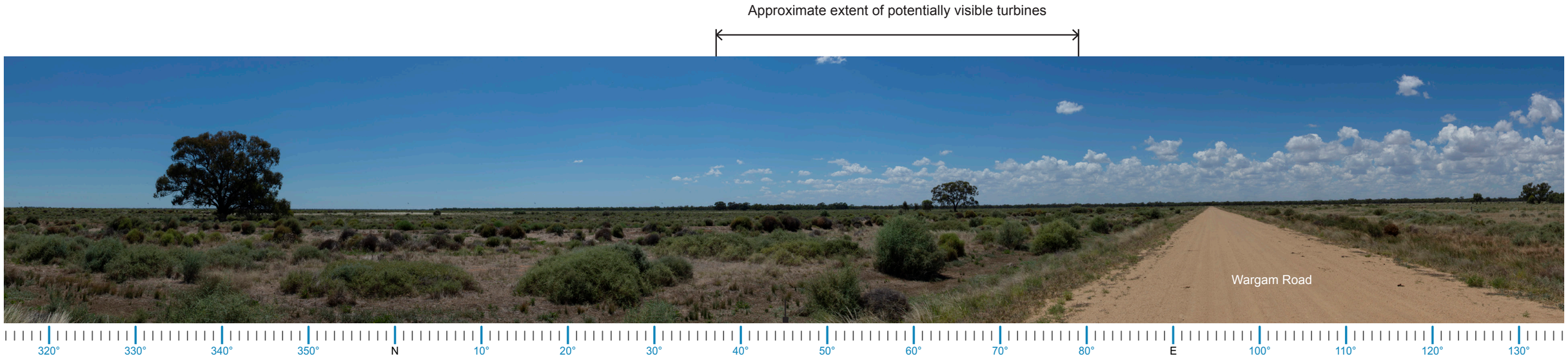
The viewpoint was taken from Cobb Highway within the small rural township of Booroorban, near NAD_05 and the Royal Mail Hotel. It is a representation of views from public viewpoints located in the town. Surrounding lands are associated with these rural dwellings and utilised as grazing lands with minimal activity. Patches of riparian vegetation associated with Coleambally Outfall Drain is visible to the north, east and west. The terrain is generally flat with very minor undulations. Views to the east are filtered with existing vegetation.

Potential Visual Impact:

Due to the distance from the project and existing vegetation, it is unlikely any wind turbines will be visible from this location.

Aerial Image Source: Google Earth (11/2020)

VP05 Wargam Road, Booroorban



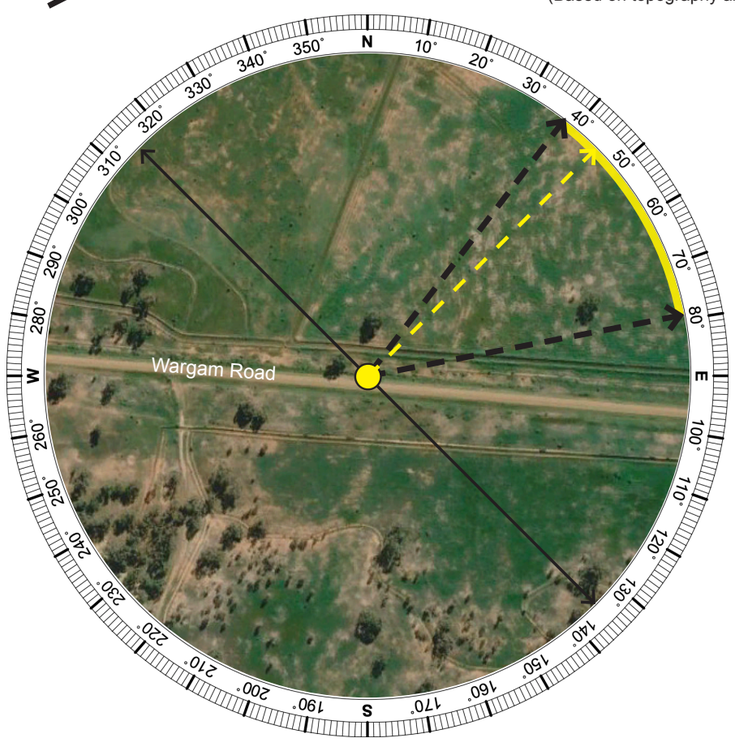
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines (Based on topography alone)



VIEWPOINT VP05

Viewpoint Summary:	
Location:	Elevation:
Wargam Road, Booroorban	89 m
Coordinates:	Viewing Direction:
34°56'19.79"S 144°48'7.93"E	Northeast
Distance to nearest WTG:	Visibility Distance Zone:
12.15 m	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Existing Landscape Character Description:

The viewpoint is located on Wargam Road, Booroorban. Adjacent land is classified as grazing farmlands. The terrain is flat with saltbush and scrubby groundcovers or low-growing bushes, allowing for open and expansive views. There are few scattered trees in the middleground and dense vegetation in the background filtering the view along the horizon.

Potential Visual Impact:

Due to the distance from the project and existing vegetation, it is likely turbines would be partially visible as distant objects in the landscape.

Aerial Image Source: Google Earth (11/2020)

VP06 Wargam Road, Booroorban

Approximate extent of potentially visible turbines

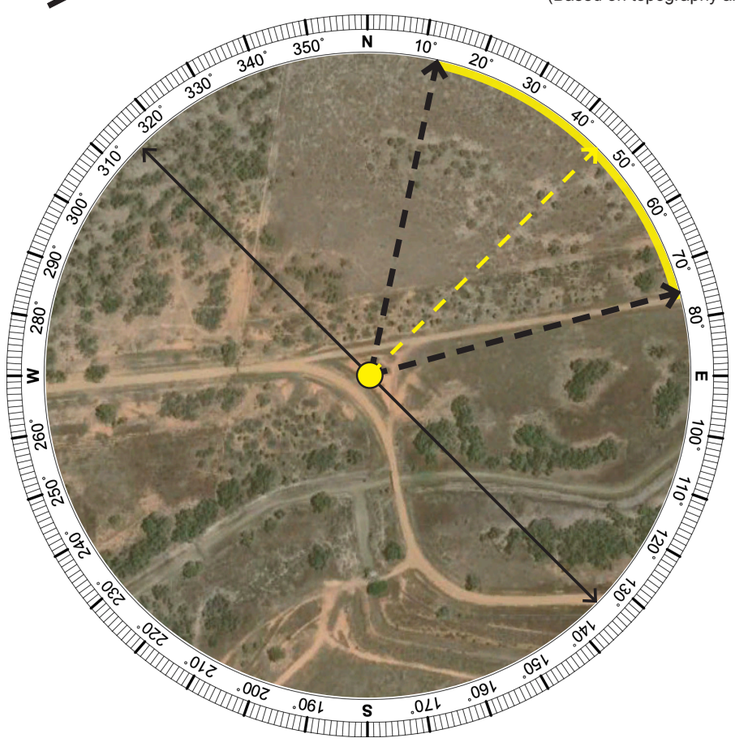
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP06

Viewpoint Summary:	
Location:	Elevation:
Wargam Road, Booroorban	88 m
Coordinates:	Viewing Direction:
34°55'45.33"S 144°51'47.53"E	Northeast
Distance to nearest WTG:	Visibility Distance Zone:
7.05 km	**Far Middleground (FM)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU03 : Swamps & Flood-plains	**Moderate**

Multiple Wind Turbine Tool:

Two (2) 60° Sector with turbines within 8000m

Aerial Image Source: Google Earth (11/2020)

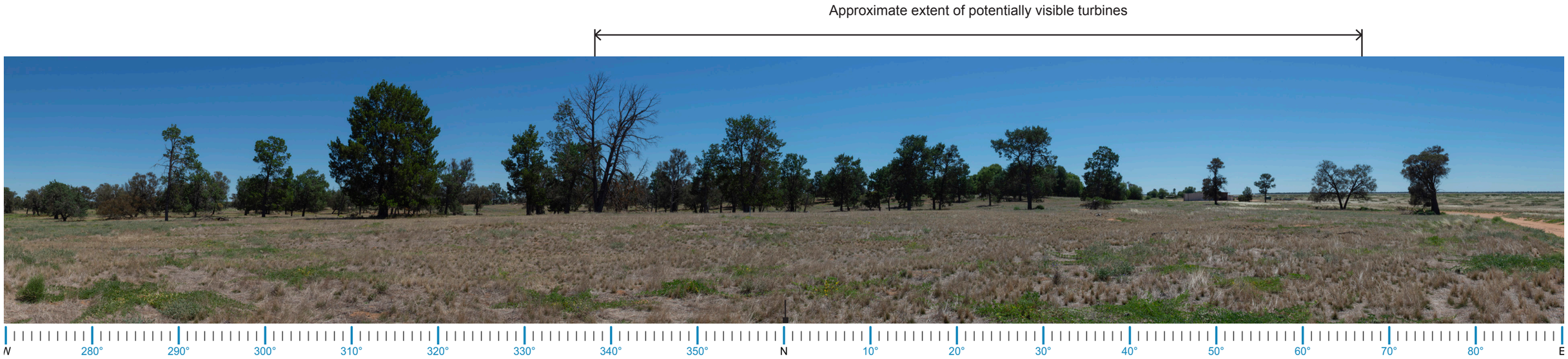
Existing Landscape Character Description:

The viewpoint is located on Wargam Road, Booroorban, near Elmsleigh Station. The landscape character is classified as swamps and flood plains and grazing lands. The surrounding terrain is flat with saltbush and scrubby groundcovers or low-growing bushes. A row of vegetation is prominent in the middleground, providing filtered views to the northeast. The Coleambally Outfall Drain is located nearby with associated riparian vegetation visible to the east.

Potential Visual Impact:

Due to the proximity to the project and flat terrain, it is possible that turbines will be visible from this location, however, the existing vegetation will assist in fragmenting views.

VP07 Wargam Road, Booroorban



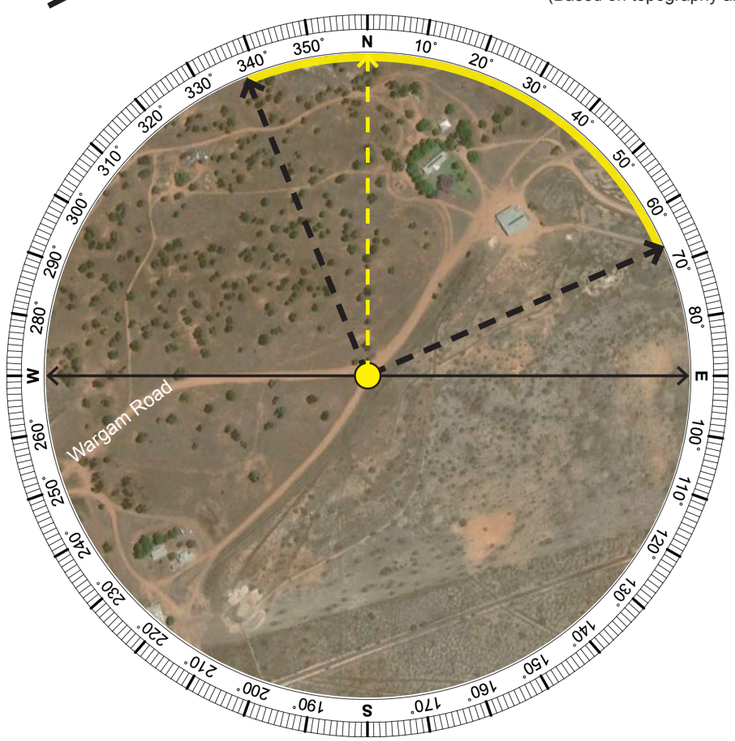
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP07

Viewpoint Summary:	
Location:	Elevation:
Wargram Road, Booroorban	91 m
Coordinates:	Viewing Direction:
34°56'6.01"S 144°55'25.44"E	North
Distance to nearest WTG:	Visibility Distance Zone:
3.20 km	**Near Middleground (NM)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Moderate**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

Two (2) 60° Sector with turbines within 8000m

Existing Landscape Character Description:

The viewpoint is located on Wargam Road, Booroorban, at the driveway of dwelling NAD_01. Surrounding terrain is flat and is predominantly used for livestock grazing. Vegetation character is generally defined by grassy farmlands. Views to the north are mostly filtered by the existing mature vegetation and farm buildings associated with the nearby dwelling.

Potential Visual Impact:

Views of the project will be visible from this location due to the flat topography, however partially fragmented by existing vegetation.

Aerial Image Source: Google Earth (11/2020)

VP08 East-West Road, Willurah

Approximate extent of potentially visible turbines

W 280° 290° 300° 310° 320° 330° 340° 350° N 10° 20° 30° 40° 50° 60° 70° 80° E

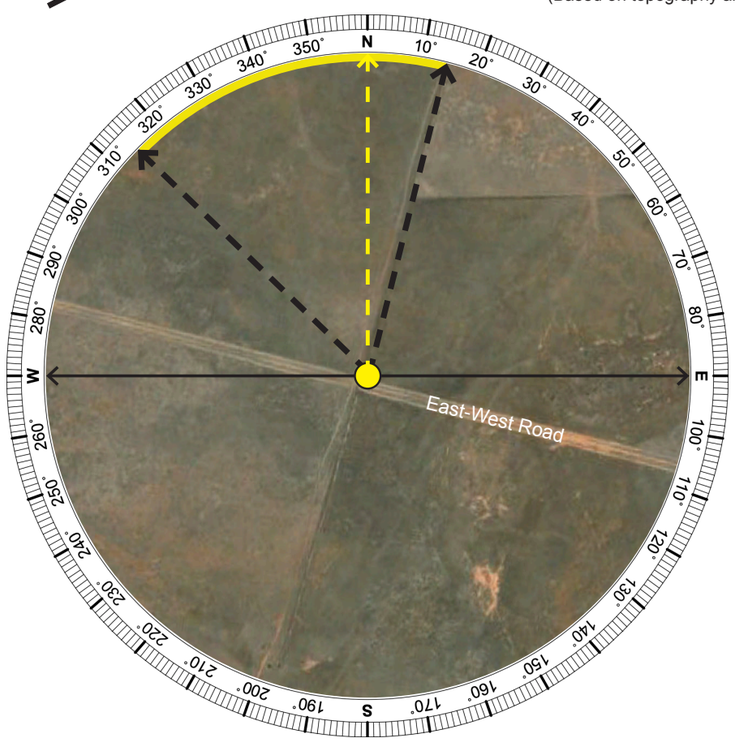
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP08

Viewpoint Summary:	
Location:	Elevation:
East-West Road, Willurah	94 m
Coordinates:	Viewing Direction:
35° 1’2.39”S 145° 4’40.33”E	North
Distance to nearest WTG:	Visibility Distance Zone:
14.10 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Aerial Image Source: Google Earth (12/2020)

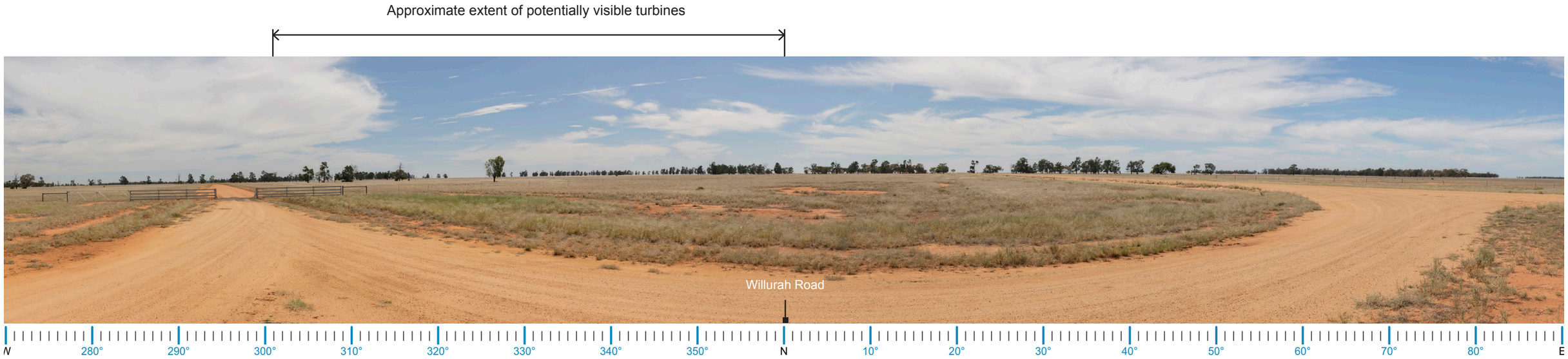
Existing Landscape Character Description:

This viewpoint is located on East-West Road, Willurah, near NAD_06. Surrounding lands are used for livestock grazing and cropping. East-West Road is a low use road that provides access to nearby rural dwellings (Bullawah and Willurah). Views are generally open and not limited by vegetation. The flat topography allows for expansive views. Dense vegetation is visible along the horizon.

Potential Visual Impact:

Due to the distance from the project, it is likely turbines would be partially visible as distant objects in the landscape. Existing vegetation along the horizon is likely to assist in filtering views.

VP09 Willurah Road, Willurah



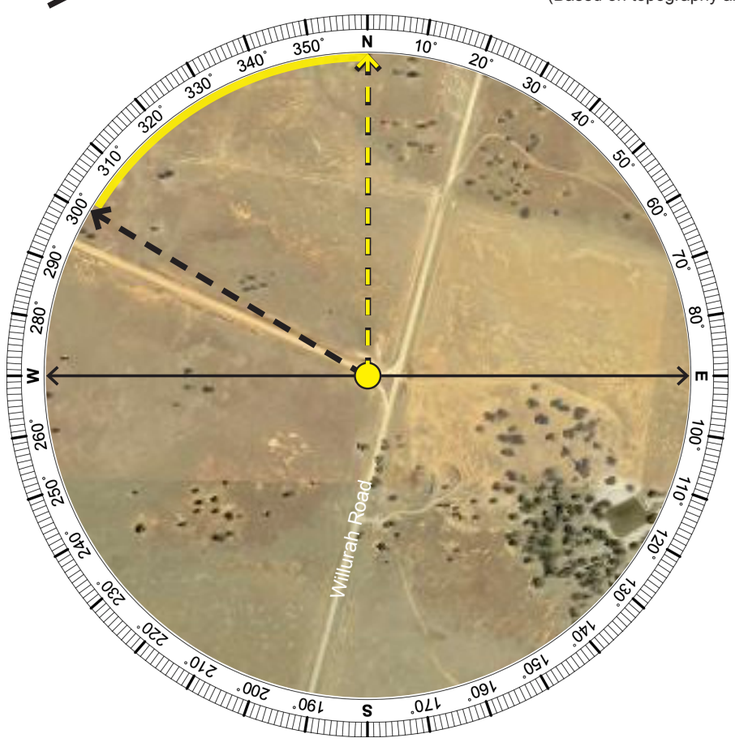
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP09

Viewpoint Summary:	
Location:	Elevation:
Willurah Road, Willurah	95 m
Coordinates:	Viewing Direction:
35° 0’16.10”S 145° 7’47.23”E	North
Distance to nearest WTG:	Visibility Distance Zone:
14.60 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Aerial Image Source: Google Earth (12/2020)

Existing Landscape Character Description:

This viewpoint was taken near the mailbox of ‘Willurah’, i.e. dwelling R6 off Willurah Road. The landscape character is predominantly defined by grazing pastures with native grasses and saltbush. Clumps of trees are scattered across the flat parcels of land and these are mostly associated with dwellings or remnant creek corridors or wetlands. Views are generally open but limited by the row of vegetation visible in the middleground.

Potential Visual Impact:

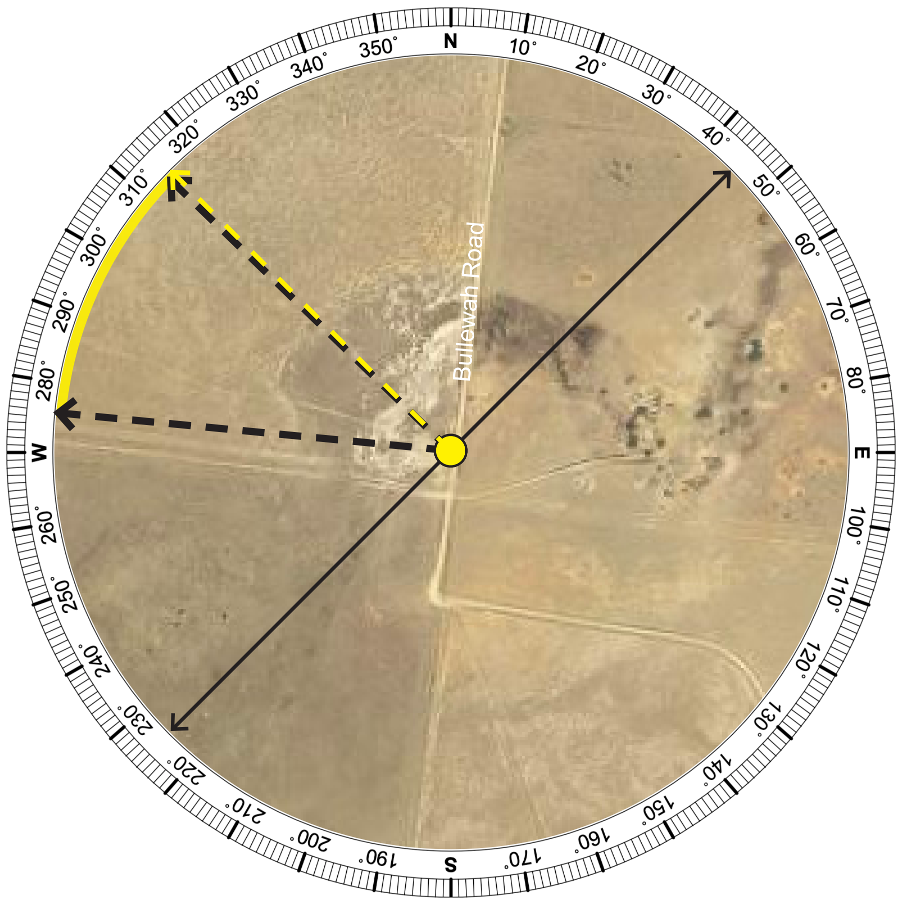
This viewpoint is located beyond the 8 km extent from the wind turbines. Turbines will be partially visible in the distance, however, existing vegetation will screen majority of the project.

VP10 Bullewah Road, Steam Plains

Approximate extent of potentially visible turbines

LEGEND

- Viewing direction and centre of panorama
- Direction of potentially visible turbines
- Extent of panorama
- Extent of visible turbines (Based on topography alone)



VIEWPOINT VP10

Viewpoint Summary:	
Location:	Elevation:
Bullewah Road, Steam Plains	101 m
Coordinates:	Viewing Direction:
34°56’33.38”S 145°16’14.16”E	Northwest
Distance to nearest WTG:	Visibility Distance Zone:
16.60 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Aerial Image Source: Google Earth (12/2020)

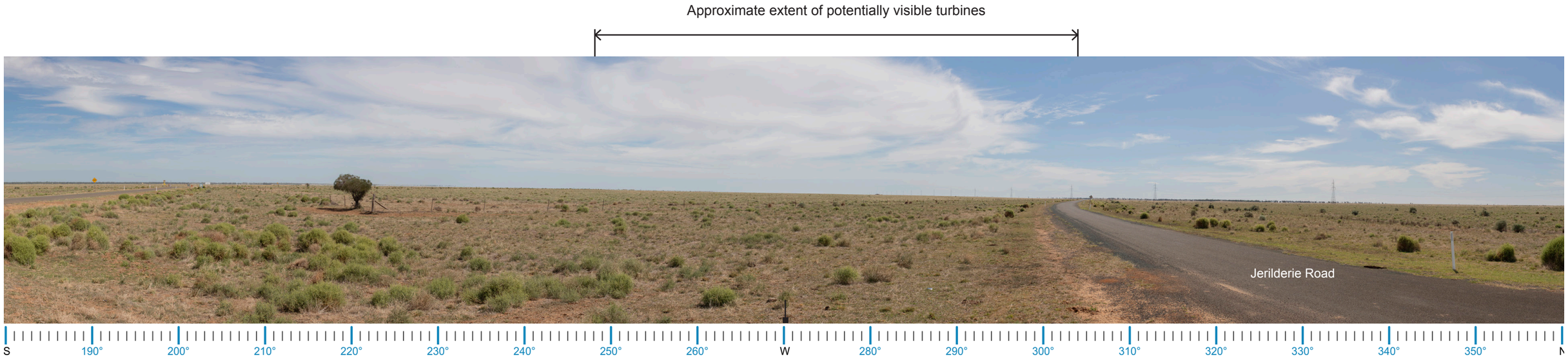
Existing Landscape Character Description:

This viewpoint is located on Bullewah Road near the mailbox of ‘Willurah Back Station’, i.e. dwelling R4 and dwelling R5. Surrounding lands are used for livestock grazing and cropping. Bullewah Road is a low use road that provides access to these dwellings. Views are generally open and not limited by vegetation. The flat topography allows expansive views.

Potential Visual Impact:

This viewpoint is located beyond 8 km of the wind turbines. Due to the flat terrain and open views, turbines would be partially visible as distant objects in the landscape.

VP11 Intersection of Northern Boundary, Jerilderie and Willurah Road, Hay South



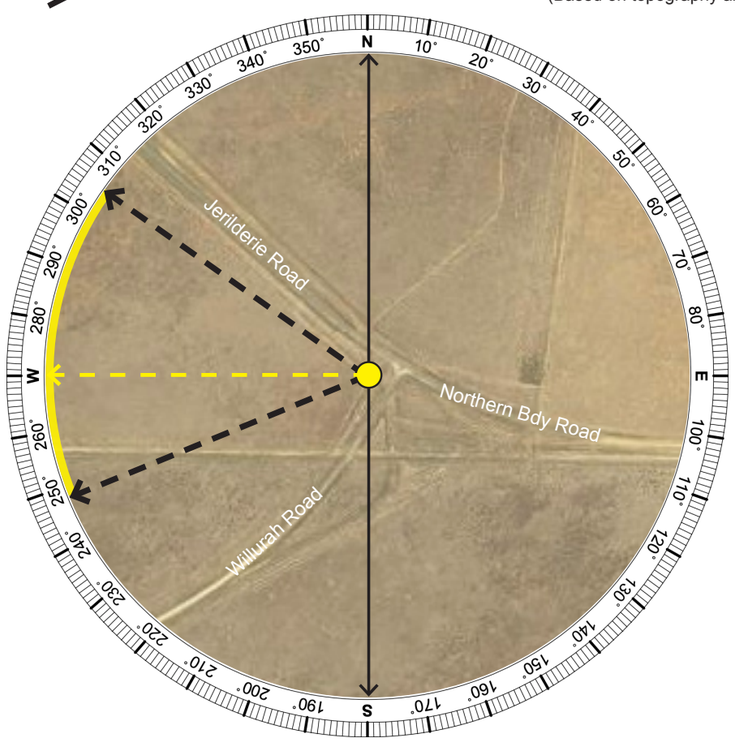
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP11

Viewpoint Summary:	
Location:	Elevation:
Intersection of Northern Boundary, Jerilderie and Willurah Road, Hay South	101 m
Coordinates:	Viewing Direction:
34°51'1.18"S 145°10'29.85"E	West
Distance to nearest WTG:	Visibility Distance Zone:
4.25 km	**Far Middleground (FM)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

One (1) 60° Sector with turbines within 8000m

Aerial Image Source: Google Earth (03/2004)

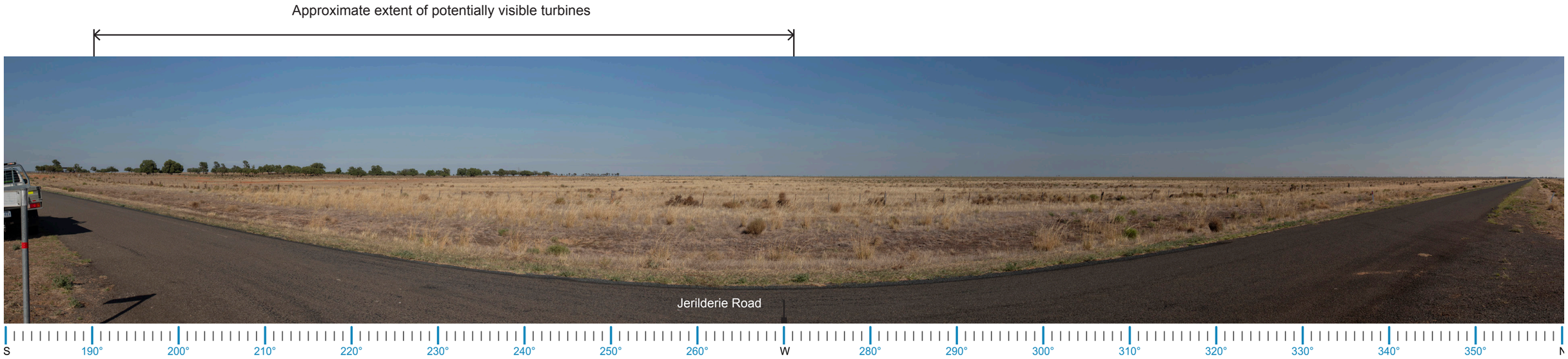
Existing Landscape Character Description:

This viewpoint is located at the intersection of Willurah Road and Jerilderie Road / North Boundary Road. Surrounding lands are utilised for grazing and are characterised by flat topography. The vegetation character is defined by tracts of saltbush, grasses, forbs and intermittent patches of lignum. No tall canopy cover has been identified in the vicinity of the viewpoint, therefore, views are open and expansive. Transmission lines are visible in the distance to the north/northwest.

Potential Visual Impact:

Views of the project will be visible from this location due to the flat topography and open and expansive views.

VP12 Jerilderie Road, Hay South



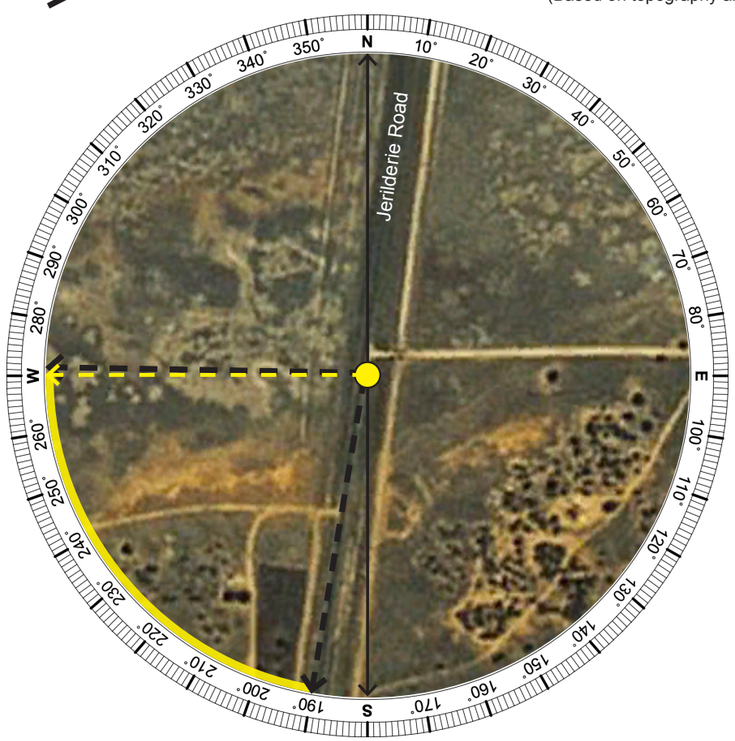
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP12

Viewpoint Summary:	
Location:	Elevation:
Jerilderie Road, Hay South	97 m
Coordinates:	Viewing Direction:
34°48’45.04”S 145° 8’13.60”E	West
Distance to nearest WTG:	Visibility Distance Zone:
2 km	**Far Foreground (FF)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

Two (2) 60° Sectors with turbines within 8000m

Existing Landscape Character Description:

This viewpoint is located on Jerilderie Road, Hay South. Surrounding lands are utilised for grazing and are characterised by flat topography with scattered groups of shrubs. No tall canopy cover has been identified in the vicinity of the viewpoint, therefore, views are open and expansive. Transmission lines are visible in the distance to the north/northwest. Views are generally open, however views to the southwest are filtered by scattered trees visible in the middleground.

Potential Visual Impact:

Views of the project will be visible from this location due to the flat topography, open views and close proximity. Views to the wind turbines may be partially filtered by existing vegetation to the southwest.

Aerial Image Source: Google Earth (03/2004)

VP13 Mailbox of ‘Eurolie’ Jerilderie Road, Hay South

Approximate extent of potentially visible turbines

LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)

VIEWPOINT VP13

Viewpoint Summary:	
Location:	Elevation:
Jerilderie Road, Hay South	96 m
Coordinates:	Viewing Direction:
34°45’17.15”S 145° 7’44.13”E	Southwest
Distance to nearest WTG:	Visibility Distance Zone:
7.30 km	**Far Middleground (FM)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU01: Semi-Arid Woodlands, LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

One (1) 60° Sector with turbines within 8000m

Aerial Image Source: Google Earth (03/2004)

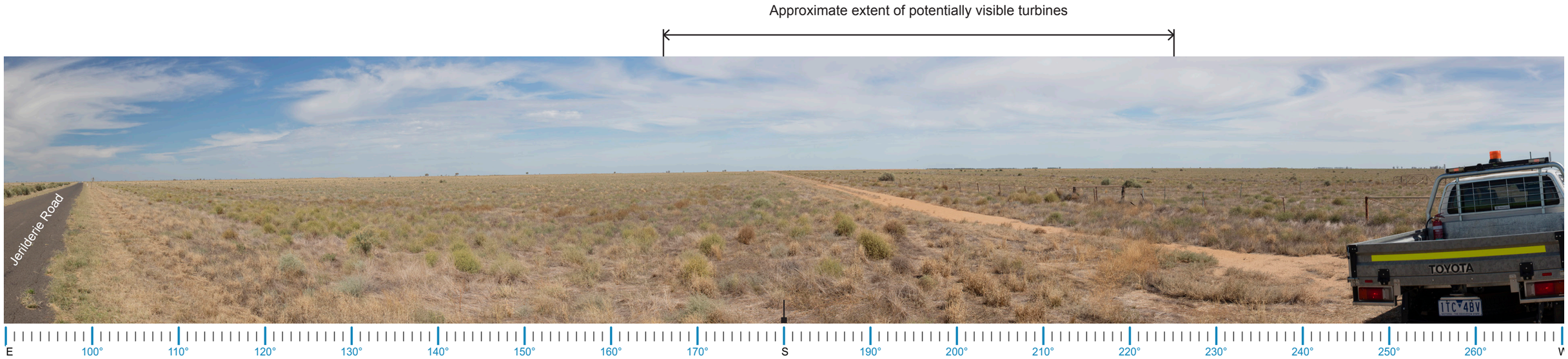
Existing Landscape Character Description:

This viewpoint was taken at the mailbox of ‘Eurolie’, off Jerilderie Road. Land is characterised by the grassy and saltbush plains that are used for grazing. The terrain is predominantly flat with very minor undulations that hold seasonal water. Occasional stands of lignum, larger saltbush varieties and nitre goosefoot are visible in the foreground and the middleground. A row of dense vegetation which is associated with Eurolie Creek is visible in the background.

Potential Visual Impact:

It is unlikely views of the project will be visible from this location due to distant location and existing vegetated associated with Eurolie Creek along the horizon.

VP14 Mailbox of ‘Elginbah’, Jerilderie Road, Hay South



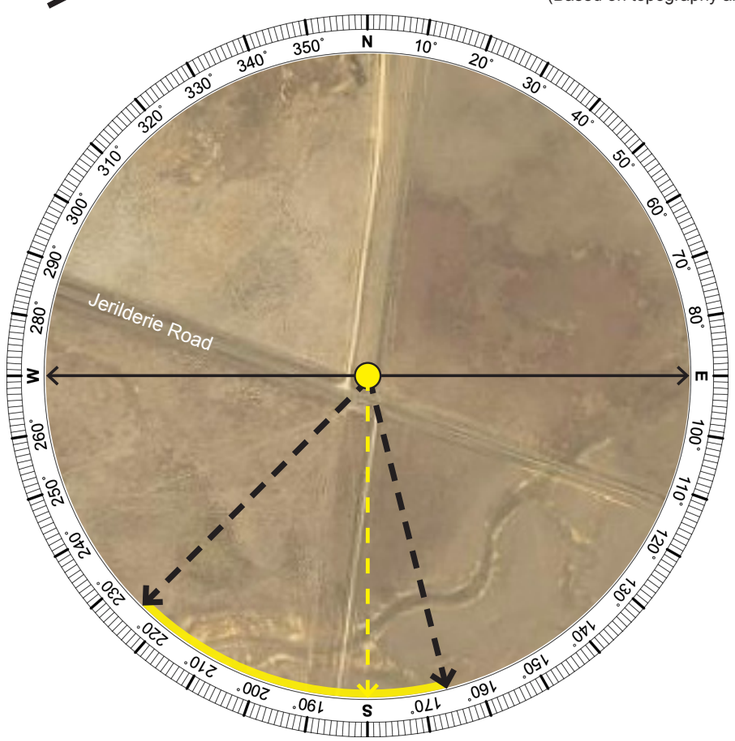
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP14

Viewpoint Summary:	
Location:	Elevation:
Jerilderie Road, Hay South	95 m
Coordinates:	Viewing Direction:
34°41’10.25”S 145° 4’51.25”E	South
Distance to nearest WTG:	Visibility Distance Zone:
14.40 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Aerial Image Source: Google Earth (12/2015)

Existing Landscape Character Description:

This viewpoint is located near the gate and mailbox of ‘Elginbah’. Surrounding lands are used as grazing pastures and comprise of saltbush and native grasses. Isolated stands of trees can be seen in the far background and this defines the generally vast character of these plains. Views are open and expansive due to the lack of obtrusive elements.

Potential Visual Impact:

This viewpoint is located beyond the 8 km extent of the wind turbines. Due to the flat terrain and open views, turbines would be partially visible as distant objects in the landscape.

VP15 Jerilderie Road, Hay South

Approximate extent of potentially visible turbines

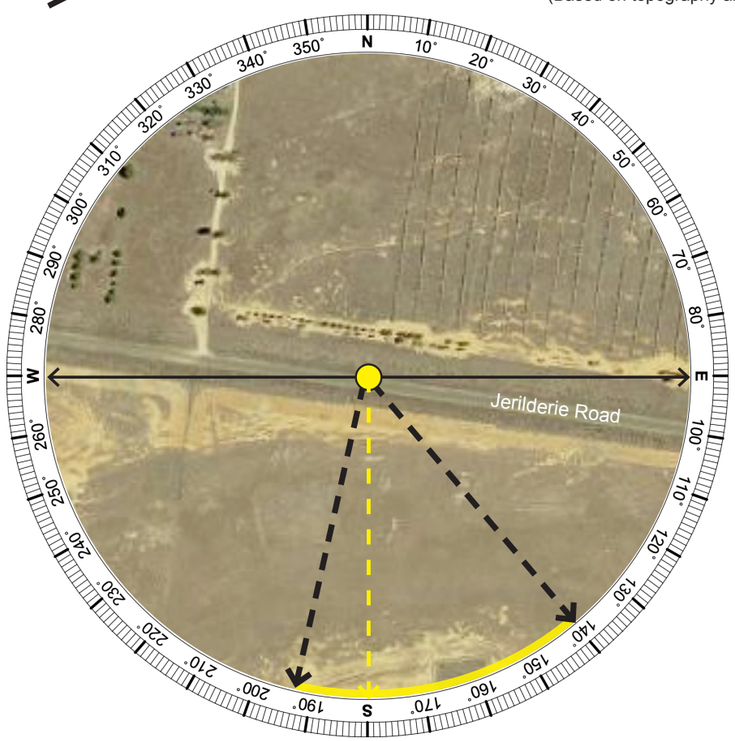
LEGEND

Viewing direction and centre of panorama

Extent of panorama

Direction of potentially visible turbines

Extent of visible turbines
(Based on topography alone)



VIEWPOINT VP15

Viewpoint Summary:	
Location:	Elevation:
Jerilderie Road, Hay South	93 m
Coordinates:	Viewing Direction:
34°39'4.51"S 144°56'40.64"E	South
Distance to nearest WTG:	Visibility Distance Zone:
19.40 km	**Mid Background (MB)**
Land Use:	Viewer Sensitivity Level:
Low Use Road	**Low**
LCU:	Scenic Quality Rating:
LCU04: Farmlands	**Low**

Multiple Wind Turbine Tool:

No turbines within 8000m

Existing Landscape Character Description:

This viewpoint is located on Jerilderie Road, Hay South. Jerilderie Road is a low use road that provides access to low density rural residential lots. Adjacent lands are classified as grazing farmlands with some areas of dryland and irrigated cropping. Surrounding terrain is flat with open, unhindered views, with existing tree cover along the horizon.

Potential Visual Impact:

Due to the distance from the project and existing vegetation along the horizon, it is unlikely any wind turbines will be visible from this location.

Aerial Image Source: Google Earth (02/2020)

Appendix D Noise Impact Assessment

Pottinger Energy Park - Wind Farm

Preliminary Noise Impact Assessment

S7618C1C

May 2023

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Client	**:** Someva Pty Ltd
Document Reference	: S7618C1C
Date	: May 2023
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GLOSSARY

A-weighting	Frequency adjustment applied to measured noise levels to approximate the frequency response of the human ear.
Ambient noise level	The noise level of the existing noise sources in the environment in the absence of the Applicant (wind farm).
Annoying noise characteristics	Characteristics of noise that can be considered annoying, including tonality, intermittency, irregularity, or dominant low-frequency content.
Associated Residence	A residence, where the landowner has a commercial agreement with the wind farm.
Background noise level	The ambient noise level which excludes intermittent noise sources.
BESS	Battery Energy Storage System
Bulletin	*Wind Energy: Noise Assessment Bulletin - For State significant wind energy development (NSW Department of Planning and Environment, December 2016)*
dB(A)	A-weighted noise or sound power level in decibels.
EIS	Environmental Impact Statement
Non-associated Residence	A residence, where the landowner does not have a commercial agreement with the Applicant.
SEARs	Secretary's Environmental Assessment Requirements
Sound power level	A measure of the sound energy emitted from a source of noise.
The Noise Sources	All equipment associated with the BESS and associated ancillary equipment.
The Policy	NSW Noise Policy for Industry 2017
The Project	Pottinger Energy Park
Worst-case	Conditions resulting in the highest noise level at residences.
WTG	Wind turbine generator comprising a three bladed, upstream facing, horizontal axis turbine mounted on steel towers with a common set of generic design components generally comprising a foundation, tower, nacelle, hub and blades

1 INTRODUCTION

The Pottinger Energy Park (the **Project**) is proposed to be constructed approximately 60km south of Hay, New South Wales.

The Applicant seeks in perpetuity approval for the construction, operation and decommissioning of a 750 MW wind farm and associated infrastructure, generally including the following components:

Up to 108 Wind Turbine Generators (WTGs) of which each has a tip height of up to 280 m;

- Electrical reticulation network:
    - Up to five main transformers and an optional second satellite substation and associated transformers, switchroom, and reactive plant;
    - On-site connection to Energy Connect, associated switch and other equipment at the main substation;
    - Internal electrical reticulation (both underground and overhead);
    - Approximately 500 MW **/** 2 GWh Battery Energy Storage (BESS);
- Other temporary and permanent infrastructure including:
    - Operations and Maintenance (O&M) facility and infrastructure including site office, storage facilities, car parking and fencing;
    - Accommodation facilities;
    - Construction and operational compounds;
    - Hardstands for WTGs and other infrastructure;
    - Internal access tracks and road turning head connecting Project infrastructure;
    - Meteorological masts;
    - Concrete batching plants, crushing facilities, gravel / borrow pits, construction laydown areas;
- Ancillary activities including sourcing of materials and water for construction; subdivision and boundary adjustments, visual screening and associated ancillary works;
- Access road use and Project-required upgrades:
    - Project Area access: via the Cobb Highway from Jerilderie Road in the north-east and West Burrabogie Road in the west, as well as emergency access; and
    - Wind farm components access: via a major Port in either NSW, VIC, SA, via the Sturt Highway and/or Cobb Highway, then Jerilderie Road and/or West Burrabogie Road;
- Operational workforce of up to 40 Full Time Equivalent (FTE) and construction up to 450 FTE; and
- Construction generally within standard construction hours, and operations 24 hours per day 7 days per week.

This preliminary noise impact assessment supports the Scoping Report which has been prepared to assist in the application for the Secretary's Environmental Assessment Requirements (**SEARs**) which shall guide the preparation of the Environmental Impact Statement (**EIS**) for the Project.

The assessment includes predictions of the noise from the WTGs in accordance with the New South Wales Department of Planning and Environment's (DPE, 2016) *Wind Energy: Noise Assessment Bulletin* (**the Bulletin**), which makes reference to the 2009 South Australian document *Wind farms – environmental noise guidelines* (**SA 2009**).

2 PRELIMINARY WIND TURBINE NOISE IMPACT ASSESSMENT

The preliminary wind turbine noise impact assessment is based on the following information:

- 108 **WTG** locations as summarised in Appendix A and project description in Section 1;
- Residence locations summarised in Appendix B, including the classification of the residence, the distance to the nearest WTG (up to 10km from the nearest turbine) and the predicted noise level;
- Local topographical contours[1];
- Noise level data for an indicative WTG with a sound power level of 107 dB(A) (including an addition for uncertainty), which is a conservative (worst case maximum) assumed sound power level for the likely model of wind turbine proposed;
- A hub height of 180m above ground level, with a tip height up to 280 m; and,
- The WTG being free of any excessive levels of tonality or any other special audible characteristics, when assessed at the residences.

[1] 2020. SRTMGL1v003-DSM. Geoscience Australia, Canberra. http://pid.geoscience.gov.au/dataset/ga/135165

2.1 Methodology

The predictions of environmental noise from the Project have been based on the noise propagation model described by ISO 9613-2:1996 *"Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation"* (**ISO 1996-2**) and SoundPLAN noise modelling software. ISO 9613-2 is one of the recommended models under SA 2009 for the prediction of wind turbine noise. The noise propagation model considers the following:

- sound power levels and noise source locations;
- separation distances between noise sources and residences;
- topography of the area;
- influence of the ground;
- air absorption; and,
- meteorological conditions

ISO 9613-2 provides a methodology for predicting noise levels at sensitive land uses under meteorological conditions favourable to noise propagation. Specifically, the ISO 9613-2 model predicts noise based on the assumption of downwind noise propagation (resulting in higher noise levels) from all WTGs to all noise sensitive receptors simultaneously, therefore representing a conservative approach.

Inputs to the noise prediction model are in accordance with the Institute of Acoustics *"A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise"* (May 2013) (**IOA Guide**), which includes the following requirements:

- 10°C temperature;
- 70% relative humidity;
- Intermediate ground absorption (required by the IOA Guide, despite the pastoral nature of the land);
- barrier attenuation of no greater than 2 dB(A) (required by the IOA Guide);
- Receiver point located 4m above ground level at the residence (required by the IOA Guide, despite receiver points being at a lower level than this); and,
- application of a 3 dB(A) correction where a "concave" ground profile exists as defined by the IOA Guide.

The above inputs are generally in accordance with the recommendations of SA 2009 to provide conservative predictions of the noise level from turbine operation. The only exception is the assumption of intermediate ground absorption (in lieu of the hard ground recommended by SA 2009); this assumption is recommended by the IOA Guide to avoid over-prediction of noise levels which can occur when a hard ground assumption is used. It is also noted that the updated version of SA 2009 (November 2021) specifically references the IOA Guide as a suitable alternative to the modelling parameters given in SA 2009.

2.2 Criteria

The Bulletin provides criteria based on the higher of 35 dB(A) or 5 dB(A) above the background noise level at each integer wind speed for non-associated residences.

This preliminary assessment is based on the baseline criteria of 35 dB(A). Background noise monitoring conducted as part of the acoustic assessment for the EIS may result in an increase in the criteria above the baseline criteria. Though in largely rural areas, background noise levels can still influence the criteria, especially at higher wind speeds. For example, at high wind speeds the wind in the trees surrounding a residence can be quite noisy and increase the criteria, or in areas where insects, birds or other wildlife are present and are a dominant feature of the ambient noise environment.

2.3 Results

The highest predicted noise from WTGs (corresponding to hub height wind speeds of 10m/s and above) is detailed for each residence in Appendix B and is shown graphically in Figure 1 below. Figure 1 shows the predicted 35 dB(A), 40 dB(A) and 45 dB(A) noise contours. The preliminary prediction indicates that the noise at residences shown outside of the 35 dB(A) contour achieves the baseline criterion.

Based on the preliminary modelling, there are no residences that have a predicted noise level greater than or equal to 35 dB(A), and as such, the baseline criterion is achieved at all sensitive receivers (refer to Figure 1).

The Project will be refined as part of the ongoing design process to seek to minimise noise impacts at all residences. Potential modifications to the WTG 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.

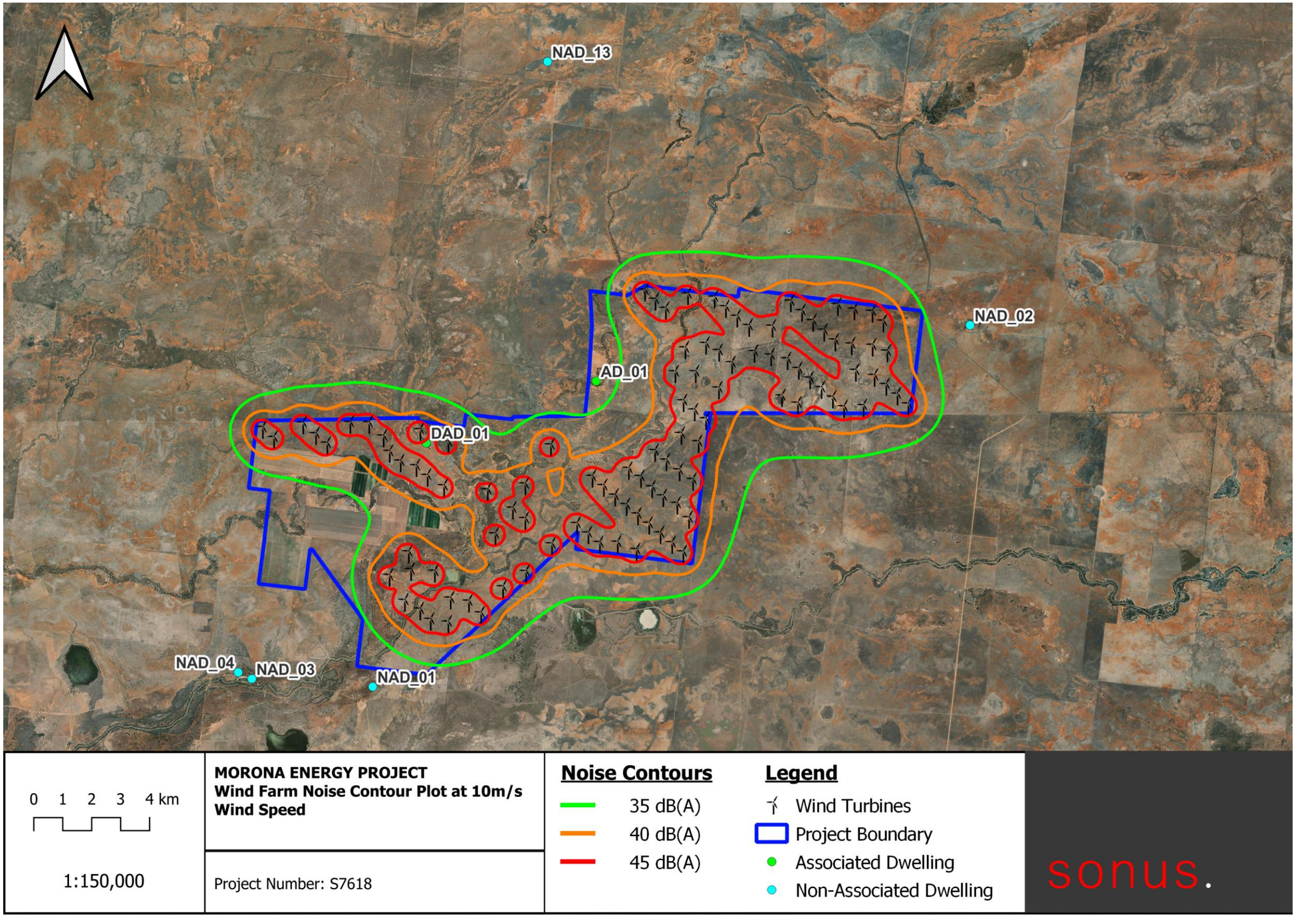

Figure 1: Wind Farm Noise Result Contours

3 PRELIMINARY ANCILLARY INFRASTRUCTURE NOISE IMPACT ASSESSMENT

The preliminary ancillary infrastructure noise impact assessment is based on the following information:

- The designated zone for the locations of the Noise Sources associated with the assessment. The Noise Sources have been contained within this area and centred around the coordinates shown in Appendix A.
- Noise level data for an indicative 500MW, 2GWh BESS system, with an overall sound power level of 120 dB(A).
- Noise level data for 5 indicative 250MVA transformers, each with a sound power level of 100 dB(A)
- Receiver locations summarised in Appendix B, including the classification of the receiver, the distance to the designated zone and the predicted noise level; and,
- Local topographical contours[2].

Note that the ancillary infrastructure described above is common to both the wind and solar components of the proposal, and therefore the assessment of the noise emissions from this equipment has also been considered for the (separate) solar farm noise assessment.

3.1 Methodology

The predictions have been based on the CONCAWE noise propagation model as implemented in SoundPLAN noise modelling software. The noise propagation model considers the following:

- sound power levels and noise source locations;
- separation distances between noise sources and residences;
- topography of the area;
- influence of the ground;
- air absorption; and,
- meteorological conditions.

[2] 2020. SRTMGL1v003-DSM. Geoscience Australia, Canberra. http://pid.geoscience.gov.au/dataset/ga/135165

The CONCAWE noise propagation model accounts for meteorological conditions based on six separate "weather categories", dependant on wind speed, wind direction, time of day and level of cloud cover. Weather Category 1 provides the weather conditions associated with the "lowest" propagation of noise, while Weather Category 6 provides "worst-case" (i.e. highest noise level) conditions. Weather Category 4 provides "neutral" weather conditions for noise propagation (that is, conditions in which the effects of temperature inversion or wind on propagation of noise are neutral).

Fact Sheet D of the Policy describes how to account for noise enhancing weather conditions. The conditions described as "Noise-enhancing" meteorological conditions align with the CONCAWE Weather Category 6 conditions used in this assessment.

The assessment has been based on the following input conditions:

- CONCAWE Weather Category 6 (representing meteorological conditions that enhance the propagation of noise);
- atmospheric conditions at 10°C and 70% relative humidity (representing conditions that result in low levels of noise absorption from the atmosphere);
- wind directions representing the absolute worst-case noise propagation from the wind from all noise sources to the receiver; and,
- acoustically soft ground (representing the pastoral nature of the land).

3.2 Criteria

The Policy provides the Project Noise Trigger Level based on the most onerous requirement of:

1. The intrusiveness noise level, which limits the noise level to 5 dB above the background level, so long as it is above a minimum threshold; and
2. The project amenity noise level, which provides an overall noise level limit for different land uses.

As background noise monitoring has not been conducted, the intrusiveness noise level has been taken as the minimum threshold. These are as follows:

Table 1: Minimum assumed project intrusiveness noise levels

Time of day	Minimum project intrusiveness noise levels ($L_{Aeq,\ 15\ min}$ dB[A])
Day (7am to 6pm Monday to Saturday, or 8am to 6pm on Sundays and public holidays)	40
Evening (6pm to 10pm)	35
Night (all remaining periods)	35

The project amenity noise levels are based upon the receiver noise amenity area, which in this case is RU1 – primary production. For residential receivers, the following project amenity noise levels apply.

Table 2: Recommended amenity noise levels

Time of day	Project amenity noise levels (L_{Aeq} dB[A])
Day (7am to 6pm Monday to Saturday, or 8am to 6pm on Sundays and public holidays)	48
Evening (6pm to 10pm)	43
Night (all remaining periods)	38

This preliminary assessment is based on setting the Project Noise Trigger Level as the minimum project intrusiveness noise levels. Background noise monitoring conducted as part of the Project process may result in an increase in the Project Noise Trigger Levels above these levels.

In accordance with the Policy, where a noise source contains certain characteristics, such as tonality, intermittency, irregularity or dominant low-frequency content, there is evidence to suggest that it can cause greater annoyance than other noise at the same noise level. The Policy applies the correction factors to be applied to the source noise level at the receiver before comparison with the project noise trigger levels specified to account for the additional annoyance caused by these modifying factors. The modifying factor corrections should be applied having regard to:

- the contribution noise level from the premises when assessed/measured at a receiver location, and
- the nature of the noise source and its characteristics (as set out in the Policy).

The corrections specified for tonal, intermittent, and low-frequency noise are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. The adjustments for duration are to be applied to the criterion.

As the equipment for the Project are yet to be selected, a conservative assumption has been made that the equipment will result in a tonal correction being applicable at the residences.

3.3 Results

The predicted noise levels from the assessment are shown graphically in Figure 2 below. Figure 2 shows the predicted 35 dB(A), 40 dB(A) and 45 dB(A) noise contours, which are inclusive of a 5 dB(A) correction for tonality. The preliminary prediction indicates that the noise at receivers shown outside of the 35 dB(A) contour achieves the Project Noise Trigger Levels.

Based on the preliminary modelling, there are no residences that have a predicted noise level greater than or equal to 35 dB(A), and as such, the Project Noise Trigger Levels are achieved at all sensitive receivers.

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

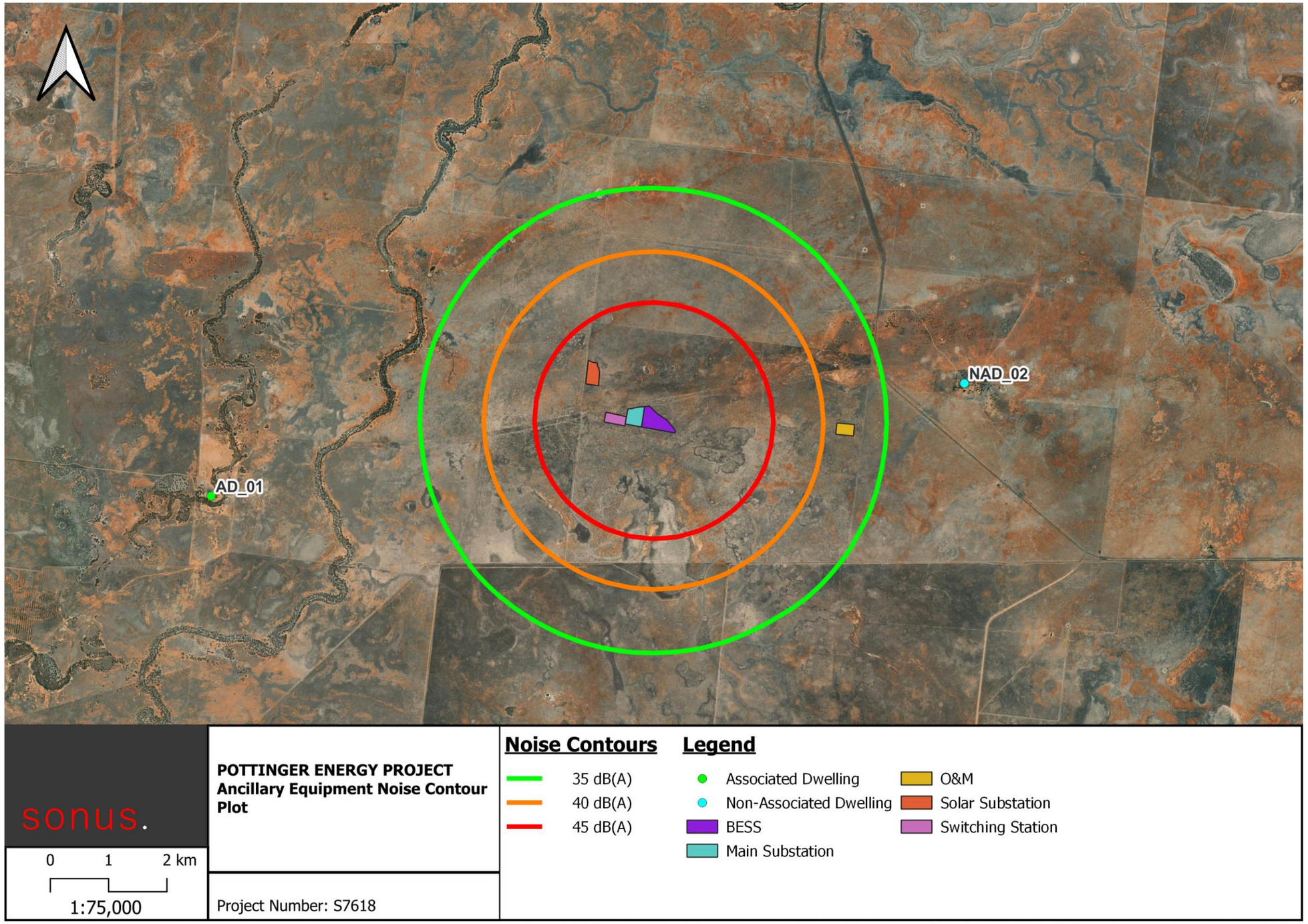

Figure 2: Ancillary Equipment Result Contours

4 ACOUSTIC IMPACT ASSESSMENT

A detailed acoustic assessment will be prepared for inclusion in the EIS, addressing the following components:

- WTG noise in accordance with the Bulletin;
- BESS and other ancillary infrastructure noise in accordance with the *Noise Policy for Industry, 2017;*
- Construction noise in accordance with the *Interim Construction Noise Guideline, 2009;*
- Traffic noise in accordance with the *NSW Road Noise Policy, 2011*;
- Vibration in accordance with *Assessing vibration: A Technical Guideline, 2006*; and,
- Cumulative noise impacts, considering other developments in the area.

The EIS will incorporate the following information to assist in considering the detailed assessment:

1. Background noise monitoring results;
2. Establishment of criteria in accordance with the background noise monitoring results;
3. Predictions which account for the sound power levels and locations of WTGs, BESS and ancillary infrastructure;
4. A construction noise assessment and framework for a management plan, if required;
5. A traffic noise assessment;
6. Commentary on vibration impacts; and,
7. Noise reduction measures where the relevant operational or construction assessment criteria are not achieved.

APPENDIX A: NOISE SOURCE LOCATIONS

WTG Number	WTG Coordinates (GDA94 / MGA zone 55)	
	Easting	Northing
WP1	306583	6141314
WP2	306970	6140971
WP3	307977	6141474
WP4	308421	6141102
WP5	308810	6140773
WP6	309606	6141492
WP7	310259	6141485
WP8	310754	6141023
WP9	310966	6140490
WP10	311345	6140157
WP11	311890	6139995
WP12	312276	6139662
WP13	312847	6139303
WP14	312026	6141242
WP15	312996	6140825
WP16	311627	6137019
WP17	311705	6136406
WP18	312526	6136351
WP19	310961	6136205
WP20	311491	6135343
WP21	312021	6135041
WP22	312383	6134684
WP23	312992	6134593
WP24	313074	6135420
WP25	313704	6135316
WP26	314125	6134910
WP27	314884	6135812
WP28	315681	6136342
WP29	316574	6137295
WP30	317443	6137999
WP31	317833	6137672
WP32	318229	6137344
WP33	318845	6137353
WP34	319500	6137094
WP35	314618	6137640
WP36	314354	6139169
WP37	315223	6138528
WP38	315653	6138169

WTG Number	WTG Coordinates (GDA94 / MGA zone 55)	
	Easting	Northing
WP39	315655	6139362
WP40	316539	6140713
WP41	317973	6139629
WP42	318365	6139308
WP43	318757	6138977
WP44	319153	6138650
WP45	319544	6138326
WP46	319933	6138005
WP47	320325	6137676
WP48	320727	6137338
WP49	321112	6137019
WP50	319229	6139900
WP51	319648	6139623
WP52	320034	6139266
WP53	320419	6138953
WP54	320903	6138696
WP55	321310	6138200
WP56	320137	6140519
WP57	320530	6140192
WP58	320983	6139850
WP59	321448	6139521
WP60	321044	6141109
WP61	321641	6140824
WP62	321121	6142238
WP63	321504	6141921
WP64	321896	6141616
WP65	320837	6143242
WP66	321540	6143242
WP67	322340	6142678
WP68	321185	6144066
WP69	321898	6144220
WP70	322350	6143977
WP71	322796	6143553
WP72	324522	6142408
WP73	325072	6142155
WP74	323574	6143940
WP75	324146	6143820
WP76	324716	6143687
WP77	325103	6143356
WP78	325494	6143024

WTG Number	WTG Coordinates (GDA94 / MGA zone 55)	
	Easting	Northing
WP79	325889	6142691
WP80	326278	6142363
WP81	326668	6142031
WP82	327340	6142073
WP83	327073	6143290
WP84	327719	6143116
WP85	328125	6142802
WP86	328512	6142468
WP87	328889	6142129
WP88	319787	6146061
WP89	320151	6145746
WP90	320508	6145432
WP91	321274	6145934
WP92	322193	6145821
WP93	322584	6145489
WP94	322976	6145159
WP95	323388	6144838
WP96	324192	6144817
WP97	324826	6145686
WP98	325215	6145350
WP99	325596	6145011
WP100	325980	6144677
WP101	326364	6144338
WP102	326932	6144202
WP103	327654	6144157
WP104	328162	6143956
WP105	326452	6145566
WP106	327025	6145404
WP107	327647	6145330
WP108	328025	6144992

Ancillary Equipment Sources	Noise Source Coordinates (WGS84 / UTM zone 55S)	
	Easting	Northing
BESS	325720	6144265
Main Substation	325430	6144335

APPENDIX B: RESIDENCE LOCATIONS AND PREDICTIONS

Table 3: Wind Farm Predictions

Residence ID	Residence Coordinates (GDA94 / MGA zone 55)		Category	Nearest WTG	Distance to Nearest WTG (m)	Predicted Level (dB(A))
	Easting	Northing				
AD_01	318158	6142984	Associated	WP65	2692	33
NAD_01	310438	6132425	Non-Associated (Associated with another project)	WP22	2981	29
NAD_02	331081	6144917	Non-Associated (Associated with another project)	WP108	3057	30
NAD_03	306264	6132699	Non-Associated	WP20	5858	23
NAD_04	305792	6132922	Non-Associated (Associated with another project)	WP19	6123	22
NAD_13	316480	6154023	Non-Associated	WP88	8622	20
DAD_01	312290	6140850	Associated	WP14	473	44

Table 4: Ancillary Infrastructure Predictions

Residence ID	Residence Coordinates (GDA94 / MGA zone 55)		Category	Distance to Closest Source (m)	Predicted Level (dB(A))
	Easting	Northing			
AD_01	318157	6142983	Associated	7300	24
NAD_02	331081	6144915	Non-Associated (Associated with another project)	5335	29

Appendix E Preliminary Biodiversity Development Assessment Report

Pottinger Wind Farm

Preliminary Biodiversity Assessment

FINAL REPORT

Prepared for Someva Renewables

12 May 2023

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- Callan Wharfe, Nick Lloyd (fieldwork and report preparation)
- Sarah Tobin (zoological technical input)
- Matt Looby, Mitch Palmer (oversight and technical input)
- James Shepherd and Astrid Mackegard (GIS and mapping).

Contents

Tables

Figures

Glossary

BAM	*Biodiversity Assessment Method*
BC Act	*NSW Biodiversity Conservation Act 2016*
Biosecurity Act	*Biosecurity Act 2015*
BOS	Biodiversity Offsets Scheme
CEEC	Critically Endangered Ecological Community
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DPI	Department of Primary Industries
DPE	NSW Department of Planning and Environment
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
FM Act	*Fisheries Management Act 1994*
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation for Australia
Indicative development footprint	Equivalent to the approximate development footprint to be assessed in the future BDAR
LGA	Local Government Area
LLS	Local Land Services Amendment Act 2016
LLS Act	*Local Land Services Act 2013*
Locality	A 20 km radius of the subject land
Matters of NES	Matters of National Environmental Significance
NPW Act	*National Parks and Wildlife Act 1974*
NSW	New South Wales
PCT	Plant Community Type
Pottinger Wind Farm	Wind Farm project for which Application will be made
Project	The proposed Pottinger Wind Farm
Project area	The portion of the property that relates to the Project and will be subject to the state and Commonwealth applications

SEPP	NSW State Environmental Planning Policy
SIC	Significant Impact Criteria
Subject land	The entire property upon which the Project is situated, and to where the BAM will be applied.
TEC	Threatened Ecological Community
WM Act	*Water Management Act 2000*
WTG	Wind turbine generator

1 Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by Someva Renewables Pty Ltd to undertake a preliminary biodiversity assessment for the proposed Pottinger Wind Farm (the Project).

The Project is proposed within an Energy Park comprised of wind and solar renewable energy infrastructure and associated structures including a 750 Megawatt wind farm, solar farm and Battery Energy Storage System (BESS). For the purpose of this report only, the wind farm and associated infrastructure has been assessed, with the solar farm being the subject of separate report.

The Project is located on a large rural agricultural property, comprising a total area of approximately 14,000 hectares across 108 lot/DPs, east of the Cobb Highway, approximately 60 kilometres south of Hay, New South Wales (NSW) (the subject land).

This preliminary biodiversity assessment report describes the biodiversity values and constraints associated with the Project, within the subject land and indicative development footprint (approximate footprint of wind farm and associated infrastructure) as shown on Figure 1. The report will facilitate the preparation of the project's Scoping Report to obtain Secretary's Environmental Assessment Requirements (SEARs) and support an application under Part 9 of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The objective of this preliminary biodiversity assessment report is to determine the potential presence of any threatened flora, fauna, populations or ecological communities (entities) listed under the EPBC Act, NSW *Biodiversity Conservation Act 2016* (BC Act) and *Fisheries Management Act 1994* (FM Act) within the subject land and indicative development footprint, and provide guidance on means of avoiding and minimising potential impacts to those entities.

This report supports the Scoping Report and has informed early project design to avoid, minimise and mitigate biodiversity impacts likely to arise from the project.

1.2 Scope of assessment

The scope of this preliminary biodiversity assessment is to identify high level constraints and describe biodiversity values within the subject land. This preliminary assessment allows for recommendations to be provided in terms of avoidance, mitigation and/or further detailed assessment of biodiversity. Following a thorough review of publicly available information, previous environmental reports for the subject land, a rapid field investigation in February 2023, and summer bird and bat utilisation surveys, the primary objectives are:

- Describe the biodiversity values present within the subject land based on best available desktop and ground validated data.
- Identify potential constraints for a wind farm development with respect to collision risk with bird/bat species.
- Identify potential constraints for the Project with respect to remnant vegetation, threatened ecological communities (TECs), threatened species habitat, potential turbine collision risk, and flow on effects on approvability and potential/likely impacts with respect to the NSW Biodiversity Offset Scheme (BOS).

- Provide details of any other high-risk issues that may be likely to arise in the EPBC Act referral / approvals process and the state-based planning regime more broadly.
- Provide recommendations on activities and an associated scope of work to support a future state significant development (SSD) application and EPBC referral process with respect to biodiversity values.

1.3 Relevant terminology

The following terms are used throughout this assessment, within the scoping report and across other relevant specialist studies.

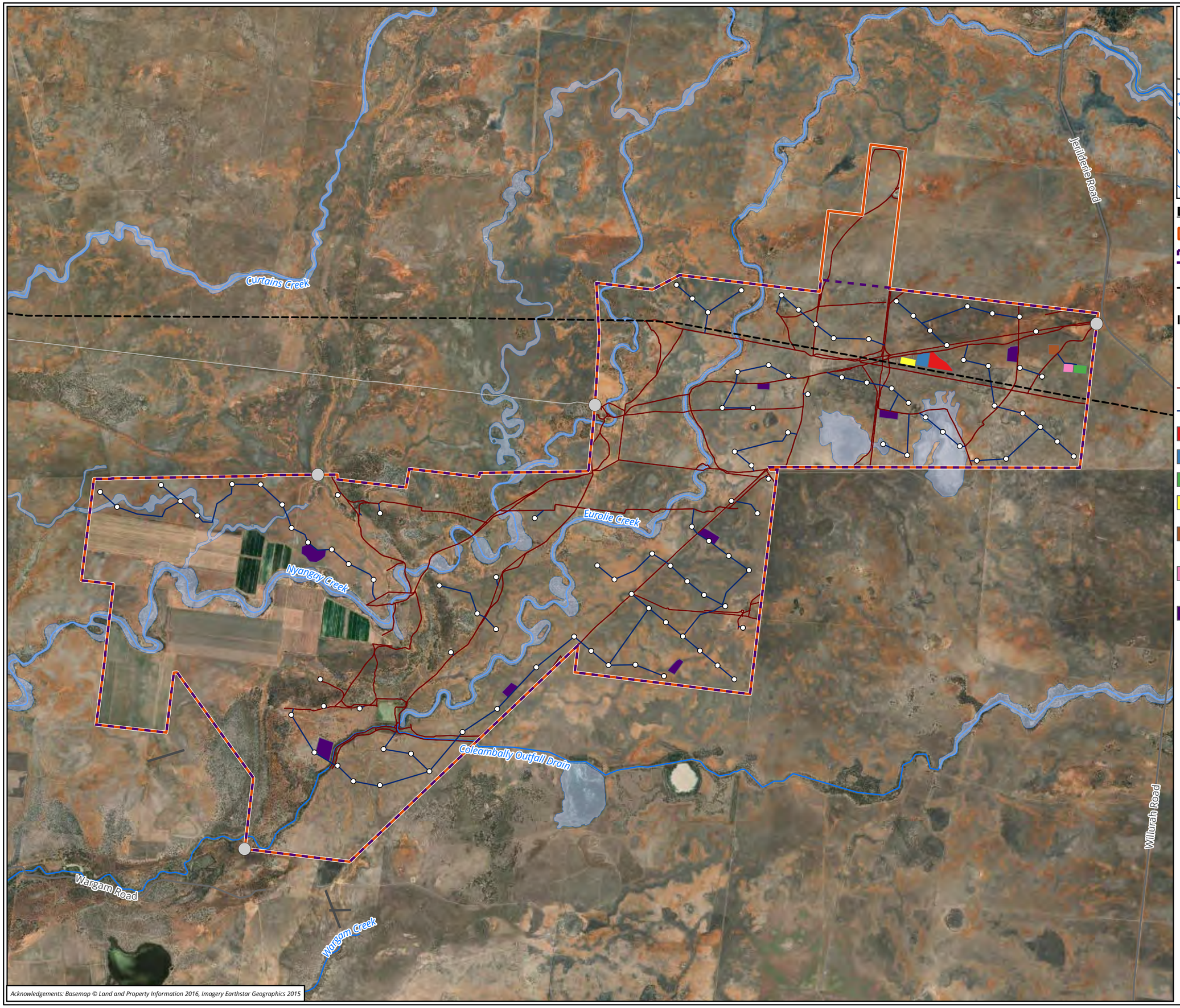
- Subject land: The entire property upon which the Project is situated. This includes the indicative development footprint as well as areas that will not be subject to development, operational agriculture area, residential dwelling etc. and areas proposed for separate solar development.
- Project area: the portion of the property that relates to the Project and will be subject to the application for SEARs and under Part 9 of the EPBC Act.
- Indicative development footprint: Equivalent to the approximate development footprint to be assessed in the future BDAR. This area is currently indicative due to the Project being in the early stages of design. The indicative development footprint sits within the project area and the subject land. (Figure 1)

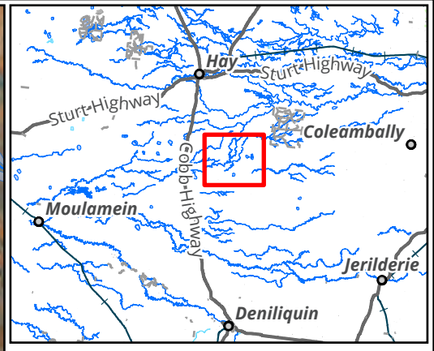
1.4 Location of the subject land

The subject land is located east of the Cobb Highway between Hay and Deniliquin, approximately 60 kilometres south-east of Hay and approximately 220 kilometres west of Wagga Wagga (Figure 1). It encompasses approximately 14,000 hectares of private land, with internal and adjacent public road reserves, and waterways. It is zoned RU1 primary production.

The subject land is within the:

- Riverina Interim Biogeographic Regionalisation for Australia (IBRA) and Murrumbidgee subregion.
- Murrumbidgee channels and floodplains, Murrumbidgee Depression Plains and Murrumbidgee Scaled Plains Mitchell landscapes (predominantly).
- Murrumbidgee catchment.
- Riverina and Murray Local Land Services (LLS) Management Areas.
- Hay and Edward River Local Government Areas (LGA).
- Hay and Deniliquin Local Aboriginal Land Councils





Legend

- Subject land
- Project area
- Project Energy Connect alignment (assumed)

Indicative development footprint

- Propsed WTG layout
- Project access
- Existing access tracks
- Additional internal access track
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown

Figure 1 Subject land - Pottinger Energy Park

0 1 2 3 4

Kilometers

Scale: 1:80,000 @ A3

Coordinate System: GDA2020 MGA Zone 55

N

biosis

Matter: 38557,
Date: 08 May 2023 ,
Prepared for: CW, Prepared by: AM, Last edited by: amackegard
Layout: Wind_F1_Subjectland
Project: P:\38500s\38557\Mapping\
38557_PottingerEnergyPark_figures_v2.aprx

2 Legislative Context

2.1 Environmental Planning and Assessment Act 197 and Biodiversity Conservation Act 2016

The Project will be assessed under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and has a capital investment cost estimated at more than $30 million. Therefore, the Project is "State Significant Development (SSD)" under Part 4 of the EP&A Act.

The BC Act relates to the conservation of biodiversity. The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community consistent with the principles of ecological sustainable development. The BC Act brings in changes to biodiversity survey, assessment and offset methodologies. It also requires specific consideration of irreversible impacts. The Project will impact on native vegetation and biodiversity values. SSD projects must enter the Biodiversity Offset Scheme (BOS) and a Biodiversity Development Assessment Report (BDAR) will be required to assess biodiversity impacts following the Biodiversity Assessment Method (BAM 2020).
This is likely to trigger biodiversity offset liabilities for the Project in accordance with the BC Act (and potentially EPBC Act), with any offset obligations achieved by:

- Acquiring or retiring credits that are publicly available or setting up an onsite or offsite Stewardship Site under the BOS.
- Making payments into the Biodiversity Conservation Fund using the offsets payment calculator (generally only suitable for small credit liabilities to risk and premium associated costs), or
- Funding a biodiversity action that benefits the threatened entity(ies) impacted by the development.

2.2 Local Land Services Act Amendment Act 2016

A review of land categorisation under the *Local Land Services Act Amendment Act 2016* (LLS Act) to clarify the native vegetation management regime was undertaken. Where applicable to do so (land applicable to the LLS act i.e. rural), the potential for land to be mapped as Category 1 exempt land was evaluated, as land mapped or determined as Cat 1 land can be excluded from the BAM and are not required to be assessed, with exception to prescribed impacts in reference to relevant legislation is provided below:

- **BC Act s6.8(3):** The BAM is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on Category 1 exempt land (within the meaning of Part 5A of the LLS Act 2013), other than any impacts prescribed by the regulations under section 6.3.
- **BAM cl1.5:** Biodiversity values not assessed under the BAM include: (d) biodiversity values associated with the assessment of the impacts of any clearing of native vegetation and loss of habitat on Category 1 exempt land (within the meaning of Part 5A of the LLS Act), other than the additional biodiversity impacts in accordance with clause 6.1 of the BC regulation; (that being prescribed impacts).

Where development consent is required under the EP&A Act, to meet the Category 1 exempt land requirement, land must be;

- Legally cleared at or since 1st Jan 1990 (Woody vegetation only); and/or

- Significantly disturbed or modified since 1990 (Non-woody vegetation).

As the Native Vegetation Regulatory maps (NVR) are not publicly available, during the transitional period (until the entire Native Vegetation Regulatory map is released), accredited assessors may establish the categorisation of land for the consent authority to consider by approximating the method used to make the NVR map under the provisions of the BC Act and the LLS Act. This is done via:

- Historical aerial imagery.
- Landuse mapping:
  - The land use layer contributes to identifying land for inclusion in category 1 in the NVR map. Chapter 4 of the NVR map method statement describes the process for identifying and mapping existing and historical agricultural land use since 1 January 1990. Mapping existing and historical land use focuses on identifying patterns or evidence of agricultural land uses according to high resolution aerial or satellite imagery and classifying land under a national land use classification system.
- Woody extent layer:
  - Contributes to identifying areas for inclusion in category 2 in the NVR map (including individual trees).
  - Latest publicly available is NSW Woody Vegetation Extent, and FPC 2011 and 2017 update.
- Boundaries of sensitive regulated and vulnerable regulated land available on the NVR map portal.

Confirmation of the relevant land categories relevant to the Project will be included within any BDAR prepared to support the EIS and have been included where possible as part of constraints definition.

2.3 Fisheries Management Act 1994

Key fish habitat is defined under the FM Act as aquatic habitat important to the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. Assessment of the Hay LGA (DPI, 2017) identified streams of Strahler order 3 and above within the subject land including Eurolie Creek and Nyangay Creek.

Waterway crossings as well as clearing and excavation near key fish habitat must consider impacts on aquatic habitat, have pollution risks mitigated and be designed in accordance with the Policy and Guidelines for Fish Habitat Conservation and Management and the Policy and Guidelines for Fish Friendly Waterway Crossings.

2.4 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) establishes the fundamental functions of the NSW National Parks and Wildlife Service. These include the conservation of nature, objects, features, places and management of land reserved under the Act. Specifically, the conservation of nature includes:

- Landforms of significance, including geological features and processes.
- Landscapes and natural features of significance including wilderness and wild rivers.

Animal and plant provisions of the NPW Act have been repealed and replaced by the BC Act. *Guidelines for developments adjacent to National Parks and Wildlife Service lands* (DPIE 2020) are also relevant to the Project

and will be considered; namely in relation to erosion control, storm and wastewater, pest and weed management, fire and access requirements including aerial and ground measures, visual, noise and other amenity impacts, connectivity impacts, impacts to groundwater dependant ecosystems and cultural heritage.

2.5 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). Under the EPBC Act, if the Minister determines that an action is a 'controlled action' which would have or is likely to have a significant impact on a Matter of National Environmental Significance (MNES) or Commonwealth land, then the action may not be undertaken without prior approval of the Minster.

The EPBC Act identifies the following nine MNES:

- World Heritage properties.
- National heritage places.
- Ramsar wetlands of international significance.
- Threatened species and ecological communities.
- Migratory species.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- Water resources (in relation to coal seam gas development and large coal mining development)

Further flora and fauna studies will confirm biodiversity impacts, during the preparation of an EIS. At this stage however, given the potential nature and scale of the Project, an EPBC Act referral on the basis of potential to significantly impact specific Commonwealth listed TECs, birds and bats, inclusive of migratory species is considered likely.

3 Methods

3.1 Database Searches

Information provided by Someva as well as other key information was reviewed, including:

- DCCEEW Protected Matters Search Tool (PMST) for MNES protected by the EPBC Act.
- NSW BioNet Atlas of NSW Wildlife, for items listed under the BC Act within 20 kilometres (study locality) of the subject land.
- The NSW Department of Primary Industries (DPI) Spatial Data Portal for FM Act listed threatened species, populations and communities
- NSW DPI *Biosecurity Act 2015* for Priority listed weeds for the Murray LLS area.
- Review of the NSW Biodiversity Values Map and Threshold Tool.
- Establishment of a BAM Calculator project(s) for the assessment to determine the requirements for threatened species survey.
- Review BAM Important Areas mapping for areas of habitat mapped for threatened entities considered potentially be subject to Serious and Irreversible Impacts (SAIIs).
- Vegetation Information System (VIS) mapping, including.
  - NSW Government's modelled State Vegetation Type Mapping (SVTM) Riverina (RiverinaSVM_v1p2_PCT_E_4469, OEH 2016)
- Review Birdata and Birdlife Australia databases.
- EnergyConnect (NSW – Eastern Section) Technical Paper 1 – Revised Biodiversity Development Assessment Report (WSP 2022) relative to overlapping project areas.
- Cotemporary Scoping Reports and EISs for other wind farm projects in the South-West Renewable Energy Zone (SW REZ).

The implications for the Project are assessed in relation to key biodiversity legislation and policy including:

- EPBC Act.
- EP&A Act.
- BC Act.
- NPW Act.
- LLS Act.

3.2 Literature review and regulator consultation

A review of relevant literature was undertaken to provide local context for threatened species occurrence and contemporary information relating to relevant threatened species, and where possible their interaction with relevant wind farm projects. A review of the following key documents was undertaken:

- Broad-scale opportunistic movements in the tropical waterbird *Anseranas semipalmata* (Magpie Goose): implications for human-wildlife conflicts (Corriveau et al 2021).
- Breeding home range movements of pre-fledged brolga chicks, *Antigone rubicunda* (Gruidae) in Victoria, Australia - Implications for wind farm planning and conservation (Veltheim et al 2019).
- EnergyConnect (NSW – Eastern Section) Technical Paper 1 – Revised Biodiversity Development Assessment Report (Project Energy Connect BDAR) (WSP 2022).
- Yanko Delta Wind Farm Biodiversity Development Assessment Report (Jacobs 2022).
- The Plains Wind Farm Scoping Report (ERM 2022)
- Scoping Report: Wilan Wind Farm (Biosis and Kilara Energy 2022)
- Dinawan Wind Farm Scoping Report (EMM 2022)

Key issues have been discussed with regulators with regards to wind farm development in the SW REZ, and these issues have been considered as part of this preliminary biodiversity assessment however, it should be noted that regulator consultation specific to this Project is yet to commence.

3.3 Land category and desktop vegetation mapping assessment

A detailed land category assessment (LCA) and review desktop vegetation mapping to PCT was undertaken to inform the extent of the area subject to assessment under the BAM and BC Act, as well as preliminary PCT mapping and field validation described below (Figure 2 and Figure 3).

In order to pre-emptively exclude highly utilised and/or modified areas from assessment under the BC Act, a desktop review of land categorisation under the LLS Act was undertaken. This assessment clarifies the native vegetation management and land use regime of the subject land and where applicable to do so, the potential for land to be mapped as 'Category 1 exempt land'. Land mapped or determined as Category 1 exempt can be excluded from the BAM and is not required to be assessed, with the exception of prescribed impacts. Note, the LCA does not remove the requirement to address matters under the EPBC Act.

The results of Biosis' LCA are provided in Figure 2. Note that the results of Biosis LCA is yet to be compared to Native Vegetation Regulatory (NVR) mapping from DPE for the subject land, however historically Biosis' LCA results have proven well aligned with the NVR mapping.

3.4 Field investigation, SVTM validation and summer BBUS

Biosis undertook a rapid field validation survey of the subject land between 15-17 February 2023, with staff involved including Callan Wharfe (BAM Accredited Assessor, Senior Associate Botanist – Technical Lead Major Projects and Offsets) and Nick Lloyd (Graduate Botanist). Early mapping and validation of PCTs and TECs will ensure informed ongoing design decisions and biodiversity risks assessment can be considered from the outset of the Project, with biodiversity impacts avoided and minimised from the outset. The field investigations included:

- Preliminary vegetation mapping of PCTs across the subject land, including validation of the Riverina SVTM (OEH 2016) vegetation modelling.
- Mapping of any TECs listed under the BC Act and/or EPBC Act.
- Consideration of broad vegetation condition states to determine vegetation zones.

- Verification of previously recorded locations of threatened species and undertaking opportunistic surveys for threatened species considered to have the potential to occur within the subject land.
- Preliminary habitat assessment in accordance with the BAM to determine the potential for threatened species identified under the BAM as 'ecosystem credit species' and 'species credit species' to occur.
- Indicative mapping ecological constraints such as habitat trees, wetlands, waterways and nearby areas supporting potential habitat for threatened species.
- Flora and fauna species inventory.

Further to the above PCT mapping and habitat assessment work, Biosis completed the first seasonal replicate of the bird and bat utilisation surveys (BBUS) that will inform the BDAR, and the Bird and Bat Adaptive Management Plan (BBAMP). Surveys for the summer 2023 season were completed between 20 – 24 February 2023 by Biosis Zoologists Joel Nicholson and John Kelly.

A total of 24 bird utilisation survey (BUS) points, comprising 18 impact points and 6 control points, were sampled over three replicates each, with impact / control points stratified and paired on the basis of habitat types aligned to vegetation classes present across the subject land. It should be noted that two control points are located in the South West Woodland Nature Reserve, approximately 5 kilometres south-west of the subject land to ensure the control points are outside any future influence of wind turbine generator (WTG)s.

A total of 6 microbat survey points were established across the subject land with survey points generally co-located with BUS points, again stratified by vegetation class habitats.

3.5 Biodiversity constraints mapping

Table 1 below provides an overview and explanation of the biodiversity constraints parameters used to develop a site specific biodiversity constraints GIS model and GIS outputs. This constraints model has been used to undertake initial avoidance and minimisation of impacts (see Section 5.2 for more detail), and will continue to form the basis for impact minimisation thought the design and assessment phases of the Project. GIS outputs layers include specific 'WTG and powerline constraints' and 'Civil constraints', based on the various parameters and specific project constraints and opportunities each presents to the different components.

Key biodiversity constraints of the subject land, which will require consideration throughout the Project, include but not limited to:

- DPE mapped Important Areas of Plains Wanderer *Pedionomus torquatus* habitat, a species potentially subject to serious and irreversible impacts (SAIIs) under the NSW *Biodiversity Assessment Method* (BAM), and is listed as Critically Endangered under the Commonwealth EPBC Act.
- The occurrence of ephemeral wetlands and woodland/wetlands within the subject land and indicative development footprint, which during high rainfall (flood) years are likely to attract migrating waterbirds to the Riverina region, and subject land specifically.
- The occurrence, or potential occurrence, of the following BC Act and/or EPBC Act TECs:
  - *Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions* (Endangered Ecological Community [EEC], BC Act).
  - *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions* (EEC, BC Act and EPBC Act).

- *Natural Grasslands of the Murray Valley Plains* (Critically Endangered Ecological Community [CEEC], EPBC Act).
- *Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions* (EEC, BC Act).

- The presence of potential habitat for threatened flora and fauna species listed under the BC Act and/or EPBC Act (as provided in Table 3).

In order to assess the constraints of vegetation and habitat present within the subject land, areas were identified and mapped into the four categories outlined in Table 1 below. Landscape features and mapped biodiversity values present outside the subject land were considered to ensure the influence of any values beyond the site were captured. Various landscape habitat features and mapped biodiversity values are considered to result in different levels of consistent for potential wind developments (with highest constraints largely relating to potential turbine strike by birds and/or bats) as opposed to civil works associated with both wind and solar projects. As such, details of the constraints values relevant to each constraint category for both wind and civil project components are provided separately below.

The data input into the constraints model is based on best available desktop GIS data, combined with ground validated PCTs determined during the February 2023 field survey, as described above.

Table 1 Biodiversity constraint model outputs definitions, justifications and management / mitigation approach

Constraint category	Definition	WTG and powerline constraint value *(predominantly in regards to bird and bat collision risk)*	Civil constraint value *(includes WTGs, solar arrays, site reticulation and access etc.)*	Suggested management / mitigation approach
No Go areas (Constraint score – 4)	These are areas that should be avoided and if not, may impact regulatory approval of the project (i.e. regulators may require significant redesign to reduce impacts, or impose further impact minimisation/mitigation measures at approval).	• DPE mapped Important Areas of Plains Wanderer habitat, with an additional 100 m buffer to reduce potential for direct impacts to areas of highest potential habitat. Plains Wanderer is a species potentially subject to Serious and Irreversible Impacts (SAIIs) under the BAM, and is listed as Critically Endangered under the EPBC Act.	• DPE mapped Important Areas of Plains Wanderer habitat, with an additional 100 m buffer to reduce potential for direct impacts to areas of highest potential habitat.	• Remove all infrastructure from mapped No Go areas. • Minor encroachment may be acceptable, but increases the risk of future redesign and protracted approvals timeframes.
High Constraint (Constraint score – 3)	These are areas where impacts should be avoided wherever possible, with any unavoidable residual impacts likely to be subject to impact minimisation/mitigation measures. Justification for unavoidable impacts will be required in the BDAR. Likely to be subject to operational impact minimisation strategies for WTGs, and/or include areas that are likely to generate high biodiversity credit per hectare requirements at offsetting.	• Additional 200 m buffer on No-Go areas associated with mapped Plains Wanderer habitat to reduce the potential for indirect impacts, generally during the operational phase of the project. • Mapped wetlands, woodland/wetlands and riparian vegetation, including a 200 m WTG exclusion buffer on mapped polygons to reduce the potential for WTG collisions. These comprise areas of highest potential habitat for waterbirds, raptors and microbats, with wetland areas in particular likely to provide habitat to a large number of waterbirds in flood years. Temporal/seasonal mitigation may be required to minimise potential operational impacts.	• Additional 200 m buffer on No-Go areas associated with mapped Plains Wanderer habitat to reduce the potential for indirect impacts, during the construction and operational phases of the project. • Mapped potential threatened ecological communities (TECs) listed under the BC Act or EPBC Act. This includes Sand Hill Pine Woodland, Weeping Myall Woodland, and Acacia melvillei shrubland communities, as well as the EPBC Act Critically Endangered Natural Grasslands of the Murray Valley Plains, which is associated with PCTs 44, 45 and 46.	• Minimise project infrastructure in High Constraint areas to reduce direct and indirect impacts. • Operational WTGs within wetland and woodland/wetland habitat areas (and buffers) in particular, may be subject to mitigation strategies (such as seasonal curtailment) in high rainfall/flood years when waterbirds migrate to the Riverina floodplain region generally, and the subject land specifically. • Impacts minimisation strategies including maintenance of WTG-free zones (flyways) between wetlands (stepping-stones) and other habitat feature should be employed during project design. • Operational WTGs are considered likely to be 'high risk' and monitoring and

Constraint category	Definition	WTG and powerline constraint value *(predominantly in regards to bird and bat collision risk)*	Civil constraint value *(includes WTGs, solar arrays, site reticulation and access etc.)*	Suggested management / mitigation approach
		• Mapped woodland vegetation, including a 200 m WTG exclusion buffer on mapped polygons to reduce the potential for WTG collisions. These comprise areas of highest potential breeding habitat for mircobats, raptors, parrots and owls. • Note that in some areas, High Constraint buffers for WTGs and powerlines overlap into lower constraint areas for civil works. This is due to the requirements for all areas to address (at a minimum) Prescribed Impacts under the BAM, which included potential turbine strikes.	• Threatened species populations and habitat (*note this potential constraint has not been included in the current GIS model due to difficulties relating to scale, and constraints generally being associated with PCTs and landscape features. Threatened species are to be considered further during future design stages, and further surveys have been completed*).	adaptive management will be required to trigger suitable mitigation strategies. • Implement measures in designing WTGs to dissuade perching and minimise the diameter of the rotor swept area. • In average rainfall (drier) years operational WTGs in these areas may be less likely to be subject to impact minimisation strategies. • Direct and indirect impact to TECs should be avoided and minimised and all impacts will require justification for state and Commonwealth approvals.
Moderate Constraint (Constraint score – 2)	Suitable for development, however being predominantly native vegetation (and associated habitats) will be subject to legislative requirements to demonstrate application of avoid and minimise principles. Areas likely to generate a moderate biodiversity credit per hectare that require offsetting.	• n/a	• All native vegetation (not subject to the above constraints) remains a moderate constraint due to the legislative requirements to avoid and minimise impacts, and the potential for threatened species to occur. • Drier areas of PCT 160 *Nitre Goosefoot shrubland wetland on clays of the inland floodplains,* considered more likely to be derived from former saltbush communities (BioNet 2023), are included as moderate constraints, rather than wetter areas of the same community which provide higher quality wetland habitat to fauna (included above).	• Consider the overall design requirements of the project and how that relates to impact minimisation from the outset. • Operational WTGs may be considered to be 'moderate risk' and monitoring and adaptive management may be required to trigger suitable mitigation strategies. • Locate as much infrastructure as possible in areas of non-native vegetation and/or Category 1 exempt land (further detailed below) • Avoidance of threatened species populations and habitat (or minimisation of impacts) can be undertaken during future design stages.

Constraint category	Definition	WTG and powerline constraint value *(predominantly in regards to bird and bat collision risk)*	Civil constraint value *(includes WTGs, solar arrays, site reticulation and access etc.)*	Suggested management / mitigation approach
Low Constraint (Constraint score – 1)	Best suited for development. These areas are unlikely to generate biodiversity credits (exotic/cultivated areas) or may have low biodiversity credit requirements per hectare.	• n/a	• Non-native vegetation or areas likely to meet the definition of Category 1 exempt land and where prescribed impacts are considered negligible	• Preferentially locate project infrastructure in areas of non-native vegetation and/or Category 1 exempt land. • Category 1 exempt land (assessed under the Local Land Services Act) is excluded from assessment under the BAM, with the exceptions of Prescribed Impacts (i.e. WTG collision), and impacts to BC Act listed critically endangered entities. EPBC Act considerations must also be addressed in regards to development on Category 1 exempt land.
Items considered but not subject to specific constraints	• National Parks estate and setbacks are not directly applicable as the project areas is >3 km from the nearest park. • Mapped watercourses are not subject to specific constraints as mapped vegetation provides and prescribes suitable constraints levels and setbacks. • Threatened species habitat and/or presence cannot be incorporated into the constraints model (at this scale), and relevant constraints/recommendations and captured by those relating to native vegetation.			

3.6 Limitations and assumptions

Biodiversity constraints outlined above are based on desktop assessment of best available spatial mapping data, with refinement during ground validation surveys in February 2023 only. It should be noted that the wetter period over early summer 2022, has resulted in a number of wetlands within the subject land still being inundated in February 2023, this allowed for direct observation of the habitat value of these areas for waterbirds (in particular) during wet years.

The constraints mapping contained herein is based on modelled interpretation of this data using the rulesets outlined Table 1 above using a GIS processing model, and no substantial interpretation of aerial imagery has been undertaken to determine any inconsistencies between the existing datasets and observable on-ground conditions. The above presented constraints relate to biodiversity values and related approvals only, and does not consider other environmental assessment requirements such as cultural heritage values, flooding or geotechnical constraints.

4 Results

The principal land uses in the subject land have included modified and native pasture grazing as well as irrigated cropping. The contemporary landscape is dominated by the physical structures associated with irrigated agriculture such as irrigation bays and banks, channels, roads, fences, farm infrastructure and regulators. Grazing with sheep (predominantly) and cattle has also had a significant negative effect on the structure and diversity of floodplain and chenopod shrubland vegetation communities in some instances.

The subject land contains areas conducive to semi-arid chenopod dominated landscapes with grasslands areas supporting various densities of woody shrubs interspersed with open Pine and Myall woodlands, with Black Box woodland/wetlands and Lignum / Nitre Goosefoot wetlands present in areas more frequently inundated. The subject land predominantly supports native vegetation, with only highly disturbed areas, a result of ongoing agricultural uses, devoid of native species. Native vegetation and habitat occur in a range of condition states, however the majority would be considered to be on moderate ecological condition, with some areas occurring in a more natural state and others being more degraded by historical land management practices.

Three main watercourses exist within the subject land; Nyangay Creek, Eurolie Creek and Coleambally Outfall Drain (a concrete-lined irrigation channel), and a number of large areas of natural wetlands occur associated with Eurolie Creek, and to the north-east of the subject land.

4.1 Land category assessment

The BC Act determines that the BAM is to exclude the assessment of the impacts of clearing native vegetation on Category 1 - exempt land. As the Category 1 Land regulatory maps are not yet publicly available, a preliminary assessment of whether cleared areas within the subject land meet the definition of the Category 1 exempt land was undertaken. Based on 2013 (OEH, 2014) and 2017 Landuse Datasets (OEH, 2017), NSW Woody Vegetation extent and foliage projection cover datasets (OEH, 2015), Native Vegetation Regulatory Mapping (NVRM) and historical aerial imagery, approximately 1,400 hectares of land within the subject land is considered to be classed as Category 1 exempt land (Figure 2).

The majority of the Category 1 exempt land with the subject land is associated with cropping land in western portion of the site. Another large area occurs along the northern site boundary west of Nyangay Creek, which has recently been subject to large scale replanting of eucalypts in windrows over an area of approximately 250 hectares. Three smaller patches of Category 1 exempt land exists near the homestead (again in an areas excluded from potential development), associated with the large irrigation dame off the Coleambally Outfall Drain and a very small area adjacent to Nyangay Creek. These areas are exempt from further assessment in the BAM with exception to prescribed impacts as stated in Section 6.3 of the BC Act, however there is currently very little development proposed for these areas.

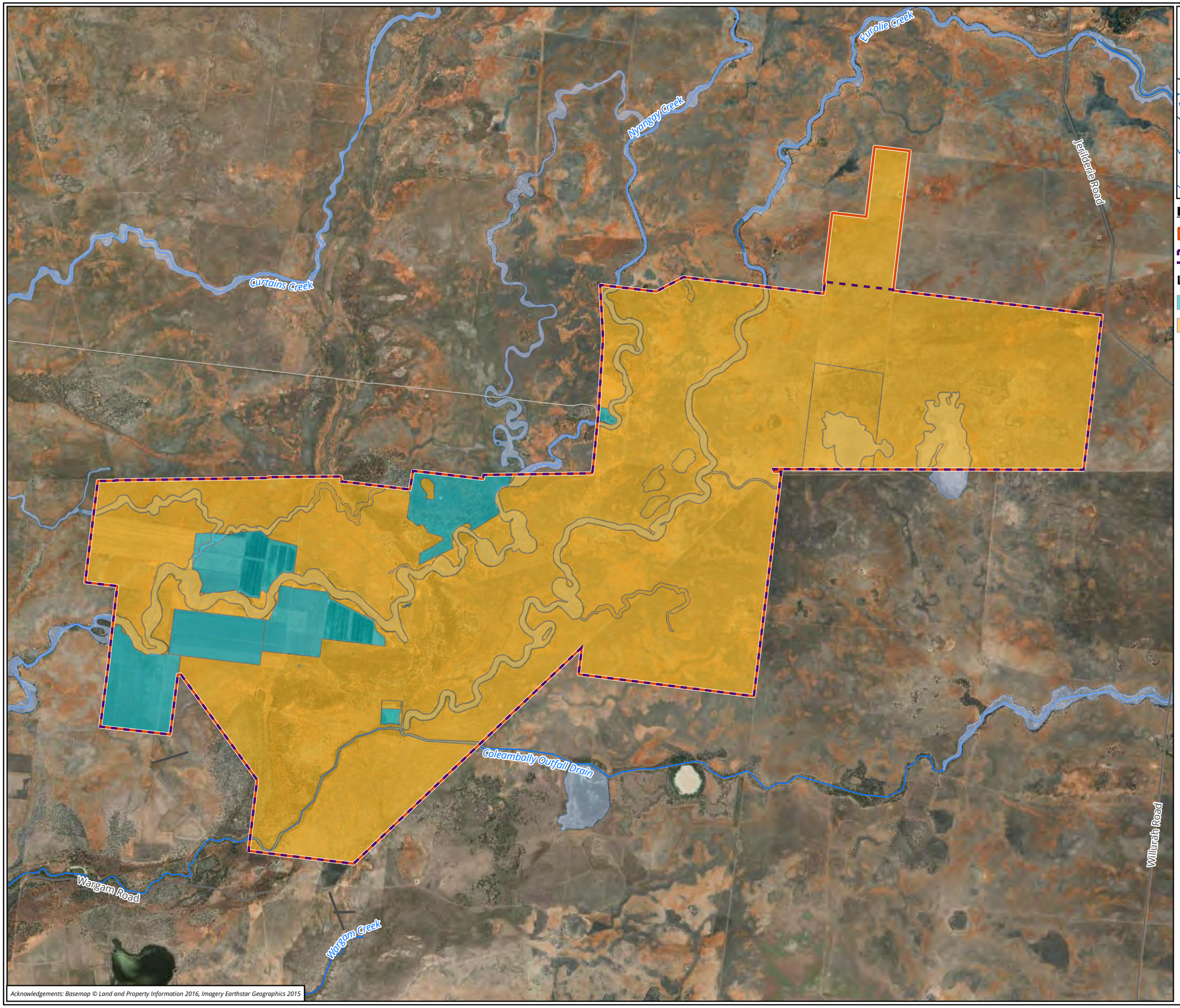


Figure 2 Land category assessment (Biosis)

Matter: 38557,
Date: 31 March 2023 ,
Prepared for: CW, Prepared by: AM, Last edited by: amackegard
Layout: F2_LandCat
Project: P:\38500s\38557\Mapping\
38557_PottingerEnergyPark_figures_v2.aprx

4.2 Vegetation communities

Desktop mapping and analysis confirmed 20 potential Plant Community Types (PCT) had been modelled as occurring within 5 kilometres of the subject land (Riverina SVTM, OEH 2016), and the primary aim of the preliminary field investigation was to validate the PCTs (and TECs) present within the subject land and immediate surrounds.

A total of 16 PCTs were confirmed as present during the field investigation, ranging from wetlands and woodland / wetlands, to drier sandplain / sand hill woodlands, chenopod shrubland and grasslands (Figure 3). Vegetation condition ranged from high condition in areas less subject to historical pressures such as clearing and grazing, to low condition in areas of ongoing disturbance from agricultural activities. The majority of the subject land's vegetation is considered to be in moderate ecological condition, subject to some level of historical/ongoing disturbance but a generally lower level of current negative pressures such as exotic species infestations, erosion, overgrazing, trampling etc. However, this will be confirmed in the BDAR.

Up to four TECs have been assessed as likely to be present within the subject land, two confirmed TECs being Myall Woodland and Sandhill Pine Woodland, and two potential being Acacia melvillei Shrubland and Natural Grasslands of the Murray Valley Plains, which require further assessment to confirm presence. Further information is provided in Table 2 and Section 4.3 below.

A summary of ground validated PCTs and TEC within the subject land is provided in Table 2. A number of 'modelled only' PCTs remain included in Table 2 as their presence (or potential presence) throughout the broader subject land provides background habitats and to the potential original PCTs in areas of derived grasslands/shrublands.

Table 2 Summary of modelled and ground validated PCTs within the subject land

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
10: River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone	**Structure:** tall to mid-high woodland **Height:** to 18 m **Upper stratum:** River Red Gum *Eucalyptus* camaldulensis, Black Box *Eucalyptus largiflorens*. **Mid stratum:** may contain dense to very sparse stands of Lignum *Duma* (*Muehlenbeckia*) *florulenta,* River Cooba *Acacia stenophylla* with Pale-fruit Ballart *Exocarpos strictus* in lower numbers. **Ground stratum:** Warrego Grass *Paspalidium jubiflorum,* Spider-grass *Enteropogon acicularis,* Couch *Cynodon dactylon,* Ringed Wallaby Grass *Rytidosperma caespitosum,* Corkscrew Grass *Austrostipa nodosa*, Corrugated Sida *Sida corrugata, Oxalis perennans,* River Bluebell *Wahlenbergia fluminalis, Cyperus exaltatus*.	Ground validated. Recorded as a single patch in the east of the subject land	Riparian woodland / wetland	N/a	N/a	N/a
13: Black box-lignum woodland of the inner floodplains in the semi-arid zone	**Structure:** open woodland **Height:** to 15 m **Upper stratum:** Black Box *Eucalyptus largiflorens* **Mid stratum:** scattered to dense cover of Lignum *Duma* (*Muehlenbeckia*) *florulenta,* Cooba *Acacia salicina*, Thorny Saltbush *Rhagodia spinescens,* Dillon Bush *Nitraria billardierei.* **Ground stratum:** Warrego Grass *Paspalidium jubiflorum*, Creeping Saltbush *Atriplex semibaccata*, Dense Stonecrop *Crassula colorata*, Ruby Saltbush *Enchylaena tomentosa*, Short-wing saltbush *Sclerolaena brachyptera*, Climbing Saltbush *Einadia nutans* subsp. *nutans*.	Ground validated. Recorded along the major watercourses present through the subject land.	Riparian woodland / wetland	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
15: Black box open woodland with chenopod understorey	**Structure:** very open woodland **Height:** to 10 m **Upper stratum:** Black Box *Eucalyptus largiflorens* **Mid stratum:** scattered to dense cover of Thorny Saltbush *Rhagodia spinescens,* Dillon Bush *Nitraria billardierei.* **Ground stratum:** Ruby Saltbush *Enchylaena tomentosa*, Short-wing saltbush *Sclerolaena brachyptera*, Climbing Saltbush *Einadia nutans* subsp. *nutans*, Slender-fruit Saltbush *Atriplex leptocarpa*, Spider-grass *Enteropogon acicularis*, Fairy Grass *Sporobolus caroli*, Knottybutt Grass *Paspalidium constrictum*, *Marsilea costulifera,* Mousetail *Myosurus australis.*	Ground validated. Recorded adjacent to the major watercourses present through the subject land.	Riparian woodland / wetland	N/a	N/a	N/a
16: Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW	**Structure:** open woodland **Height:** to 10 m **Upper stratum:** Black Box *Eucalyptus largiflorens* **Mid stratum:** Thorny Saltbush R*hagodia spinescens* **Ground stratum:** Ruby Saltbush *Enchylaena tomentosa,* Creeping Saltbush *Atriplex semibaccata, Salsola tragus* subsp. *tragus, Atriplex eardleyae,* Black Rolypoly *Sclerolaena muricata* var. *muricata,* Cannonball Burr *Dissocarpus paradoxus, Oxalis perennans,* Quena *Solanum esuriale,* Wallaby Grasses *Rytidosperma* spp.	Ground validated. Recorded further from the major watercourses present through the subject land.	Woodland / wetland	N/a	N/a	N/a
17: Lignum shrubland of the semi-arid (warm) plains	**Structure:** dense to open shrubland with aquatic and terrestrial components **Height:** to 4 m **Upper stratum:** occasional emergent River Red Gum *Eucalyptus camaldulensis,* Black Box *Eucalyptus largiflorens* or River Cooba *Acacia stenophylla*. **Mid stratum:** Lignum *Duma* (*Muehlenbeckia*) *florulenta* with scattered Nitre Goosefoot *Chenopodium nitrariaceum.*	Ground validated. Single large dense patch recorded at the confluence of the unnamed watercourse and the Coleambally Outfall Drain, with a number of smaller scattered occurrences elsewhere	Ephemeral wetland (wetter sub-type)	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
	Ground stratum: Spike Sedges *Eleocharis* spp., Rushes *Juncus* spp., Twin-leaved Bedstraw *Asperula gemella,* Black Rolypoly *Sclerolaena muricata* var. *villosa,* Pacific Azolla *Azolla filiculoides, Myriophyllum papillosum,* Australian Mudwort *Limosella australis,* Cat-tail *Myriophyllum caput-medusae,* Red Water-milfoil *Myriophyllum verrucosum,* Water Primrose *Ludwigia peploides* subsp. *montevidensis, Callitriche umbonata, Haloragis glauca* f. *glauca,* Tall Groundsel *Senecio runcinifolius,* Slender Monkey-flower *Mimulus gracilis.*					
19: Cypress Pine woodland of source-bordering dunes mainly on the Murray and Murrumbidgee River floodplains	**Structure:** medium to high woodland **Height:** to 13 m **Upper stratum:** White Cypress Pine *Callitris glaucophylla* occasionally with Slender Cypress Pine *Callitris gracilis* subsp. *Murrayensis*. **Mid stratum:** often absent, if present Common Fringe-myrtle *Calytrix tetragona*, Silver Banksia *Banksia marginata*. **Ground stratum:** Ringed Wallaby Grass *Rytidosperma caespitosum, Oxalis perennans,* Flannel Cudweed *Actinobole uliginosum*.	Modelled only. Cypress Pine PCTs found only to represent PCT 28 within the indicative development footprint and portion of the subject land assessed during initial vegetation mapping fieldwork.	Riverine sandhill woodlands	EEC - Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	N/a	N/a
23: Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	**Structure:** tall open shrubland **Height:** to 6 m **Upper stratum:** N/A **Mid stratum:** Yarran *Acacia melvillei*, Black Oak *Casuarina pauper*, Spiny Saltbush *Rhagodia spinescens,* Turpentine Bush *Eremophila sturtii,* Black Cotton-bush *Maireana decalvans*, Small-leaf Bluebush *Maireana microphylla,* Dillon Bush *Nitraria billardierei,* Old Man Saltbush *Atriplex nummularia, Sclerolaena diacantha*	Ground validated (potential). A single stand of potential *Acacia melvillei* was recorded in the central portion of the subject land. No reproductive material was present in February 2023 to confirm the species identification.	Riverine sandhill woodlands	EEC - Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
	Ground stratum: Corkscrew Grass *Austrostipa nodosa,* Ringed Wallaby Grass *Rytidosperma caespitosum,* Soft Billy-buttons *Pycnosorus pleiocephalus*, *Leiocarpa brevicompta,* Wooly Plover-daisy *Leiocarpa tomentosa*, Corrugated Sida *Sida corrugata, Goodenia fascicularis*, *Tetragonia eremaea,* Hard-headed Daisy *Brachyscome lineariloba,* Plover Daisy *Leiocarpa leptolepis*, Fuzzweed *Vittadinia cuneata*, Twiggy Sida *Sida intricata*, Small White Sunray *Rhodanthe corymbiflora*, Bitter Saltbush *Atriplex stipitata*					
24: Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	**Structure:** tall tussock grassland **Height:** 2 m **Upper stratum:** N/A **Mid stratum:** Copperburrs *Sclerolaena* spp., Saltbushes *Atriplex* spp., Forest Germander *Teucrium racemosum*. **Ground stratum:** Canegrass *Eragrostis australasica*, Windmill Grass *Chloris truncata*, Blown Grass *Lachnagrostis filiformis*, Plains Grass *Austrostipa aristiglumis*, Neverfail *Eragrostis setifolia,* Weeping Lovegrass *Eragrostis parviflora*, *Eleocharis acuta, Eleocharis* pusilla, Pale Spike-sedge *Eleocharis pallens,* Rushes *Juncus* spp., Common Nardoo *Marsilea drummondii*, Narrow-leaf Nardoo *Marselia costulifera*, *Azolla filiculoides,* Water Milfoils *Myriophyllum* spp.	Ground validated. Single occurrence recorded in unnamed watercourse in the north of the subject land	Ephemeral wetland (wetter sub-type)	N/a	N/a	N/a
26: Weeping Myall open woodland of the Riverina Bioregion and NSW South	**Structure:** mid-high open woodland **Height:** to 8 m **Upper stratum:** Weeping Myall *Acacia pendula*, Belah *Casuarina cristata* with Black Box *Eucalyptus largiflorens*, River Red Gum *Eucalyptus camaldulensis* occurring in depressions. **Mid stratum:** Spiny Saltbush *Rhagodia spinescens,* Black Cotton bush *Maireana decalvans,* Old Man Saltbush *Atriplex*	Ground validated. Occasional high condition and denser patches in the north of the subject land, with larger areas supporting sparse to very sparse Weeping Myall and	Riverine plain woodlands	EEC - Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling	EEC - Weeping Myall Woodlands	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
Western Slopes Bioregion	*nummularia,* Nitre Goosefoot *Chenopodium nitrariaceum,* Needlewood *Hakea leucoptera,* Northern Sandalwood *Santalum lanceolatum,* Leafless Ballart *Exocarpos aphyllus,* Cotton Bush *Maireana aphylla*. **Ground stratum:** Ringed Wallaby Grass *Rytidosperma caespitosum,* Smallflower Wallaby Grass *Rytidosperma setaceum,* Plains Grass *Austrostipa aristiglumis,* Speargrass *Austrostipa scabra,* Corkscrew Grass *Austrostipa nodosa,* fairy Grass *Sporobolus caroli,* Spiny-fruit Saltbush *Atriplex spinibractea,* Slender-fruit Saltbush *Atriplex leptocarpa,* Creeping Saltbush *Atriplex semibaccata,* Lesser Joyweed *Alternanthera denticulata,* Wooly-heads *Myriocephalus rhizocephalus,* Common Sneezeweed *Centipeda cunninghamii,* Small White Sunray *Rhodanthe corymbiflora,* Fuzzweed *Vittadinia cuneata* var. *cuneata.*	associated derived native grasslands		Depression, Riverina and NSW South Western Slopes bioregions		
28: White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	**Structure:** open woodland to derived grassland **Height:** to 15 m **Upper stratum:** White Cypress Pine *Callitris glaucophylla* **Mid stratum:** Buloke *Allocasuarina luehmannii*, Needlewood *Hakea leucoptera,* Hooked Needlewood *Hakea tephrosperma* **Ground stratum:** Black Bluebush *Maireana pyramidata*, *Maireana enchylaenoides,* Thorny Saltbush *Rhagodia spinescens*, *Tetragonia tetragonioides*, *Sclerolaena diacantha, Sclerolaena obliquicuspis.*	Ground validated. Commonly recorded on sand hills and over sand lenses associated with a prior stream trough the central / southern portion of the subject land	Riverine sandhill woodlands	EEC - Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions	N/a	N/a
44: Forb-rich Speargrass - Windmill Grass - White Top grassland of the	**Structure:** diverse open natural grassland or derived grassland from intergraded woodland communities **Height:** 0.5 m **Upper stratum:** N/A **Mid stratum:** N/A	Ground validated. Recorded throughout the subject land where grasslands occur with a lower (sparse to very	Riverine plain grassland	N/a	CEEC - Natural Grasslands of the Murray Valley Plains (potential)	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
Riverina Bioregion	**Ground stratum:** Corkscrew Grass *Austrostipa nodosa*, Windmill Grass *Chloris truncata*, Ringed Wallaby Grass *Rytidosperma caespitosum, Calotis scabiosifolia, Sida corrugata,* Hairy Bluebush *Maireana pentagona and Maireana excavate.*	sparse) cover of chenopod shrubs such as Cotton Bush, Dillon Bush and Nitre Goosefoot				
45: Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	**Structure:** tussock grassland **Height:** to 2 m **Upper stratum:** N/A **Mid stratum:** Tangled Lignum *Duma (Muehlenbeckia) florulenta* **Ground stratum:** Plains Grass *Austrostipa aristiglumis*, *Walwhalleya proluta,* Wallaby Grass *Rytidosperma duttonianum*, Curly Windmill Grass *Enteropogon ramosus,* Fairy Grass *Sporobolus caroli,* Windmill Grass *Chloris truncata,* Nardoo *Marsilea drummondii,* Early Nancy *Wurmbea dioica* subsp. *dioica,* Wiry Dock *Rumex dumosus*, Small Vanilla Lily *Arthropodium minus,* Scaly Buttons *Leptorhynchos squamatus* subsp. A, Spreading Crassula *Crassula decumbens* var. *decumbens*, Silky Goodenia *Goodenia fascicularis,* Small White Sunray *Rhodanthe corymbiflora*, *Swainsona* spp., Pale Spike-sedge *Eleocharis pallens.*	Ground validated. Recorded occasionally within the subject land where grasslands occur with a lower (sparse to very sparse) cover of chenopod shrubs such as Cotton Bush, Dillon Bush and Nitre Goosefoot	Riverine plain grassland	N/a	CEEC - Natural Grasslands of the Murray Valley Plains (potential)	N/a
46: Curly Windmill Grass - speargrass - wallaby grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	**Structure:** open to closed tussock grassland **Height:** to 0.3 m **Upper stratum:** N/A **Mid stratum:** *Sclerolaena stelligera,* Bottle Bluebush *Maireana excavate,* Cottonbush *Maireana aphylla.* **Ground stratum:** Curly Windmill Grass *Enteropogon ramosus*, Corkscrew Grass *Austrostipa nodosa*, Speargrass *Austrostipa scabra,* Wallaby Grasses *rytidosperma* spp., Small White Sunray *Rhodanthe corymbiflora, Crassula colorata* var. *acuminata,* Blue Storksbill *Erodium crinitum, Oxalis perennans,* Hairy Sida *Sida*	Ground validated. Recorded throughout the subject land where grasslands occur with a lower (sparse to very sparse) cover of chenopod shrubs such as Cotton Bush, Dillon Bush and Nitre Goosefoot	Riverine plain grassland	N/a	CEEC - Natural Grasslands of the Murray Valley Plains (potential)	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
	trichopoda, Corrugated Sida *Sida corrugata, Goodenia pusilliflora, Goodenia fascicularis,* Rough burr-daisy *Calotis scabiosifolia* var. *scabiosifolia,* Pale Beauty-heads *Calocephalus sonderi,* Native Leek *Bulbine semibarbata, Daucus glochidiatus* form G.					
58: Black oak-western rosewood open woodland on deep sandy loams	**Structure:** low open woodland or isolated clumps **Height:** to 7 m **Upper stratum:** Black Oak *Casuarina pauper* **Mid stratum:** Western Rosewood *Alectryon oleifolius* subsp. *canescens*, Sugarwood *Myoporum platycarpum* subsp. *platycarpum*, *Acacia oswaldii*, *Pittosporum angustifolium*. **Ground stratum:** Thorny Saltbush *Rhagodia spinescens*, Black Bluebush *Maireana pyramidata, Sclerolaena patenticuspis, Sclerolaena obliquicuspis, Salsola tragus* subsp. *tragus, Atriplex stipitate,* Spear Grasses *Austrostipa nitida, Austrostipa scabra, Austrostipa elegantissima.*	Modelled only	Riverine sandhill woodlands	N/a	N/a	N/a
153: Black bluebush low open shrubland of the alluvial plains and sand plains	**Structure:** variable shrubland **Height:** to 1.3 m **Upper stratum:** N/A **Mid stratum:** Black Bluebush *Maireana pyramidata*, Bladder Saltbush *Atriplex vesicaria*, Dillon Bush *Nitraria billardierei*, Old Man Saltbush *Atriplex nummularia*, Thorny Saltbush *Rhagodia spinescens*. **Ground stratum:** *Disphyma crassifolium* subsp. *clavellatum*, *Hyalosperma semisterile*, Eastern Flat-top Saltbush *Atriplex lindleyi*, Grey Copperburr *Sclerolaena diacantha*, Pigmy Sunray *Rhodanthe pygmaea*, Spear-grass *Austrostipa scabra*, Water Weed *Osteocarpum acropterum.*	Modelled only. The modelled presence of this PCT suggests areas currently occurring as grassland PCTs (44, 45, 46) may have once compromised areas of saltbush shrublands prior to historical grazing.	Aeolian chenopod shrublands	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
157: Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	**Structure:** variable shrubland **Height:** to 0.9 m **Upper stratum:** Mostly not present except for occasional Weeping Myall *Acacia pendula* or Black Oak *Casuarina pauper* isolated trees. **Mid stratum:** Bladder Saltbush *Atriplex vesicaria,* Desert Glasswort *Pachycornia triandra*, Three-spined Copperburr *Sclerolaena tricuspis*, Poverty Bush *Sclerolaena intricate,* Pigface *Disphyma crassifolium* subsp. *Clavellatum,* Slender Glasswort *Sclerostegia tenuis, Sclerolaena brachyptera, Sclerolaena tenuis*, Black Cotton Bush *Maireana decalvans*, Cotton Bush *Maireana aphylla,* Soft Horns *Malacocera tricornis, Dissocarpus biflorus* var. *biflorus*, *Atriplex lindleyi, Atriplex pseudocampanulata,* Dillon Bush *Nitraria billardierei*, Desert Glasswort *Pachycornia triandra.* **Ground stratum:** Windmill Grass *Chloris truncata,* Smallflower Wallaby Grass *Rytidosperma setaceum,* Fairy Grass *Sporobolus caroli, Minuria cunninghamii, Brachyscome smithwhitei,* Small White Sunray *Rhodanthe corymbiflora, Calandrinia volubilis.*	Modelled only. The modelled presence of this PCT suggests areas currently occurring as grassland PCTs (44, 45, 46) may have once compromised areas of saltbush shrublands prior to historical grazing.	Riverine chenopod shrublands	N/a	N/a	N/a
159: Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)	**Structure:** tall shrubland **Height:** to 2.5 m **Upper stratum:** Dominated by Old Man Saltbush *Atriplex nummularia.* **Mid stratum: C**henopod shrub layer dominated by bluebushes such as *Maireana microcarpa*, *Maireana appressa, Maireana pyramidata* and *Maireana brevifolia*, Thorny Rhagodia *Rhagodia spinescens*, Bladder Saltbush *Atriplex vesicaria* and Nitre Goosefoot *Chenopodium nitrariaceum*. **Ground stratum:** Low ground shrubs include *Dissocarpus biflorus, Atriplex lindleyi* and a number of copperburr species	Ground validated. Recorded at one location as a large stand within the area excluded for development relatively near the homestead. Whether this is a naturally occurring example of this PCT, or planted is yet to be determined.	Riverine chenopod shrublands	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
	(*Sclerolaena* spp.). Forb species include *Senecio runcinifolius, Brachyscome lineariloba, Geococcus pusillus, Calandrinia eremaea, Bulbine bulbosa, Tetragonia tetragonioides, Crassula colorata* var. *colorata, Crassula sieberiana* subsp. *sieberiana* and *Osteocarpum acropterum* var. *deminuta*; grass species include *Chloris truncata*, *Austrodanthonia caespitosa*, *Austrostipa nodosa* and *Walwhalleya proluta*.					
160: Nitre Goosefoot shrubland wetland on clays of the inland floodplains	**Structure:** open to closed shrubland **Height:** to 2 m **Upper stratum:** N/A **Mid stratum:** Nitre Goosefoot *Chenopodium nitrariaceum* with occasional Dillon Bush *Nitraria billardierei* and Lignum *Duma* (*Muehlenbeckia*) *florulenta.* **Ground stratum:** *Tecticornia tenuis*, Common Sneezeweed *Centipeda cunninghamii*, Creeping Saltbush *Atriplex semibaccata*, Eastern Flat-top Saltbush *Atriplex lindleyi,* Mossgiel Daisy *Brachyscome papillosa,* Pale Spike Sedge *Eleocharis pallens,* Small White Sunray *Rhodanthe corymbiflora,* Short-wing Saltbush *Sclerolaena brachyptera.*	Ground validated. Two board forms occur, wetter form in larger wetland/lakes and drainage depression (some large areas inundated in Feb 2023), and drier form in higher grassier areas potentially derived from previous Old Man Saltbush (or possibly Bladder Saltbush) communities.	Ephemeral wetland (wetter and drier sub-types)	N/a	N/a	N/a
163: Dillon bush (Nitre bush) shrubland	**Structure:** open shrubland **Height:** to 1.5 m **Upper stratum:** N/A **Mid stratum:** Dillon Bush *Nitraria billardierei,* Black Bluebush *Maireana pyramidata*, Bladder Saltbush *Atriplex vesicaria*, Cotton Bush *Maireana aphylla*, Old Man Saltbush *Atriplex nummularia,* Nitre Goosefoot *Chenopodium nitrariaceum*. **Ground stratum:** *Atriplex pseudocampanulata*, *Sclerolaena obliquicuspis*, *Disphyma crassifolium* subsp. *clavellatum, Sida intricata,* Black Rolypoly *Sclerolaena muricata* var. *villosa*, Spider-	Ground validated. Recorded occasionally throughout the subject land, often in association with Cotton Bush, or grassy areas	Open chenopod shrubland	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
	grass *Enteropogon acicularis,* Eastern Flat-top Saltbush *Atriplex lindleyi,* Short-wing Saltbush *Sclerolaena brachyptera,* Ringed Wallaby Grass *Rytidosperma caespitosum.*					
164: Cotton Bush open shrubland of the semi-arid (warm) zone	**Structure:** open shrubland/herbland/grassland **Height:** to 1 m **Upper stratum:** N/A **Mid stratum:** Baldoo *Atriplex lindleyi, Atriplex eardleyae,* Angular Saltbush *Atriplex angulata,* Babbagia *Osteocarpum acropterum* var. *deminuta,* Pop Saltbush *Atriplex holocarpa,* Tangled Copperburr *Sclerolaena divaricata,* Tangled Poverty Bush *Sclerolaena intricata, Sclerolaena brachyptera,* Green Copperburr *Sclerolaena decurrens,* Grey Copperburr *Sclerolaena diacantha, Sclerolaena stelligera,* Salt Copperburr *Sclerolaena ventricosa,* Goathead Copperburr *Sclerolaena bicornis,* Cottonbush *Maireana aphylla,* Fissure Weed *Maireana ciliata,* Crown Fisure-weed *Maireana coronate,* Satiny Saltbush *Maireana turbinate.* **Ground stratum:** Common White Sunray *Rhodanthe floribunda,* Variable Dasiy *Brachyscome ciliaris,* Common Poison Pea *Swainsona affinis, Swainsona campylantha,* Neverfail grass *Eragrostis setifolia.*	Ground validated. Commonly recorded throughout the subject land, including areas of high condition chenopod shrubland in the north-west, areas of mixed shrubland with Dillon Bush and Nitre Goosefoot, and grassier areas with a higher cover of Cotton Bush throughout.	Open chenopod shrubland	N/a	N/a	N/a
165: Derived corkscrew grass grassland/ forbland on sandplains and plains in the semi-arid (warm) climate zone	**Structure:** mid-high open chenopod shrubland and/or very open woodland **Height:** to 1 m **Upper stratum:** Western Rosewood *Alectryon oleifolius*, Poplar Box *Eucalyptus populnea* subsp. *bimbil*, Black Box *Eucalyptus largiflorens,* Coolabah *Eucalyptus coolabah*. **Mid stratum:** Black Roly Poly *Sclerolaena muricata*, Goathead Burr *Sclerolaena bicornis,* Galvanised Burr *Sclerolaena birchii,* Buckbush *Salsola kali,* Small-leaf Bluebush *Maireana*	Modelled only.	Riverine plain grassland	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
	microphylla, Slender-fruit Saltbush *Atriplex leptocarpa,* Black Bluebush *Maireana pyramidata.* **Ground stratum:** Rat's Tail Couch *Sporobolus mitchellii,* Spider-grass *Enteropogon acicularis,* Tarvine *Boerhavia dominii,* Windmill Grass *Chloris truncata,* Native Millet *Panicum decompostum,* Fairy Grass *Sporobolus caroli,* Common Nardoo *Marsilea drummondii, Goodenia fascicularis,* Quena *Solanum esuriale.*					
216: Black Roly Poly low open shrubland of the Riverina Bioregion and Murray Darling Depression Bioregion	**Structure:** low to high open chenopod shrubland **Height:** to 1 m **Upper stratum:** Occasional scattered Black Box E*ucalyptus largiflorens* **Mid stratum:** Black Roly Poly *Sclerolaena muricata* var. *semiglabra,* Grey Copperburr *Sclerolaena diacantha,* Small-leaf Bluebush *Maireana microphylla,* Wooly Buttons *Leiocarpa panaetioides,* Forest Germander *Teucrium racemosum.* **Ground stratum:** Creeping Saltbush *Atriplex semibaccata,* Fuzzweed *Vittadinia cuneata,* Winged New Holland Daisy *Vittadinia pterochaeta,* Small White Sunray *Rhodanthe corymbiflora,* Hairy Sida *Sida trichopoda,* Austral Cranesbill *Geranium solanderi* var. *solanderi,* Speargrass *Austrostipa scabra* subsp. *scabra,* Ringed Wallaby Grass *Rytidosperma caespitosum, Walwhalleya proluta,* Windmill Grass *Chloris truncata.*	Modelled only. However may be present interspersed within areas mapped as PCT 160, further refinement will be undertaken during future field investigations.	Riverine chenopod shrublands	N/a	N/a	N/a

PCT	Description	Ground validated or modelled only	Corresponding habitat type	BC Act	EPBC Act	SAII
Modified land (non-PCT)	**Structure:** variable structure depending on land use history ranging from heavily cultivated areas with high proportion of bare ground to regenerating native vegetation dominated by indigenous grasses and chenopods. **Height:** to 0.2 m **Upper stratum:** N/A **Mid stratum:** occasional regeneration of Lignum *Duma* (*Muehlenbeckia*) *florulenta,* Dillon Bush *Nitraria billardierei*, Nitre Goosefoot *Chenopodium nitrariaceum*, Thorny Saltbush *Rhagodia spinescens.* **Ground stratum:**, *Sida intricata, Vittadinia cervicularis, Walwhalleya proluta*, Black Rolypoly *Sclerolaena muricata* var. *muricata, Sclerolaena muricata* var. *villosa*, *Sclerolaena muricata* var. *semiglabra*, Soft Rolpoly *Salsola tragus*, Eastern Flat-top Saltbush *Atriplex lindleyi*, Giant Redburr *Sclerolaena tricuspis*, Quena *Solanum esuirale*. Cotton Bush *Maireanna aphylla*, Grey Germander *Teucrium racemosum*, Slender-fruit Saltbush *Atriplex leptocarpa*, **Associated weed species:** Spear Thistle *Cirsium vulgare*, Patterson's Curse E*chium plantagineum,* Barley Grass *Hordeum* spp., Burr Medic *Medicago polymorpha*, Bathurst Burr *Xanthium spinosum*, Oats *Avena* spp., Arabian Grass *Schismus barbatus*.	Ground validated. Modified land occurs in areas subject to higher levels of use relating to agricultural activities.	Irrigated cropping land, Dryland cropping, grazing land, disturbed areas	N/a	N/a	N/a

4.3 Threatened ecological communities

4.3.1 Acacia melvillei Shrubland

Acacia melvillei Shrubland is a BC Act listed EEC dominated by Yarran *Acacia melvillei*. The community generally comprises an open canopy of small trees and shrubs, occasionally with scattered mid-stratum shrubs and/or a sparse, variable ground layer dominated by grasses, chenopod shrubs and herbs. The vegetative structure and species composition of the community varies depending on disturbance type/history and seasonal to long-term variability in rainfall. The open canopy of small trees or large shrubs may be reduced to scattered individuals or be depleted from past clearing. The tree/shrub layer is dominated by Yarran, either in pure stands or with a range of other trees or tall shrubs in lower abundance. These may include Nelia *Acacia loderi*, Western Rosewood *Alectryon oleifolius* subsp. *canescens*, Belah *Casuarina pauper* and Sugarwood *Myoporum platycarpum*.

Acacia melvellei Shrubland occurs on sandhills and undulating sandplains on red-brown, sandy loam soils. Within the subject land, the community was conservatively identified from a single stand of Acacia trees, closely resembling Yarran.

At the time of field survey no reproductive material was available on the trees to make a positive identification. The stand is present on a sandplain areas in the central portion of the site, with nearby sandhills hosting White Cypress Pine open woodland and/or nearby stands of Western Rosewood *Alectryon oleifolius*.

4.3.2 Myall Woodland

Myall Woodland is a BC Act and EPBC Act listed EEC dominated by Weeping Myall *Acacia pendula*. The community structure can vary from low woodland and low open woodland to low sparse woodland or open shrubland, depending on disturbance history, soils, and topographical and ecological influence. The tree layer grows up 10 metres with Weeping Myall as either a dominant species or the only tree species present. The understorey consists of an open chenopod shrub layer including other woody plant species with an open to complete groundcover of herbs and grasses.

Myall Woodland occurs on alluvial plains on red-brown earths and heavy textured grey and brown alluvial soils. Within the subject land, the community occurs in moderately large patches and smaller isolated stands ranging from high to low/moderate condition, and as more scattered trees over derived grasslands, on sandplains across the northern portion of the site.

4.3.3 Natural Grasslands of the Murray Valley Plains

Natural Grasslands of the Murray Valley Plains is an EPBC Act listed CEEC dominated by Spear Grasses *Austrostipa* spp., Wallaby Grasses *Rytidosperma* spp. and Spider Grass *Enteropogon ramosus*. The ecological community may also be dominated or co-dominated by a range of forb species (McDougall et al 1994), depending on seasonality and disturbance history. The ecological community ranges from open to closed tussock grassland. In areas where grasses are sparse, the community may be a herbland/forbland. In other areas, the community may be an open grassy shrubland where low chenopod shrubs are co-dominant with grasses (DSE 2004b).

Natural Grasslands of the Murray Valley Plains occurs generally within a mosaic of woodlands and naturally occurring grasslands on flat alluvial lowland plains with heavy-textured grey, brown and red clays. Extant grasslands derived from the historical removal of open woodlands or chenopod shrublands (through clearing or overgrazing) do not represent an occurrence of the CEEC. Within the subject land, the community could potentially occur on alluvial plains where soils are heavier and less well-drained in the central and south-western extents of the site.

Further assessment of the origin of extant grasslands across the subject lend is required to determine the presence/absence of the Natural Grasslands of the Murray Valley Plains CEEC. Within the subject land grasslands occur as predominantly grassy areas with a sparse to very sparse cover (<5% cover) of chenopod shrubs, such as Cotton Bush or Dillon Bush, as well as areas where chenopods and other woody plants occur at higher levels. Grasslands derived from former Myall, Pine and Black box woodlands occur across the subject land, and additional areas of grassland potentially derived from former chenopod shrublands, dominated by species such as Black Bluebush, Old Man Saltbush and Bladder Saltbush, may also exist. The historical presence of these chenopod shrublands is supported by the presence of SVTM modelled PCTs occurring within and surrounding the subject land in vegetation/landscape patterns similar to those where areas of grassland occur within the subject land. Furthermore, it is noted in BioNet that the presence of species such as Cotton Bush and Nitre Goosefoot (in drier habitats) indicate a history of overgrazing, and the potential occurrence of grasslands/shrublands derived from former woodland chenopod shrubland communities. A large stand of Old Man Saltbush shrubland occurs in the central portion of the subject land, further indicating the possible historical presence of chenopod shrublands, however it is possible that the patch of Old Man Saltbush is planted in origin, and requires clarification.

Nonetheless it is possible that areas of naturally occurring grasslands, conforming to Natural Grasslands of the Murray Valley Plains, exist within the subject land with large grassy areas, supporting a very sparse cover of woody shrubs present in the central and western portions of the site. Further detailed investigation is required to resolve the original vegetation likely to have been present in these areas.

4.3.4 Sandhill Pine Woodland

Sandhill Pine Woodland is a BC Act Endangered Ecological community dominated by White Cypress Pine *Callitris glaucophylla*. The community is characterised by an open cover of trees, which may be reduced to isolated individuals or may be absent as a result of past clearing and regenerative failure. The tree layer is dominated by *C. glaucophylla*, primarily in pure stands but sometimes with a range of less abundant trees or tall shrubs. The structure and species composition of the community varies depending on disturbance history and temporal variability in rainfall.

Sandhill Pine Woodland occurs on aeolian stream source-bordering dunes on red-brown loam sands with alkaline sub-soils. Within the subject land, the community is found as extensive dune patches across the south-western extent of the site.

4.4 Aquatic habitats

Hydrological features occur within the subject land include channels, creeks, drainage lines and farm dams. The aquatic ecological communities within the subject land and broader locality are typified by wetland specialist and lowland river generalists, generally comprising highly modified watercourses, altered flow regimes, channel formation, diversions and removal or modification of riparian vegetation. Nevertheless, during peak periods and overflow, parts of subject land and surrounds provide significant habitat for a diverse range, and large number of species.

Aquatic and riparian areas provide a valuable and often essential resource for fauna and flora species. Within the subject land, aquatic habitats are considered to be in poor to moderate condition state generally, and provide sub-optimal to optimal habitat for aquatic species. However, this may include during a wetter season, important habitat for a range of wetland and migratory birds species.

Three main watercourses exist with Nyangay Creek and Eurolie Creek traversing the subject land in a north-east to south-west manner, flowing nearly in parallel through the central portion of the subject land, with Coleambally Outfall Drain, a concrete-lined irrigation channel, flowing generally east to west across the southern portion of the subject land, to its confluence with Eurolie Creek. Smaller tributaries of Nyangay

Creek and Curtains Creek, also occur in the north-western potion of the subject land. Two large naturally occurring wetland areas, dominated by Nitre Goosefoot shrublands, occur in the north-eastern portion of the subject land. These wetlands were saturated during the field investigations undertaken in February 2023, and both were found to be providing habitat to a large number of waterbirds at the time. A number of small to moderate sized farm dams occur across the subject land, however of particular note is the large (400 meters x 400 metres approx.), elevated irrigation dam present at the confluence of the Coleambally Outfall Drain and Eurolie Creek.

All native fish and aquatic invertebrates within all natural creeks, rivers, and associated lagoons, billabongs and lakes in the area are considered to be part of the FM Act listed threatened ecological community - *Aquatic ecological community in the natural drainage system of the lower Murray River catchment*.

4.5 Threatened species

Background searches identified five threatened flora species and 29 threatened fauna species as being recorded (EES 2023) or predicted to occur (Commonwealth of Australia 2023) within 20 kilometres of the subject land (the locality). Furthermore, based on the PCTs confirmed present within the subject land, and those additional modelled PCTs conservatively included in the BAM Calculator case, a total of 33 candidate species credit species and 36 predicted ecosystem credit species, have been generated as potentially occurring within the subject land.

Review of relevant contemporary biodiversity studies, including the Project Energy Connect BDAR (WSP 2022) which overlaps with the subject land, confirmed records of four of the potentially occurring threatened flora species, and two of the potentially occurring threatened fauna species, within or in close proximity to the subject land. The potential presence of other threatened species has considered the findings of, and regulator responses to, other contemporary biodiversity assessments as listed in Section 3.2.

4.5.1 BAM species credit species

Table 3 below provides a preliminary assessment of potential occurrence of candidate species credit species within the subject land. This assessment is based on the PCTs confirmed present within the subject land, and those additional modelled PCTs conservatively included in the BAM Calculator case, and provides a list of relevant habitat or geographic constraints not present at the subject land (or outside the locality of the subject land), as well as a brief analysis of species records. A preliminary likelihood of occurrence is then provided for each candidate species credit species based on preliminary habitat assessments undertaken in February 2023 and each species' known extent of occurrence based partly on existing records. It should be noted that a paucity of records may be as much a product of lack of official survey in the locality, as an actual lack of occurrence.

Those candidate species credit species concluded to have a moderate or higher likelihood of occurrence within the subject land are considered to have a higher likelihood of being impacted by the project.

Table 3 Preliminary assessment of potential occurrence of candidate species credit species within the subject land

Scientific name	Common Name	PCT ID - Ground validated														PCT ID - Modelled only				Relevant Habitat constraints / Geographic limitations	BioNet and other relevant record notes	Preliminary likelihood of occurrence within subject land (species credit habitat only)
		10	13	15	17	23	24	26	28	44	45	46	160	163	164	16	153	157	159			
Flora																						
Austrostipa wakoolica	A spear-grass				x			x	x												No records within 60km of the subject land, all records to the south	Moderate
Brachyscome muelleroides	Claypan Daisy									x	x	x									Closest record 115km to the east of the subject land near Morundah	Low – Moderate
Brachyscome papillosa	Mossgiel Daisy		x	x			x			x	x	x	x	x	x	x	x	x	x		Records within 10km of the subject land (PEC records close to subject land)	High
Caladenia arenaria	Sand-hill Spider Orchid								x											East of Jerilderie	n/a	Negligible
Calotis moorei	A burr-daisy					x											x	x			Single historic (1913), low accuracy (25000m) record over 50km from the subject land	Low
Convolvulus tedmoorei	Bindweed				x		x	x		x	x	x		x	x			x	x		Single historic (1969), low accuracy (10000m) record 50km from the subject land	Low
Cullen parvum	Small Scurf-pea									x											No records on the Hay Plain, closest 60km south-east between Conargo and Jerilderie	Moderate

Scientific name	Common Name	PCT ID - Ground validated													PCT ID - Modelled only				Relevant Habitat constraints / Geographic limitations	BioNet and other relevant record notes	Preliminary likelihood of occurrence within subject land (species credit habitat only)
		10	13	15	17	23	24	26	28	44	45	46	160	163	164	16	153	157	159			
Eucalyptus leucoxylon subsp. *pruinosa*	Yellow Gum		x	x												x					Very few proximal records, single record cantered on Hay, remainder west of Moulamein (95-110km from the subject land)	Low
Lepidium monoplocoides	Winged Peppercress		x	x			x	x			x	x	x	x		x	x		x		Records within 10km of the subject land	Moderate - High
Leptorhynchos orientalis	Lanky Buttons						x	x		x	x	x									Single historical (1917) records 35km form the subject land, remainder of proximal records over 100km east near Morundah and Urana	Low
Maireana cheelii	Chariot Wheels							x		x		x						x			Records within 5km of the subject land (PEC records close to subject land)	High
Pilularia novae-hollandiae	Austral Pillwort		x	x				x		x	x	x				x			x	East of Deniliquin	PEC records within subject land, single BioNet record 20km to the north-east of the subject land, remainder east of Jerilderie	High
Sclerolaena napiformis	Turnip Copperburr							x		x											Records centred around Jerilderie, 75km to the south-east of the subject land	Low - Moderate

Scientific name	Common Name	PCT ID - Ground validated														PCT ID - Modelled only				Relevant Habitat constraints / Geographic limitations	BioNet and other relevant record notes	Preliminary likelihood of occurrence within subject land (species credit habitat only)
		10	13	15	17	23	24	26	28	44	45	46	160	163	164	16	153	157	159			
Solanum karsense	Menindee Nightshade		x	x	x		x						x			x	x		x	West of Maude	n/a	Negligible
Swainsona murrayana	Slender Darling Pea			x		x		x	x	x	x	x		x	x	x		x			Recorded within the eastern portion of the subject land (numerous PEC records close to, and within subject land)	High
Swainsona plagiotropis	Red Darling Pea							x		x	x	x									Records centred around Jerilderie, 75km to the south-east of the subject land	Low - Moderate
Swainsona sericea	Silky Swainson-pea					x		x	x	x	x	x			x						Records generally east of the subject land, closest record 25km to south-east	Moderate
Fauna																						
Ardeotis australis	Australian Bustard			x		x	x	x	x	x	x	x	x	x	x	x	x	x	x		Records within 30km of the subject land	Moderate
Burhinus grallarius	Bush Stone-curlew	x	x	x		x		x	x				x	x	x	x	x	x			Records within 35km of the subject land	Low - Moderate
Calidris ferruginea	Curlew Sandpiper						x													As per Important Habitat Map	n/a	Negligible
Haliaeetus leucogaster (Breeding)	White-bellied Sea-Eagle	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Very few records on Hay Plain	Low

Scientific name	Common Name	PCT ID - Ground validated														PCT ID - Modelled only				Relevant Habitat constraints / Geographic limitations	BioNet and other relevant record notes	Preliminary likelihood of occurrence within subject land (species credit habitat only)
		10	13	15	17	23	24	26	28	44	45	46	160	163	164	16	153	157	159			
Hieraaetus morphnoides (Breeding)	Little Eagle	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		Records within 15km of the subject land (PEC recorded [foraging] close to subject land)	Low - Moderate
Lathamus discolor	Swift Parrot	x													x					As per Important Habitat Map	n/a	Negligible
Litoria raniformis	Southern Bell Frog	x	x		x		x										x				Recent (2017) records in Coleambally Outfall Drain and Werkenbergal Wetland within 2km of the subject land	High
Lophochroa leadbeateri (Breeding)	Major Mitchell's Cockatoo	x	x	x		x		x	x		x			x		x	x		x		Few records on the Hay Plain, but generally surrounding the subject land	Low - Moderate
Lophoictinia isura (Breeding)	Square-tailed Kite	x	x	x		x		x	x		x		x	x	x	x	x	x	x		Records within 5km of the subject land	Low - Moderate
Myotis macropus	Southern Myotis	x											x		x		x				No records on the Hay Plain, but generally surrounding the subject land	Low – Moderate
Ninox connivens (Breeding)	Barking Owl	x	x	x									x	x	x	x	x	x	x		Single historic (1985), low accuracy (10000m) record within 60km of the subject land	Low
Pedionomus torquatus	Plains-wanderer									x		x									Numerous records surrounding the subject land, closest records within 200m of the subject land	High

Scientific name	Common Name	PCT ID - Ground validated														PCT ID - Modelled only				Relevant Habitat constraints / Geographic limitations	BioNet and other relevant record notes	Preliminary likelihood of occurrence within subject land (species credit habitat only)
		10	13	15	17	23	24	26	28	44	45	46	160	163	164	16	153	157	159			
Phascolarctos cinereus	Koala	x	x	x	x	x	x	x	x				x		x	x	x	x	x		No records on the Hay Plain, records associated with major watercourses	Low
Polytelis anthopeplus monarchoides (Breeding)	Regent Parrot (eastern subspecies)	x	x	x												x				Within 10 km of the junction of the Murray River	n/a	Negligible
Polytelis swainsonii (Breeding)	Superb Parrot	x	x			x		x	x		x	x					x				Records within 5km of the subject land	Low – Moderate
Tyto novaehollandiae (Breeding)	Masked Owl	x	x				x	x					x		x		x	x	x		Few historic (1955, 1982), low accuracy (1000-10000m) record within 70km of the subject land	Low

4.5.2 Bird and bat species with potential collision risk

The subject land is located is within a semi-arid environment, with habitat comprising a variety of vegetation types as well as ephemeral periodically inundated waterways and wetlands, and more permanent water bodies such as irrigation dams, farm dams and irrigation channels. Habitat provided by native vegetation, waterbodies and periodically inundated wetlands are considered suitable for a number of threatened fauna, migratory listed species, raptors (such as Grey Falcon, Square-tailed Kite and Spotted Harrier), flocking birds (such as Major Mitchel's Cockatoo) and wading or waterbirds (such as Australian Painted Snipe, Blue Billed Duck and Magpie Goose).

Threatened species, especially aerial species and migrating wetland species, may be subject to a higher risk from the Project due to WTG collision and movement corridor impacts, and areas of potential habitat have been subject to avoidance and minimisation from the outset of project design. Species with a higher risk of being impacted by wind farms are considered to be those with potential for ongoing population impacts during operation, such as:

- Raptors which may manoeuvre close to turbine blades to prey on carrion below. These species are at low density in the landscape and removal of even one breeding pair may be significant at a local level.
- Flocking birds e.g. Superb Parrot, Major Mitchell's Cockatoo may be subject to a large number of strikes in a single event that could impact local populations.
- Migrating or nomadic waterbirds, which may be less able to manoeuvre around operational turbine blades, and operational WTGs may also affect breeding viability, inclusive of large colonial nesting events.
- Resident or colonial roosting bats that may fly within the rotor swept area.

Generally, most woodland birds and bats forage and move within or just above canopies, at lower than turbine height, and are considered a lower risk of collision. Impacts to more sedentary species are more likely able to be avoided early in the project design or assessed thoroughly to confirm that losses are negligible, or at the very least, acceptable.

Migratory and nomadic species represent an increased risk as one migratory movement through an operational wind farm may have a local population-level impact on the species. Ongoing collisions may affect the population as a whole. White-throated Needletail for example, although occurring in its south-western known distribution, is both migratory and often occurs in flocks, increasing the risk to the EPBC Act listed species. Threatened species, such as the Brolga, and more common species such as Magpie Goose and Ibis, may appear in large numbers at times of increased flooding and optimal breeding conditions, and as such risk of impacts may fluctuate with site and seasonal conditions.

An assessment of the bird and bat species likely to occur within the subject land, based on habitat values recorded during the preliminary biodiversity assessment and summer BBUS is provided in Table 4, along with each species' potential collision risk based on known flight characteristics. This assessment is based on the limited site specific data collected from the subject land to date, and is precautionary in nature to ensure sufficient consideration is given to species that may be at risk from the Project. Further assessment is yet to be undertaken around the significance of any potential collisions for each species, and this will be completed as part of the BDAR following the collection of multiple seasons of BBUS data, and the aerial fauna of the subject land and wider locality is better understood.

Threatened and migratory species known or predicted to occur within the subject land, and preliminarily determined to be most at-risk, based on a moderate or greater likelihood of occurrence, combined with a predicted high collision risk, are listed below (and further detailed in (Table 4):

- Black Falcon *Falco subniger*
- Brolga *Grus rubicunda*
- Curlew Sandpiper *Calidris ferruginea*
- Dusky Woodswallow *Artamus cyanopterus*
- Glossy Ibis *Plegadis falcinellus*
- Grey Falcon *Falco hypoleucos*
- Inland Forest Bat *Vespadelus baverstocki*
- Little Eagle *Hieraaetus morphnoides*
- Magpie Goose *Anseranas semipalmata*
- Spotted Harrier *Circus assimilis*
- Square-tailed Kite *Lophoictinia isura*
- Superb Parrot *Polytelis swainsonii*
- White-bellied Sea Eagle *Haliaeetus leucogaster*
- White-throated Needletail *Hirundapus caudacutus*
- Yellow-bellied Sheathtail-bat *Saccolaimus flaviventris*

It should be noted that none of the above listed species were recorded during the initial summer BBUS, with the final assessment of species considered to be at-risk of impact from the Project to be made following completion of the multi-seasonal BBUS work. Furthermore, collision risk presented in Table 4 is determined prior to any mitigation, including the assumed placement of some WTGs in areas considered to be of higher risk / constraint.

Table 4 Assessment of habitat and collision risk for threatened and migratory species

Common Name	Species Name	BC Act	EPBC Act	BAM Credit type	SAII	Migratory/ Nomadic/ Vagrant	Likelihood of occurrence	Collison risk
Australian Bustard	*Ardeotis australis*	**E**	**-**	Species	-	-	Moderate	Low
Australasian Bittern	*Botaurus poiciloptilus*	**E**	**E**	Ecosystem	-	-	Moderate	Moderate
Australian Painted Snipe	*Rostratula australis*	**E**	**E**	Ecosystem	-	-	Moderate	Moderate
Barking Owl	*Ninox connivens*	**V**	**-**	Ecosystem/Species	-	-	Low	Low
Black Falcon	*Falco subniger*	**V**	**-**	Ecosystem	-	-	High	High
Blue-billed Duck	*Oxyura australis*	**V**	**-**	Ecosystem	-	-	High	Moderate
Brolga	*Grus rubicunda*	**V**	**-**	Ecosystem	-	Nomadic	Moderate	High
Bush Stone-curlew	*Burhinus grallarius*	**E**	**-**	Species	**-**	**-**	Low	Low
Caspian Tern	*Hydroprogne caspia*	**-**	**Mi**	-	-	Migratory	Moderate	Moderate
Common Sandpiper	*Actitis hypoleucos*	**-**	**Mi**	-	--	Migratory	Moderate	Moderate
Corbens Long-eared Bat	*Nyctophilus corbeni*	**V**	**V**	-	**-**	**-**	Moderate	Low
Curlew Sandpiper	*Calidris ferruginea*	**E**	**CE**	Species/Ecosystem	SAII	Migratory	Moderate	High
Diamond Firetail	*Stagonopleura guttata*	**V**	**-**	Ecosystem	**-**	**-**	Moderate	Low
Dusky Woodswallow	*Artamus cyanopterus cyanopterus*	**V**	**-**	Ecosystem	-	Nomadic	Moderate	High
Eastern Curlew	*Numenius madagascariensis*	**-**	**CE**	-	SAII	Migratory	Low	High

Common Name	Species Name	BC Act	EPBC Act	BAM Credit type	SAII	Migratory/ Nomadic/ Vagrant	Likelihood of occurrence	Collison risk
Flame Robin	*Petroica phoenicea*	**V**	**-**	Ecosystem	**-**	**-**	Low	Low
Fork-tailed Swift	*Apus pacificus*	**-**	**Mi**	-	-	Migratory	Low	High
Freckled Duck	*Stictonetta naevosa*	**V**	**-**	Ecosystem	-	Nomadic	High	Moderate
Gilbert's Whistler	*Pachycephala inornata*	**V**	**-**	Ecosystem	**-**	**-**	Low	Low
Glossy Ibis	*Plegadis falcinellus*	**-**	**Mi**	-	-	Migratory	High	High
Grey Falcon	*Falco hypoleucos*	**E**	**-**	Ecosystem	-	Vagrant	Moderate	High
Grey-crowned Babbler (eastern subspecies)	*Pomatostomus temporalis temporalis*	**V**	**-**	Ecosystem	**-**	**-**	High	Low
Gull-billed Tern	*Gelochelidon nilotica*	**-**	**Mi**	-	-	Migratory	Low	Moderate
Hooded Robin	*Melanodryas cucullata cucullata*	**V**	**-**	Ecosystem	**-**	**-**	Low	Low
Inland Forest Bat	*Vespadelus baverstocki*	**V**	**-**	Ecosystem	**-**	**-**	Moderate	High
Latham's Snipe	*Gallinago hardwickii*	**-**	**Mi**	-	**-**	**-**	Low	Moderate
Little Eagle	*Hieraaetus morphnoides*	**V**	**-**	Ecosystem/Species	**-**	**-**	Moderate	High
Little Pied Bat	*Chalinolobus picatus*	**V**	**-**	Ecosystem	**-**	**-**	Low	High
Magpie Goose	*Anseranas semipalmata*	**V**	**-**	Ecosystem	-	Nomadic	Moderate	High
Major Mitchell's Cockatoo	*Lophochroa leadbeateri*	**V**	**-**	Ecosystem/Species	**-**	**-**	Moderate	Moderate
Marsh Sandpiper	*Tringa stagnatilis*	**-**	**Mi**	-	-	Migratory	Moderate	Moderate
Masked Owl	*Tyto novaehollandiae*	**V**	**-**	Ecosystem/Species	**-**	**-**	Low	Moderate
Night Parrot	*Pezoporus occidentalis*	**E**	**EN**	-	**-**	**-**	Low	Low
Painted Honeyeater	*Painted Honeyeater*	**V**	**V**	Ecosystem	-	Nomadic	High	Low
Pectoral Sandpiper	*Calidris melanotos*	**-**	**Mi**	-	-	Migratory	Moderate	Moderate

Common Name	Species Name	BC Act	EPBC Act	BAM Credit type	SAII	Migratory/ Nomadic/ Vagrant	Likelihood of occurrence	Collison risk
Pied Honeyeater	*Certhionyx variegatus*	**V**	**-**	Ecosystem	**-**	**-**	Low	Low
Plains-wanderer	*Pedionomus torquatus*	**E**	**CE**	Ecosystem/Species	SAII	**-**	High	Low
Redthroat	*Pyrrholaemus brunneus*	**V**	**-**	Ecosystem	**-**	**-**	Moderate	Low
Regent Parrot	*Polytelis anthopeplus monarchoides*	**E**	**V**	Ecosystem	-	Nomadic	Low	Moderate
Satin Flycatcher	*Myiagra cyanoleuca*	**-**	**Mi**	-	**-**	Migratory	Moderate	Low
Scarlet Robin	*Petroica boodang*	**V**	**-**	Ecosystem	**-**	**-**	Moderate	Low
Sharp-tailed Sandpiper	*Calidris acuminata*	**-**	**Mi**	-	-	Migratory	Moderate	Moderate
Southern Myotis	*Myotis macropus*	**V**	**-**	Species	-	-	Moderate	Moderate
Spotted Harrier	*Circus assimilis*	**V**	**-**	Ecosystem	**-**	**-**	High	High
Square-tailed Kite	*Lophoictinia isura*	**V**	**-**	Ecosystem/Species	**-**	**-**	High	High
Superb Parrot	*Polytelis swainsonii*	**V**	**V**	Ecosystem/Species	-	Nomadic	High	High
Swift Parrot	*Lathamus discolor*	**E**	**CE**	Ecosystem/Species		-	Low	High
Varied Sitella	*Daphoenositta chrysoptera*	**V**	**-**	Ecosystem	**-**	**-**	Low	Low
White-bellied Sea-Eagle	*Haliaeetus leucogaster*	**V**	**-**	Ecosystem/Species	-	Migratory	Moderate	High
White-fronted Chat	*Epthianura albifrons*	**V**	**-**	Ecosystem	**-**	**-**	High	Low
White-throated Needletail	*Hirundapus caudacutus*	**-**	**V**	Ecosystem	-	Migratory	Moderate	High
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*	**V**	**-**	Ecosystem	**-**	**-**	Moderate	High
Yellow Wagtail	*Motacilla flava*	**-**	**Mi**	-	**-**	Migratory	Moderate	Moderate

4.6 Matter of National Environmental Significance

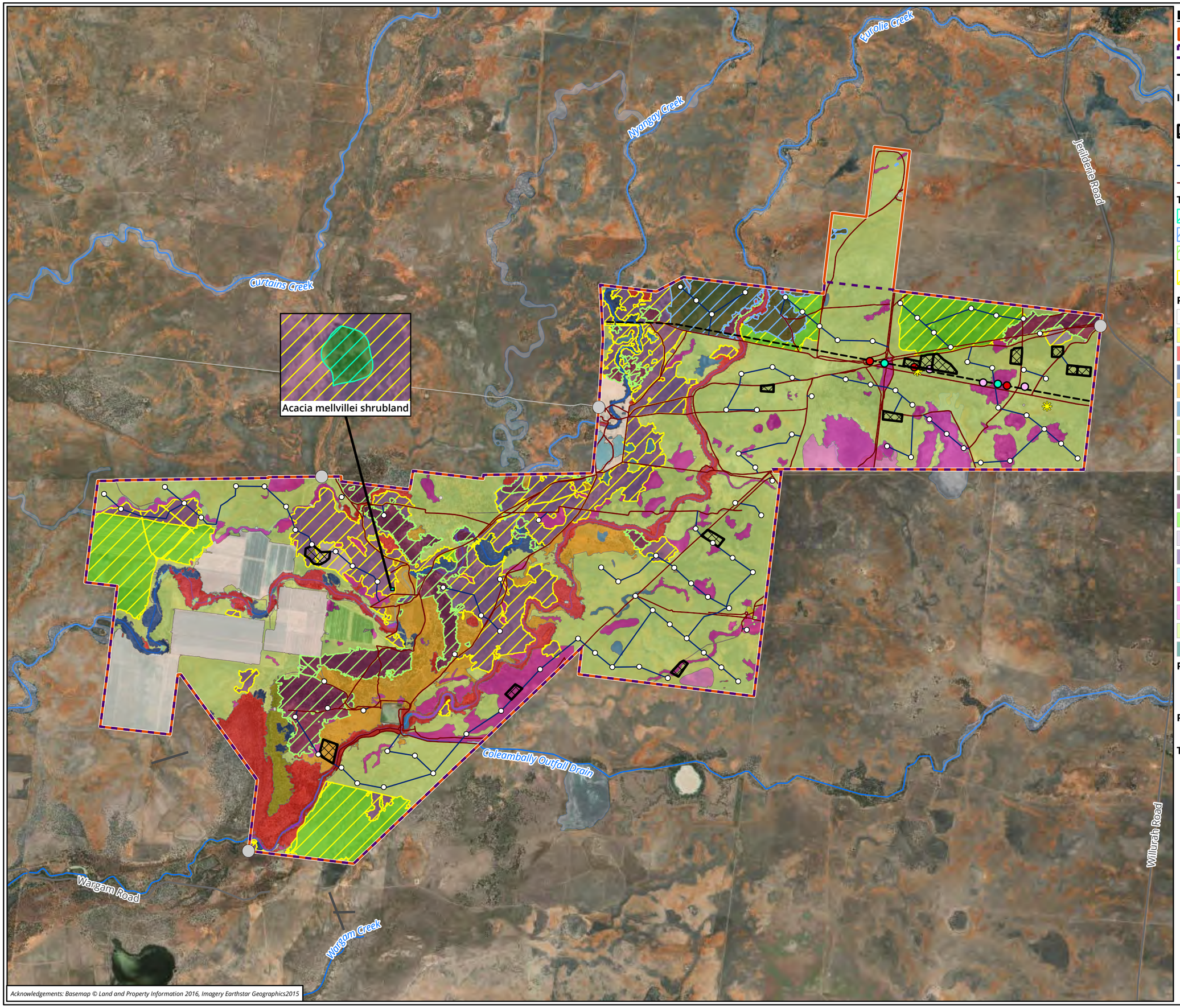
Based on the results of a Protected Matters Search Tool run in March 2023, and the findings of the preliminary field investigations, MNES potentially of relevance to the Project are provided in Table 5 below.

Table 5 MNES of relevance to the Project

MNES	Relevance to the Project
World Heritage Properties	Not identified within the subject land or a 30 km radius.
National Heritage Places	Not identified within the subject land or a 30 km radius.
"Wetlands of International Importance (Ramsar Wetlands)	There are no Wetlands of International Importance within the subject land or 30 km buffer. The closest Ramsar Wetlands, based on a PMST search include: • Banrock Station Wetland Complex (300 - 400km downstream). • The Coorong, and Lakes Alexandrina and Albert Wetland (400 - 500km downstream). • Hattah-Kulkyne Lakes (150 - 200km downstream). • Riverland (300 - 400km downstream).
Great Barrier Reef Marine Park	Not identified within the subject land or a 30 km radius.
Commonwealth Marine Area	Not identified within the subject land or a 30 km radius.
Listed Threatened Ecological Communities	A total of five Commonwealth listed TECs are predicted to occur within the subject land and/or 30 km buffer. Those TECs include: • Natural Grasslands of the Murray Valley Plains (Critically Endangered) – Potentially recorded within the subject land and indicative development footprint. • Weeping Myall Woodlands (Endangered) – Likely to be present within the subject land and indicative development footprint. • Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions (Critically Endangered) – Not recorded within the subject land and not expected to occur. • Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (Endangered) – Not recorded within the subject land and not expected to occur. • Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions (Endangered) – Not recorded within the subject land and not expected to occur.
Listed Threatened Species	A total of 31 listed threatened species are predicted to occur within the subject land and 30km buffer. Those considered most likely to occur include: • Chariot Wheels (Vulnerable) • Mossgiel Daisy (Vulnerable) • Painted Honeyeater (Vulnerable) • Plains-wanderer (Critically Endangered) • Slender Darling-pea (Vulnerable) – Recorded within the subject land • Southern Bell Frog (Vulnerable) • Superb Parrot (Vulnerable) • Winged Pepper-cress (Endangered)

MNES	Relevance to the Project
Listed Migratory Species	A total of 10 listed threatened species are predicted to occur within the subject land and 30km buffer. Those considered most likely to occur include: • Common Sandpiper • Sharp-tailed Sandpiper • Pectoral Sandpiper • Yellow Wagtail • Marsh Sandpiper • Glossy Ibis (note this species was not predicted to occur by the PMST search, however it is considered highly likely to occur in the subject land)

MNES listed above, along with any other MNES recorded or predicted as likely to occur within the subject land, will require consideration as part of ongoing ecological assessments. A referral of the Project to DCCEEW is planned and will provide a determination as to whether the Project is considered a Controlled Action under the EPBC Act. The above listed MNES will form the basis of potential impacts included in the Referral.



Legend

- Subject land
- Project area
- Project Energy Connect alignment (assumed)

Indicative development footprint

- Propsed WTG layout
- Ancillary infrastructure
- Project access
- Additional internal access track
- Existing access tracks

Threatened Ecological Communities

- Acacia Melvillei shrubland
- Myall Woodland
- Sandhill Pine Woodland
- Natural Grasslands of the Murray Valley Plains (potential)

Plant Community Types

- Non-native / cleared
- 10
- 13
- 15
- 16
- 17
- 19
- 23
- 24
- 26
- 28
- 44
- 45
- 46
- 159
- 160
- 163
- 164
- 216

PEC threatened flora records

- Austral Pillwort, *Pilularia novae-hollandiae*
- Slender Darling Pea, *Swainsona murrayana*

PEC threatened fauna records

- White-fronted Chat, *Epthianura albifrons*

Threatened flora (Bionet 2023)

- Slender Darling Pea, *Swainsona murrayana*

Figure 3 Biodiversity values

0 1 2 3 4

Kilometers

Scale: 1:80,000 @ A3

Coordinate System: GDA2020 MGA Zone 55

N

biosis

Matter: 38557,
Date: 08 May 2023 ,
Prepared for: CW, Prepared by: AM, Last edited by: amackegard
Layout: Wind_F3_BV
Project: P:\38500s\38557\Mapping\
38557_PottingerEnergyPark_figures_v2.aprx

5 Preliminary impact assessment and next steps

5.1 Biodiversity values and potential impacts

Biodiversity values and potential impacts presented herein are based largely on the ground validated results of the field investigations completed in February 2023, with areas of the subject land outside the indicative development footprint, subject to assessment and constraints based on modelled vegetation (Riverina SVTM) only. The subject land supports a range of biodiversity values with few areas considered to be of low risk of impact, due to the vast majority of the site supporting native vegetation. The indicative development footprint also supports limited areas of Category 1 exempt land, that would be excluded form assessment under the BAM. Higher risk areas are associated with wetland habitats present across the subject land, wooded PCTs associated with existing and former creeklines and sandhills, and TECs represented by both wooded and (potentially) grassland vegetation types. Ongoing application of the principles of avoid, minimise and mitigate will be essential in development of a project design with further detailed surveys to be completed as part of the BDAR.

There are however, opportunities to locate project infrastructure in areas considered to be of lower risk to biodiversity values, albeit generally still within areas of native vegetation. Such areas include where historical land management practices have led to lower condition grassy / chenopod shrubland areas, less likely to support habitat for threatened species. Risks associated with WTG and powerline collisions are also not expected to be uniform in terms of their occurrence over the life of the operation of the wind farm. Higher potential for impacts may occur in wetter "flood" years when a larger number of waterbirds may be utilising the subject land for its wetland habitat values, associated with increased numbers of waterbirds in the Riverina region generally. These higher risk times (i.e. substantially wetter years) are expected to occur far less frequently than drier years, when fewer birds are present in the region and therefore fewer birds would be expected to be utilising the habitat on the subject land.

Biodiversity constraints have been presented on a worst case scenario basis to allow for consideration of impact minimisation over the life of the project, and strategies are likely to be able to be developed that balance impact minimisation with maximising the benefits a project of this nature can provide..

Potential serious and irreversible impacts

Areas of highest constraint and higher significance potential impacts across the subject land, where impacts have been avoided where possible and minimised through early stage project design, are associated with Mapped Important Areas of habitat for Plains Wanderer, and an additional 100 metre buffer around the DPE mapped polygons (Figure 4).

Impacts within these areas will require further detailed assessment for direct and/or indirect impacts to Plains Wanderer in accordance with the assessment for SAIIs on biodiversity values, as outlined in Section 9.1 of the BAM. This assessment would be required as part of the BDAR, with the consent authority (upon recommendation from BCD) making the final determination on whether a SAII is likely to occur.

Wind and powerline constraints

Modelled biodiversity constraints for the Project have been developed in accordance with the hierarchy and method outlined in Table 1 and are illustrated on Figure 4 below. Higher level constraints for wind farm projects, generally relate to the risk of impact associated with turbine strike and overhead powerline collisions, particularly for threatened and protected bird and bat species. Impacts of this nature are generally considered to be significant by regulators, and have been, and will continue to be, avoided and minimised by the Project.

Areas of highest constraint within the subject land, in relation to fauna collision impacts, are associated with mapped wetland areas forming habitat for waterbird species, riparian woodland/wetland vegetation and wooded PCTs. Project infrastructure will avoid these habitats to the fullest extent possible, to minimise the potential for impacts such as loss of breeding opportunities, and potential collision with WTGs or overhead powerlines by protected species. The Riverina is known to support a large number of significant wetlands, some of which are known to support over 20,000 waterbirds in ideal conditions (NPWS 2003). The subject land, and surrounding locality, support wetland habitats that can act as stepping stones between larger more significant wetlands, which creates an increased risk of collision and the potential for population scale impacts. This constraint is by no means unique to the Project, with other contemporary (proposed) wind farms in the SW REZ addressing similar issues. Impact minimisation strategies such as setback buffers and maintenance of flyways during project design will be required, and consideration of seasonal curtailment strategies could be required, to prevent Project specific and cumulative impacts.

Areas of additional high constraint occur in areas where activity is considered likely to be higher with birds and bats moving between habitats as part of regular flights, or areas where the operation of WTGs has the potential to result in ongoing disturbance to breeding or other important habitats. WTG exclusion areas within these buffer areas for a distance of 200 metres from the edge of the wetlands, and/or treed PCTs (often associated with watercourses) will be implemented where possible. In excluding WTGs from these buffer areas, it will be ensured that a minimum setback of 100 meters from areas of potential high-use habitat will also remain free from turbine blades. This impact minimisation measure is noted as a material item of feedback from BCS on another SW REZ wind farm project BDAR. WTGs placed within these buffer areas may be more likely to be subject to seasonal, or event-based, curtailments (or similar). WTGs located within and surrounding treed PCTs will generally present an increased risk of collision to bird and bat species likely to be preferentially utilising this habitat type within the landscape. Minimisation of WTGs in these areas will reduce the potential for strikes were to occur. WTGs located closer to treed areas also have the potential to impact upon threatened bird species (raptors, parrots, owls) using tree hollows and/or large old trees as a nesting resource.

Areas within 100 to 300 meters of Mapped Important Areas of habitat for Plains Wanderer are also considered a high constraint for WTGs, and development in these areas will be minimised to further minimise the potential to indirect impacts to the species.

Measures implemented during early project design, as detailed below in Section 5.2, have reduced the potential for the Project to result in the above higher risk impacts, and efforts will continue through future project design to further avoid and minimise impacts associated with potential WTG and powerline collision.

Civil works constraints

Modelled biodiversity constraints for civil works associated with the Project have been developed in accordance with the hierarchy and method outlined in Table 1 and are illustrated on Figure 4 below. Higher level constraints for civil works (i.e. roads, hardstands, WTG and transmission line towers, ancillary facility etc.), generally relate to direct and indirect impacts to TECs, threatened species populations and habitats, and areas of native vegetation.

High constraints for civil works where proposed development has been minimised, including areas within 100 to 300 meters of Mapped Important Areas of habitat for Plains Wanderer, reducing potential for indirect impacts to the highly sensitive species.

Further high level constraints are included for areas mapped as TECs (or potential TECs) listed under state or Commonwealth legislation. The Project will avoid these areas wherever possible to ensure the BC Act and EPBC Act requirement for avoidance and minimisation of impacts to biodiversity values is implemented. Mapped (potential) TECs include areas of the EPBC Act listed Critically Endangered Natural Grasslands of the

Murray Valley Plains, which has the potential to occur in areas of natural grasslands across the subject land. Further detailed data collection is required to confirm the presence/absence of this TEC within the subject land, however all areas of potential TEC have been conservatively mapped as the TEC to ensure avoidance and minimisation of impacts is considered in these areas from the outset of project design.

The current biodiversity constraints model does not specifically attribute constraints to existing records of threatened flora and fauna species. This is due to items such as issues with the scale at which the modelling was undertaken, the transient nature of threatened species records, and the use of native vegetation as suitable surrogates for threatened species related constraints during the early stages of project design. Following further detailed field survey, existing population of threatened species and/or higher condition habitats will form part of avoidance and minimise considerations and will represents specific biodiversity constraints to be considered.

All native vegetation (not highlighted as part of the above constraints) remains a moderate constraint due to the legislative requirements to avoid and minimise impacts, and the potential for threatened species to occur. However, locating project infrastructure within areas of moderate and low constraints is considered most suitable and is likely to result in the least amount impacts to biodiversity values. In locating project infrastructure in these areas, the potential for more significant or substantial impacts will be minimised and the operational phase of the wind farm is less likely to be subject to ongoing impact minimisation measures, such as curtailment strategies. Assessment of collision risk is required, however the potential for significant risk and impact will be reduced and mitigated against.

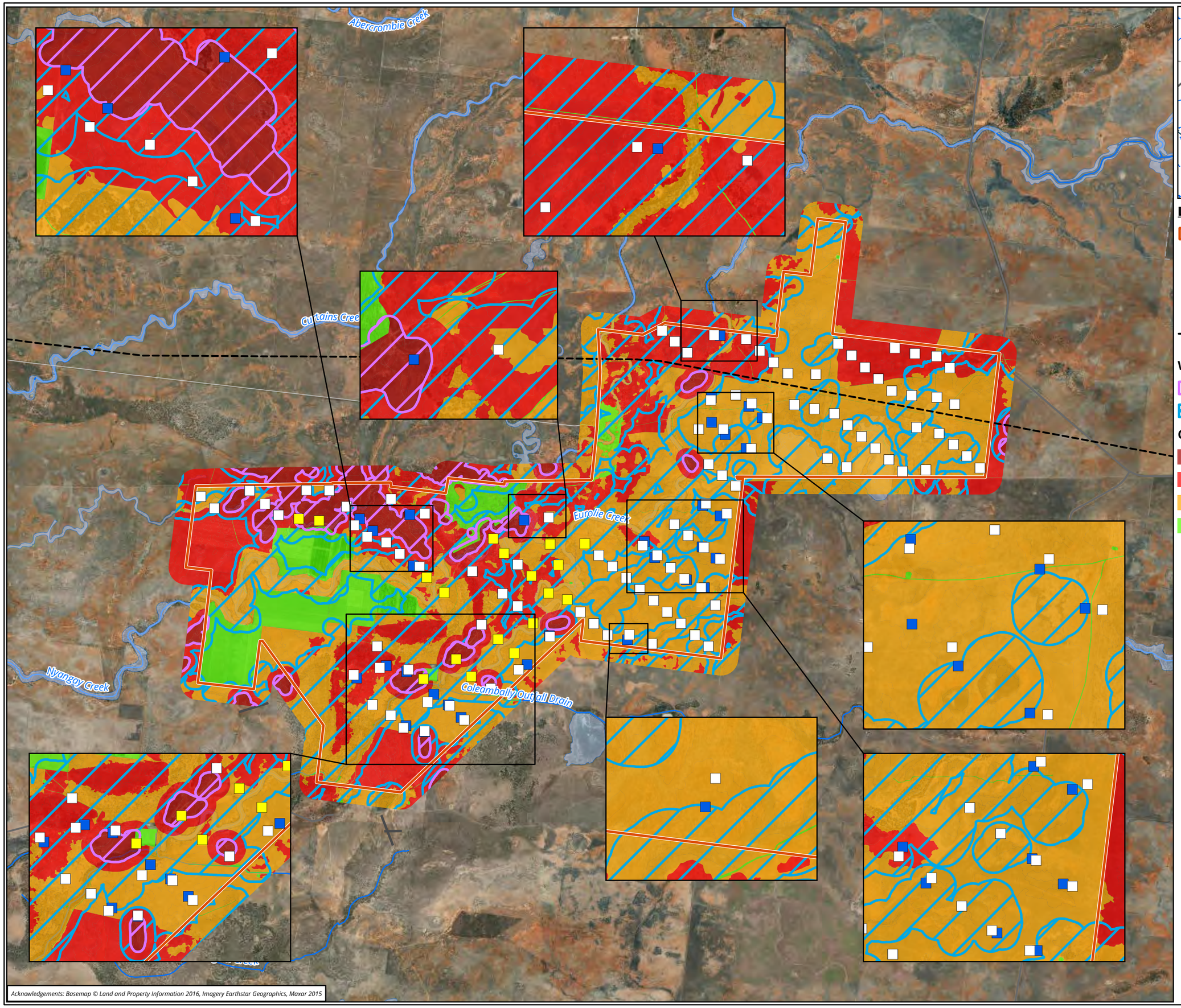
5.2 Avoidance and minimisation of impacts

As outlined above, the avoidance and minimisation of impacts to biodiversity values is a requirement under both state and Commonwealth legislation, and will be implemented throughout the Project. Avoidance and minimisation has already occurred in the initial project design phases, as a result of the initial desktop biodiversity constraints prepared by Biosis, prior to the February field investigation.

Initial desktop biodiversity constraints were based on parameters similar to those presented in Table 1, however included larger, more conservative buffers around some higher constraint biodiversity items (based on desktop assessment only). Some avoidance buffers have been reduced following ground validation of habitat values. Application of the avoidance and minimisation principles in the initial pre-scoping stage of the Project has resulted in the following:

- A reduction in the total number of WTGs proposed from 129 down to 108.
- No WTGs being located in No Go areas (Plains Wanderer SAII habitat).
- No WTGs in High Constraint areas along major watercourses.
- Impact minimisation including minor shifts to WTG locations out of High Constraint areas where possible.
- Moving roads out of No Go areas where possible.
- Moving other ancillary infrastructure out of No Go and High Constraint areas where possible.
- Locating ancillary infrastructure (especially permanent infrastructure) in Moderate Constraint, or Low Constraint where possible.

It should be noted that areas of mapped Low Constraint in the south-western portion of the subject land support existing operational agricultural activities, and as such are not available for development, hence no project infrastructure located in these areas.



Legend

- Subject land
- 108 WTG layout
- 127 WTG layout - Relocated
- 127 WTG layout - Removed
- Project Energy Connect alignment (assumed)

WTG, powerline constraints

- No-go
- High constraint

Civil constraints

- No-go
- High constraint
- Moderate constraint
- Low constraint

Figure 4 Avoid and minimise

0 1 2 3 4

Kilometers

Scale: 1:100,000 @ A3

Coordinate System: GDA2020 MGA Zone 55

N

biosis

Matter: 38557,
Date: 08 May 2023 ,
Prepared for: CW, Prepared by: AM, Last edited by: amackegard
Layout: Wind_F4_Avoid
Project: P:\38500s\38557\Mapping\
38557_PottingerEnergyPark_figures_v2.aprx

Acknowledgements: Basemap © Land and Property Information 2016, Imagery Earthstar Geographics, Maxar 2015

5.3 SAII species and communities

Serious and Irreversible impacts (SAII) are defined by the BC Act as an impact that a consent authority considers likely to significantly increase the extinction risk of a threatened species or ecological community. Under section 9.1 of the BAM, the consent authority is responsible for determining if a SAII impact is likely to occur. This assessment includes:

- Identifying every potential SAII entity that may occur.
- Evaluating the nature of the impact on each entity.
- Documenting efforts to avoid and minimise impacts on biodiversity in accordance with the assessment criteria.

The BAM assessment pathway will determine the presence of SAII species and communities within the subject land. SAII species and communities have the potential to occur within the subject land. These include:

- Plains Wanderer.
- Curlew Sandpiper.
- Eastern Curlew.
- *Convolvulus tedmoorei.*
- *Calotis moorei.*

The potential for SAIIs will be further investigated as part of the preparation of a BDAR. Curlew Sandpiper and Eastern Curlew have the potential to occur within the site and will be considered a part of impacts to potential forage habitat and turbine collision risk. No Mapped Important Areas occur in the vicinity of the subject land for either species, however if recorded an SAII assessment may be undertaken.

5.4 Estimated direct impacts to biodiversity values

The indicative development footprint has been developed following initial efforts to avoid and minimise impacts to biodiversity values as outlined above, with the estimated direct impacts associated with the project outlined in Table 6 below.

Table 6 Estimated direct impacts of the project

Biodiversity value	Estimated impacts
Native vegetation	
• 15 PCTs (based on rapid field validation survey)	• 416 ha (approx.)
TECs	

Biodiversity value	Estimated impacts
• Myall Woodland (PCT 26) • Sandhill Pine Woodland (PCT 28) • Potential Natural Grasslands of the Murray Valley Plains (PCT 44, 45, 45)	• 7.99 ha (approx.) • 14.95 ha (approx.) • 65.36 ha (approx.)
Potential SAII candidate species habitat	
• **Plains Wanderer** • **Curlew Sandpiper** • **Eastern Curlew** • ***Convolvulus tedmoorei*** • ***Calotis moorei***	• 4.89 ha (approx.) of mapped important areas • 41.47 ha (approx.) of low potential forage habitat • 41.47 ha (approx.) of low potential forage habitat • 366.22 ha (approx.) of potential habitat • Direct impacts not expected. Species associated with PCT 23, which does not occur within the indicative development footprint

5.5 Collison risk modelling and Bird/Bat operational management plans

The overall objectives of a Bird and Bat adaptive Management Plan (BBAMP) is to provide an effective monitoring program and strategy to manage and mitigate operational issues relating to bird and bat impacts for the wind farm. Guided by the collision risk modelling and assessment as well as the WTG risk assessment, and importantly, additional baseline data, a detailed BBAMP is likely to be required to be developed prior to project approval (based on recent feedback from BCS on contemporary wind farm development application), in conjunction with relevant stakeholders, to inform adaptive management measures around the potential for collision mortality, barrier effects and behavioural displacement of resident, nomadic and migratory bird and bat species.

The BBAMP would include baseline data on threatened bird and bat species as well as those considered at moderate risk surrounding the development that could potentially be affected. One of the key objectives for the collection of detailed baseline data is to gather adequate information that can be replicated on the existing bird and bat species abundance prior to commencement of construction of the wind farm. This includes the setup of impact zones and control zones that would be monitored pre-construction and upon operation for an agreed amount of time. The data collected will be utilised to detect changes in the species use (including changes in activity patterns such as avoidance) of the site post-construction and during operation of the wind farm and allow for stringent mitigation measures to be implemented as and when they are required to be.

Bird and bat utilisation surveys commenced in February 2023 with the collection of the initial summer season data that will be required to inform the biodiversity impacts assessment and preparation of the BBAMP.

Construction and operational management plans will all contain an adaptive management component. Adaptive management strategies will be receptive to any new and relevant data that may arise through ongoing assessment and monitoring and is key to the successful implementation of crucial objectives yet also allow flexibility to changing dynamics and ongoing feedback and results. This includes measures to monitor predicted and uncertain impacts which will trigger adaptive management actions and allow for effective and quick responses.

An overall Environmental Management Strategy (EMS) would need to be developed with site specific sub management plans that will entail an adaptive management strategy component. Those sub management plans in relation to biodiversity should include but are not limited to a Biodiversity Management Plan (BMP) and BBAMP.

5.6 Indirect, prescribed and uncertain impacts

Targeted surveys will be undertaken for each of the candidate species as to assess all impacts, inclusive of indirect, prescribed and uncertain impacts. The targeted survey will:

- Use methods appropriate for the species being targeted.
- Be performed at times of the year appropriate for identifying the species.
- Be based on a repeatable method for inclusion in any ongoing monitoring program post-approval.

Based on the outcomes of the targeted survey the BDAR will include:

- Maps of the predicted and habitual flight paths for nomadic and migratory species likely to fly over the subject land.
- Maps of the likely habitat for resident threatened aerial and raptor species.

Where a proposed project is a wind farm, prescribed impacts listed for collision risk in Section 6.1.5 of the BAM applies. During the preparation of the BDAR, a candidate list of species that may use the subject land as a flyway or migration route will be identified including:

- Resident threatened aerial species (such as Major Mitchell's Cockatoo, Little Eagle, Little Pied Bat, Inland Forest Bat, Yellow-bellied Sheathtail-bat).
- Resident raptor species (such as Black Kite, Spotted Harrier, Whistling Kite, Wedge-tailed Eagle, Brown Falcon).
- Nomadic and migratory species that are likely to fly over the project area or periodically breed win the locality (such as Pelican, Brolga, Black-tailed Godwit, Curlew Sandpiper, White-throated Needletail, Latham's Snipe, Pectoral Sandpiper, Red-necked Stint).

As outlined above there are potential seasonal risks associated with increased abundance of bird, particularly waterbirds in the region, and this may result in impact minimisation measures being required such as to curtail high risk WTGs seasonally or periodically.

The survey requirements pre-construction require the collection of baseline data and the ongoing requirements through operation can be intensive and could form a component of the biodiversity management of an approved wind farm project.

6 Recommendations

6.1 Recommendations

The result of preliminary and future field surveys will be used to continue to guide the design for the Project. Avoiding and minimising impacts to biodiversity will be considered further during detailed design revisions and will be developed in consultation with relevant stakeholders and agencies. Specific considerations will include:

- Avoidance and minimisation of impacts to potential SAII entities.
- Clearing of native vegetation to the minimum extent necessary.
- Minimising project infrastructure in High Constraint areas to reduce direct and indirect impacts.
  - Minimising WTGs in areas associated with wetlands (PCTs 17, 160) to minimise the potential for waterbird collisions.
  - Minimising WTGs in areas associated with woodlands (PCTs 10, 13, 15, 16, 23, 26, 28) to reduce the potential for bird and bat collision, as well as to minimise the potential for impacts to breeding habitat.
  - Minimising placement of all infrastructure types in mapped TECs and threatened species habitat / populations, to reduce potential impacts to highly sensitive biodiversity values and to ensure application of the avoid and minimise principles.
- Development of impacts minimisation strategies including maintenance of WTG-free buffer zones (flyways) through the subject land, between wetlands (stepping-stones), and other habitat feature during project design.
- Further consideration of habitat value of cropped areas (particularly rice crops) for waterbirds with regards to potential WTG collision.
- Minimisation of impacts in areas of good condition native vegetation and habitats.
- Minimisation of impacts to paddock trees and hollow-bearing trees as far as practicable.
- Avoidance of areas of greater collision risk to resident birds and bats and migrating species.
- Development of measures in designing WTGs to dissuade perching and minimise the diameter, and maximising the height, of the rotor swept area.
- Cross reference with other site/value-based constraints – e.g. Aboriginal cultural heritage values and flood prone areas.

A number of the above impact minimisation strategies have already been implemented during initial project design (as outlined in Section 5.2), and further work will continue as the assessment stage of the Project progresses, and the BDAR is developed.

As part of a BDAR, detailed ecological surveys, investigations and assessment will be undertaken including:

- Collection of floristic plot data.
- Confirmation of extent of all TECs present.
- Targeted surveys for candidate flora and fauna species.

- Full season bird and bat utilisation surveys.
- Assessment of all direct, indirect and prescribed impacts.
- Offset planning for unavoidable residual impacts.

On-site survey effort by suitability qualified ecologists will be undertaken to further ground truth vegetation types, associations with TECs and associations with threatened species habitats. Field surveys in relation to the BDAR will be grouped together into optimal surveys windows to address the requirements of the BAM, most likely within Spring and Summer. Surveys required for future operational requirements in the way of BBUS for collision risk modelling will require field data capture across all seasons and across a minimum 12 month survey period, and potentially up to 24 months for Commonwealth requirements, as well ongoing operational monitoring.

As the Project may significantly impact Matters of National Environmental Significance, EPBC Act assessment requirements are also considered likely, and would need to be addressed with an EPBC referral and assessed under the NSW bilateral agreement.

The BOS will apply to the assessment, generating an offset requirement for the Project. Establishment of Biodiversity Stewardship Sites to satisfy the Project's offset credit obligation is likely to be the most effective approach for the Project, and has the greatest local biodiversity outcome. This can be completed by procuring land that has the potential to generate the required biodiversity credits, or negotiate with landholders to manage an offset site on their land, on their behalf whilst the Project is operational.

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Appendices

Appendix 1 Photos

Photo 1 **PCT 46 grasslands potentially representing Natural Grasslands of the Murray Valley Plains CEEC**

Photo 2 **PCT 45 grasslands potentially representing Natural Grasslands of the Murray Valley Plains CEEC**

Photo 3 **Grassy PCT 164 with a higher cover of chenopod shrubs such as Cotton Bush**

Photo 4 **Grassier PCT 164 with a higher cover of chenopod shrubs such as Cotton Bush and Dillon Bush**

Photo 5 **High condition PCT 164 with Cotton Bush dominant and tussuck grasses in the inter-shrub spaces in the far western portion of the subject land**

Photo 6 **Large Nitre Goosefoot dominated wetland (PCT 160) in north-eastern portion of subject land, providing habitat for a large number and diversity of waterbirds**

Photo 7 **Second large Nitre Goosefoot dominated wetland (PCT 160) in north-eastern portion of subject land, providing habitat for a large number and diversity of waterbirds**

Photo 8 **Large Lignum wetland (PCT 17) at the confluence of Eurolie Creek and Coleambally Outfall Drain, providing habitat for a large number and diversity of waterbirds**

Photo 9 **Large Lignum wetland (PCT 17) (in background) at the confluence of Eurolie Creek and Coleambally Outfall Drain, providing habitat for a large number and diversity of waterbirds**

Photo 10 **High condition Myall Woodland EEC (PCT 26) in northern portion of the subject land**

Photo 11 Large Weeping Myall tree (1 metre ranging pole can be seen in the foreground)

Photo 12 Grassy Black Box woodland (PCT 16) represented mainly by scattered remnant trees

Photo 13 Black Box woodland / wetland (PCT 13) with an understorey dominated by Nitre Goosefoot and occasional Lignum along Eurolie Creek

Photo 14 Sandhill Pine Woodland EEC (PCT 28) in the central portion of the subject land

Photo 15 **Stand of Yarran *Acacia melvillei* (potential) likely to represent Acacia melvillei Shrubland EEC**

Photo 16 **Irrigation channel flowing from Coleambally Outfall Drain in the southern portion of the subject land supporting potential habitat for Southern Bell Frog *Litoria raniformis***

Photo 17 **Large irrigation dam at the confluence of Eurolie Creek and Coleambally Outfall Drain providing potential habitat for waterbirds**

Photo 18 **Medium sized farm dam within the proposed solar park portion of the subject land providing potential habitat for waterbirds**

Appendix F Preliminary Social Impact Assessment Worksheet

	Social Impact Assessment (SIA) Worksheet					Project name: Pottinger Wind Farm							Date: 23 February 2023					
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**	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	**duration** of expected impacts? (**i.e.**	**intensity** of expected impacts i.e. scale	**sensitivity** or vulnerability of people potentially	**level of concern/interest** of people potentially		Secondary data	Primary Data - Consultation	Primary Data - Research		
Construction of wind turbines.	community	Potential impacts in relation to change in the natural environment and visual amenity may lead to impacts on the perceived quality, use and aesthetics of the landscape in the Social Locality.	Negative	**Yes - this project**	Preliminary Landscape and Visual Impact Assessment. Preliminary community consultations.	Yes	Keri Keri Wind Farm (SSD-38358962); Project EnergyConnect (NSW - Eastern Section; SSI-9172452) The Plains Wind Farm (SSD-50629707) Yanco Delta Wind Farm (SSD-41743746) Dinawan Wind Farm (SSD-50725708) Baldon Wind Farm (SSD-40138508)	Yes	Yes	Yes	Unknown	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Appropriate set back from neighbouring residences incorporated into project, design, layout will continue to be revised during EIA stage to minimise impacts where possible. Consideration of mitigation strategies for any residual impact, including landscape screening and other oppotunities that will be co-designed with project neighbours into a Neighbour Benefits Program.
Construction of wind turbines.	community	Potential impacts on social cohesion between community members (for/against renewable energy and/or the project) in the Social Locality.	Negative	**Yes - this project**	Preliminary community consultations and known documented feedback about other largescale renewable energy projects in NSW.	Yes	As above.	Yes	Yes	Yes	Unknown	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Someva to continue conducting timely and detailed community engagement. Ensure community concerns are listened to and information to address concerns is provided to the community. Work with local community stakeholders to identify needs in the community that can be supported via the Project's Community Benefit Fund/ Voluntary Planning Agreement, and Neighbour Benefits Program.
Construction phase of the project.	way of life	In the Social Locality: Potential for increased pressure on limited local accommodation from construction and operational work force (for limited period of construction). Potential for increased pressure on local work force, negatively impacting local businesses with labour competition and wage increases. Perceived impacts on land/property values (price increases), adding further pressure on local housing/ accommodation. Topic was raised during initial consultation.	Negative	**Yes - other project**	These impacts are well understood from other projects.	No	As above.	Yes	Yes	No	Unknown	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Explore possibility for accommodation camp near the project site during construction. Consultation with local business groups and Councils to understand existing constraints and opportunities to deliver local economic benefits.
Construction of wind turbines.	way of life	Alteration of landscape: potential impact to tangible and intangible Aboriginal heritagein the Social Locality..	Negative	**Yes - other project**	These impacts are well understood from other projects.	Yes	As above.	Yes	Yes	Yes	Unknown	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Someva is engaging early with identified Local Aboriginal Land Councils (Hay LALC; Deniliquin LALC) to understand and address potential impacts.
Operating life of the project.	livelihoods	Diversification of income streams for involved landowners and nearby neighbours, which will in turn provide flow on economic benefits for the surrounding community.	Positive	**Yes - other project**	These impacts are well understood from other projects.	Yes	As above.	Yes	Yes	Yes	Yes	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Conduct timely and appropriate community engagement and implement measures to maximise benefits for the local and regional economy.
Construction phase and operating life of the project.	access	Potential upgrades to local infrastructure (road network and electricity grid) to facilitate the project in the Social Locality..	Positive	**Yes - other project**	These impacts are well understood from other projects.	Yes	Positive impacts as a result of road and electricty infrastructure upgrades have been demonstrated on other projects.	Yes	Yes	Yes	**Unknown**	**Yes**	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Consultation with landholder and local Councils and community on transport routes, local roads, private roads and potential upgrades to ensure benefits are delivered for landholder and local community wherever possible. Conduct timely and appropriate community, Council, local business and energy industry engagement and implement measures to maximise benefits for the local and regional economy.
Construction phase (up to 18 mths) of the project.	access	Potential impacts and disruptions to host landowners, near neighbours and local traffic during construction from increased traffic, noise and dust and oversized loads during construction.	Negative	**Yes - other project**	These impacts are well understood from other projects.	No	Not required	Yes	Yes	Yes	**Unknown**	**Yes**	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Project boundary and noise generating infrastructure (substation, inverters, batteries) are located a sufficient distance (minimum 3.5km) from nearest neighbour. A detailed noise and shadow flicker impact assessment will be completed as part of the EIS.
Construction phase (up to 18 mths) of the project, and then support for operating life of the project.	way of life	Increased demands for local goods and servicesin the Social Locality. Broader community - employment and contracting opportunities during the construction and operation period. Also flow on economic benefits for regional community. Topic was raised during initial consultation.	Positive	**Yes - other project**	These impacts are well understood from other projects.	Yes	Keri Keri Wind Farm (SSD-38358962); Project EnergyConnect (NSW - Eastern Section; SSI-9172452) The Plains Wind Farm (SSD-50629707) Yanco Delta Wind Farm (SSD-41743746) Dinawan Wind Farm (SSD-50725708) Baldon Wind Farm (SSD-40138508)	Yes	Yes	Yes	**Unknown**	**Yes**	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Conduct timely and appropriate community, Council and local business engagement and implement measures to maximise benefits for the local and regional economy. This may include the development of a Local Content Strategy.
Construction phase and operating life of the project.	health and wellbeing	Perceived health impacts of wind turbines (resulting from noise ouput) in the Social Locality.	Negative	**Yes - other project**	These impacts are well understood from other projects.	Yes	As above.	Yes	Yes	Yes	**Unknown**	**Yes**	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	A detailed noise and shadow flicker impact assessment will be completed as part of the EIS.
Majority of project activities, project delivery and operation phases.	community	Stakeholders in the Social Locality are unable to make informed decisions; do not have influence on project design or decisions; to not have influence on the project benefits programs (neighbour or community programs); and are unable to access enquiry and complaint processes.	Negative	**Yes - other project**	These impacts are well understood from other projects. Someva ensures continous engagement with community (especially project neighbours) to ensure accurate information is conveyed and co-design of benefits programs is enabled.	Yes	As above.	Unknown	Yes	Yes	**Unknown**	**Yes**	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Someva has prepared and maintains a Community Stakeholder Register, with phone/postal/email contact details, to ensure proactive advice is shared when Planning Milestones for the project are achieved. Someva to continue conducting timely and detailed community engagement. Ensure community concerns are listened to and information to address concerns is provided to the community. Work with local community stakeholders to identify needs in the community that can be supported via the Project's Community Benefit Fund/ Voluntary Planning Agreement, and Neighbour Benefits Program.
Project decomissioning or replacement phase.	surroundings	Potential impacts during future project decommissioning (or re-energising/ replacement). Topic was raised during initial consultation.	Negative	**Yes - other project**	These impacts are well understood from other projects.	Yes	As above.	Yes	Yes	Yes	**Unknown**	**Yes**	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Ensure deconstruction and/or replacement activities are carried out in accordance with the relevant legislation, including as outlined in the EMP, with a strong emphasis on recycling project materials.