



Euston Wind Farm

Preliminary Visual Impact Assessment

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Prepared for

DP Energy Australia Pty Ltd C/o NGH Consulting

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1.0 Introduction

1.1 Introduction

Moir Landscape Architecture has been commissioned by NGH Consulting on behalf of DP Energy Australia Pty Ltd (the Proponent) to prepare a Preliminary Visual Impact Assessment (PVIA) for the proposed Euston 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) from the NSW Department of Planning & Environment (DPE). The PVIA includes an assessment of all aspects of the Project including project activities and associated infrastructure.

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 wind energy projects. In the context of our experience and with guidance from the Visual Assessment Bulletin we have developed methodologies to ensure a comprehensive and qualitative assessment of the Project.

Relevant experience includes the preparation of Preliminary Visual Impact Assessments and Landscape and Visual Impact Assessments for the following Wind Energy Projects:

- *Uungula Wind Farm LVIA (Wellington, NSW) - Approved May 2021*
- *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)*
- *Burrawong Wind Farm PVIA (Balranald, NSW)*
- *Barneys Reef Wind Farm PVIA (Gulgong, NSW)*
- *Winterbourne Wind Farm LVIA (Walcha, NSW)*
- *Keri Keri Energy Park PVIA (Balranald, NSW)*
- *Paling Yards Wind Farm PVIA (Paling Yards, NSW)*

1.3 Overview of Preliminary Visual Impact Assessment

The purpose of this Preliminary Visual Impact Assessment (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 assessment process is broken into two main phases, (see **Figure 1**):

- Phase 1:** Scoping Phase and
- Phase 2:** Environmental Impact Statement (EIS) Phase

This PVIA forms a part of *Phase 1: Scoping Phase*, which involves the submission of the Scoping Report for the request for SEARs to be submitted to DPE.

In regard to the visual assessment, the requirements of Phase 1: Scoping Phase are as follows:

At the PVIA stage, a process consisting of community consultation regarding key landscape values and application of preliminary assessment tools has been developed in accordance with the Bulletin.

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 Development Application (DA).

Proponents will be required to submit, with the request for SEARs, a PVIA that includes a map with key information, results of community consultation and the application of the preliminary assessment tools. This will be included in the Scoping Report which forms basis for the issue of the SEARs that will identify the matters that must be addressed in the EIS.

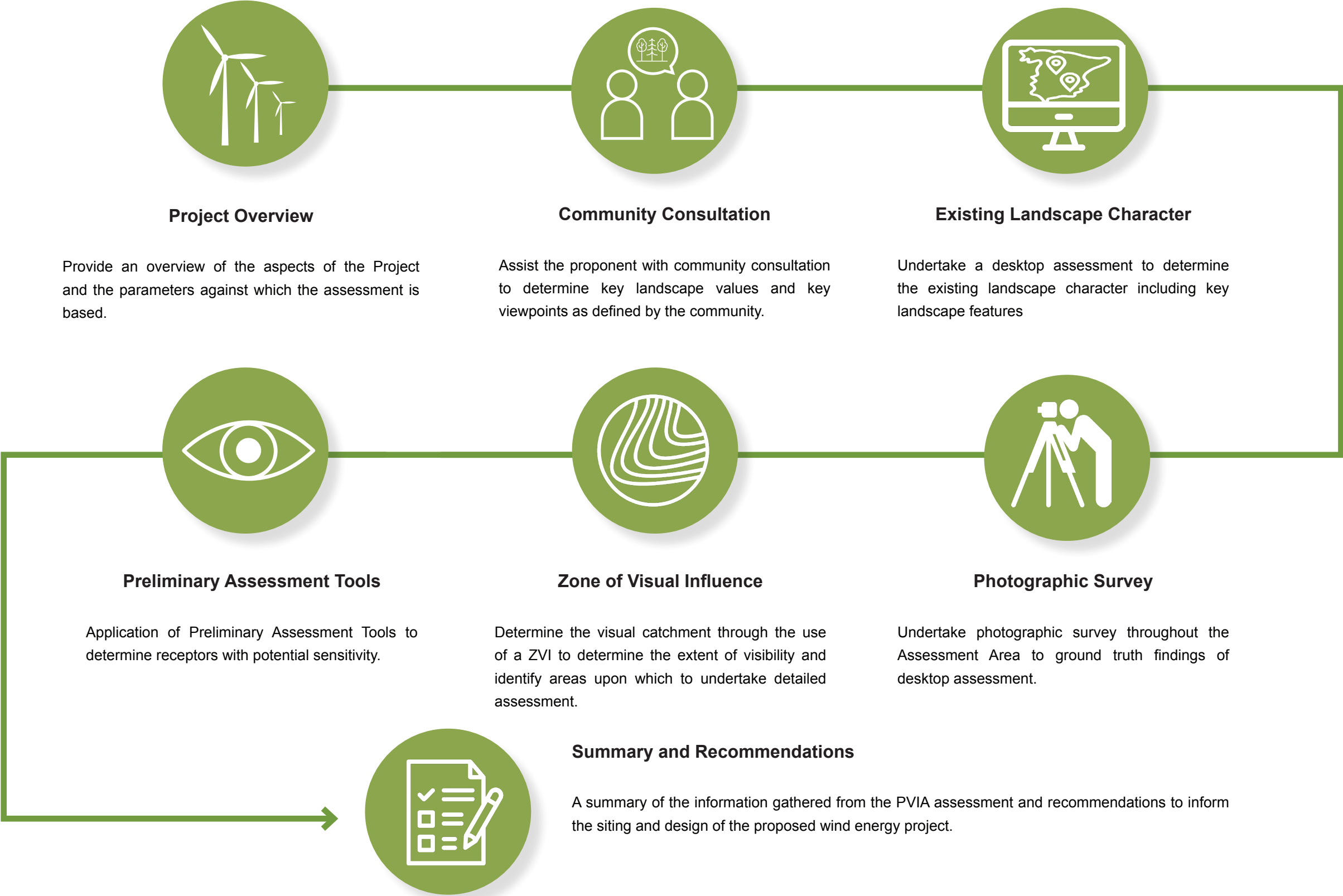


Figure 1 Steps in Visual Impact Assessment (Source: Wind Energy Assessment Bulletin, 2016)

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 receptors 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 April 2023 to carry out a preliminary assessment of the existing landscape character from publicly accessible land within the Assessment 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 targeted 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. Allow the community to have input into the ranking of those features and scenic quality into high, moderate or low visual significance.
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 turbine 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 turbine parameters.
Section 7.0: 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, turbines 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 8.0: Cumulative Visual Impacts	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 9.0: Preliminary Zone of Visual Influence	
Section 10.0: Summary and Recommendations	

Table 1: Overview of Report Structure

3.0 Project Overview

3.1 Regional Context

DP Energy are proposing a renewable energy development featuring up to 96 wind turbines each with a nominal generation capacity of up to 7.2 Megawatts (MW) and a containerised Battery Energy Storage System (BESS). The Project is currently in the early stages of landowner consultation, stakeholder engagement and overall design. The majority of the Project is located within the Balranald Shire Council area with some turbines extending into Wentworth Shire Council in the Riverina region of New South Wales. It is situated approximately 7.6 kilometres (km) north of Euston and approximately 68 km west of Balranald. Robinvale in Victoria is located approximately 24 km south of the Project.

The Project is located on expansive operating pastoral and farming land. Gulthul Road passes through the Project. Mungo National Park lies approximately 61 km north of the Project. Willandra Lakes World Heritage Area borders the northern edge of the Project. The Project access is via Gulthul Road off Sturt Highway which is currently the proposed access point for the Project (refer to **Figure 2**).

The Project is located within the South-West Renewable Energy Zone (REZ). The South-West REZ was formally declared by the NSW Minister for Energy on 4 November 2022. The declared South-West REZ has an intended transmission capacity of 2.5 GW (EnergyCo NSW, 2022). The Project is therefore strategically located in a broad area identified as suitable for renewable energy projects.

The South-West Region has been identified as having high solar and wind renewable energy resource potential. Preliminary investigations undertaken by the Proponent have guided the development of the preliminary turbine layout for the Project. The Project will deliver energy produced into either, the 220 kV transmission line, or the new 330 kV line, recently approved under Project EnergyConnect (EnergyCo NSW, 2022).

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 of the design layout.

3.2 The Project Site

The Project Site is located approximately 7.6 km north of Euston, close to the NSW-Victoria state border and covers approximately 38,567 hectares (ha). The Project Site is located on relatively flat land at an elevation of approximately 100 metres above sea level with a good available wind resource. Three (3) Non-Associated Dwellings were identified within 8,000 m of the nearest turbine. Two (2) additional dwellings were assessed within the Assessment Area (described in **Section 3.3**) due to the flat topography associated with the Site.

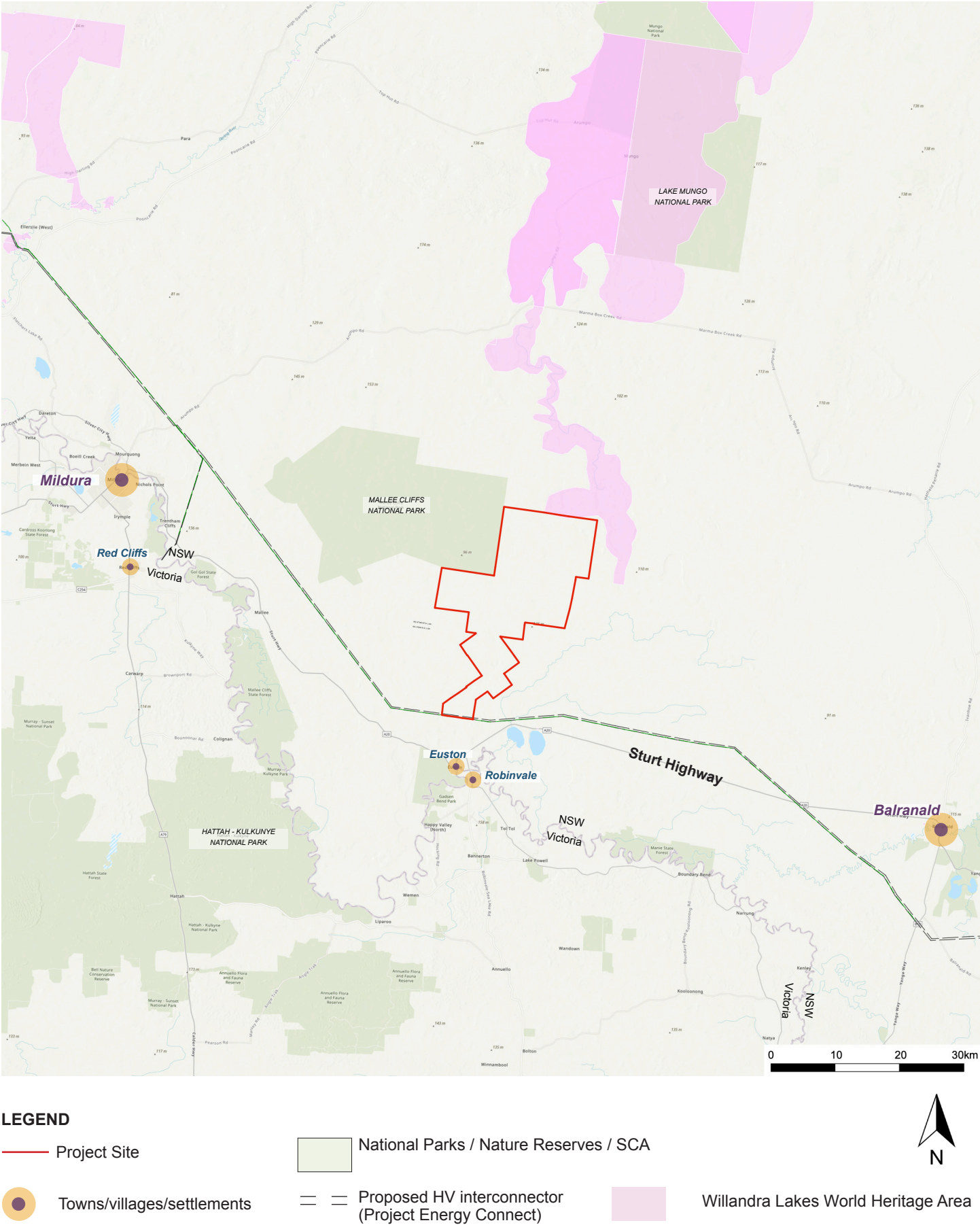


Figure 2: Regional Context

The Project crosses the Wentworth Local Government Area (LGA) and the Balranald LGA. The Majority of the turbines are located on land zoned RU1 Primary Production under the Balranald Local Environmental Plan (LEP) 2010 (Balranald LEP). The Project Site is currently used for cropping and grazing, with patches of remnant native vegetation present. The Project EnergyConnect transmission line corridor is located to the south of the Project. The Project is bordered by Mallee Cliffs National Park to the west. Mallee Cliffs National Park is categorised as a C2 - Environmental Conservation under the Wentworth Shire LEP 2011.

3.3 The Assessment Area

Referred to in this report, the Assessment Area is generally defined as the Project Site and surrounding land which requires assessment. In accordance with the Bulletin, visibility generally decreases beyond 8,000 m. Due to the relatively flat topography of the surrounding landscape the Assessment Area is has been conservatively defined as land up to 10,000 m from the nearest turbine. Dwellings within the Assessment Area have been assessed to understand the preliminary visual impacts. Similarly, public viewpoints within the Assessment Area have been assessed to understand potential visual impacts on public viewing locations. Towns and settlements located in closest proximity are Euston and Robinvale in Victoria as shown in **Figure 2**.

3.4 The Project

The Project includes the construction, operation and decommissioning of up to approximately 96 wind turbines (and associated infrastructure) within the 38,567 ha Project Site. Each turbine would have a maximum blade-tip height of 275 m above ground level (AGL). Associated infrastructure includes a Battery Energy Storage System (BESS), internal access roads, operation and maintenance buildings, civil works and electrical infrastructure (including substations and switching station) required to connect to the existing electricity transmission network. The preliminary layout for the Project (refer to **Figure 4**) will be subject to further review and refinement as the environmental and social impact assessment progresses.

A single grid-scale BESS with a capacity of up to 500 MW / 2000MWh is also proposed and will allow for the capture and storage of dispatchable to the electricity grid along with providing additional grid Services. The power generated by the Project will feed into the electricity grid (National Energy Market, NEM) either via the 330/220kV new Project EnergyConnect interconnector that will link Robertstown (South Australia) with Wagga Wagga (NSW), or direct connection to the existing 220kV transmission line or 330kV Project EnergyConnect.

The preliminary layout for the Project (refer to **Figure 3**) has been prepared to predominately locate the turbines within areas identified as having high wind resources and land that has been previously modified by pastoral and agricultural activities. **Figure 3** also includes the locations of associated

and non-associated Dwellings mapped from aerial photographs. These locations are subject to further ground truthing.

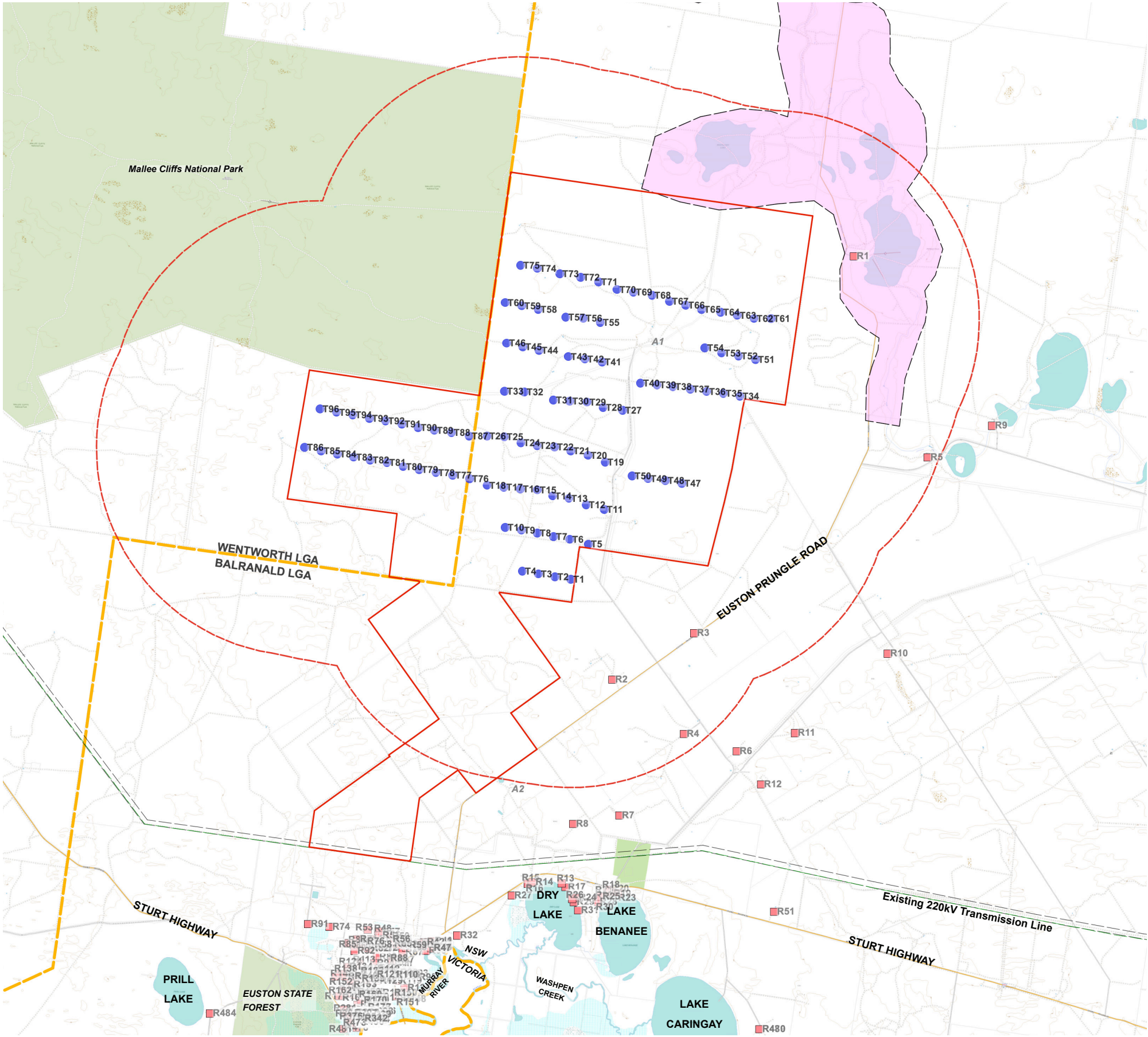
Key components of the Project include:

- Indicatively 96 wind turbines, up to 275m tall (each with nominal capacity of 7.2MW) with associated footings, hardstands and laydown areas allowing a generation capacity of approximately / nominally 700 MW.
- Onsite 33/220kV medium voltage transmission and connection to site substation containing switchgear, transformers, energy storage and grid services equipment.
- Electrical underground or overhead export connection approximately 18km south at 220kV
- Grid connection and switching yard, enabling the export transmission line to be connect into TransGrids existing 220kV line
- A Battery Energy Storage System (BESS) with proposed 500 MW / 2000MWh capacity
- Approximately 50km of internal access tracks and upgrades to existing access roads, where required.
- Access road from the Sturt Highway.
- Associated infrastructure including several 170m high met masts and perimeter fencing.
- Operations and maintenance (O&M) buildings, offices, welfare facilities and workshop, staff amenities and parking facilities.

It is anticipated that temporary components of the Project would include;

- Construction compounds including wash down facilities and laydown areas, parking
- Borrow pits for track material
- Concrete batching plant, and
- Guyed lattice meteorological masts of up to 160m.

The proposed transmission line will connect into the EnergyConnect interconnector to the South or the existing 220kv line. The proposed infrastructure would be contained within the Project Site including all turbine rotor sweep paths. The proposed layout will allow for micro-siting and will be subject to further detailed design as the environmental and social impact assessments progress.



Project Layout

Proposed Euston Wind Farm

- LEGEND**
- Project Site
 - Proposed Turbine Location
 - Associated Dwellings
 - Non-Associated Dwellings
 - Existing 220kV transmission line
 - Proposed HV Interconnector (Project Energy Connect)
 - Main Road
 - Minor Road
 - Nature Reserve / State Conservation Area
 - LGA Boundary
 - Assessment Area
 - Willandra Lakes World Heritage Area

Figure 3 Project Layout (Map Source: Six Maps)

4.0 Community Consultation

4.1 Overview of Community Consultation Process

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

The purpose of community consultation undertaken in the preparation of the PVIA is to:

- Establish key landscape features
- Defined areas of scenic quality; and
- Identify key public viewpoints valued by that community.

The results of community consultation have also been used to inform the preliminary scenic quality ratings assigned to landscape features in **Section 5.5** of this report.

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 Landscape and Visual Impact Assessment (LVIA).

4.2 Results of Community Consultation

The Proponent and NGH Consulting have undertaken the Community Consultation. Below is a summary of the consultation undertaken by the Proponent. Results of the Community Consultation has been provided in detail in the scoping report.

The feedback provided a small range of perspectives for consideration. However, the following conclusions can be drawn:

- One participant lives within 5km – 10km of the Proposal site.
- One participant lives in Robinvale.
- One participant does not live locally, but works in the area.
- One out of three participants want to build their understanding of the project and indicated that they would like to be kept informed with project updates.
- Concerns to manage and mitigate are:
 - Visual impact (specifically R1 would like to understand what they would likely see from their property)
 - Traffic and road impacts during construction and operation
 - Noise impacts during construction and operation
 - Effects on land use

- Noise effects on stock and native animals
- Recycling components of the turbines at decommissioning
- Housing workers during the construction phase
- One participant somewhat supports the Proposal.
- One participant supports the Proposal.
- One participant strongly supports the proposal.
- Two out of three participants like that the Proposal generates renewable energy, reduces greenhouse gas emissions, increases local economic opportunities, diversifies the land use/income streams and will include community benefits.
- Two participants indicated they have businesses that would like to see potential work or opportunities from the project.

5.0 Existing Landscape Character

5.1 Overview of Bioregion

The Project is located within the Murray Darling Depression IBRA Bioregion (see **Figure 4**) in southwest NSW. The area is distinctly characterised by quaternary deposits in shallow lakes, swamps and depressions with a range of vegetation character.

Topography is generally flat with very minor and isolated rises of calcareous sands material with soils predominantly ranging from red, brown and yellow calcareous soils typical of the dunefields to heavier brown grades on sandy isolated rises (DPE, 2021). Typically, dominant species include Rosewood (*Heterodendrum oleifolium*), belah (*Casuarina cristata*) along sandplains with diverse mixed communities predominately Mallee (*Eucalyptus sp.*) (DPE, 2021). A detailed description of the character is discussed in **Section 5.3** of this report. **Images 1 - 2** illustrate the typical character of the landscape within the Assessment Area.



Image 1 Typical character of vegetation within the Project Site.



Image 2 Typical character of the Riverina plains in the area - intermittent stands of vegetation with variable understorey vegetation.

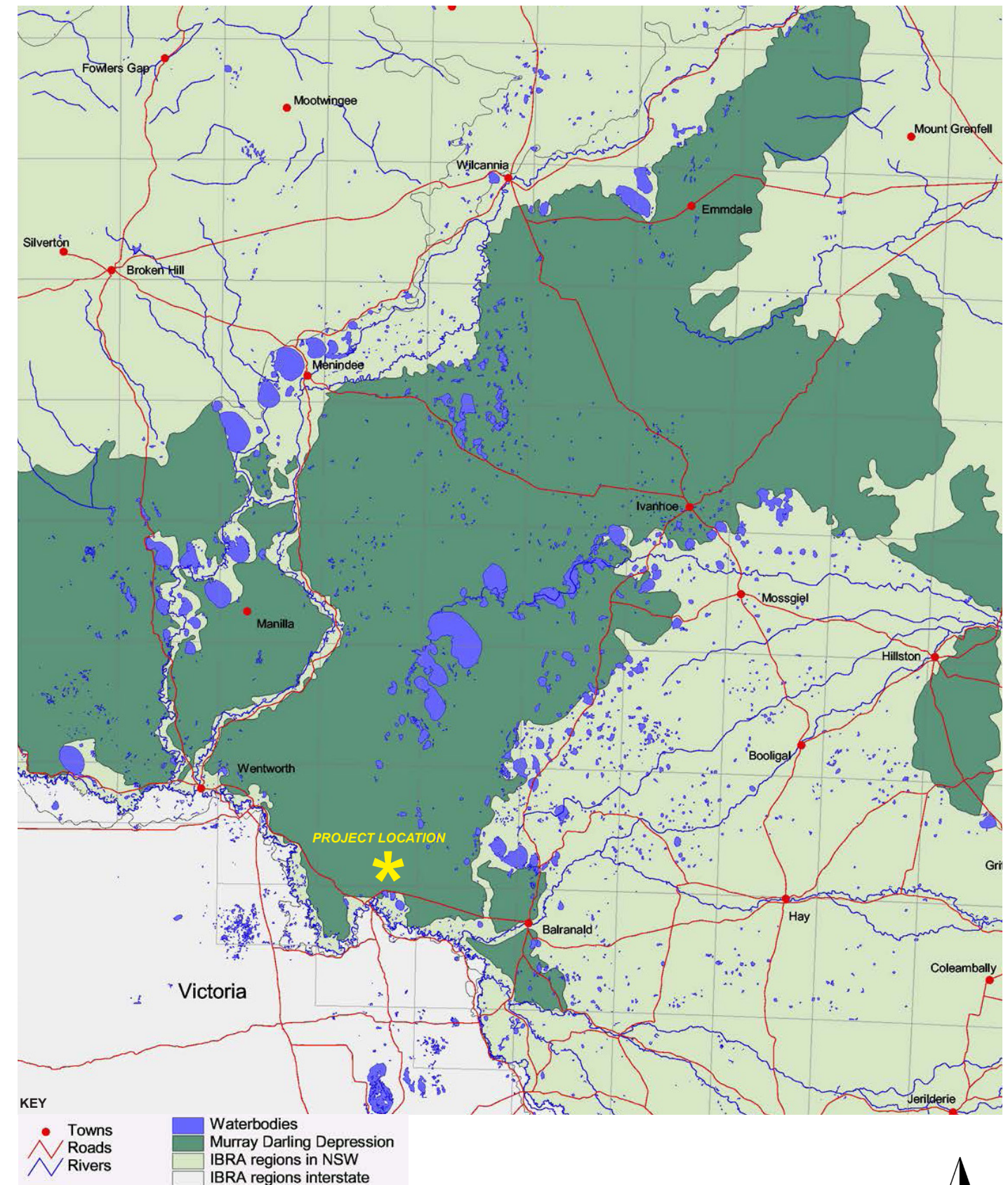


Figure 4: NSW Riverina Bioregion (Source: NPWS, 2016)

5.2 Land Use

5.2.1 Land Use Zoning

The majority of the turbines associated with the Project are located within the extents of the Balranald Shire Council with some turbines within Wentworth Shire Council. Hence the Balranald Shire Local Environmental Plan 2010 (LEP 2010) applies to the Project. The following gives an overview of the main land use zoning within the Assessment Area (see **Figure 5**):

RU1 - Primary Production

The Project Site and majority of the surrounding land is zoned *RU1 - Primary Production*. The Wentworth LEP 2011 states the following objectives of the *RU1 - Primary Production* zoning:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To encourage development that is in accordance with sound management and land capability practices, and that takes into account the environmental sensitivity and biodiversity of the locality.
- To support rural communities.
- To ensure the provision of accommodation for itinerant workers.

C1 - National Parks and Nature Reserves

Mallee Cliffs National Park (MCNP) with its associated reserves including Banya Nature Reserve, Wilddog Nature Reserve and Gulthul Nature Reserve fall within the extents of land that is categorised as *C1- National Parks and Nature Reserves*. The Project shares its western boundary with a portion of the MCNP. The MCNP extends further north west to the Project.

Mallee Cliffs National Park Plan of Management (MCNPPM) refers to the area as 'the parks' in the Plan of Management, 'protects native ecosystems that are greatly diminished in extent or degraded by grazing and other land uses in the broader landscape' (NSW & OEH, 2018). The MCNPPM focuses on protection of the natural environment, preservation of cultural heritage, public use of the park, and educational values.

As stated in the MCNPPM, public access to the park is restricted. The primary purpose of the park has been nature conservation, and access to the public has been limited mostly to researchers and bird watching groups who visit a few times a year. Since reservation, recreation has been excluded from

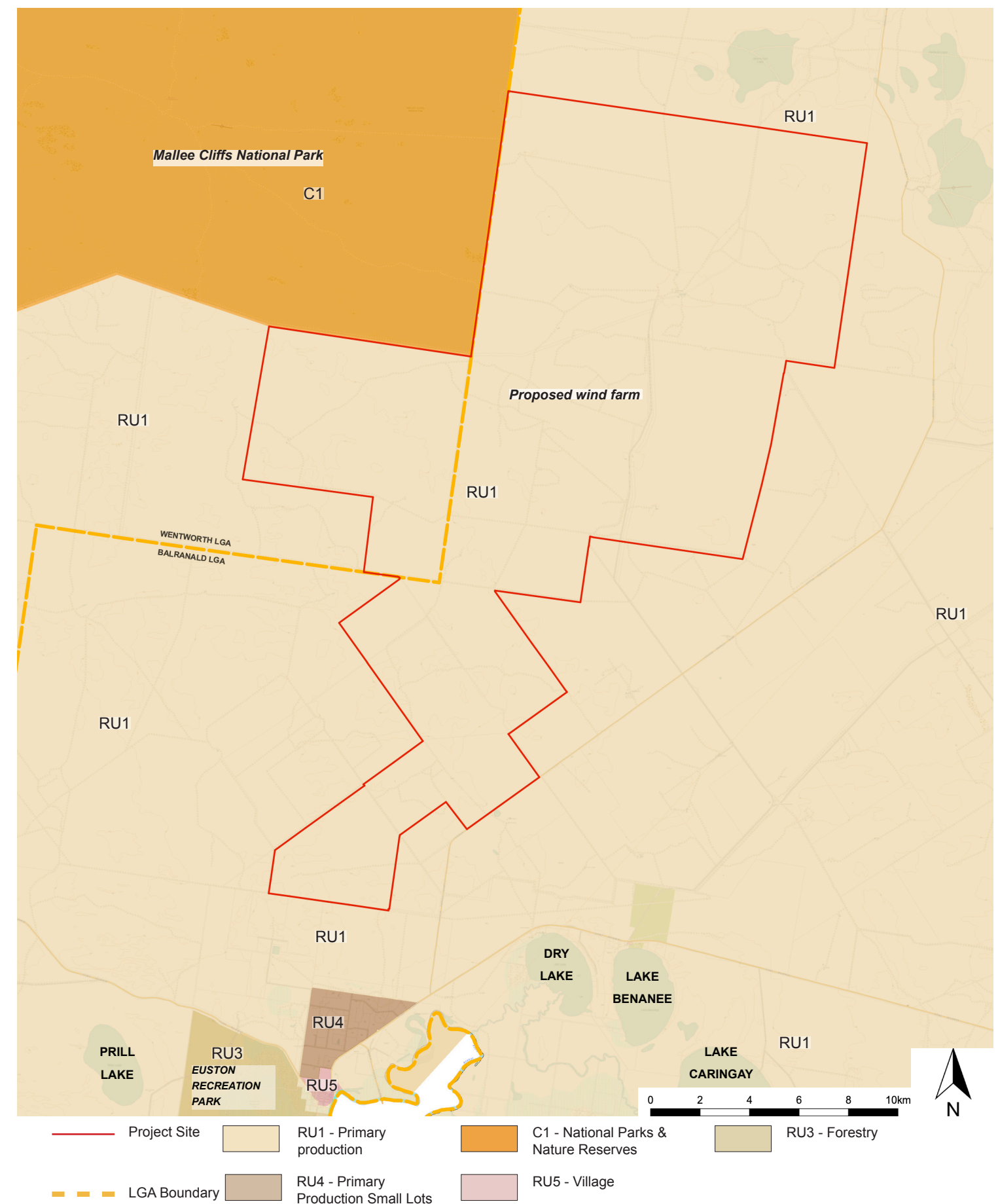


Figure 5: Land Use Zoning (Source: NPWS, Environment NSW 2016)

Mallee Cliffs as access to the park is via private roads. The Reintroduction of Locally Extinct Mammals (RLEM) project commenced in 2017 and will include managed public access. A visitor strategy will be developed as part of the RLEM project and is expected to provide special opportunities for visitors to observe threatened species in the reintroduction area.

Low-relief landscapes typical of Murray Darling Basin Bioregion are characteristic of this Park. Topography is generally flat lacking natural streams or water bodies. Vegetation is characteristic of semi-arid environment with dominant Mallee communities supplemented with derived grasslands, patchy belah-rosewood woodlands or mulga - bluebush shrublands. Primary objectives of the MCNPPM include:

- *Restore vegetation and native animal habitat values in the park include decommissioning of artificial water points, monitoring and control of herbivores, weed control and fire management.*
- *Provide patchiness and multiple age classes while maximising the amount of older mallee which has optimum habitat features.*
- *To maximise the number of threatened species that can be secured in the wild in New South Wales for 100 years.*
- *To minimise adverse impacts of introduced pest species on biodiversity and other park values.*
- *Involvement of Local Aboriginal Community in managing the parks within the native title area.*

5.2.2 Land Use

Land use within and around the Assessment Area is predominantly associated with grazing, native vegetation and modified land for agriculture. Turbines will be situated in areas that are currently dedicated to dryland cropping and grazing pastures (see **Figure 6**). Mallee Cliffs National Park (MCNP) and associated nature reserves are subject to nature conservation because of their significant natural, landscape, cultural and educational values. It's immediate surrounds consist of natural grazing pastures and dryland cropping. Grazing and modified pastures are also prevalent to the north, east and west of the Project Site. These areas are flat and open. All water channels remain dry and exhibit vegetation characteristics that are unique to this region. The Sturt Highway serves as an important transport corridor connecting the towns of Buronga to Euston, Balranald and Hay. Minor roads within Euston provide connections to Robinvale in Victoria.

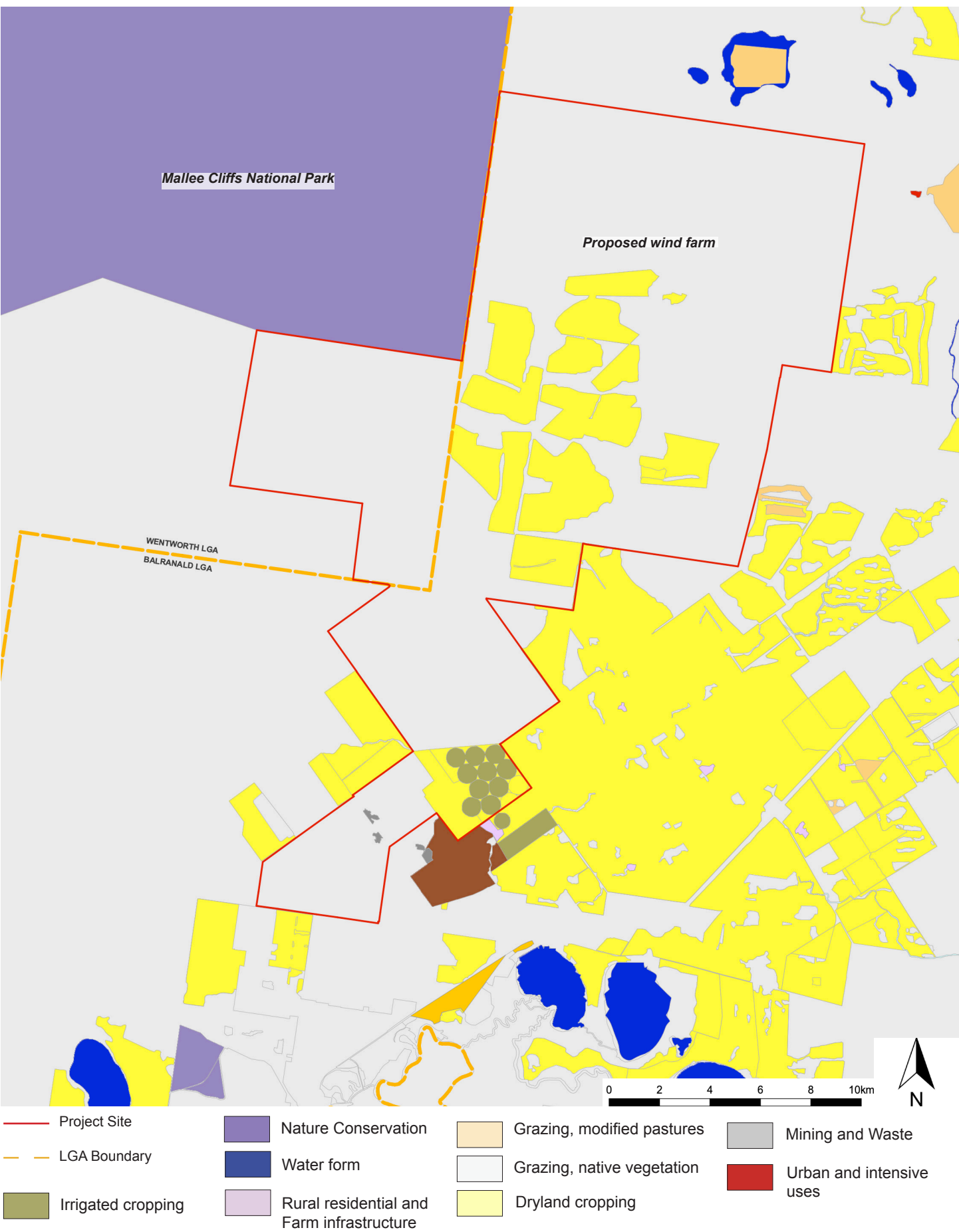


Figure 6: Land Uses (Source: NPWS, Environment NSW 2019)

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 Assessment Area. Refer to **Figure 7**. Some information below is produced from publicly available sources and this third party data has not been verified for this PVIA. Furthermore, a Biodiversity Development Assessment Report (BDAR) will be prepared following extensive surveys for the Project, such that some features described below may change.

Geology and Landform

The region is made up of Tertiary and Quaternary sediments deposited due to constant movement of shallow seas over the last 50 - 60 million years modelling the landforms into extensive dunes and sandplains (Department of Planning and Environment, 2003). Dry lakes and saline groundwater basins along with lateral dunefields and sandplains form characteristic land typologies within the region (Department of Planning and Environment, 2003). Shallow depressions in the form of dry lakes and swamps display well formed lunettes along its edges with scattered and isolated bedrock ridges rising above the sandplains (National Parks and Wildlife Service (NSW), 2003).

Vegetation Character

Vegetation within the surrounding landscape is typical of the Murray Darling Depression Bioregion. Vegetation character evolves in accordance with the landforms within the landscape. Semi-arid conditions support dominant Mallee communities with derived grasslands, *belah* (*Casuarina pauper*)-rosewood (*Heterodendrum oleifolium*) woodland communities and isolated mulga (*Acacia aneura*) and bluebush (*Maireana pyramidata*) shrublands (NSW & OEH, 2018). Variable spear grass (*Stipa variabilis*), cane grass (*Eragrostis australasica*), lignum (*Muehlenbeckia cunninghamii*) with clumps of black box (*Eucalyptus largiflorens*) form part of the unique vegetation character of the surrounding area (National Parks and Wildlife Service (NSW), 2003).

Low canopy species provides views to an expansive landscape. Thick clumps of Mallee vegetation forms a rich habitat for a diversity of fauna including the endangered Mallee fowl and other species found in the region. Other areas to the north, east and south of the Project Site show predominantly low vegetation allowing easier grazing opportunities for sheep, thus rendering the area favourable for livestock grazing. Land has been converted to support agricultural production closer to the settlements of Euston.

Dry lakes and Swamps

Given the semi-arid conditions of the region, dry lakes and swamps remain dry through most of the year. Rivers and waterways are viewed as significant features within the landscape and hold notable visual amenity within the region. These include the Murray River, Prill Lake, Dry Lake, Lake Benanee and Lake Caringay.

Lakes or depressions are generally shallow with clay floors and typically have defined vegetation such as lignum, nitre goosefoot (*Chenopodium nitrariaceum*) and canegrass species (National Parks and Wildlife Service (NSW), 2003). The closest fresh water sources is the Murray River which is located approximately south of the Project Site.

National Park and Nature Reserve

The MCNP is located to the immediate west of the Project. The MCNP exhibits characteristics of the Murray Darling Depression Bioregion. The MCNP and Nature Reserve contain undisturbed patches of dense *belah* - rosewood, mallee, mulga - bluebush communities with abundant grasses and dillon bush (National Parks and Wildlife Service (NSW), 2003). The MNCP is extensively managed to protect the unique red sandplains and linear dunefields formed nearly 500,000 years ago. The MCNP is part of Country for the Barkandji People and an Indigenous Land Use Agreement (ILUA) with the Barkandji native title holders focuses on managing the parks within the native title area (NSW & OEH, 2018). The MCNP serves as a habitat for native flora and fauna including 11 Native plant communities and 293 native plant species and 27 threatened fauna species such as the Mallee Fowl (NSW & OEH, 2018).

Euston Regional Park (ERP) is located approximately 26 km south of the Project. ERP covers an approximate area of 3274 ha. The park is located within the Murray Channels and Floodplains subregion of the Riverina Biogeographic Region. Surrounding land uses are predominantly pastoral with areas that are publicly accessible for recreational activities.

Mungo National Park located within the Willandra Lakes Region World Heritage Area is located approximately 61 km north east of the Project.

UNESCO World Heritage Areas

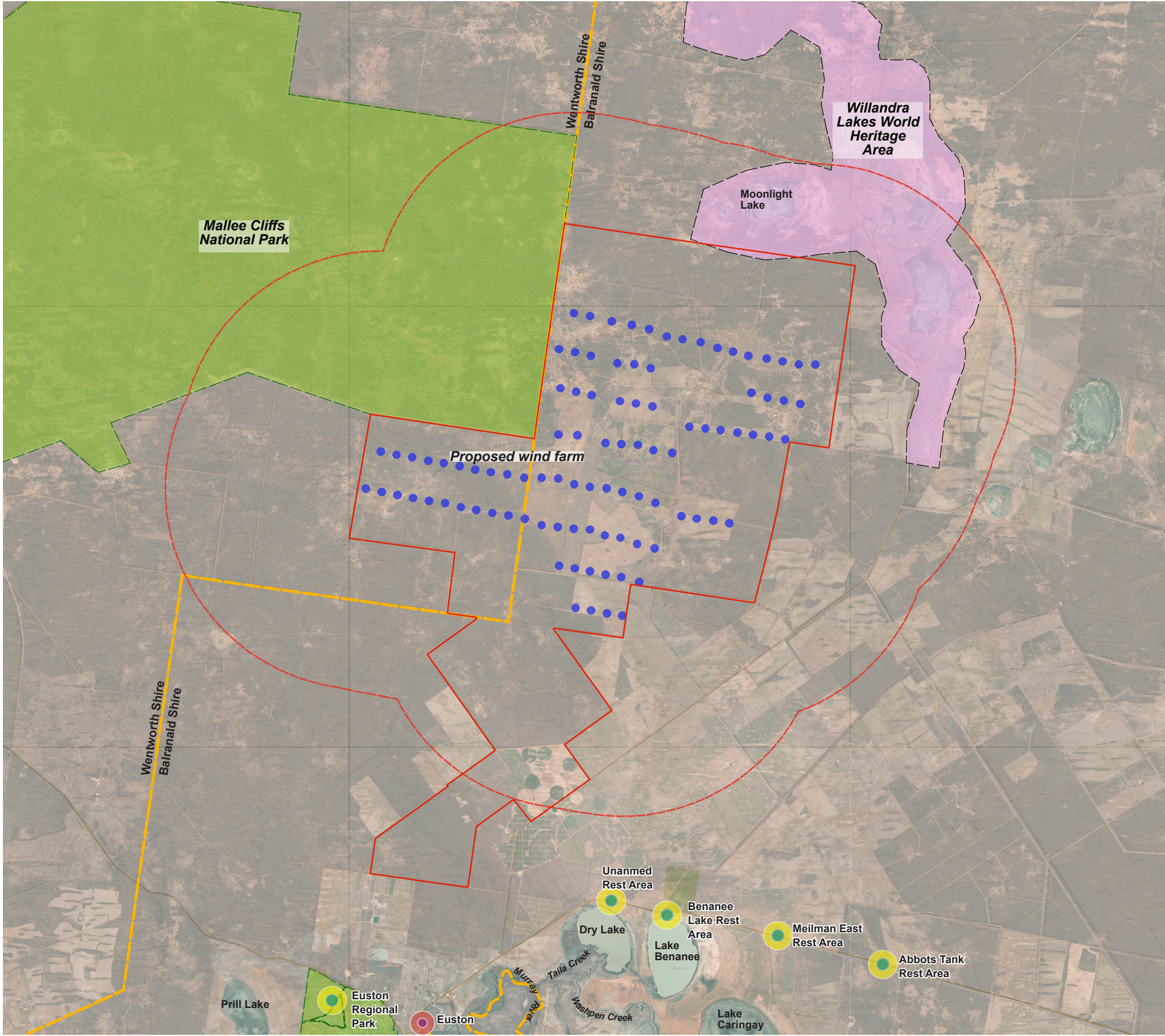
The Willandra Lakes Region World Heritage Area borders the northern edges of the Project Site. The Willandra Lakes Region was inscribed on the World Heritage Register under the United Nations' World Heritage Convention as an area with Outstanding Universal Value due to its authenticity of natural and Aboriginal cultural heritage values. The Willandra Lakes Region (WLR) is viewed as an outstanding example of a period with records of the glacial-interglacial climatic oscillations of the late Pleistonic landscape (UNESCO World Heritage Centre 1981).

The WLR covers an estimated area of 2,400 km² to include the surrounding lake and river system but to exclude the pastoral areas (see **Figure 7**). The WLR is located within the State of New South Wales (NSW) and the majority of the area is administered by NSW Land and Property Management Authority. Management of the WLR is established under the NSW Legislation by the Willandra Lakes Region Environmental Plan (UNESCO World Heritage Centre 1981).

Recreation Associations and Points of Interest

Recreational associations within the wider Assessment Area are limited. Benanee Lake Rest Area and Alternate rest area are the closest publicly accessible recreation spot (approximately 15 km south) which offers opportunities for recreational activities. Dense mallee, belah and rosewood communities dominate the region.

Other areas of interest include the Meilman East Rest Area and Abbots Tank Rest Area on Sturt Highway. These areas serve as an important resting spots for commuters travelling along Sturt Highway. For the purposes of this PVIA, an assessment of impacts from all these rest areas will be relevant due to its proximity to the Project Site.



Existing Landscape Features Proposed Euston Wind Farm

LEGEND

- Project Site
- Proposed Turbine Locations
- Main Road
- Minor Road
- Assessment Area
- National Park / SCA / Nature Reserve
- Points of Interest
- Townships / Settlements
- Rivers, creeks and channels
- Willandra Lakes World Heritage Area

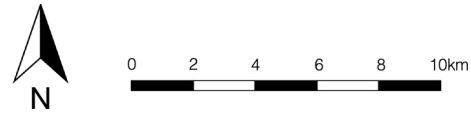


Figure 7: Existing Landscape Features (Map Source: ESRI Aerial Imagery)

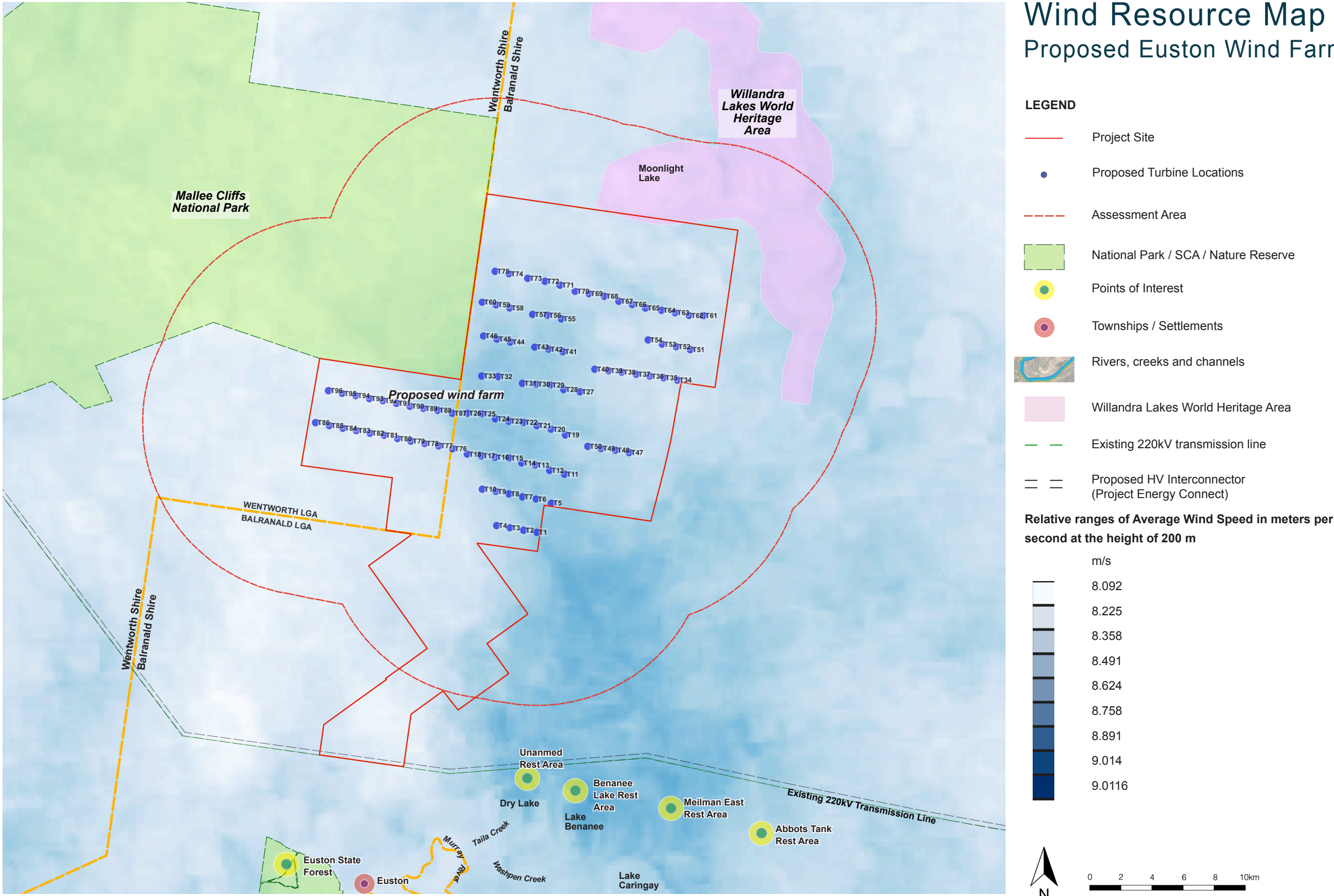


Figure 8: Wind Resource Map (Map Source: GlobalWindAtlas 2023)

5.4 Preliminary Landscape Character Units and Scenic Quality Rating

The Bulletin states that: *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 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		
	LOW	MODERATEHIGH
Description		
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

5.5 Preliminary Landscape Character Units

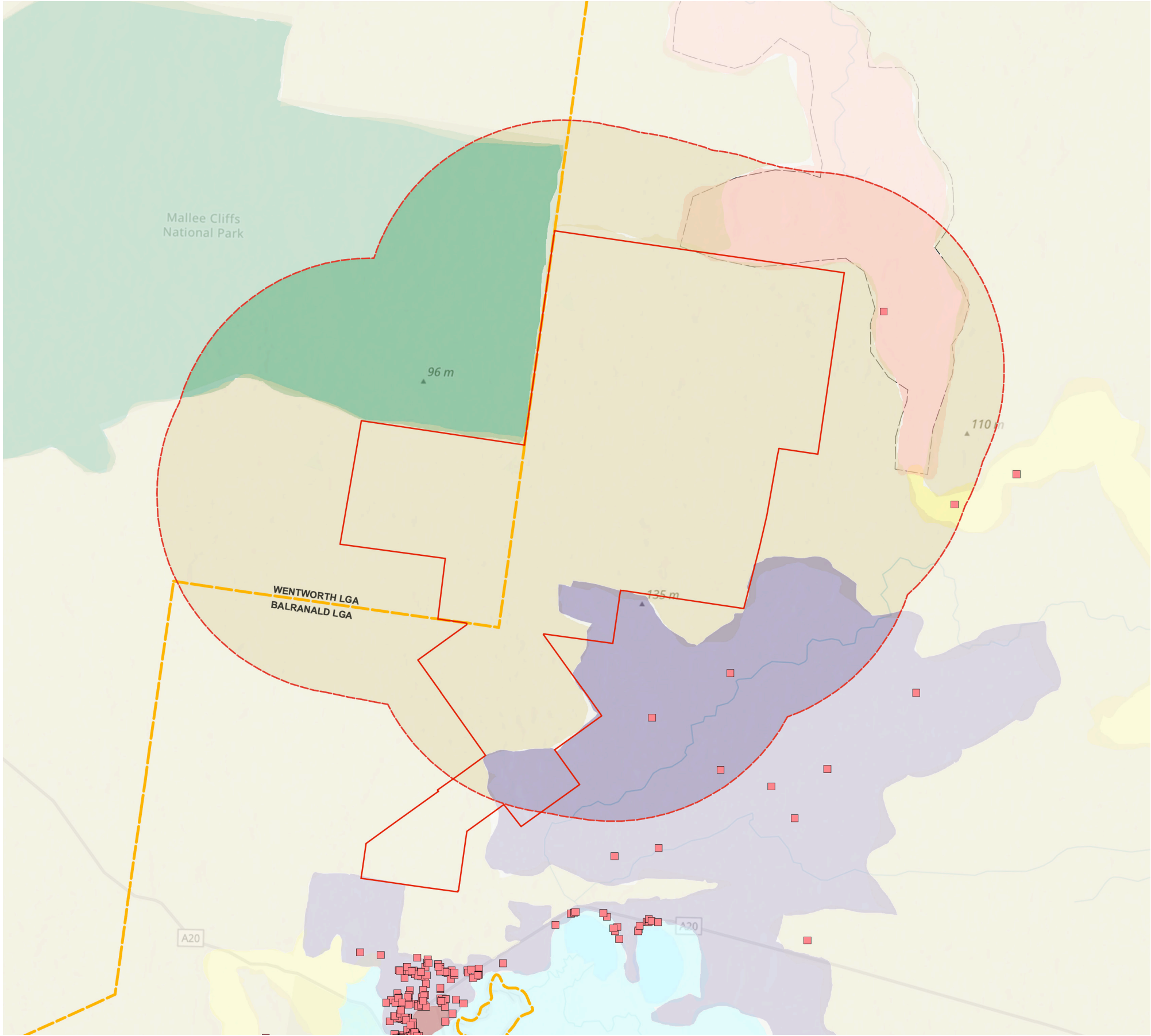
An assessment of existing land use and landscape features suggests that the Project Site and its surrounds exhibit a strong agricultural history of grazing and cropping along with ecological associations with the adjacent Mallee Cliffs National Park and associated Nature Reserves. Several Landscape Character typologies exist within the Assessment Area (refer to **Figure 9**). As a part of the Preliminary Landscape Character Assessment, a total of seven (7) key landscape typologies referred to hereafter as Landscape Character Units (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 and the results from ongoing community consultation. 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	Conservation Reserves	Comprises of dense woodlands of dense mallee, rosewood, bluebush and belah woodlands that are spread across the extents of Riverina plains within the extents of the Mallee Cliffs National Parks and associated Nature Reserves and other vegetated areas in close proximity.	High
LCU02	Grazing Native Pastures	Clear, flat expanses of land used for grazing or cropping. Most prominent character of the region with minor to no elevation changes.	Low
LCU03	World Heritage Areas	Land within this LCU is categorised as distinctly unique for its rich natural and Aboriginal cultural heritage. Most of this LCU is within the Willandra Lakes Region World Heritage Area.	High
LCU04	Cropping pastures	Expansive lots with modified land to support pastoral farming and irrigated agriculture. Vegetation character is predominantly Mallee shrubland scattered throughout the landscape.	Low
LCU05	Seasonal Creeks and Lakes	Shallow depressions in a flat topographical landscape with seasonal creek channels. Vegetation is patchy and often on the fringes of these shallow lakes.	Low
LCU06	Riverine Systems	Fresh water lake and river systems includes Murray River and the surrounding fresh water lakes. Vegetation is typically characteristic of the riverine region and aligns the banks.	Moderate
LCU07	Townships	Includes the town of Euston. Land has been significantly modified for dwelling settlements. Some areas within the LCU have been transformed for agricultural activities.	Low

Table 3: Overview of Preliminary Landscape Character Units



Preliminary Landscape Character Units

Proposed Euston Wind Farm

- LEGEND**
- Project Site
 - Main Road
 - Minor Road
 - Assessment Area
 - Non-Associated Dwellings
 - Willandra Lakes Region World Heritage Area
- LANDSCAPE CHARACTER UNITS (LCU)**
- LCU01: Conservation Reserves
 - LCU02: Native Grazing Pastures
 - LCU03: World Heritage Area
 - LCU04: Cropping Pastures
 - LCU05: Seasonal Creeks and Lakes
 - LCU06: Riverine Systems
 - LCU07: Township



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

LCU01: Conservation Reserves

This LCU is defined by the densely vegetated Mallee shrublands that fall within the extents of the Mallee Cliffs National Park and associated nature reserves. Land is subjected to minimal use and represents unique characteristics defined by the flat topography and dense mallee, black box and belah woodlands. Primary function within the LCU is nature conservation. Public access is limited to researchers and bird watching groups. Since reservation, recreational activities have been excluded from Mallee Cliffs as access is via private roads.

Scenic quality rating: High

See Images 3 and 4.



Image 3
LCU defined by significant shrubland with limited or no public access.



Image 4
Low lying Shrubland are characteristic of this LCU.

LCU02: Grazing Native Pastures

The LCU is defined by vast, open land parcels that are utilised for livestock grazing. The LCU portrays the most dominant character in the region. It comprises of open plains with scattered or no tree cover and vast extents of Chenopod Mallee and Shrubland. Common land uses include grazing, dryland cropping, modified and irrigated pastures.

Scenic quality rating: Low

See Images 5 and 6.



Image 5
Naturally cleared land with patchy tree cover utilised for livestock grazing or farming.



Image 6
Typical characteristic of the area surrounding the Project. Generally modified paddocks with cleared vegetation to support grazing and other activities.

LCU03: World Heritage Area

This LCU is defined by UNESCO’s distinctive Willandra Lakes Region World Heritage Area. Land within this LCU is categorised as having an outstanding universal value as it demonstrates evidence of a period with records of the glacial-interglacial climatic oscillations of the late Pleistonic landscape. Some parcels of land within this LCU are modified historically for pastoral activities. Land modification in the form of

Scenic quality rating: High

See Images 7 and 8.



Image 7
Typical character within this LCU.



Image 8
Typical view of the Willandra Lakes Region World Heritage Area.

LCU04: Cropping Pastures

The LCU is characterised by vast extents of land modified for dryland cropping and irrigated agriculture. Vegetation is cleared for agricultural cropping. Lots are expansive due to a flat topography. This LCU is typically visible within and around the Project Site.

Scenic quality rating: Low

See Images 9 and 10.



Image 9
Typical character of vast modified pastoral lands modified for agriculture. Landscape is usually highly modified.



Image 10
Characteristic expansive views with vegetation seen only around dwellings as wind break. Land has undergone modifications to support farming.

LCU05: Seasonal Creeks and lakes

The LCU is typically defined by creeks and shallow depressions in a planar topography. Seasonal creeks generally remain dry outside of peak rainfall periods. Vegetation within this LCU includes stands of black box and Mallee.

Scenic quality rating: Low

See Images 11 and 12.



Image 11

Typical character within this LCU.



Image 12

Land within this LCU typically contains shallow depressions and seasonal creek beds. Vegetation is scattered around these shallow depressions.

LCU06: Riverine Systems

The LCU is typically defined by the river and freshwater lake systems and include the Murray River, Lake Benanee, Dry Lake and other freshwater lake systems. Areas within this LCU are generally have recreational associations. This LCU is located outside the Assessment Area.

Scenic quality rating: Moderate

See Images 13 and 14.



Image 13

View of Dry Lake from Dry Lake Road.



Image 14

View of Lake Benanee. Vegetation generally aligns the edges of the lake.

LCU07: Township

This LCU is generally defined by the town of Euston. Euston is located on the border of NSW and Victoria. Land within this LCU is highly modified. Vegetation character is typically modified with introduced species with range of colour, structure and form. This LCU is located outside the Assessment Area.

Scenic quality rating: Low

See Images 15 and 16.



Image 15

View of Euston. Land has been modified for cropping and settlement. This is typical character within this LCU.



Image 16

Typical vegetation character surrounding Euston.

Landscape Character Units		
LCU:	Name:	Preliminary Visual Impact Assessment
LCU01	Conservation Reserves	The Project is located adjacent to the LCU. Access within the LCU is limited. It is likely that views towards the Project will be available due to the relatively flat topography and elevated position of the turbines. However, due to the limited public access within the LCU, resulting visual impact will likely be substantially reduced.
LCU02	Grazing Native Pastures	Views towards the Project will be available from this LCU due to the relatively flat topographical character and its proximity to the Project. The Project is located within the LCU. Land within this LCU is modified for pastoral farming and grazing pastures lacking tree cover. Scattered vegetation in the form of screening or wind breaks will likely screen views towards the Project.
LCU03	World Heritage Area	The Project borders the southern extent of this LCU. Views of the Project would be visible due to the a flat topography and low vegetation heights. Land within this LCU is historically modified for pastoral activities, but the larger extent of this LCU remains undisturbed. Modifications in the form of unsealed roads and isolated dwellings have occurred and form part of this LCU. It is likely that views of the Project will be available but fragmented by vegetation associated with this LCU.
LCU04	Cropping Pastures	This LCU is the most prominent character around the Project Site. Views are generally expansive due to flat topography and lack of intervening elements. Views of the Project are likely to be clear and open. Scattered vegetation will help limit views from certain locations from this LCU. It is likely that views of the Project will be available but fragmented.
LCU05	Seasonal Creeks and Lakes	Shallow depressions in a flat topographical landscape with seasonal creek channels. Views from this LCU would be open. Vegetation around some seasonal lakes may filter views of the Project.
LCU06	Riverine Systems	The Project is located outside this LCU. Vegetation and distance would make the Project indiscernible from this location.
LCU07	Township	The Project is located outside this LCU. Built form, intervening vegetation and distance would obscure views of the turbines associated with the Project.

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 in 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 Assessment 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 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 wind turbines 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 wind turbines are based on a worst case scenario with a tip height of 275 metres. The 'black line' intersects at a distance of 3,675 metres and the 'blue line' intersects at 5,400 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.

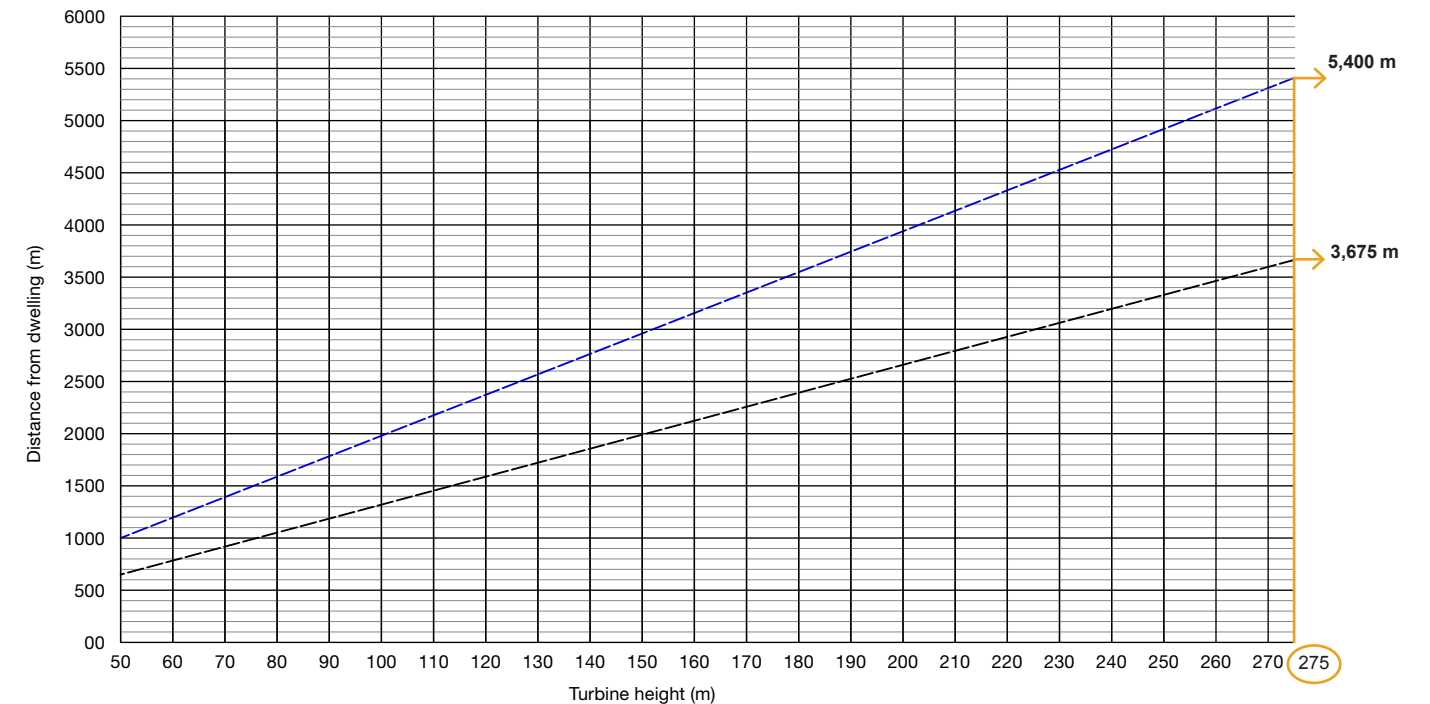


Figure 10: Visual Magnitude Thresholds for Euston Wind Farm
(Adapted from Visual Assessment Bulletin)

6.3 Results of Preliminary Assessment Tool 1: Visual Magnitude

Application of the Preliminary Assessment Tools to the Project identified three (3) dwellings which require further assessment in accordance with the Bulletin, due to its proximity within 8km of the nearest proposed wind turbine location. Non-Associated Dwellings identified within the Assessment Area are shown on **Figure 11**.

- No non-associated Dwellings were identified within 3,675 metres (m) of the Project (within the black line of visual magnitude).
- Two (2) non-associated Dwellings (R1 and R2) were identified between the 3,675 or 5,400 metres of the proposed wind turbine locations (within the black line or blue line of visual magnitude).
- One (1) non-associated dwelling (R3) has been identified within 5,500 - 8,000 metres of the proposed wind turbine locations.
- Two (2) additional non-associated Dwellings (R4 and R5) were assessed within the Assessment Area.
- Preliminary assessment of the non-associated Dwellings have been included in **Appendix A**. This assessment illustrates that existing intervening elements such as vegetation surrounding this non-associated dwelling is likely to fragment views to the Project. Further detailed assessment and site inspections of sensitive receptors to ground-truth this analysis will be undertaken during the EIS phase.

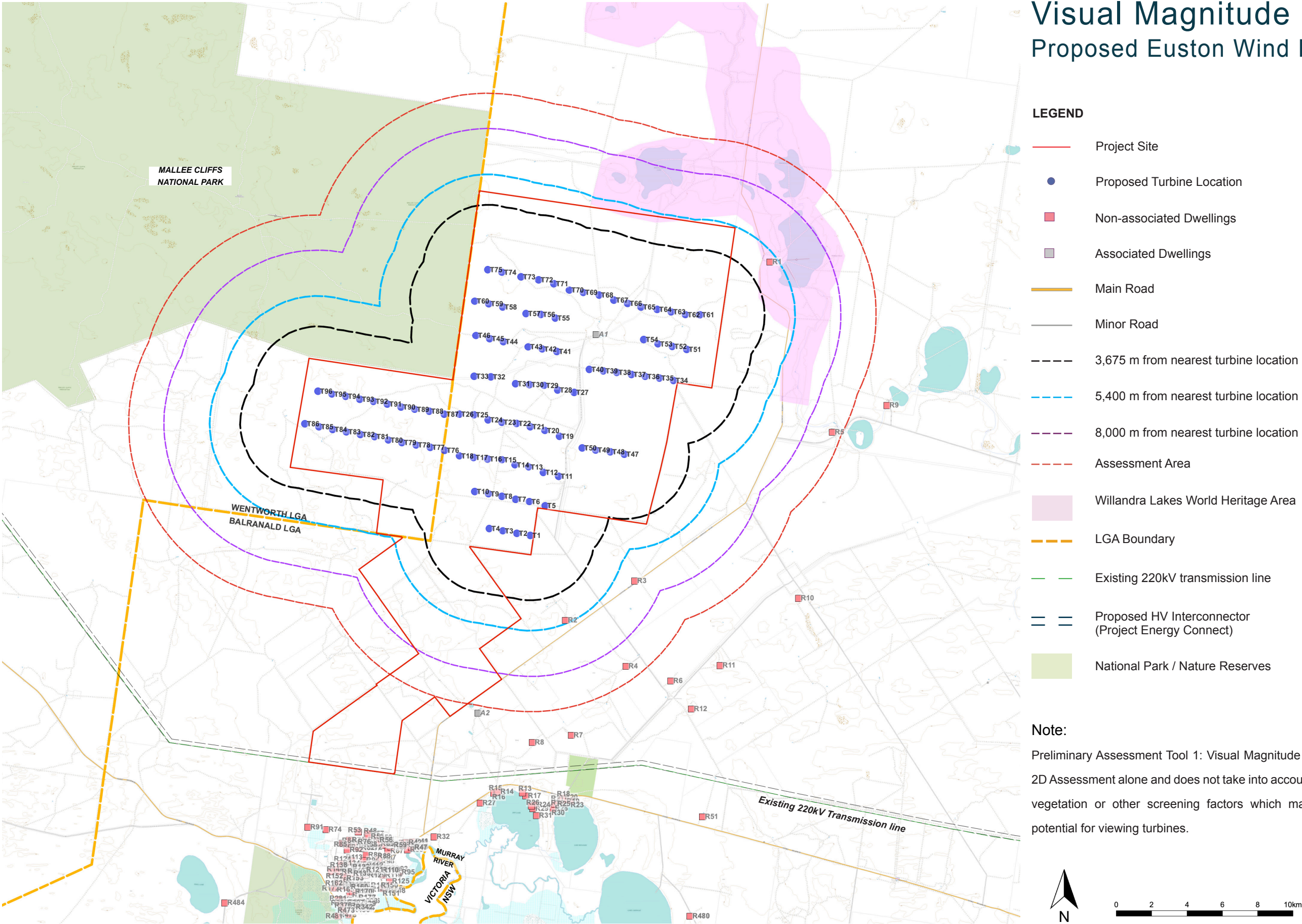


Figure 11: Preliminary Assessment Tool 1: Visual Magnitude (Map Source: Six Maps)

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 wind turbines, the proponent must map into six sectors of 60° any proposed turbines, and any existing or approved turbines within eight (8) kilometres of each dwelling or key public viewpoint. **Figure 11** provides examples of where a dwelling or key public viewpoint may have views to turbines 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 turbines will become a focus for assessment in the EIS.

Figure 12 provides an overview of the number of 60° sectors visible from each of the dwellings identified within eight (8) kilometres.

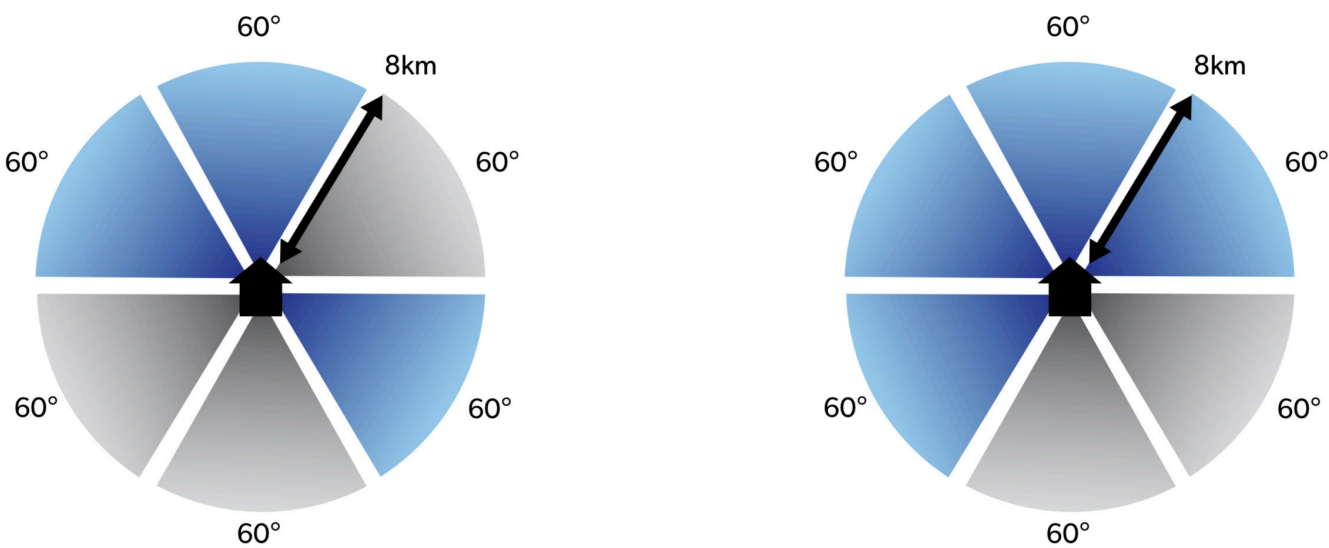


Figure 12: Multiple Wind Turbine Tool (Source: Visual Assessment Bulletin)

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

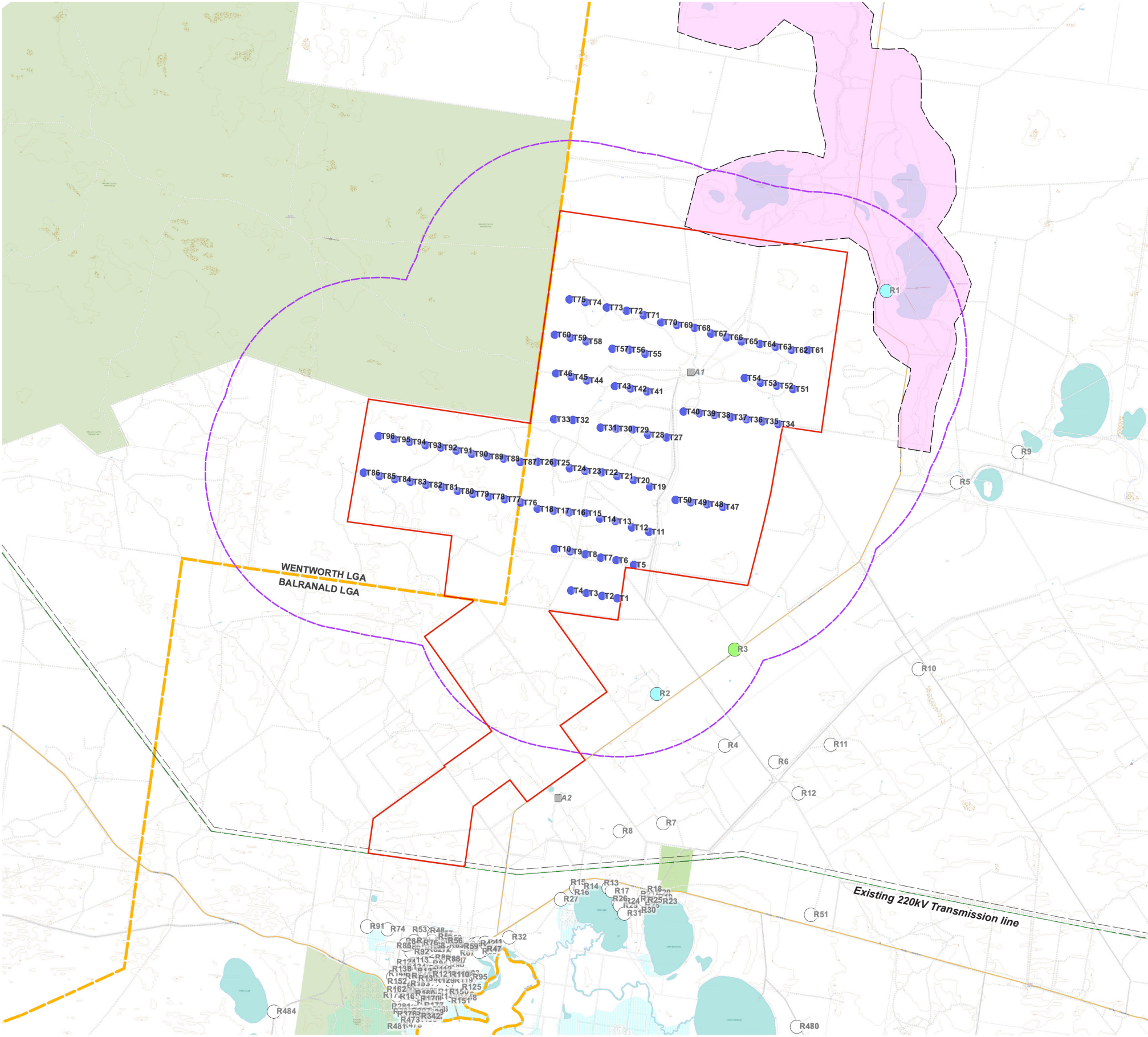
When applied to the Project, the 2D Multiple Wind Turbine Tool (see **Figure 13**) identified three (3) dwellings (R1, R2 and R3) that would potentially have views to the turbines associated with the Project. Two (2) of these non-associated Dwellings (R1 and R2) may have views in up to one (1) 60° Sector (see **Table 5**). One (1) non-associated dwelling (R3) may have views up to two (2) 60° Sectors (see **Table 5**). Two (2) additional dwellings were assessed within the Assessment Area. Theoretically, no turbines were visible in any Sectors from these dwellings.

The following summary is based on a 2D assessment and considers turbines associated with the Project.

Further assessment of this dwelling using 3D topographic mapping has delivered the same results. Existing screening factors (including vegetation and structures) may reduce visibility of the turbines. This has been discussed further in **Appendix A**.

Dwelling ID	Distance to nearest WTG:	Number of 60° Sectors (Based on a 2D Assessment):	Screening Factors:
Non-Associated Dwellings with turbines in up to one (1) or two (2) 60° Sectors (up to 60° and 120°):			
R1	4.97 km	One (1) 60° Sectors (up to 60°)	Existing intervening vegetation. Existing Farm structures
R2	5.22 km	One (1) 60° Sectors (up to 60°)	Existing intervening vegetation.
R3	6.47 km	Two (2) 60° Sectors (up to 60°)	Existing intervening vegetation. Existing Farm structures
R4	9.20 km	No visible sectors. Outside 8,000 m from the nearest turbine	Existing intervening vegetation.
R5	9.49 km	No visible sectors. Outside 8,000 m from the nearest turbine	Existing intervening vegetation.

Table 5: Non-Associated Dwellings identified using Multiple Wind Turbine Tool



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 turbines 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 wind turbines based on the blade tip height of 275 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).

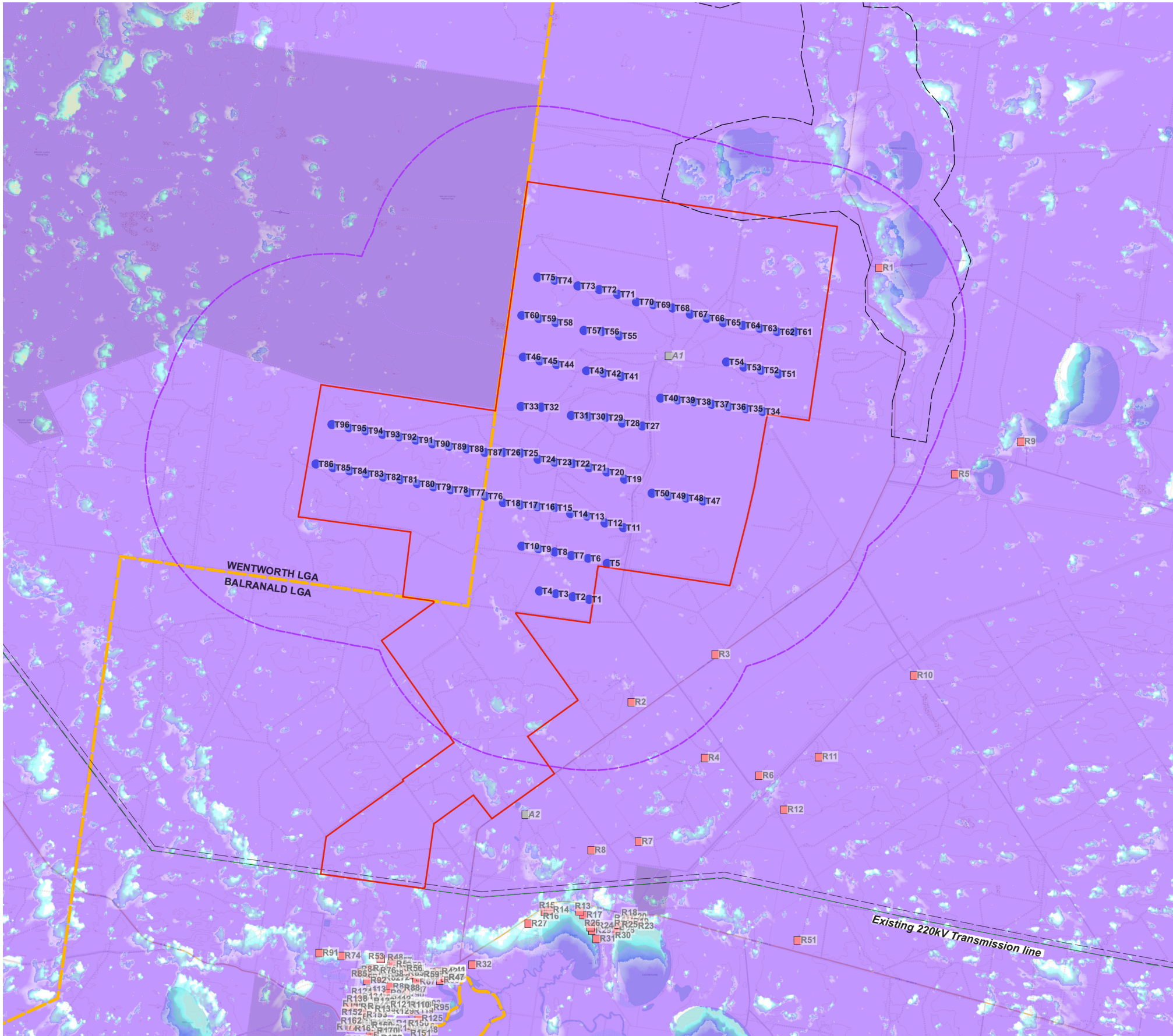
The ZVI has been determined through the use of digital topographic information and 3D modelling software *WindPro*. The ZVI has been assessed to approximately 30 km from the Project. Although it is possible for the development to be visible from further than 30 km away, it is generally accepted that beyond 10 km visibility is diminished.

7.2 Summary of Preliminary Zone of Visual Influence

The following provides a summary of the Zone of Visual Influence diagrams prepared for the Preliminary Layout of the Project.

- Due to the relatively flat topography, the majority of the turbines associated with the Project will be visible from the surrounding areas.
- Certain areas surrounding the Project are characterised by shallow topographical changes by embankments along lakes and swamps. These are present primarily to the south and the east of the Project. The ZVI identifies these areas to have limited views due to the minor topographical differences between them and the Project.
- Dwellings are generally scattered around and limited to the east and south of the Project. The ZVI indicates that all 96 turbines will be visible from these dwellings. This assessment is based on a consideration of topography alone and does not consider intervening elements such as vegetation and existing built form such as farm infrastructures.
- Euston is located approximately 15 km from the nearest turbine associated with the Project. Due to a flat topographical character of the surrounding area, views would theoretically be available from the town.
- 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. Preliminary viewpoint analysis been included in **Appendix B**. Preliminary Dwelling Assessment has been included in **Appendix A**.
- 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. 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 turbines from a number of locations.



Zone of Visual Influence

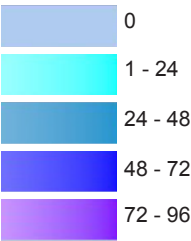
Blade Tip Height 275 m

Proposed Euston Wind Farm

LEGEND

- Project Site
- Proposed Turbine Locations
- Associated Dwellings
- Non-Associated Dwellings
- 8,000 m from nearest turbine location
- Willandra Lakes World Heritage Area

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



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.



Figure 14: Zone of Visual Influence (Blade Tip 275 m) (Map Source: Six Maps 2022)

8.0 Preliminary Dwelling & Viewpoint Assessment

8.1 Preliminary Assessment of Dwellings

The assessment, using the Preliminary assessment tools, of five (5) non-associated dwelling (as shown on **Figure 15**) is included in Appendix A.

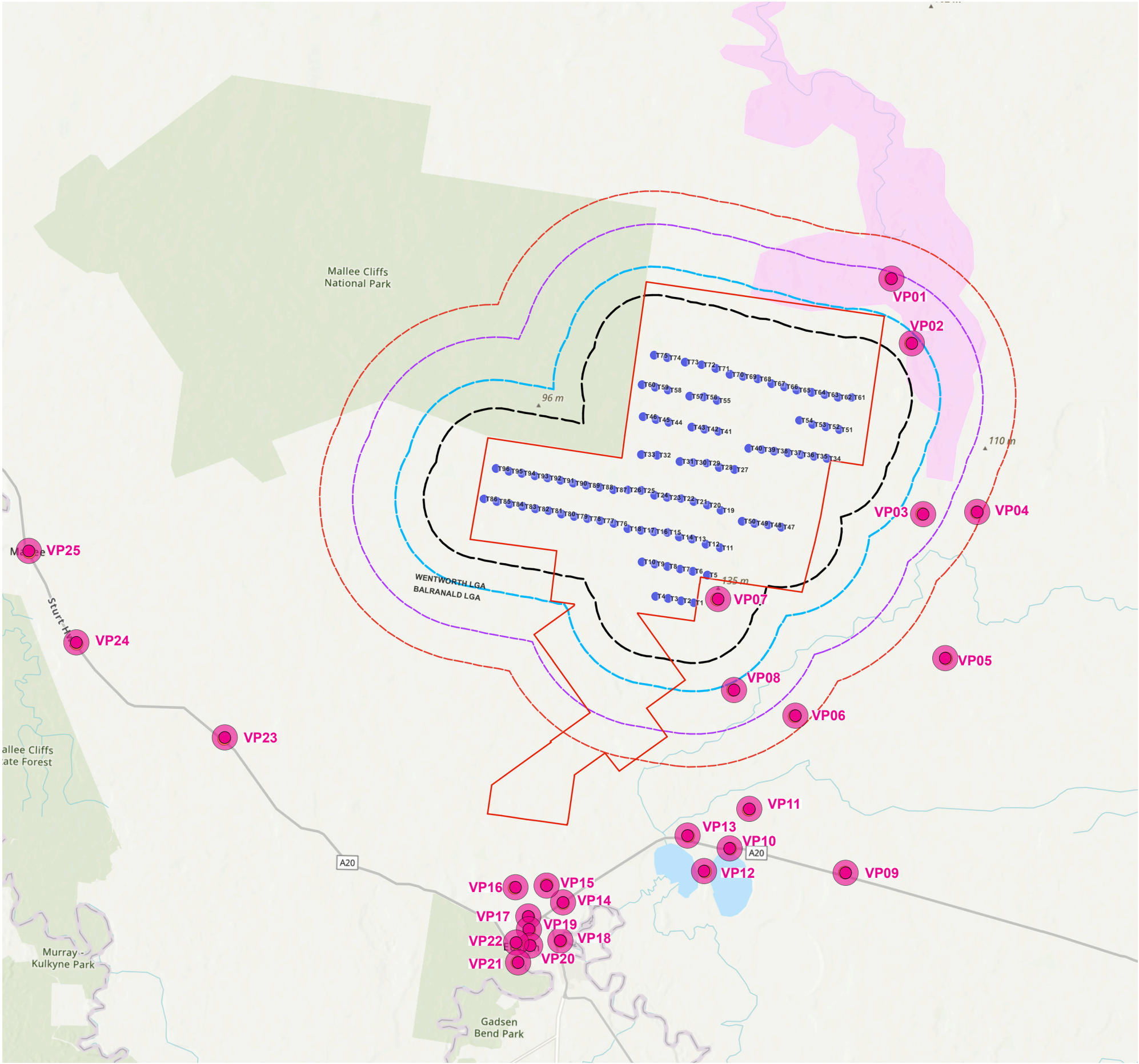
Theoretically, due to the flat topography, views of the majority of the turbines associated with the Project would be visible from these dwellings. However, the preliminary desktop assessment identifies existing vegetation and farm structures surrounding the R1, R3, R4 and R5 which would fragment views towards the Project. Due to its proximity and lack of intervening vegetation, views from R2 to most of the Project are likely to be evident. Potential mitigation measures would include supplementary planting which would assist in filtering views of the Project from these non-associated dwellings.

A detailed assessment from each of the non-associated dwellings will be undertaken during the EIS phase.

8.2 Preliminary Assessment of Public Viewpoints

Appendix B provides preliminary assessment from public viewpoints. A total of 25 viewpoints have been selected to illustrate the varying landscape character typologies throughout the Assessment Area and to provide a preliminary assessment of the potential visibility of the Project (as shown on **Figure 15**).

Due to the flat topography and the height and verticality of the turbines, most of the turbines will likely be visible from the surrounding areas. The potential visual impact would be from public roads in proximity to the Project that have been identified within the Assessment Area. Views from Euston and the Sturt Highway are likely to be fragmented by intervening vegetation. As the viewing distance increases, the turbines associated with the Project would likely become indiscernible.



Preliminary Viewpoint Assessment Locations

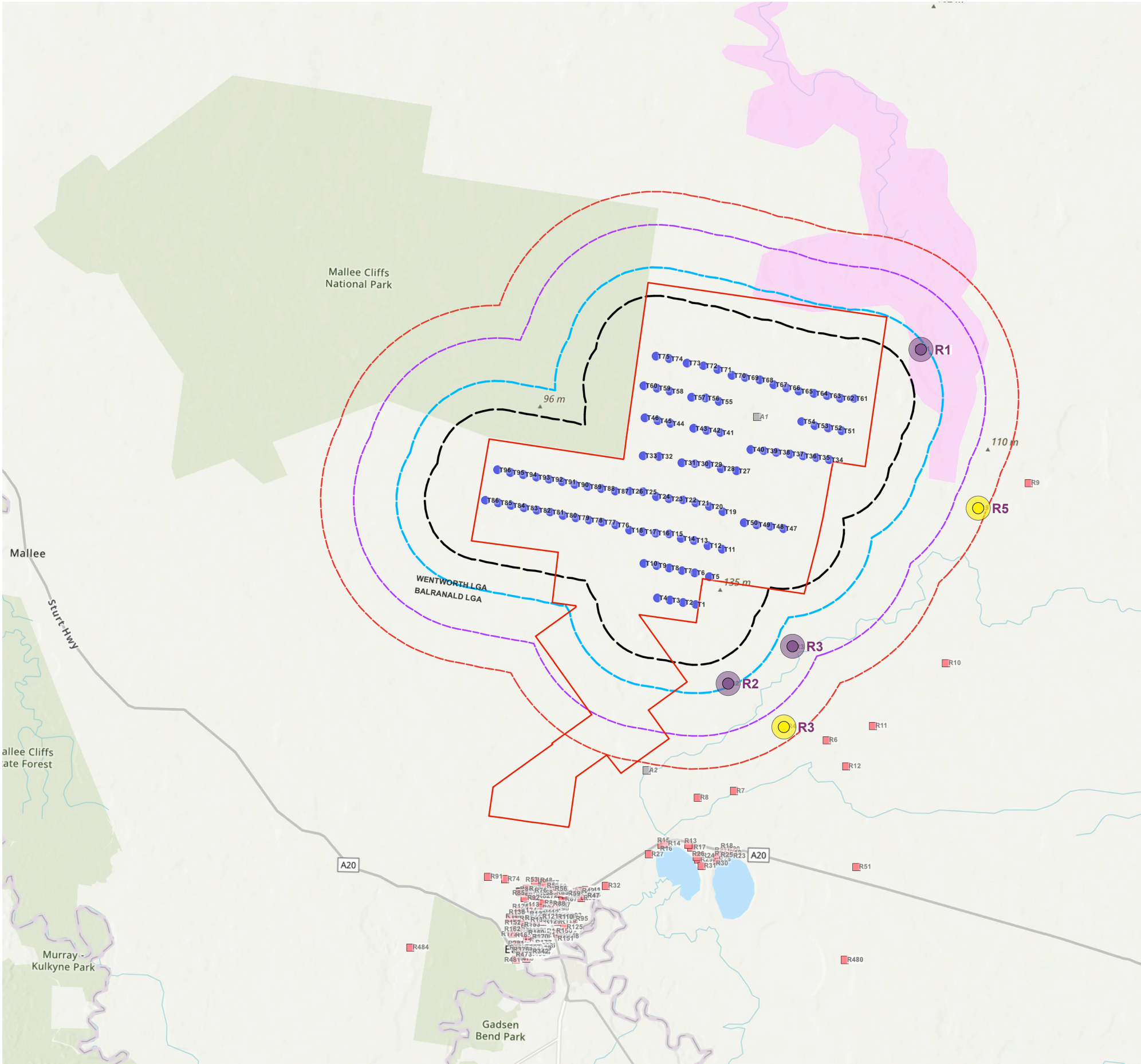
Proposed Euston Wind Farm

LEGEND

- Project Site
- Proposed Turbine Locations
- 3,675 m from nearest proposed wind turbine locations
- 5,400 m from nearest proposed wind turbine locations
- 8,000 m from nearest proposed wind turbine locations
- Assessment Area
- National Parks / Nature Reserves
- Preliminary Viewpoint Assessment locations
Refer to Appendix B.
- Willandra Lakes World Heritage Area



Figure 15: Preliminary Viewpoint Assessment Locations (Map Source: Six Maps 2022)



Preliminary Dwelling Assessment Locations

Proposed Euston Wind Farm

LEGEND

- Project Site
- Proposed Turbine Locations
- 3,675 m from nearest proposed wind turbine locations
- 5,400 m from nearest proposed wind turbine locations
- 8,000 m from nearest proposed wind turbine locations
- Assessment Area
- National Parks / Nature Reserves
- Preliminary Dwelling Assessment locations
Refer to Appendix A.
- Additional Preliminary Dwelling Assessment locations
Refer to Appendix A.
- Willandra Lakes World Heritage Area

Figure 16: Preliminary Dwelling Assessment Locations (Map Source: Six Maps 2022)

9.0 Cumulative Visual Impact Assessment

9.1 Overview of Cumulative Visual Impacts

The Project is located to the west of the South West Renewable Energy Zone (REZ). The REZ has been identified by the NSW 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, 2022).

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 17** shows the wind farms that are currently proposed within the extents of this REZ. Most of these projects are in the central and eastern parts of the REZ near the towns of Hay, Balranald and Coleambally.

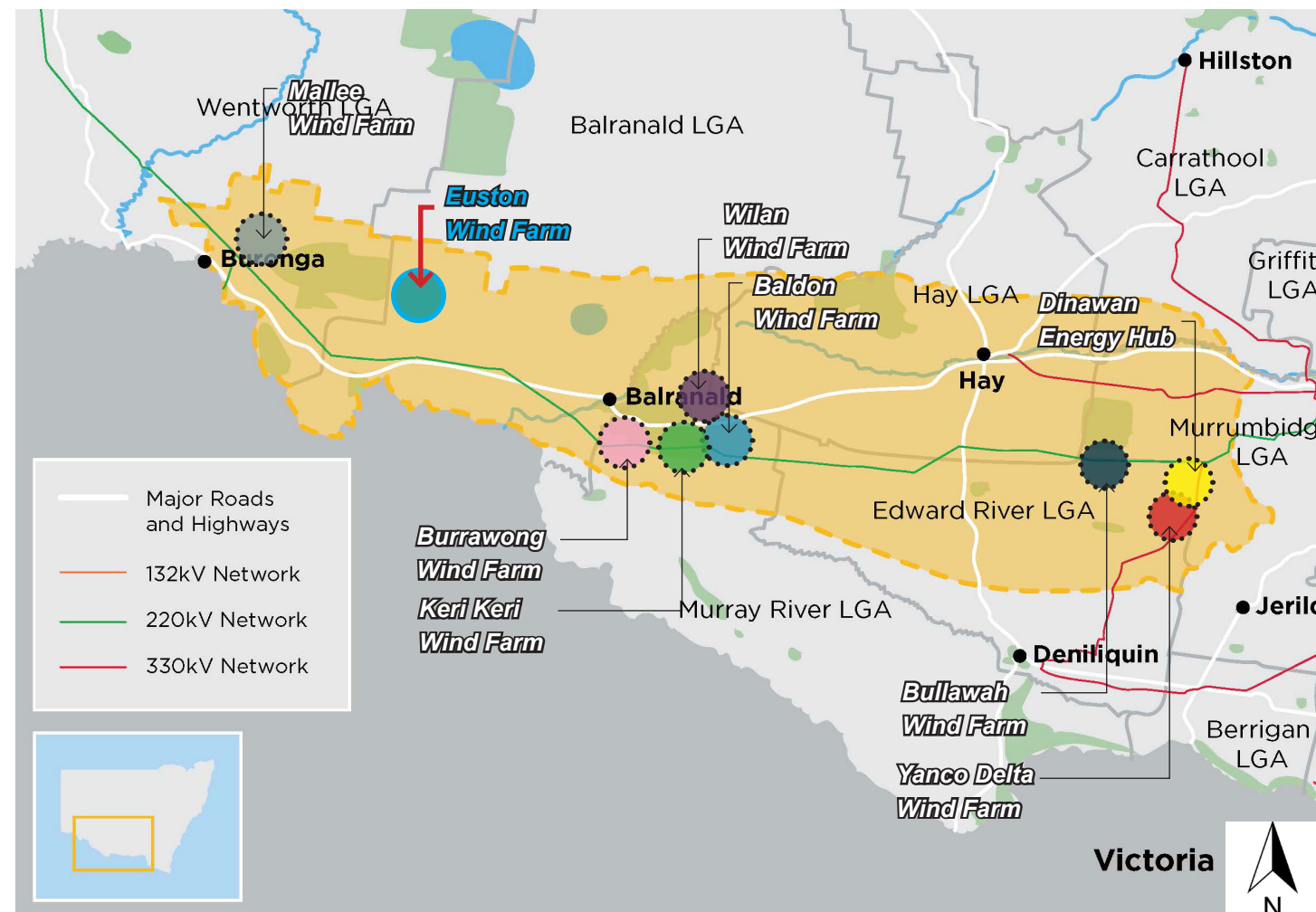


Figure 17: South West Energy Zone (Map Source: EnergyCo NSW, 2022)

9.2 Nearby Wind Farm Projects

Currently, nine (9) other large-scale renewable energy projects have been proposed in the REZ (refer **Figure 19**):

- Wilan Wind Farm (SEARs issued in December 2022)
- Mallee Wind Farm (SEARs issued in February 2023)
- Baldon Wind Farm (SEARs issued July 2022)
- Keri Keri Wind Farm (SEARs issued in April 2022)
- Yanco Delta Wind Farm (SEARs issued in May 2022)
- Burrawong Wind Farm (SEARs issued in December 2021)
- Bullawah Wind Farm (Request for Sears - October 2022)
- Dinawan Wind Farm (SEARs issued in December 2022)
- Dinawan Solar Farm (SEARs issued in December 2022)

A preliminary desktop assessment identified Mallee Wind Farm as the closest large-scale renewable energy project to the proposed Project.

In accordance with the Cumulative Impact Assessment Guidelines (DPE, 2021), the area chosen to assess relevant cumulative impacts from other proposed development should not be unnecessarily large or include areas where the cumulative impacts are likely to be negligible relative to the baseline condition of the relevant Project. Visibility research suggests turbines and objects recede into the background in terms of visibility at 8,000 m (DPE 2021). Therefore, cumulative impacts of Mallee Wind Farm would be considered in detail during the EIS stage.

Mallee Wind Farm:

Layout for Mallee Wind Farm (MWF) is comprised of up to 150 turbines with a generation capacity of up to 1,000 MW and a containerised BESS (Spark Renewables & Umwelt (Australia) Pty Limited 2022). The project is located west of the Mallee Cliffs National Park 16 km north east of Buronga (see **Figure 18**). Generally, visibility decreases beyond 8,000 m of the nearest turbines (DPE 2021). Due to the flat topography of the surrounding landscape, there is potential for views from both these projects on the Mallee Cliffs National Park.

As discussed previously in this report, public access is limited within the National Park. Therefore, potential cumulative is substantially reduced. Further assessment of the cumulative visual impact on Mallee Cliffs National Park will be discussed in the EIS, along with a description of potential mitigation and management measures being employed to reduce impacts.

Other Wind Farm Projects:

Other wind farm projects in the area that are currently proposed, include the Wilan Wind Farm, Burrawong Wind Farm, Bullawah Wind Farm, Keri Keri Wind Farm, Keri Keri Solar Farm and Yanco Delta Wind Farm. All other wind farm projects are located east of the Project exceeding 90 km. Therefore, there is limited potential to view these projects simultaneously.

9.3 Cumulative Impact on Broader Landscape Character

The re-occurrence of Large-scale 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 renewable projects within the region would combine to become the dominant visual element, altering the perception of the general landscape character.

Due to the distance between the Project and MWF, it is unlikely that there would be dwellings from which multiple projects will be visible simultaneously. Additionally, due to a limited number of dwellings within 8 km of the nearest proposed turbine and lack of dwellings surrounding the Project, cumulative visual impact is limited. 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 Large Scale Renewable Energy Projects

Proposed Euston Wind Farm

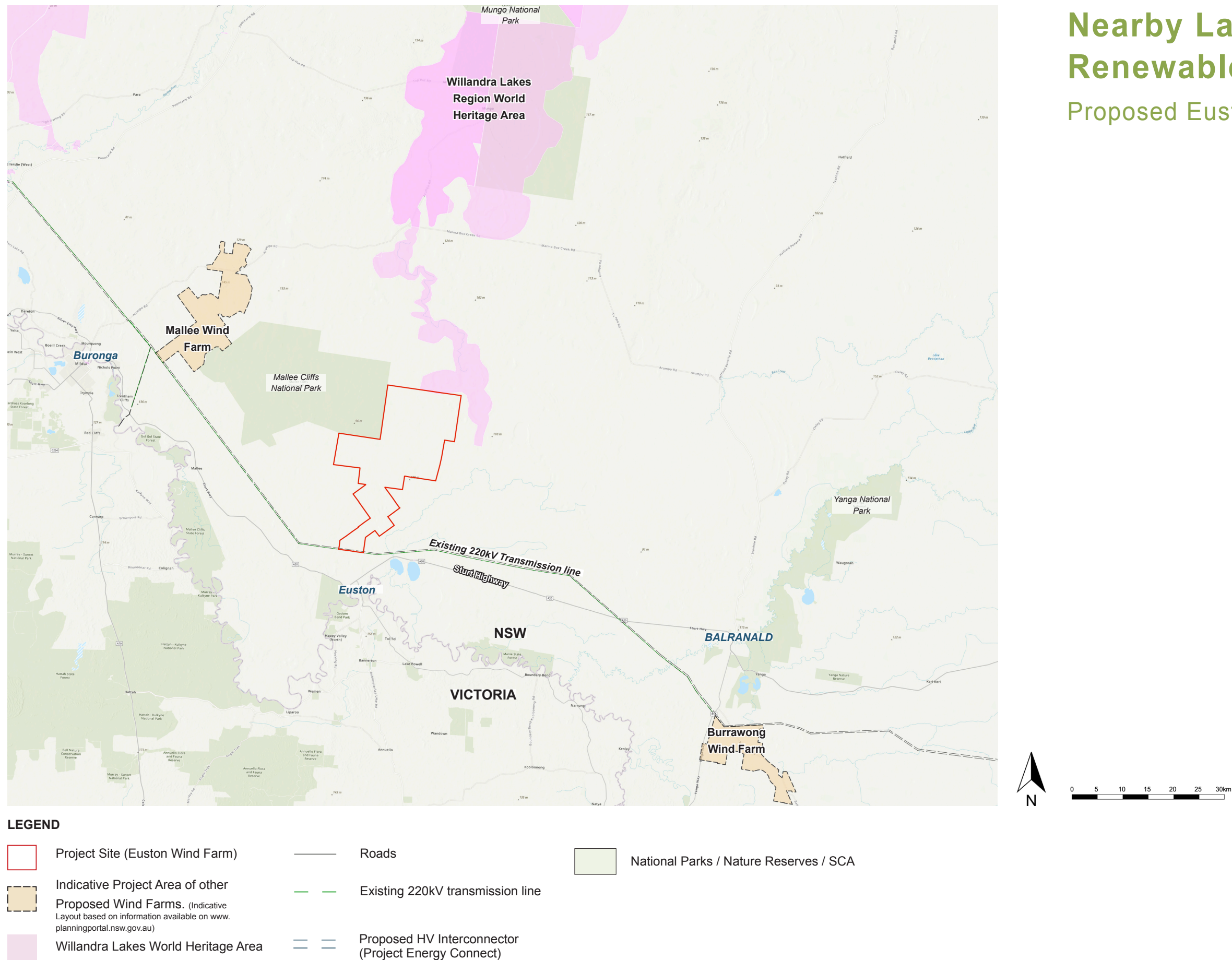


Figure 18: Nearby Large-Scale Renewable Energy Projects (Map Source: Six Maps 2022)

10.0 Summary and Next Steps

10.1 Summary of Preliminary Visual Impact Assessment

This PVIA report has been undertaken in accordance with the Visual Assessment 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 Landscape and Visual Impact Assessment (LVIA) which will be undertaken during 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 Assessment Area through the following:

- Identified land uses, key landscape features and key viewpoints,
- Categorisation of seven (7) preliminary Landscape Character Units (LCUs) within the Assessment Area,
- Application of preliminary scenic quality ratings to each of the LCUs ranging from Low - High,
- 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 Visual Assessment Bulletin.

10.1.3 Application of the Preliminary Assessment Tools

The purpose of the Preliminary Assessment Tools in the PVIA is to identify 'sensitive receptors' for further assessment in the EIS Phase of the Project.

- The Multiple Wind Turbine Tool (MWTT) was applied to all non-associated Dwellings within 8000m of the nearest proposed turbine. Additional non-associated Dwellings were assessed within the Assessment Area due to the topographical character of the area.
- The MWTT identified two (2) non-associated dwelling (R1 and R2) with views up to one (1) 60° sectors. One (1) non-associated dwelling (R3) was identified as having views in up to two (2) 60° Sectors views towards the Project. An assessment of the potential visual impact of these viewpoints, along with key public viewpoints, are 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 Zone of Visual Influence (ZVI) has been prepared to illustrate the theoretical visibility of the Project and to assist in defining the visual catchment. A Preliminary ZVI have been prepared from the blade tip height of 275 m to illustrate areas which have potential visibility of the Project.

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 LVIA to be developed in the EIS phase.

10.1.5 Cumulative Visual Impacts of Surrounding Wind Farms

The Project is located within the NSW South-West REZ. 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 turbines 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.

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