

Appendix A Preliminary Visual Impact Assessment



Burrendong Wind Farm

Preliminary Visual Impact Assessment

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Introduction

1.0 Introduction

1.1 Introduction

Moir Landscape Architecture Pty Ltd (Moir LA) have been commissioned by Eco Logical Australia (Eco Aus) on behalf of Epuron to prepare a Preliminary Visual Impact Assessment (PVIA) for the proposed Burrendong Wind Farm.

The Burrendong Wind Farm (referred to hereafter as the 'Project'), will involve the construction, operation and decommissioning of up to 105 Wind Turbine Generators (WTGs) and associated ancillary infrastructure, with a total capacity around 650 MW.

Epuron is seeking State Significant Development (SSD) consent under Division 4.7 of Part 4 of the Environmental Planning & Assessment Act 1979 (EP&AA Act). This PVIA is to be submitted in conjunction with the Scoping Report to the Secretary of the Department of Planning & Environment (DPE) in support of the SSD application for the Project.

The Scoping Report will support the Secretary in issuing the Secretary's Environmental Assessment Requirements (SEARs) that will guide the Environmental Impact Statement (EIS) as part of the SSD application for the Project.

1.2 Relevant Experience

The Bulletin states:

The proponent is expected to engage professionals from relevant natural resource management and design professions, 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:

- *Liverpool Range Wind Farm Modification* (Coolah, New South Wales)
- *Crudine Ridge Wind Farm* (New South Wales)
- *Bodangora Wind Farm* (Bodangora, New South Wales)
- *Capital II Wind Farm* (Bungendore, New South Wales)
- *Uungula Wind Farm* (Wellington, New South Wales)
- *Lakeland Wind Farm* (Lakeland, Queensland)
- *Hills of Gold Wind Farm* (Nundle, New South Wales)
- *Jeremiah Wind Farm* (Adjungbilly, New South Wales)
- *Valley of the Winds Wind Farm* (Coolah, New South Wales)

1.3 Purpose of this 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 Wind Energy: Visual Assessment Bulletin, December 2016 (referred to hereafter as the Visual Bulletin).

The visual assessment process is broken into two main stages (see Figure 1):

Phase 1: Preliminary Environmental Assessment and Phase 2: EIS

This PVIA forms part of Phase 1: Preliminary Environmental Assessment to be submitted to the Department of Planning & Environment (DPE) together with the Scoping Report for the request for the 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 Environmental Impact Statement (EIS).



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

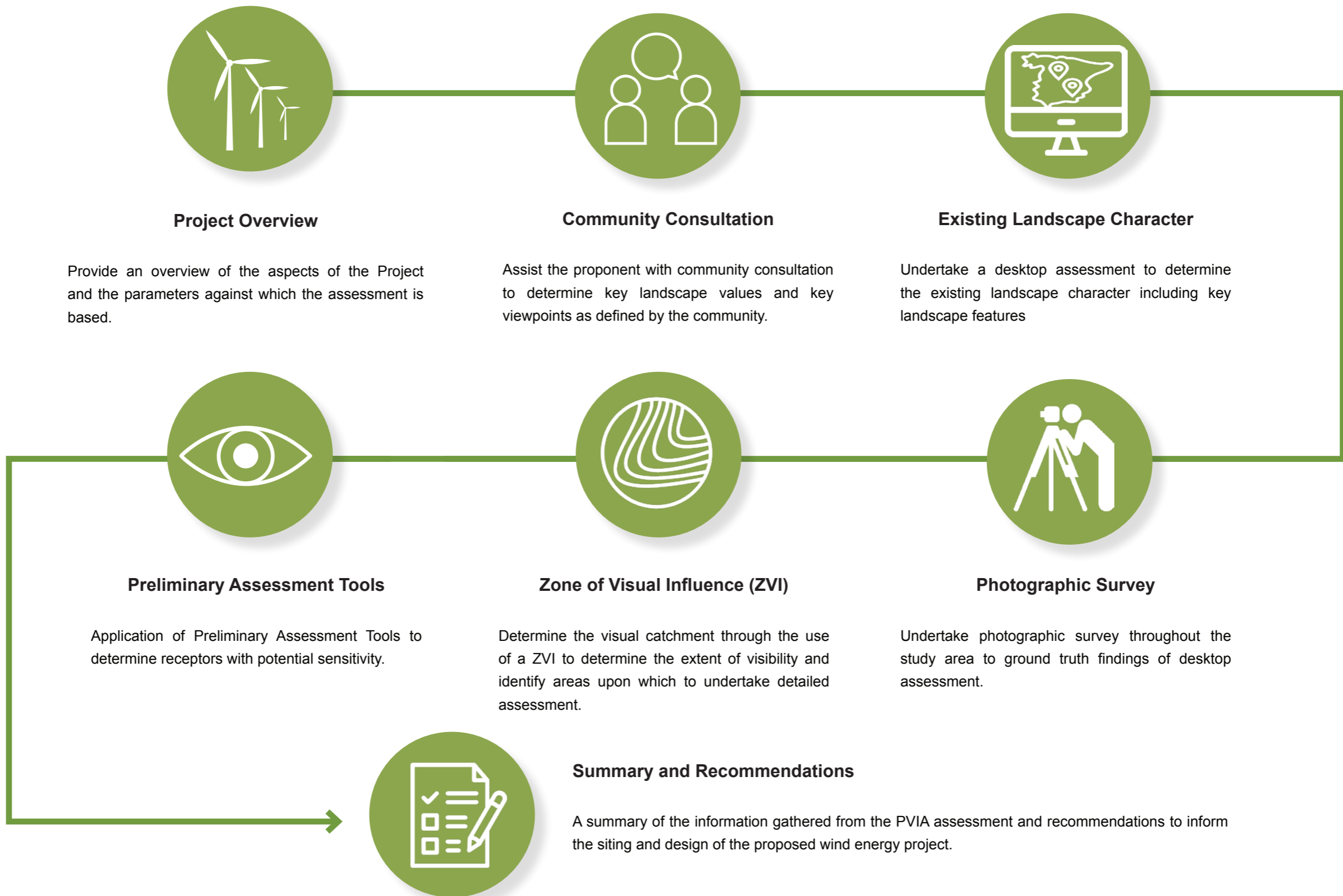
02

Study Method

2.0 Study Method

2.1 Study Method

The following has been undertaken to develop the PVIA:



2.2 Report Structure

The following table provides an overview of the requirements of the Visual Assessment 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	<i>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.</i>
Section 5.0 : Existing Landscape Character	<i>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.</i>
Section 6.0: Preliminary Assessment Tools	<i>Results of the preliminary assessment tools for both the visual magnitude and multiple wind turbine parameters.</i>
Section 7.0: Preliminary Dwelling and Viewpoint Assessment	<i>Application of the preliminary assessment tools to provide an early indication to where turbines require careful consideration because of potential visual impacts. The tools apply to both dwellings and key public viewpoints in the study area.</i>
Section 8.0: Cumulative Visual Impact	<i>Address potential cumulative impacts of wind energy projects in the region (the proposed wind energy project, as well as existing and approved projects)</i>
Section 9.0: Preliminary Zone of Visual Influence	<i>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').</i>
Section 10.0: Summary and Recommendations	

Table 1 Overview of Report Structure

03

Project Overview



3.0 Project Overview

3.1 Regional Context

The Project Site is located approximately 30 km southeast of Wellington and to the east of Lake Burrendong (**Figure 2**) and is situated within two (2) Local Government Areas (LGAs), being:

- Dubbo Regional Council
- Mid-Western Regional Council.

The Project Site is currently primarily used for agriculture, including farming and grazing operations, and lies within the Lake Burrendong Catchment.

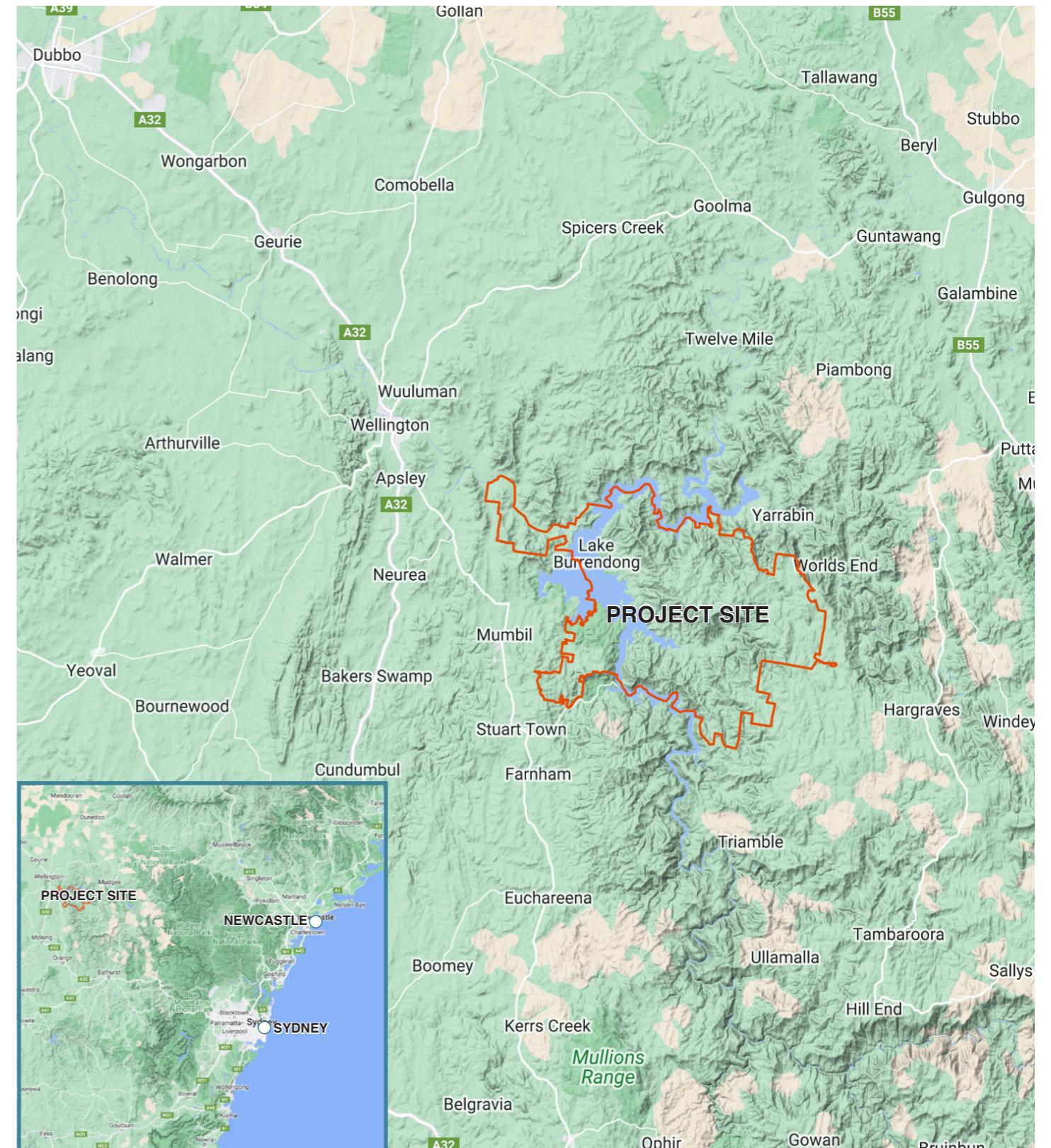


Figure 2 Regional Context



3.2 The Study Area

The Study Area refers to the land associated with and surrounding the Project. For the purpose of this report, the Study Area is loosely defined by an 8 km radius around the Project, however assessment of land outside of this radius will be undertaken as necessary.

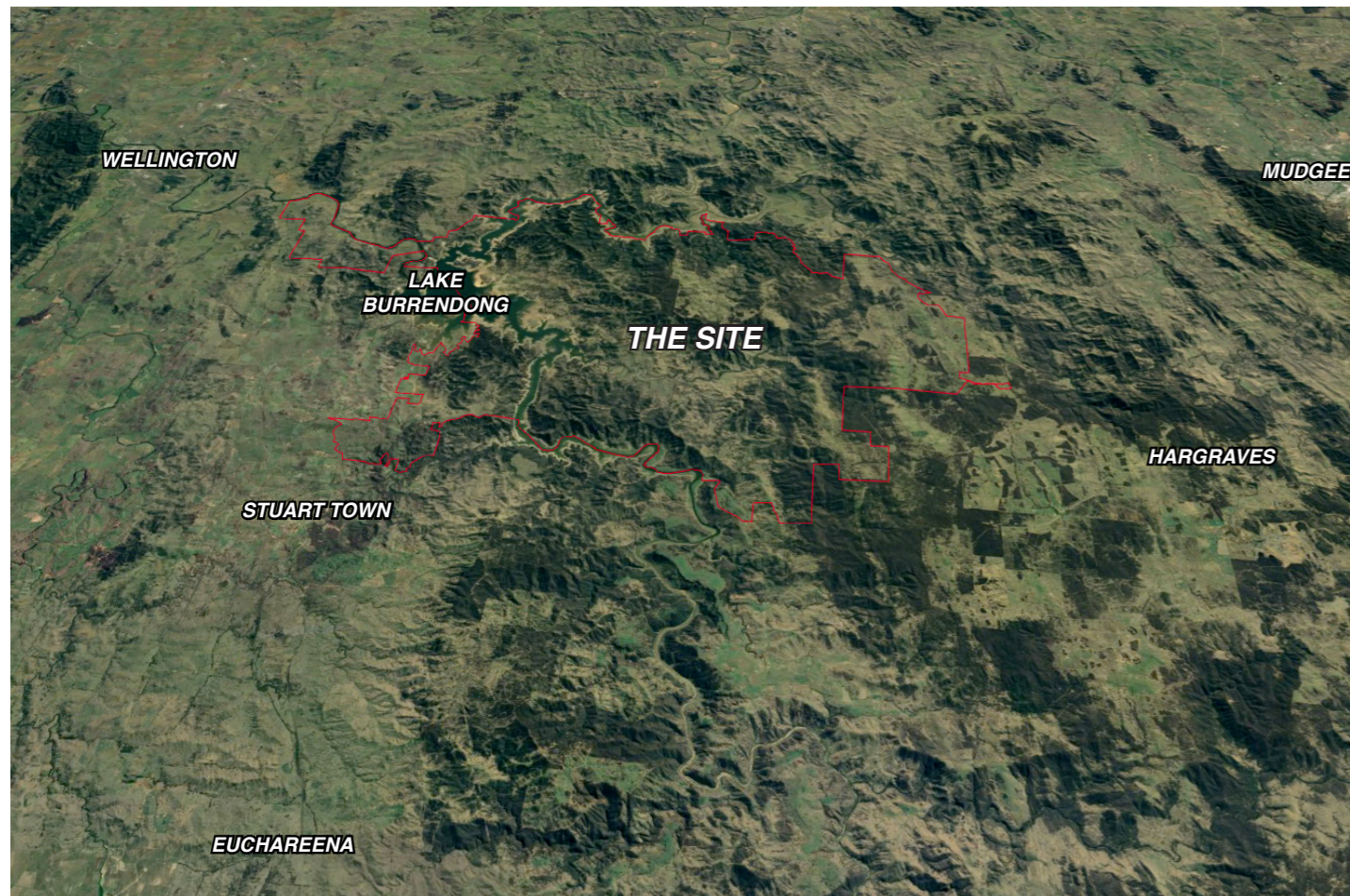


Figure 3 Birds Eye View - The Project Site (Source: Google Earth)

3.3 The Project Site

The Project Site is located approximately 20 kilometres to the south east of Wellington and 25 kilometres south west of Mudgee in New South Wales. The Project is sited on the vegetated ridges to the east of Lake Burrendong.

Land in the area consists of largely uninhabited undulating hills.

Figure 3 and **Figure 4** present the Project Site Locality.

The following provides an overview of all aspects of the proposal to be considered in this PVIA.

3.4 The Project

The Project would consist of up to 105 turbine locations with a combined maximum installed capacity of approximately 650 MW.

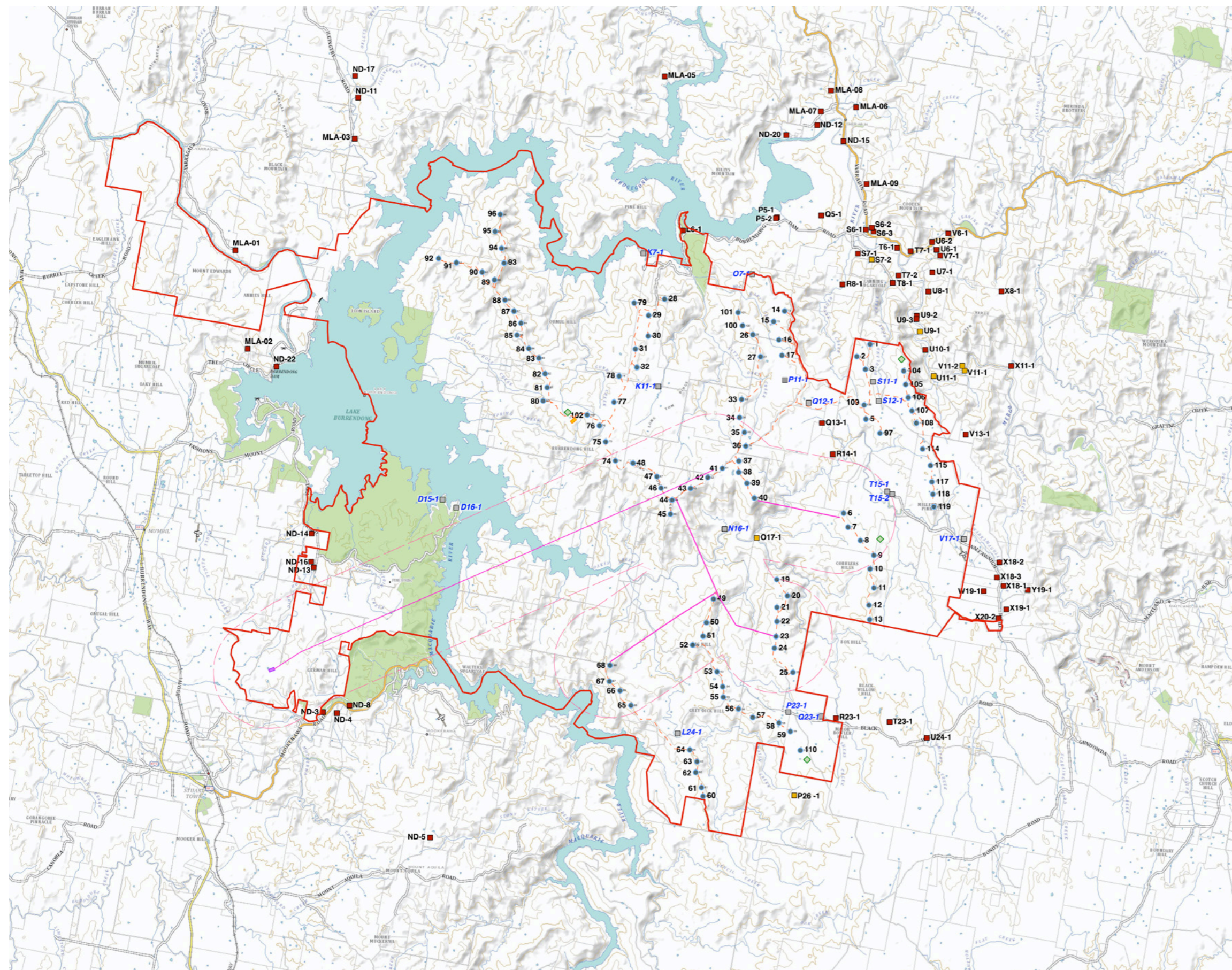
The proposal would also include:

- An internal electrical reticulation network (both overhead and underground);
- New and upgraded access roads;
- Up to two Collector Substations and a connection switchyard;
- Temporary construction facilities (including concrete batching plants); and
- Operation and maintenance buildings.

The Project Layout is presented as **Figure 4**.

Project Layout

Burrendong Wind Farm



- LEGEND:**
- Project Boundary
 - Proposed 250m Turbine Location
 - Overhead Transmission Line
 - - - Underground cabling
 - Substation
 - Switching Station
 - ◆ Permanent Met Mast Location
 - xx-x Involved Dwelling
 - xx-x Non-involved Dwelling

Figure 4 The Project

04

Community Consultation

4.0 Community Consultation

4.1 Overview of Community Consultation

In accordance with the Visual 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 of community consultation at this early stage is to:

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

4.2 Overview of Community Consultation Process

Community consultation was undertaken in the early stages of the Project to establish landscape values, key landscape features, important viewpoints and the community's perception of the Project. It is important to note that whilst taken into consideration when undertaking the Visual Baseline Study, the landscape values of the community are considered to be subjective.

The Proponent consulted with the community on the preliminary Project boundary to gather feedback and an understanding of the key landscape features, areas of scenic quality and key public viewpoints. The community feedback has been reflected in the Visual Baseline Study that will inform the PVIA and the LVIA in the EIS Phase.

The Visual Bulletin suggests community members rate the scenic quality of the landscape character as low, medium or high. However, in the context of a proposed development this is a complex process and it is likely that the results would be highly subjective. It is best practice to utilise a objective frame of reference which can be applied by professionals. This process can be undertaken whilst also taking into account (but not being driven by) values identified by the community.

This will be completed in the EIS Phase of the project.

4.3 Community Perception

Understanding of the community perception towards the proposed development is an important element of the PVIA.

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.

The questionnaire developed for the Project aimed to gain understanding of the communities concerns. **Figure 5** and **Figure 6** illustrate the responses to questions aimed at gauging the communities level of acceptance of renewable energy Projects in the local area and anticipated impact on the visual landscape

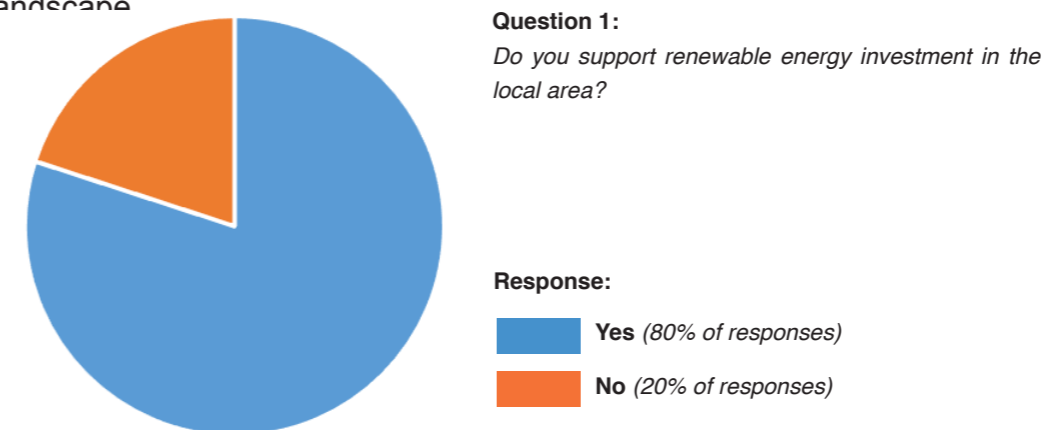


Figure 5 Response to Questionnaire Question 1

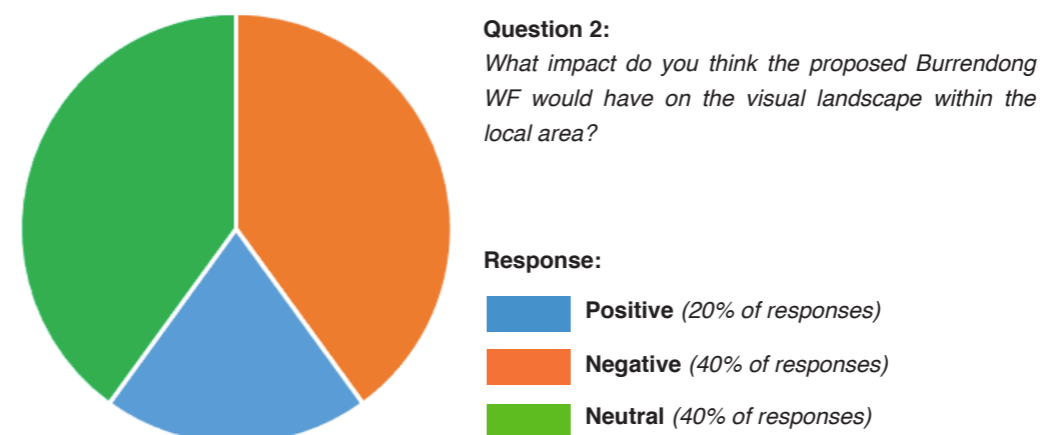


Figure 6 Response to Questionnaire Question 2

4.4 Community Landscape Values

Landscape values are highly subjective and can differ depending on location, local context and place attachment.

The questionnaire provided to the community aimed to gain an understanding of the values associated with the landscape. The results of the questionnaire indicated the community and its people, farming and agriculture were of highest value to the respondents. Views and outlook and employment opportunities were rated as having low value to the community. Refer to **Figure 7**.

Question 5:

Please consider the below aspects of the local area. Re-order the below list to rank them (top is highest value, bottom is lowest value).

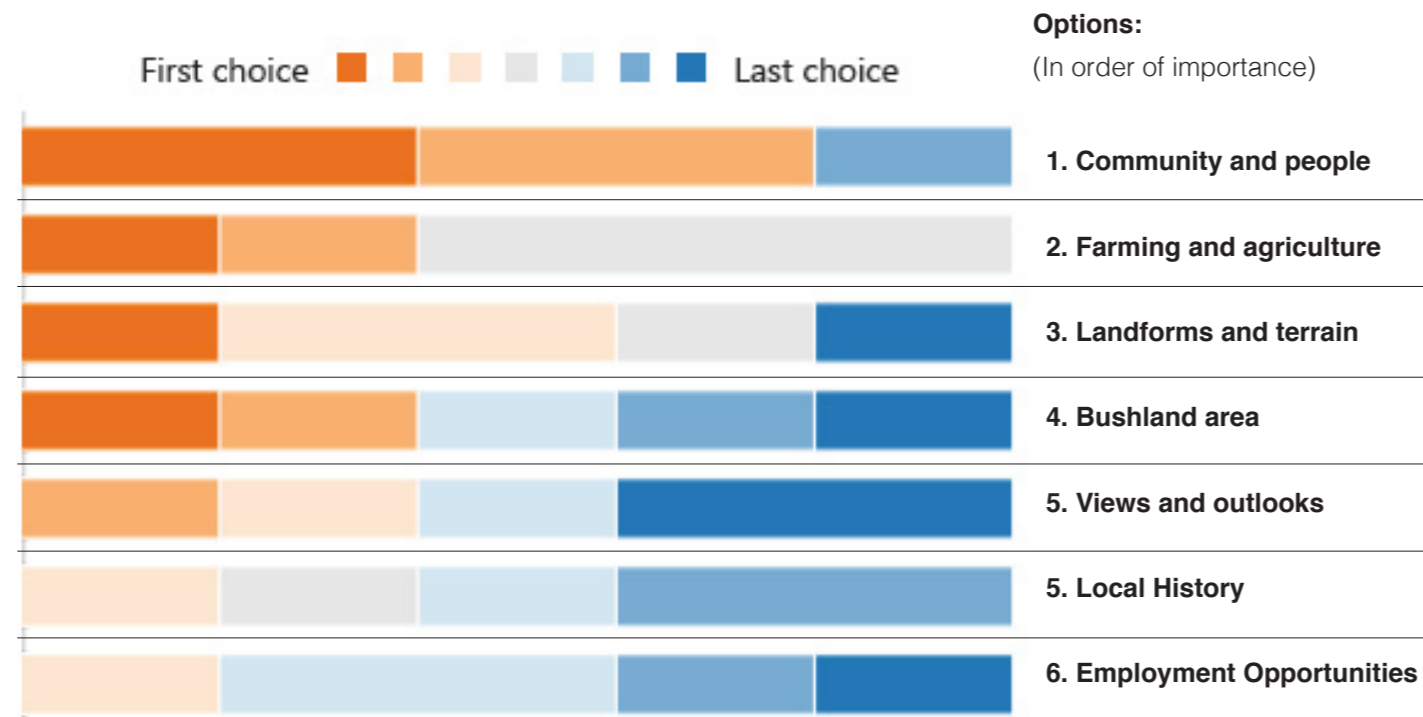


Figure 7 Response to Questionnaire Question 5

4.5 Scenic Features and Key Viewpoints

Respondents were asked to assign a level of visual significance to local landscape features and areas. The results of which have assisted in the scenic quality rating of Landscape Character Units (LCU) in the Visual Baseline Assessment (refer to **Section 5.0**).

Additionally, the community was asked to identify important public viewpoints and areas of public visibility for further assessment. Where specific locations have been identified, these have been mapped within the Visual Baseline Study (**Section 5.0**). Community consultation will continue throughout the Project and further information will be provided (as available) in the EIS Phase.

Question 3: Where are the most important public viewpoints in the local area?

Responses:

- Likely the higher “tops” West of the village of Hargraves, Burrendong recreation / Arboretum areas and within the lake.
- Wilderness landscape without wind farms.
- The scenic drives of Hill end road, Black Willow Road, Wallawaugh Road and Gundowda Road.
- From the high country looking west and from the Dam looking east.
- Foreshores of Burrendong dam.

Question 4: What lookouts or areas of public visibility do you think would be negatively impacted by the proposed Burrendong Wind Farm?

Responses:

- My property. Local traffic. Users of the area.
- The scenic drives of Hill End Road, Black Willow Road, Wallawaugh Road and Gundowda Road.
- I do not feel that turbines negatively impact an environment. Care needs to be taken situating the access roads to prevent unnecessary loss of vegetation.

Table 2 Key Public Viewpoints Identified by the Community

Question 6:

For the below areas within the local landscape, please assign a level of visual significance.

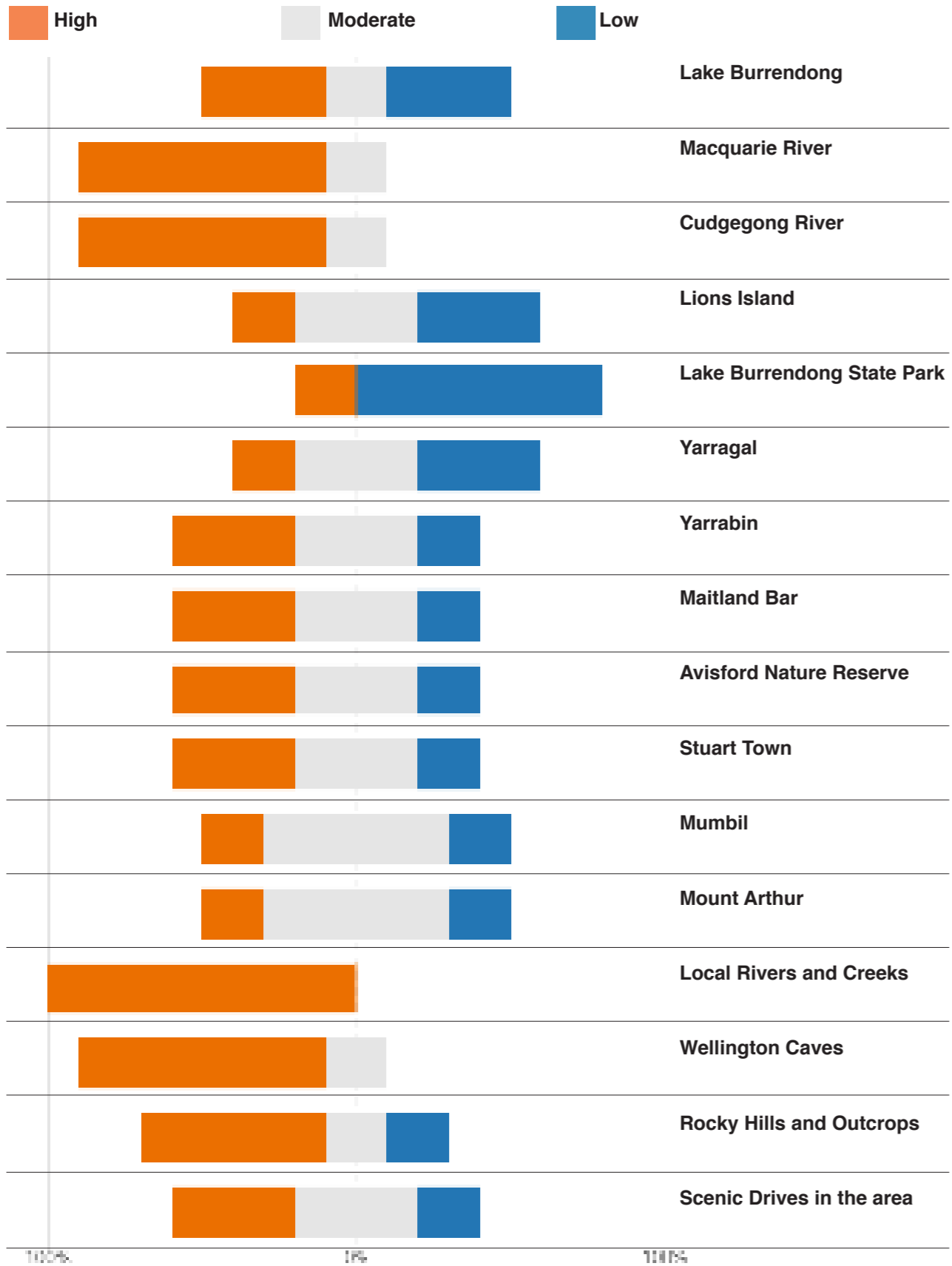
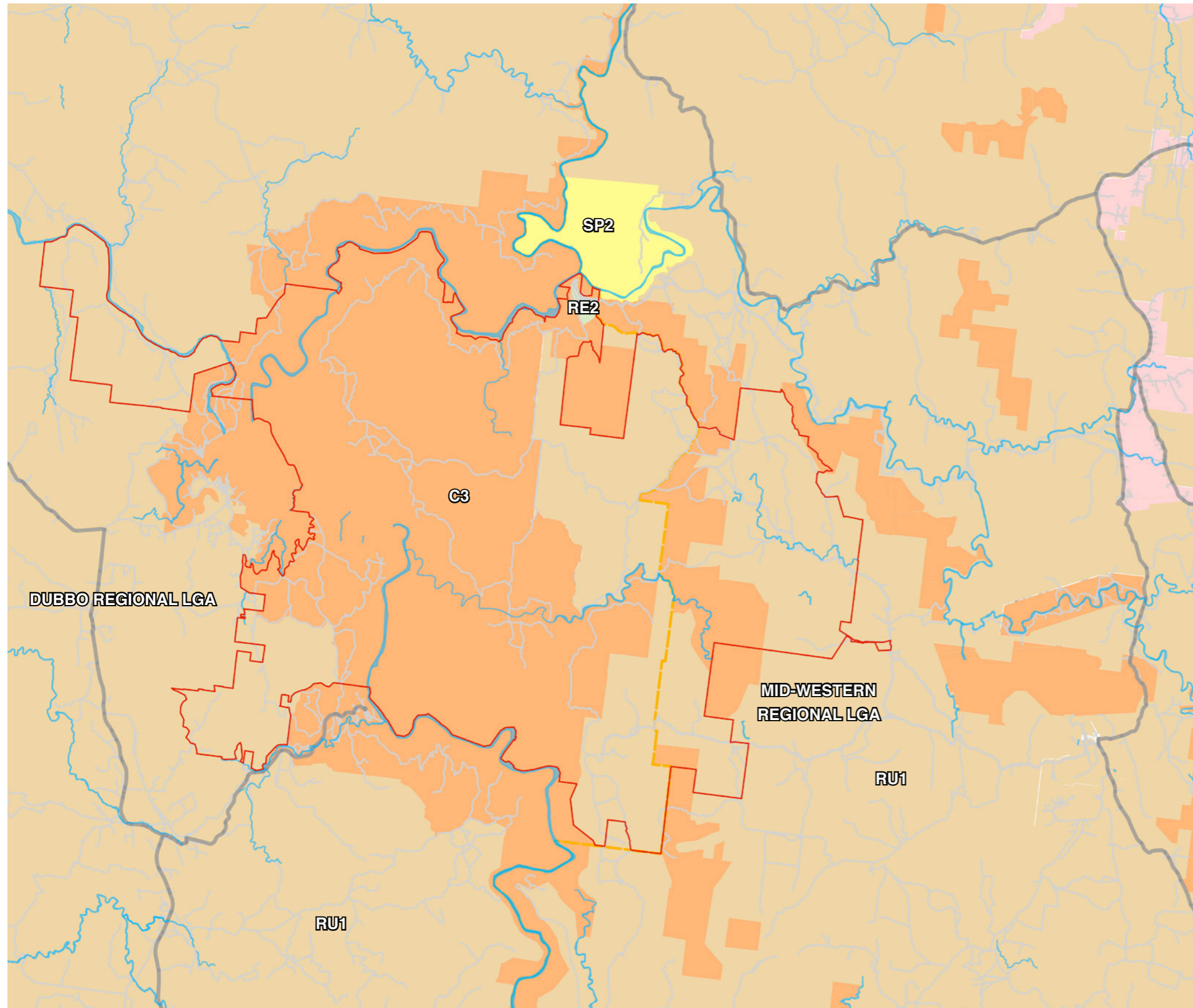


Figure 8 Response to Questionnaire Question 6

05

Existing Landscape Character





Land Zoning Burrendong Wind Farm

LEGEND










-  Project Boundary
-  RU1 Primary Production
-  RU2 Rural Landscape
-  RE2 - Private Recreation
-  C3 - Environmental Management
-  R5 - Large Lot Residential
-  LGA Boundary
-  8,000 m from nearest turbine
-  Road



Figure 10 Land Zoning - Study Area

5.3 Key Landscape Features

The Bulletin states:

proponents must identify key landscape features, dwelling locations and key public viewpoints.

The following provides an overview of the key features identified within the Study Area and its surrounds which contribute to the visual character of the landscape. The identification of key landscape features and key viewpoint has been informed by a combination of desktop analysis, community consultation and field work (refer to **Figure 12**).

5.3.1 Lake Burrendong & Burrendong State Recreation Area

Burrendong State Recreation Area surrounds Lake Burrendong with vegetated, elevated ridges to the south. Burrendong State Park is zoned as C3 Environmental Management to allow for a range of low impact recreational activities and ancillary land uses in the Burrendong State Park that protect and enhance the environmental and scenic qualities of the park and the water quality of Lake Burrendong. The land to the south of Lake Burrendong is densely vegetated and access is contained to a small number of roads. The waters of the Macquarie and Cudgegong rivers and Meroo Creek flow into the man-made Lake Burrendong. Lake Burrendong is a popular recreation area for fishing and tourism.

5.3.2 Burrendong Hill and other highpoints

The Project Site sits in the Hill End Trough physio-graphic unit which comprises of volcanic rocky outcrops. The elevations of these prominent ridgelines ranges from 680 - 970m and they predominantly run north west to southeast. The steep, rocky outcrops have poor soil fertility which limits its use to light grazing and restricted clearing of native vegetation. These uninhabited vegetated hills have with very limited access but visually they play an important role in contributing towards the scenic quality of the region.

5.3.3 Farmland character

Another prominent landscape character is that of the farmlands that span across gentle undulations in the landscape. These land parcels have been extensively cleared for grazing and pastoral activity. Most of these areas are accessible and are nestled between the prominent ridgelines that lie to the east of Lake Burrendong

5.3.4 Recreational associations with water

The banks of Lake Burrendong, Cudgegong River and Macquarie River are utilised for passive recreational activities such as camping, bush walking, fishing and boating. These landscape features act as a recreation draw-card for the region.

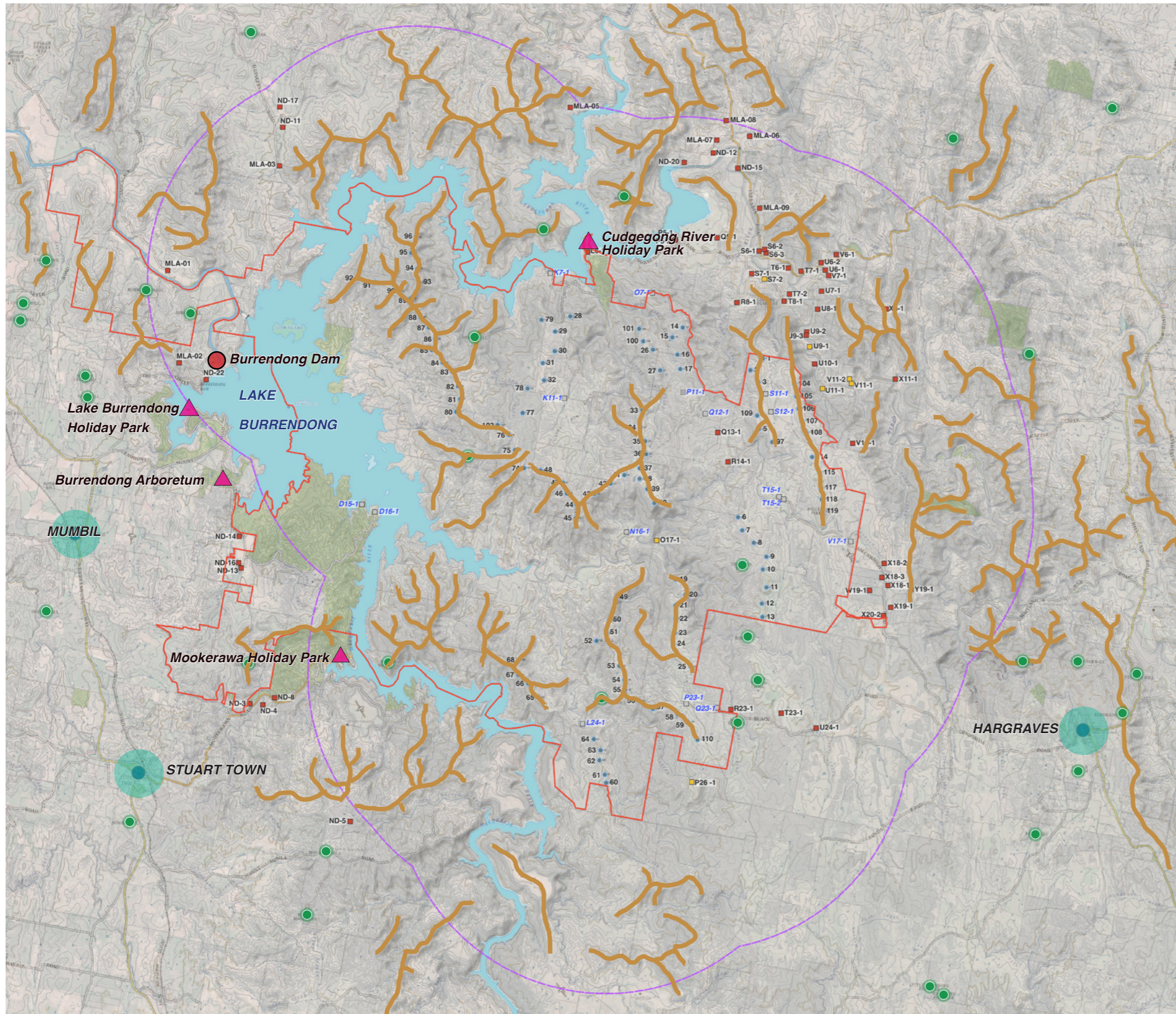
5.4 Key Viewing Locations

Key public viewing locations identified through the community consultation, desktop assessment phase and field work include:

- Publicly accessible land on the western side of Burrendong Lake
- Burrendong Dam
- Foreshores of Lake Burrendong (various locations)
- Local roads including: Hill End Road, Black Willow Road, Wallawaugh Road and Gundowa Road.
- Villages including: Hargraves
- Local high points (private and public land)
- Burrendong Arboretum
- Mookerawa Holiday Park
- Cudgegong River Holiday Park
- Lake Burrendong Holiday Park

These public viewpoint locations have been identified on **Figure 11** and will be assessed through viewpoint analysis during the EIS Phase of the Project.

Landscape Features & Key Viewpoints Burrendong Wind Farm



LEGEND:

- Project Boundary
- Proposed Turbine Location
- Involved Dwelling
- Non-involved Dwelling
- Non-involved Weekender
- - - 8000m from turbine
- Road
- Indicative ridgeline
- High points
- ▲ Parks and lookouts
- Points of interest
- Water body
- Town / Village / Settlement



Figure 11 Landscape Features and Key Viewpoint Locations (Map Source: Six Maps)

5.5 Preliminary Landscape Character Units

A number of Landscape Character typologies exist within the Project Area. As apart of the Preliminary Landscape Character Assessment, a total of seven (7) key landscape typologies referred to hereafter as LCUs have been identified (refer to **Figure 12**).

Table 3 provides an overview of the LCUs and preliminary Scenic Quality Ratings applied. 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.

Landscape Character Units					
LCU:	Name:	Description:	Key Landscape Features:	Key Viewpoints:	Preliminary Scenic Quality Rating:
LCU01	<i>Yarrabin / Hargrave Hills</i>	Steep ridgelines with vegetated hill slopes that span across the Study Area associated with Yarrabin and Hargraves. The Project Site is located within this LCU.	Vegetated Ridgelines	Local Roads	Moderate
LCU02	<i>Yarrabin / Hargraves Farmlands</i>	Gently undulating landscapes associated with Yarrabin and Hargraves that have been cleared for grazing pastures and other agricultural activity.	Localised high points and vegetated creek lines	Local Roads Hargraves	Low - Moderate
LCU03	<i>Lake Burrendong</i>	Lake Burrendong LCU is defined as the waterway and foreshore associated with Lake Burrendong.	Lake Burrendong water and associated foreshore	Holiday Parks and Lake Foreshore	Moderate
LCU04	<i>Cudgegong River Valley</i>	Cudgegong River Valley includes the Cudgegong River and associated valley, typically to the north of Lake Burrendong.	River Valley	Cudgegong River Holiday Park	Moderate
LCU05	<i>Yarragal / Twelve Mile</i>	Yarragal / Twelve Mile is generally defined as the largely uninhabited hills to the north of the Project Site associated with Yarragal and Twelve Mile. Land in this area is associated within the visual catchment of the Approved Ungula Wind Farm Project.	Undulating hills and ridgelines	Local Roads	Moderate
LCU06	<i>Mumbil</i>	Typically the vegetated hills to the west of Lake Burrendong. Land is largely uninhabited with the exception of small settlements at Mumbil and Stuart Town.	Undulating, vegetated hills	Arboretum Local Roads and Settlements (Stuart Town and Mumbil)	Low
LCU07	<i>Worlds End</i>	Worlds End is a small LCU defined by the valley defined as Worlds End. Land is typically characterised by a valley floor with dwelling utilised as weekenders.	Valley floor and steep hills	Local Road	Moderate

Table 3 Overview of Landscape Character Units

Landscape Character Units

Burrendong Wind Farm

LEGEND:

- Project Boundary
- Proposed 250m turbine Location
- Involved Dwelling
- Non-involved Dwelling
- Non-involved Weekender
- 8000m from turbine
- LCU 01: Yarrabin / Hargraves Hills
- LCU 02: Yarrabin / Hargraves Farmlands
- LCU 03: Lake Burrendong
- LCU 04: Cudgong River Valley
- LCU 05: Yarragal / Twelve Mile
- LCU 06: Mumbil
- LCU 07: Worlds End
- 10m Contour

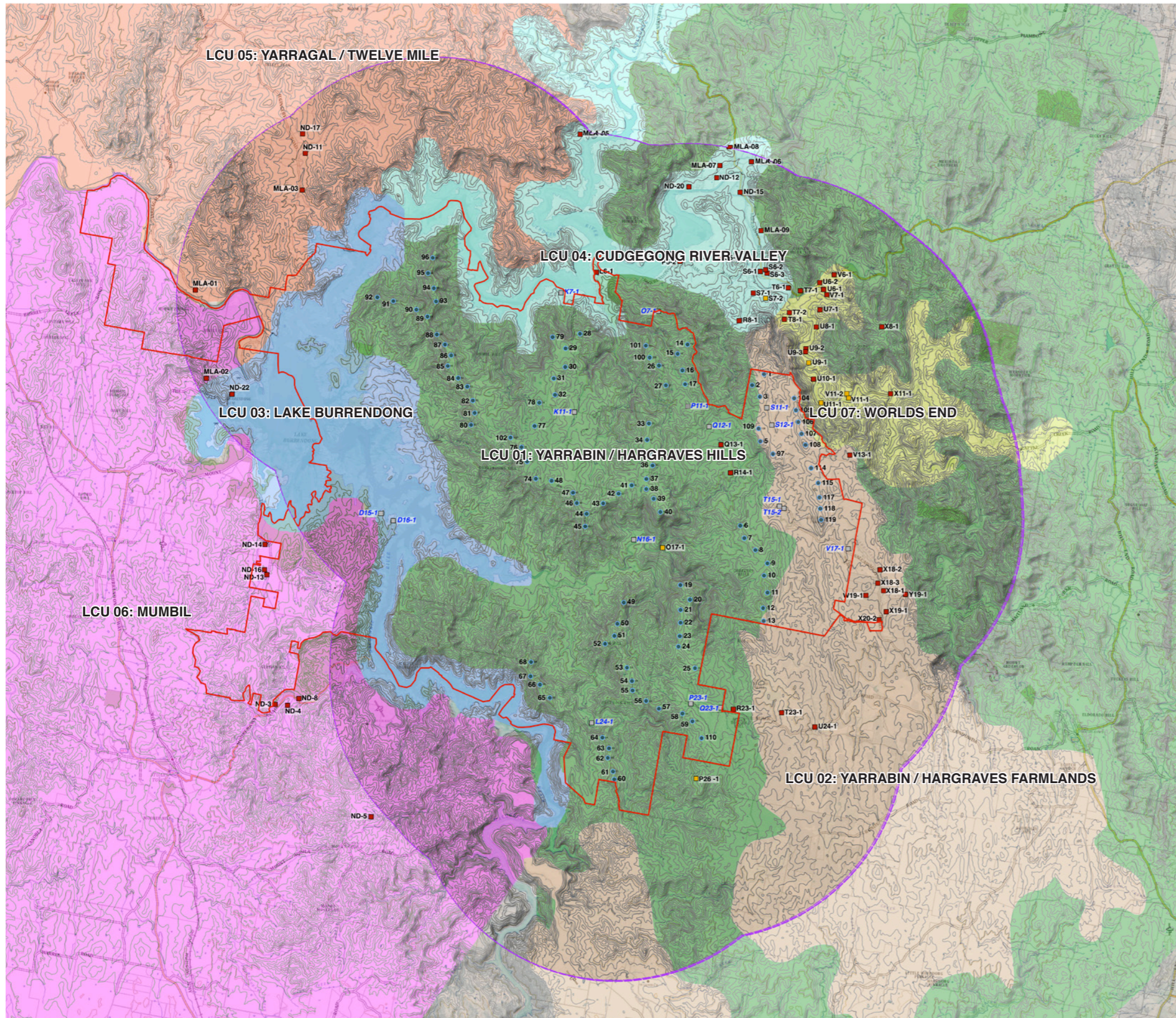


Figure 12 Landscape Character Units (Map Source: Six Maps)

06

Preliminary Assessment Tools

6.0 Preliminary Assessment Tools

6.1 Overview of Preliminary Assessment Tools

Preliminary assessment tools have been developed in the Bulletin 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*)

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 13**.

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 250 metres. The ‘black line’ intersects at a distance of 3,350 metres and the ‘blue line’ intersects at 4,950 metres as shown in **Figure 14**.

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

Next Steps:

Further assessment and justification for placement of turbines located in these sensitive areas in the EIS will be required, along with a description of the 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. (Visual Assessment Bulletin)

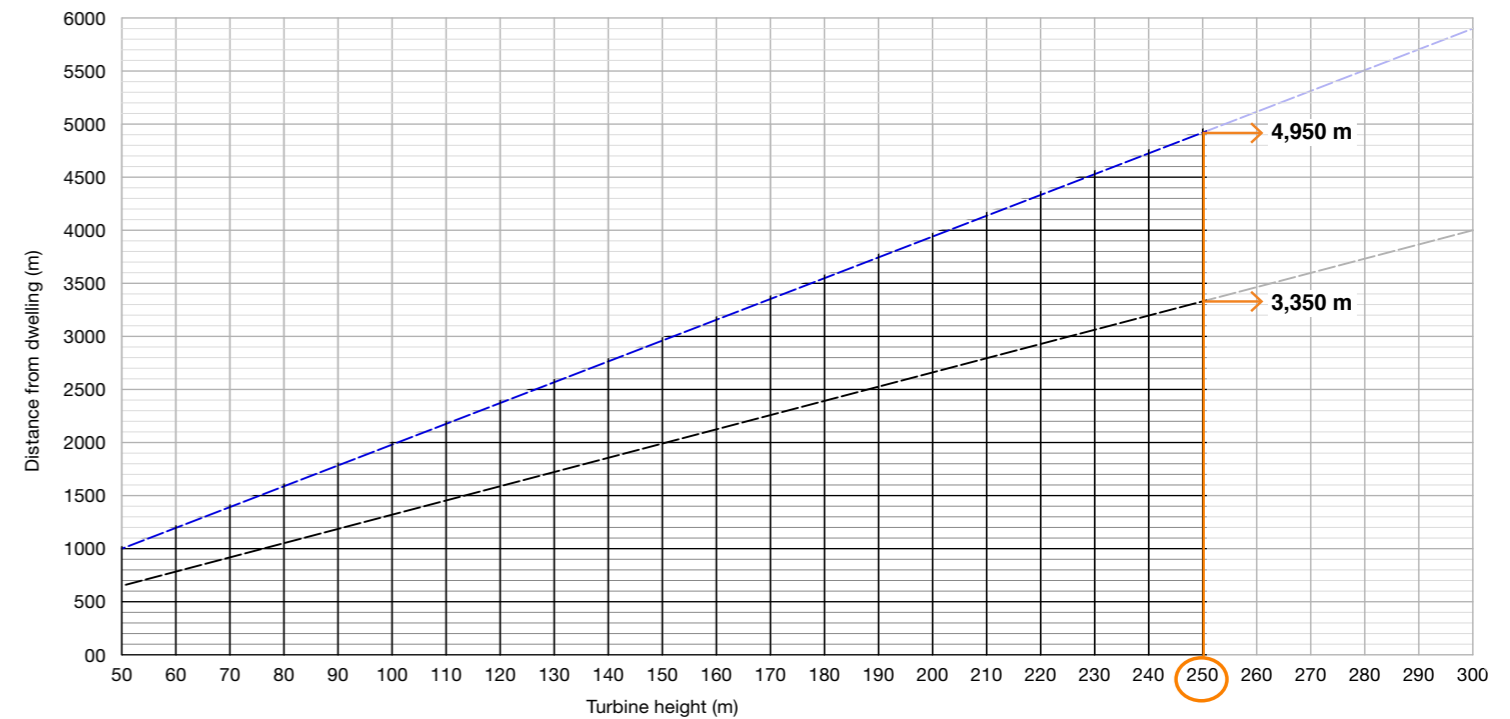


Figure 13 Visual Magnitude thresholds for Project Layouts

(Source: Visual Assessment Bulletin)

6.3 Results of Preliminary Visual Magnitude Assessment

Non-involved dwellings within 3,350 m (Black Line of Visual Magnitude):









- 23 *non-involved dwellings* have been identified within 3,350 metres of a proposed turbine location (within the black line of visual magnitude).
- Ground truthing of dwellings and discussions with landowners have identified seven (7) of the identified dwellings within the blue line of visual magnitude are unoccupied shacks, huts or weekenders. For the purpose of this report, these are referred to as ‘weekenders’.

Non-involved dwellings between 3,350 - 4,950 m (Blue Line of Visual Magnitude):

- 21 *non-involved dwellings* are located within 3,350 - 4,950 metres of a proposed turbine (between the black and the blue line of visual magnitude).

Visual Magnitude Burrendong Wind Farm

LEGEND:

-  Project Boundary
-  Proposed 250m turbine Location
-  Involved Dwelling
-  Non-involved Dwelling
-  Non-involved Weekender
-  3,350 m from Turbine (Black Line of Visual Magnitude)
-  4,950 m from Turbine (Blue Line of Visual Magnitude)
-  8,000 m from Turbine

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 turbines.

For detailed assessment of Non-associated Dwellings identified refer to **Appendix A**.

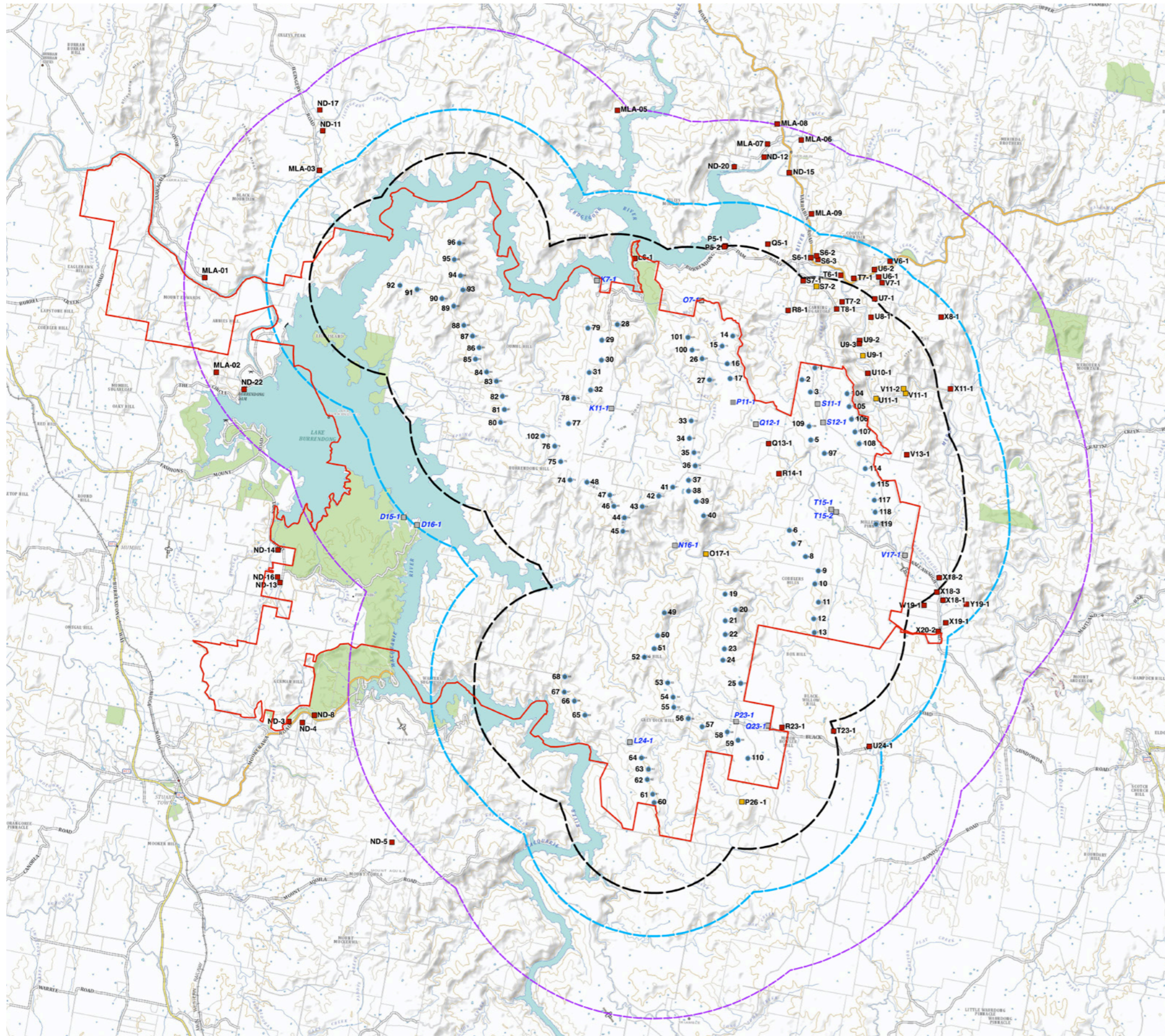


Figure 14 Visual Magnitude thresholds for Burrendong Wind Farm (Map Source: Six Maps)

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 wind energy 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 kilometres of each dwelling or key public viewpoint. **Figure 15** below provides examples of where a dwelling or key public viewpoint may have views to turbines in multiple 60° sectors.

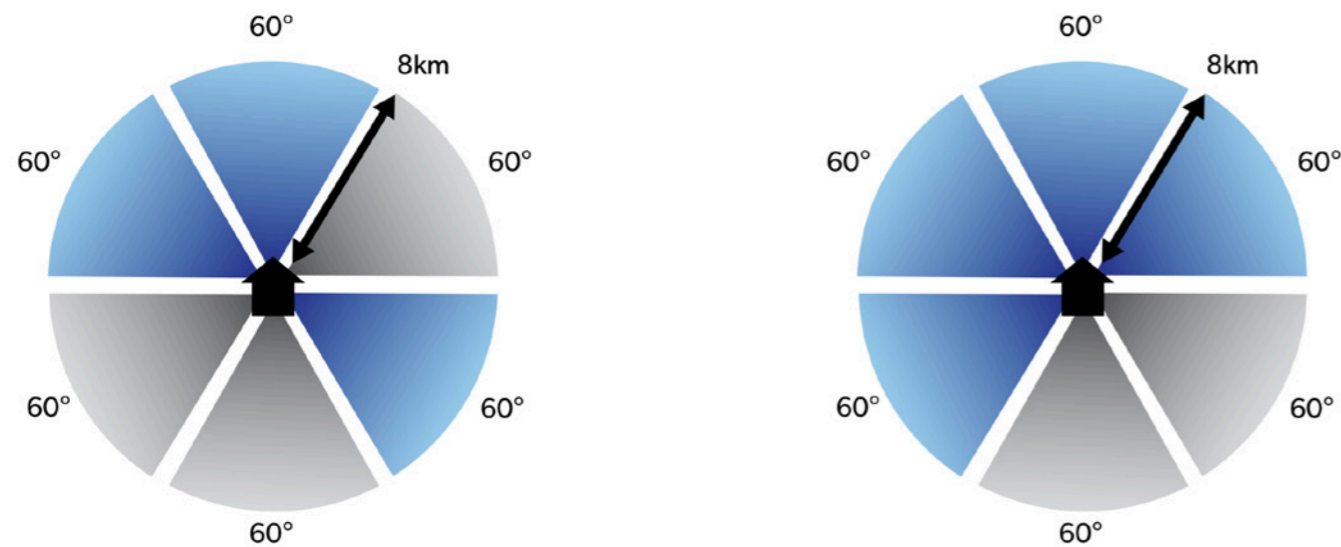


Figure 15 Preliminary Assessment Tool: Multiple Wind Turbine Tool

(Source: Visual Assessment Bulletin)

In accordance with the Visual 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 16 provides an overview of the number of 60° sectors visible from each of the dwellings identified within 8 kilometres.

6.5 Results of Preliminary Multiple Wind Turbine Tool (MWTT) Assessment

When applied to the Project, the 2D Multiple Wind Turbine Tool (see **Figure 16**) identified 11 non-associated dwellings with turbines located in three (3) or more 60 degree sectors. The assessment is based on a 2D assessment and takes into account turbines associated with the Approved Uungula Wind Farm (UWF).

- Four (4) non-involved dwellings had turbines located within up to three (3) 60 degree sectors. (Note: One of these dwellings takes into account turbines associated with UWF). Detailed assessment using topography and aerial imagery found all four (4) dwellings would reduce the potential visibility to two (2) 60 sectors or less.
- Four (4) non-involved dwellings had turbines located within up to four (4) 60 degree sectors (Note: all four take into account turbines associated with UWF).
- One (1) weekender had turbines within up to five (5) 60 degree sectors. 3D assessment identified this would be reduced to one (1) sector.
- Two (2) dwellings had turbines located within up to six (6) 60 degree sectors. 3D assessment identified this would be reduced to three (3) 60 degree sectors for both dwellings.

Table 4 provides an overview of these 11 non-involved dwellings, taking into account topography and intervening vegetation. Detailed assessment of dwellings with turbines in multiple 60 degree sectors associated with the Project will be undertaken in the EIS Phase of the Project.

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. (Visual Assessment Bulletin)

ID	Distance to nearest WTG	Number of 60° Sectors (3D Assessment)	Notes:
Non-involved dwellings with WTGs in up to three (3) 60° Sectors (up to 180°) (Based on 2D Assessment)			
R23-1	1.692 km	Nil	Screened by vegetation.
MLA-05	7.648 km	One (1)	* Note: Takes into account UWF WTGs. The Project WTGs within 8 km are screened by vegetation.
R8-1	2.259 km	One (1)	Turbines screened by topography.
T23-2	3.550 km	Two (2)	Turbines screened by vegetation.
Non-involved dwellings with WTGs in up to four (4) 60° Sectors (up to 240°) (Based on 2D Assessment)			
L6-1	2.646	Three (3)	* Note: Takes into account UWF WTGs and is likely to be reduced by vegetation.
ND-11	6.43 km	Three (3)	* Note: Takes into account UWF WTGs
ND-17	7.15 km	Three (3)	* Note: Takes into account UWF WTGs
MLA_03	5.203 km	Two (2)	* Note: Takes into account UWF WTGs
Non-involved dwellings with WTGs in up to five (5) 60° Sectors (up to 300°) (Based on 2D Assessment)			
*O17-1	1.423 km	One (1)	Topography reduces visible WTGs to one (1) sector.
Non-involved dwellings with WTGs in up to six (6) 60° Sectors (up to 360°) (Based on 2D Assessment)			
Q13-1	1.586 km	Three (3)	WTGs screened by topography and vegetation.
R14-1	1.964 km	Three (3)	WTGs screened by vegetation.

*Denotes weekender / hut accommodation

Table 4 Non-involved dwellings identified as having WTGs in multiple 60° sectors by the Multiple Wind Turbine Tool

Multiple Wind Turbine Tool Burrendong Wind Farm

LEGEND:

- Project Boundary
 - 27 Proposed 250 m Turbine Location
 - - - 8,000 m from Burrendong Wind Farm (BWF) Turbines
 - Approved Ungula Wind Farm (UWF) Turbine Location (250m)
 - - - 8,000 m from Approved Ungula Wind Farm Turbine
 - - - 3,350 m from Turbine (Black Line of Visual Magnitude)
 - - - 4,950 m from Turbine (Blue Line of Visual Magnitude)
-
- Dwelling in excess of 8 kilometres
 - One 60° Sector (60°)
 - Up to two (2) 60° Sectors (120°)
 - Up to three (3) 60° Sectors (180°)
 - Up to four (4) 60° Sectors (240°)
 - Up to five (5) 60° Sectors (300°)
 - Up to six (6) 60° Sectors (360°)
-
- Dwellings within 8,000 m of UWF and the Project
(Refer to Cumulative Visual Impact Assessment - Section 11.0)

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 turbines.



Figure 16 Multiple Wind Turbine Tool for Burrendong Wind Farm (Map Source: Six Maps)

07

Preliminary Zone of Visual Influence



7.0 Zone of Visual Influence

7.1 Overview of 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.'*

Two (2) ZVI diagrams have been prepared for the Project to illustrate the theoretical visibility of the Project, one from blade tip height (250m) and one from a nominal hub height (165m).

- **Figure 17** depicts the areas of land from which the proposed development may be visible and provides an indicative number of turbines based on the blade tip height of 250 metres.
- **Figure 18** illustrates the areas of land from which the proposed development would be visible at a hub height of 165m.

The ZVI (also known as a Zone of Theoretical Visibility 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 15 - 20 km from the Project. Although it is possible for the development to be visible from further than 15 - 20 km away, it is generally accepted that beyond this distance visibility is diminished.

7.2 Summary of Zone of Visual Influence Analysis

The results of the ZVI are as follows:

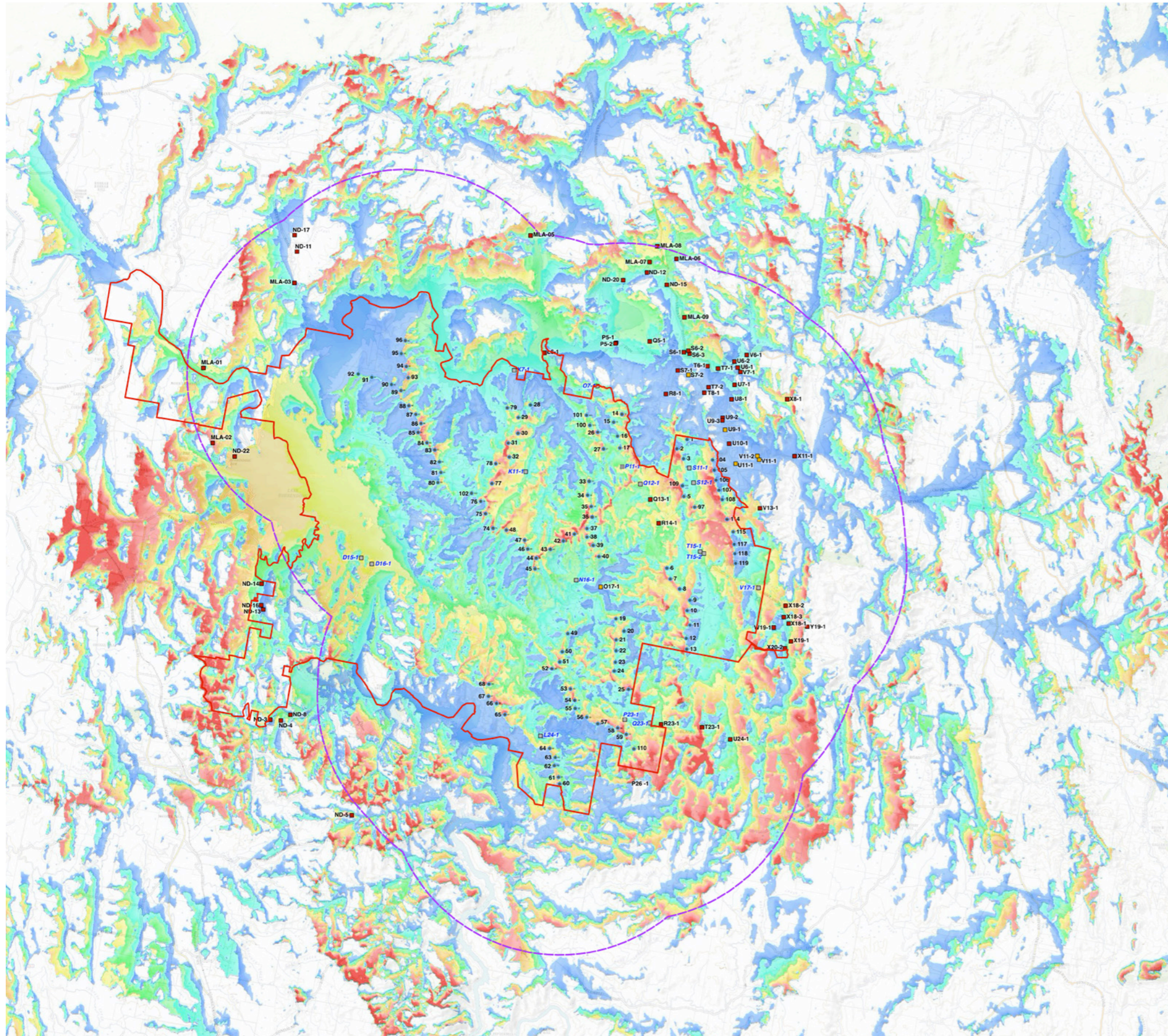
- Due to the undulating topography that characterises the landscape, the ZVI illustrates there are limited opportunities to view the Project in its entirety. Areas that have been identified as having potential to view the Project in its entirety are generally isolated, and it is likely intervening vegetation would reduce the potential to view all of the turbines.
- No dwellings have the potential to view the Project in its entirety.
- The most densely populated area to the north east of the Project associated with Yarrabin Road and Meroo River. The ZVI indicates views of the Project from dwellings in this area are limited to between 1 - 17 turbines.
- The ZVI indicates views to the Project are limited from areas in excess of eight kilometres due to topography.

It is important to reiterate the ZVI is based on a worst case scenario assessment with no vegetation or structures. Ground truthing during field work will ascertain potential visibility taking into account structures and vegetation.

Zone of Visual Influence

Blade Tip Height: 250 m

Burrendong Wind Farm



LEGEND

- Project Boundary
- Proposed Turbine Location
- Involved Dwelling
- Non-involved Dwelling
- - - - 8,000 m from nearest turbine

ZVI Legend:

	1 - 17
	18 - 35
	36 - 53
	54 - 71
	72 - 89
	90 - 105

Note:

The ZVI is a preliminary assessment tool that represents a bare ground scenario - i.e. 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 17 Zone of Visual Influence Based on Tip Height 250 m (Map Source: Six Maps)

08

Cumulative Visual Impact Assessment

8.0 Cumulative Visual Impacts

8.1 Overview of Cumulative Visual Impacts

The Project is located within the Central-West Orana Renewable Energy Zone (REZ). The REZ has been identified by the NSW Governments Electricity Strategy (refer **Figure 19**). 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 and as such, it is highly likely that over time this will be utilised for the development of wind farm projects. **Figure 19** shows the wind farms that are currently proposed, operating or approved within the extents of the REZ.

8.2 Nearby Wind Farm Projects

There are seven (7) proposed, approved and constructed wind farms within 100 kilometres of the Project. These are listed in **Table 5** below.

Project	Distance to nearest turbine (Approximate):	Project Size: *Estimated	Planning Status
Operational Wind Farms:			
Crudine Ridge Wind Farm	36 km (South East)	37 Turbines	Operational
Bodangora Wind Farm	24 km (North)	33 Turbines	Operational
Approved Wind Farms:			
Uungula Wind Farm	3.86 km (North)	* 97 Turbines	Consent granted: May 2021
Liverpool Range Wind Farm	94 km (North East)	* 267 Turbines	Modification to consent
Proposed Wind Farms:			
Barneys Reef Wind Farm	49 km (NNE)	* 65 Turbines	SEARs issued: September 2021
Valley of the Winds Wind Farm	70 km (NNE)	* 154 Turbines	SEARs issued: June 2020
Kerrs Creek Wind Farm	22 km (SW)	Unknown	No SEARS issued as of August 2022

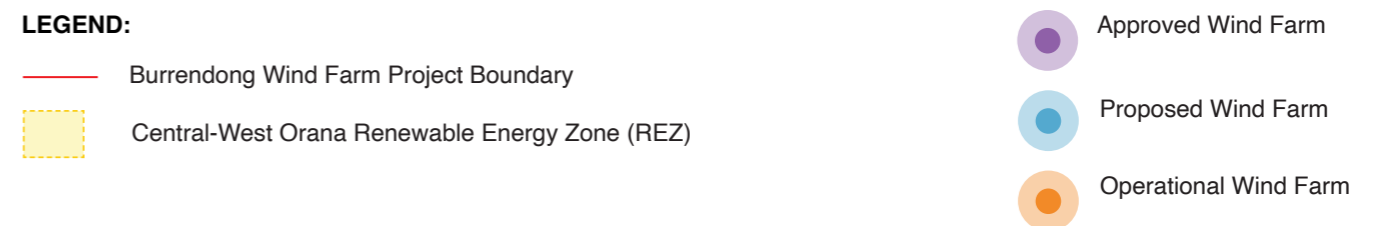
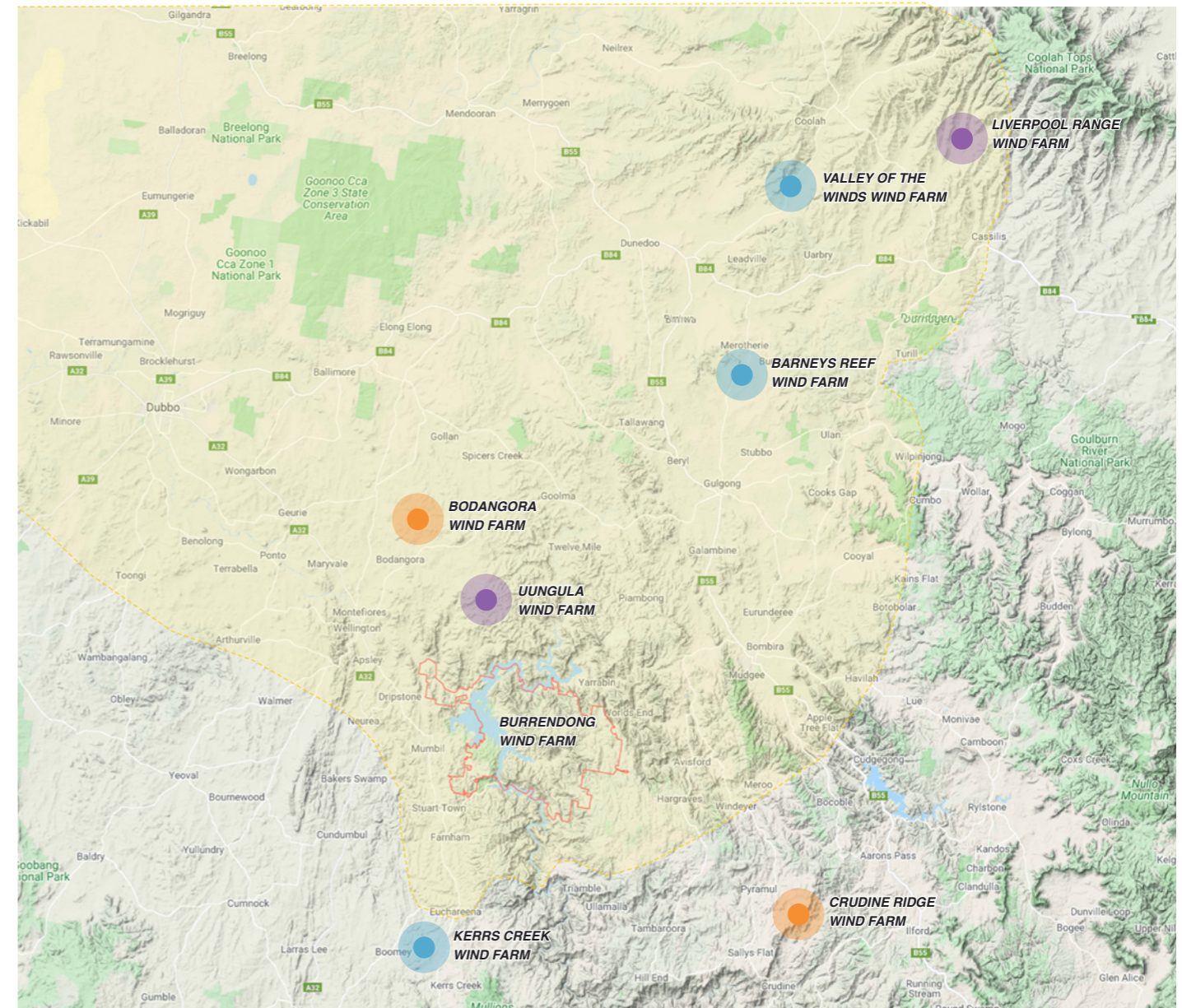


Figure 19 Nearby Wind Farms (Map Source: Google Maps)

Table 5 Summary of nearby Wind Farm Projects

8.3 Cumulative Impact of the Approved Uungula Wind Farm (UWF)

UWF gained development consent in May 2021, for 97 turbines with a blade tip height of up to 250 metres. UWF is sited north of the Cudgegong River, the nearest turbine is 3.86 kilometres north of the Projects northern most turbine (WTG 96). Due to the relatively close proximity of the approved UWF to the Project, a detailed assessment of the potential cumulative visual impact has been undertaken.

To assist in the cumulative visual impact assessment, a ZVI has been prepared to illustrate areas from which there is the potential to view both Projects (based on topography alone). The ZVI demonstrates areas of land from which turbines associated with the UWF and the Project or potential to view both Projects simultaneously. Refer to **Figure 20**.

In accordance with the *Preliminary Assessment Tool: 2 Multiple Wind Turbine Tool* (Refer to Section 6.4), an 8 kilometre radius has been applied to each Project to identify dwellings and viewpoints within 8 kilometres of both Projects. As determined in **Section 6.0** of this PVIA Report, six (6) non-involved dwellings are located within 8 kilometres of both the UWF and the Project.

The ZVI indicates that of the six (6) non-involved dwellings identified, only three (3) dwellings have the potential to view both Projects (L6-1, MLA-03 and MLA-05). A detailed assessment of these dwellings will be undertaken in the EIS Phase of the Project.

Cumulative Zone of Visual Influence

Burrendong & Ungula Wind Farms

LEGEND

- Project Boundary
- Proposed Burrendong Turbine Location
- Proposed Ungula Turbine Location
- Involved Dwelling
- Non-involved Dwelling
- - - 8,000 m from nearest Burrendong turbine
- - - 8,000 m from nearest Approved Ungula turbine

ZVI Legend:

- Approved Ungula turbine visible
- Proposed Burrendong turbine visible
- Turbines associated with Ungula Wind Farm (UWF) and Burrendong Wind Farm (BWF) visible.

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.

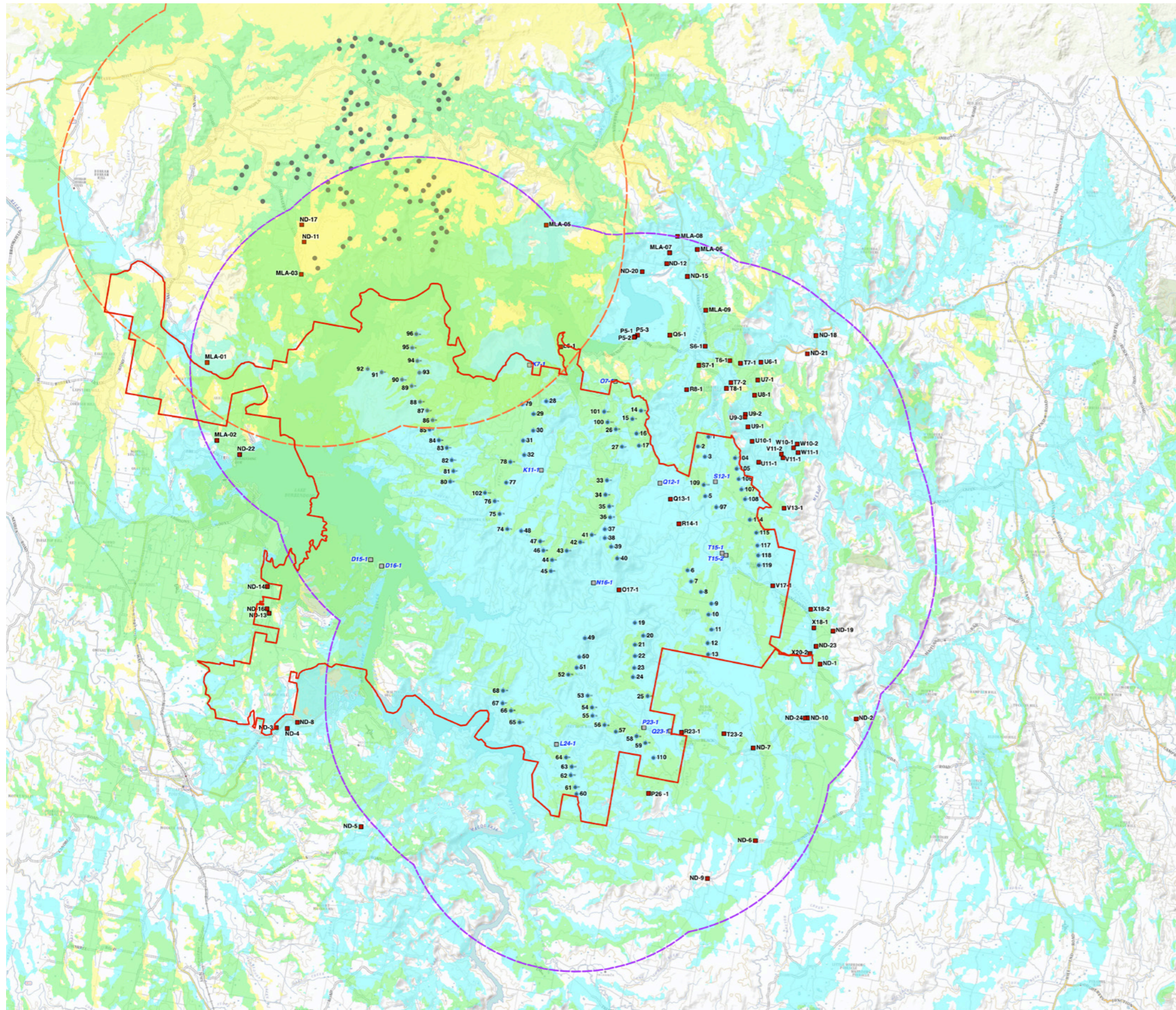


Figure 20 Cumulative Zone of Visual Influence - Burrendong and Ungula Wind Farms (Map Source: Six Maps)

09

Preliminary Dwelling and Viewpoint Assessments



9.0 Preliminary Dwelling and Viewpoint Assessments

9.1 Preliminary Assessment of Dwellings

Examples of the preliminary assessment tools applied to six (6) representative non involved dwellings (as shown on **Figure 21**) within 8,000 m of the nearest turbine have been included in **Appendix A**.

The preliminary assessment identifies existing scattered and dense vegetation surrounding majority of the dwellings which would reduce the potential visual impacts identified by the preliminary assessment tools and the ZVI.










9.2 Preliminary Assessment of Public Viewpoints

Appendix B provides preliminary assessments from Public Viewpoints. A total of 12 preliminary 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 21**).

Visual Magnitude

Burrendong Wind Farm

LEGEND:

-  Project Boundary
 -  Proposed 250m Turbine Location
 -  Involved Dwelling
 -  Non-involved Dwelling
 -  Non-involved Weekender
 -  3,350 m from Turbine (Black Line of Visual Magnitude)
 -  4,950 m from Turbine (Blue Line of Visual Magnitude)
 -  8,000 m from Turbine
 -  Representative Preliminary Dwelling Analysis Location
- Refer to Appendix A**

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 turbines.

For detailed assessment of Non-involved Dwellings identified refer to **Appendix A**.

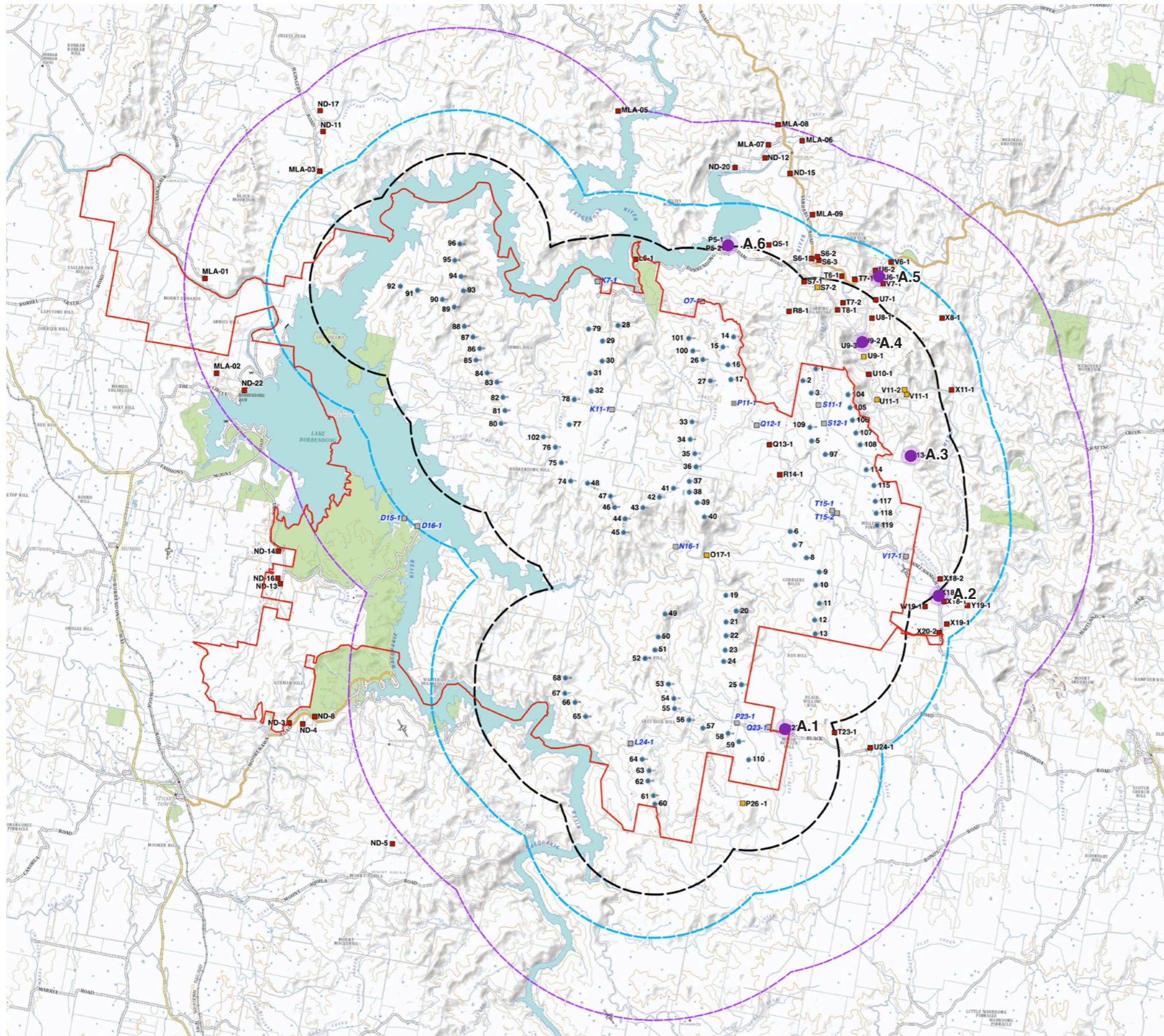
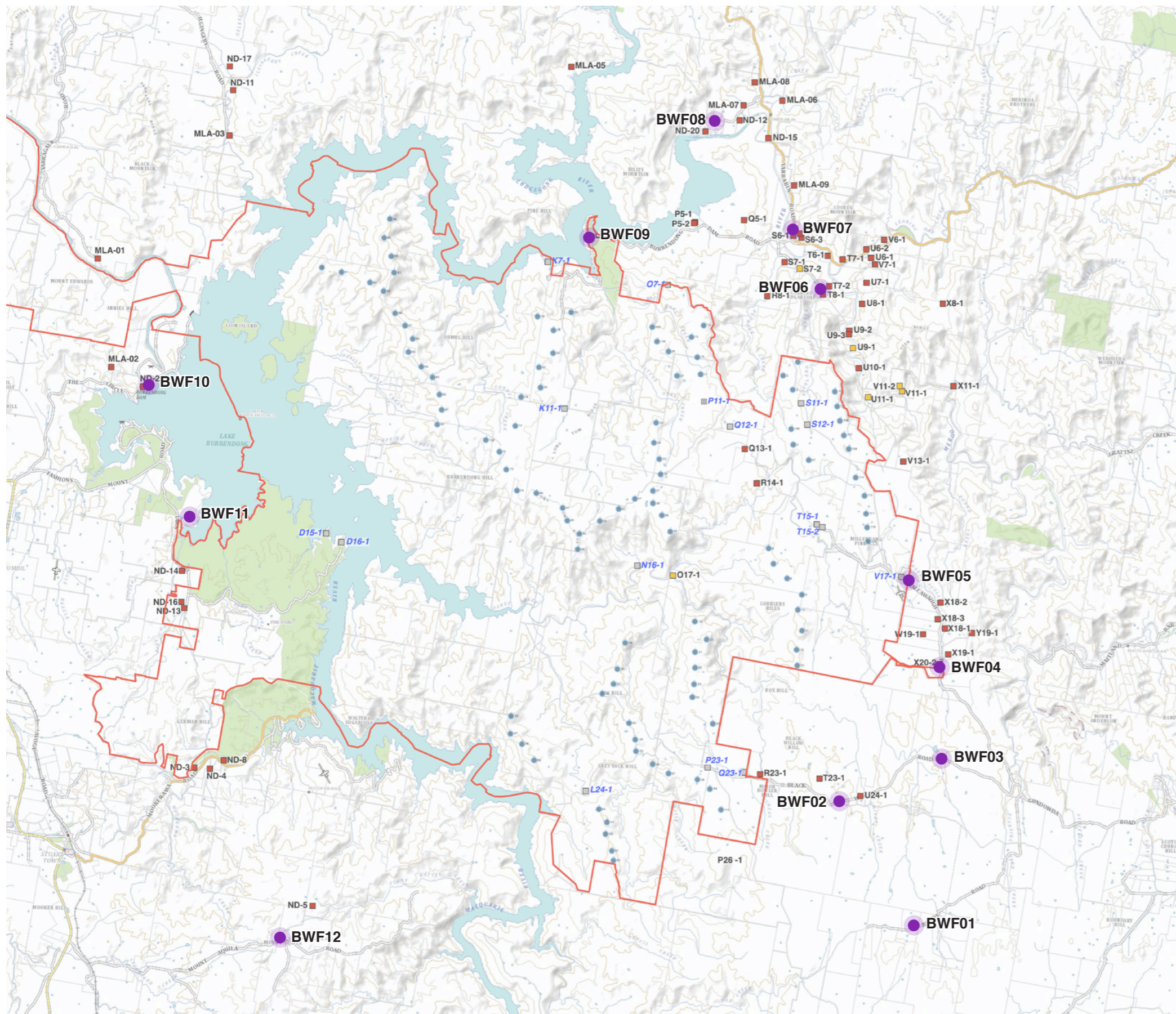


Figure 21 Preliminary Representative Dwelling Analysis Locations (Map Source: Six Maps)

Viewpoint Analysis Locations

Burrendong Wind Farm



LEGEND:

- Project Boundary
- Proposed 250m turbine Location
- Involved Dwelling
- Non-involved Dwelling
- Viewpoint Analysis Location (Public Location)
- Refer to Appendix B**

Figure 22 Preliminary Representative Viewpoint Analysis Locations (Map Source: Six Maps)

10

Summary and Next Steps

10.0 Summary and Next Steps

10.1 Summary of PVIA

This PVIA has been undertaken in accordance with the *Visual Assessment Bulletin*, and will be submitted in addition to the Scoping Report in the request for SEARs. The following provides a brief summary of the findings of the PVIA Report and outlines the steps that will be undertaken in the Landscape and Visual Impact Assessment (LVIA) which will form part of 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.
- The preliminary landscape character assessment identified seven (7) LCUs and applied preliminary scenic quality ratings to each of these LCUs ranging from Low - Moderate.
- Preliminary identification of LCUs have been assigned Scenic Quality Ratings.

Next Steps:

- Utilise the landscape character assessment to prepare a detailed Visual Baseline Study.
- Identification of any additional key features, key viewpoints valued by the community through consultation and undertake detailed assessment.
- Refine the LCUs and allow the community to provide feedback on the relative scenic quality ratings of LCUs.
- Continue community consultation in accordance with the Visual Assessment Bulletin.
- 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 Visual Magnitude Tool identified a total of **23 non-involved dwellings** within the black line of visual magnitude (3,350 m) and **21 non-involved dwellings** within the blue line of visual magnitude (3,350 - 4,950 m).
- The Multiple Wind Turbine Tool was applied to all dwellings within 8,000 m of the nearest proposed turbine, taking into account the Approved UWF. The Multiple Wind Turbine Tool identified 11 non-involved dwellings with turbines in more than two (2) 60 degree sectors.
 - Four (4) non-involved dwellings had turbines located within up to three (3) 60 degree sectors. (Note: One of these dwellings takes into account turbines associated with UWF). Detailed assessment using topography and aerial imagery found all four (4) dwellings would reduce the potential visibility to two (2) 60 sectors or less.
 - Four (4) non-involved dwellings had turbines located within up to four (4) 60 degree sectors (Note: all four take into account turbines associated with UWF).
 - One (1) weekender had turbines within up to five (5) 60 degree sectors. 3D assessment identified this would be reduced to one (1) sector.
 - Two (2) dwellings had turbines located within up to six (6) 60 degree sectors. 3D assessment identified this would be reduced to three (3) 60 degree sectors for both dwellings.

Next Steps:

- The LVIA will assess each 'sensitive receptor' in detail to take into account topography, vegetation and other screening factors.
- The LVIA will 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 has been prepared to illustrate the theoretical visibility of the Project and to assist in defining the visual catchment. Two Preliminary ZVI have been prepared: one from a blade tip height of 250 m and one from a hub height of 165 m to illustrate areas which require detailed assessment in the EIS Phase.

Next Steps:

- The LVIA will require further detailed assessment from areas identified as having potential visibility in the Preliminary ZVIs.
- Provide graphic representations of the Project using GIS technology including wire frame diagrams and photomontages.

10.1.5 Cumulative Visual Impacts

The Project is located within the NSW Central West Orana Renewable Energy Zone (REZ) and is located in close proximity to UWF (Approved in May 2021). 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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MAPS

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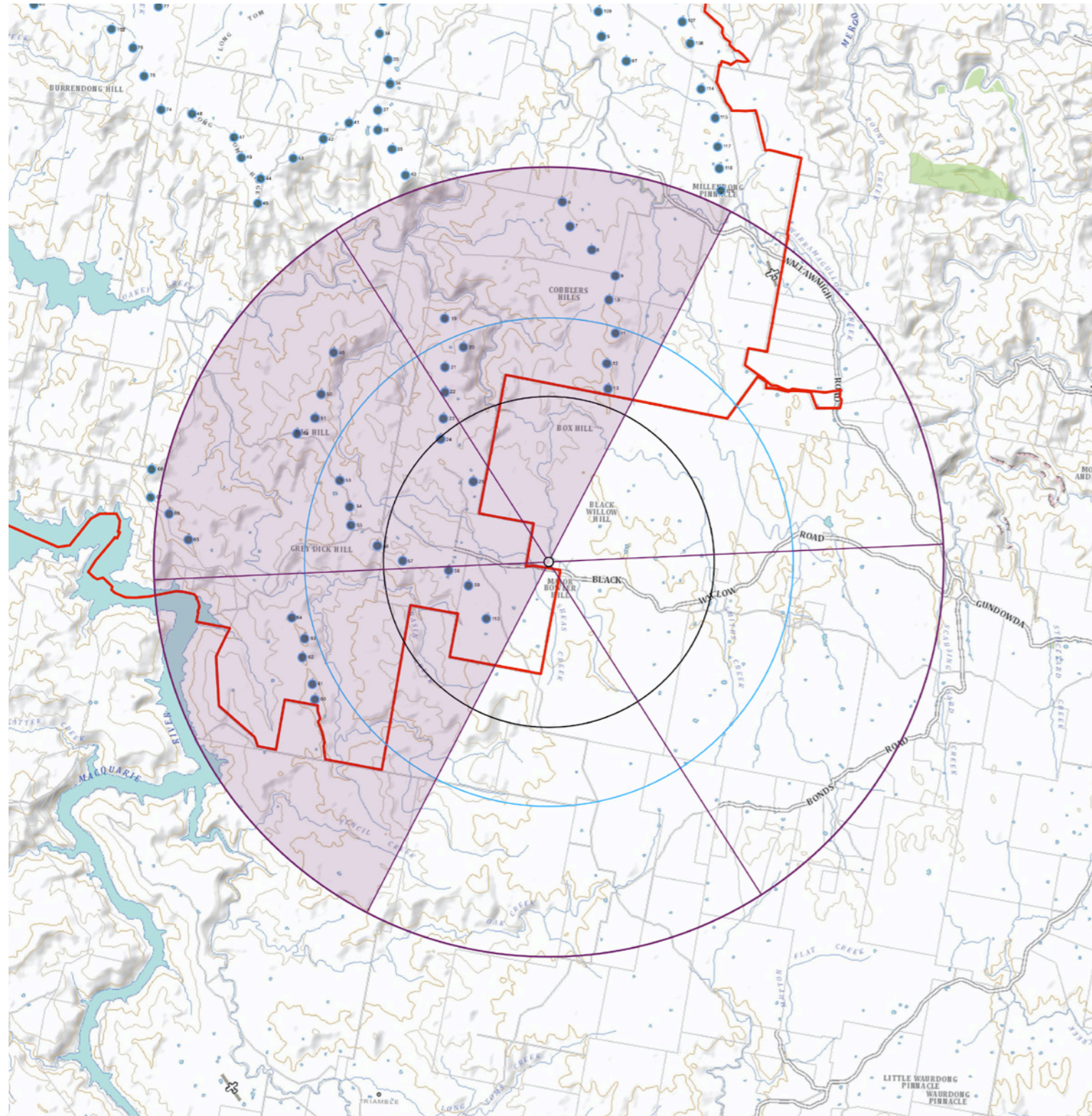
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A

Preliminary Dwelling
Assessments

A1. Dwelling R23-1 Preliminary Assessment Tools



LEGEND

Project Boundary	3,350 m from nearest turbine (Black Line)
Proposed Turbine Location	4,950 m from nearest turbine (Blue Line)
Proposed Turbine in excess of 8000 m from dwelling	8,000 m from nearest turbine
Involved Dwelling	60° sector
Non-involved Dwelling	60° sector with turbines

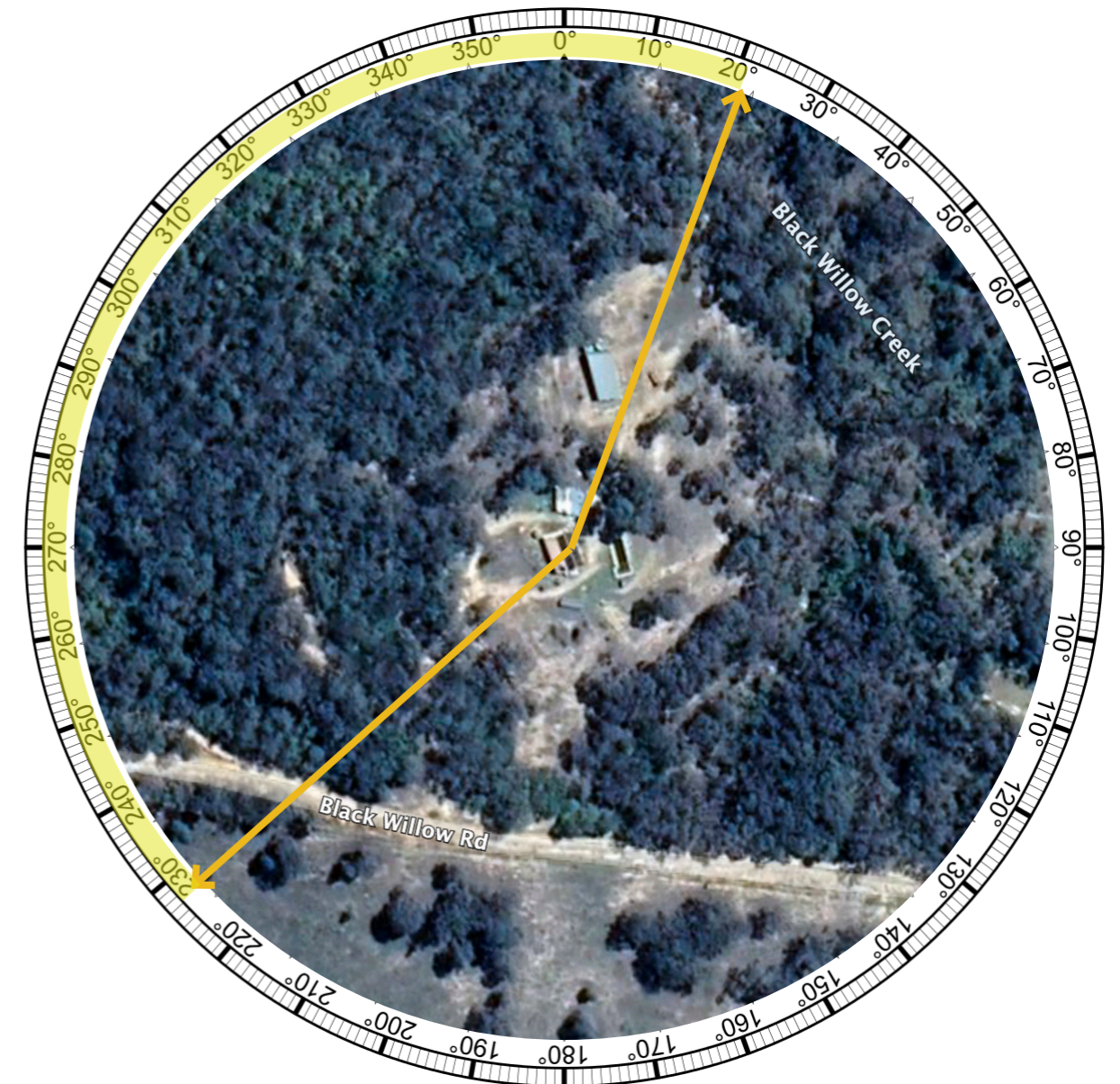
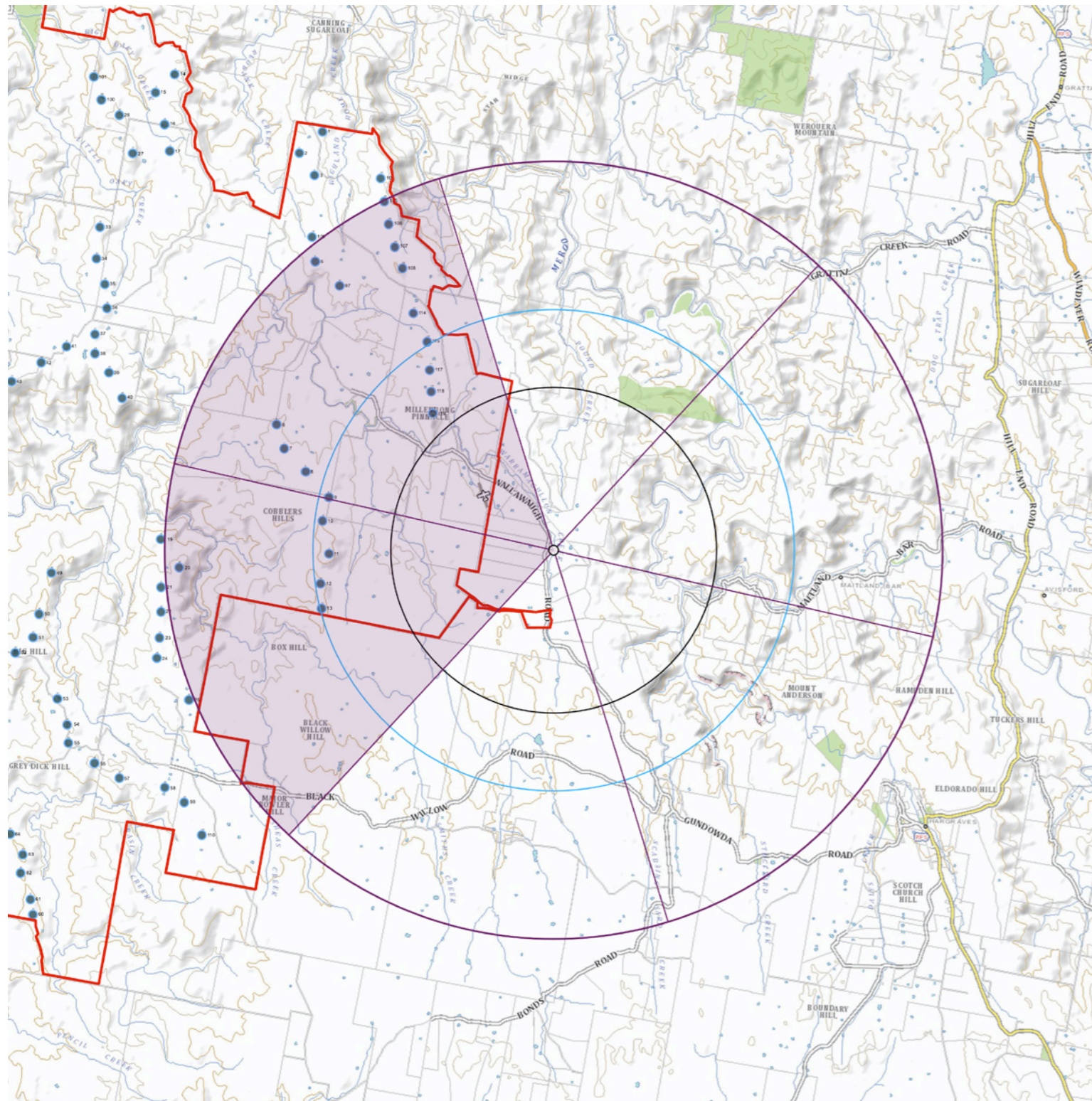


Figure A.1 Aerial Image Dwelling R23-1 (Source: Google Earth Imagery Date: 13.09.2018)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	1.695 km
Number of proposed turbines within Black Line (3,350 m):	6
Number of theoretical 60° sectors (Based on 2D assessment):	3 (Up to 180°)
Number of potentially visible turbines:	33 turbines 33 at tip 25 at hub

A2. Dwelling X18-1 Preliminary Assessment Tools



LEGEND

Project Boundary	3,350 m from nearest turbine (Black Line)
Proposed Turbine Location	4,950 m from nearest turbine (Blue Line)
Proposed Turbine in excess of 8000 m from dwelling	8,000 m from nearest turbine
Involved Dwelling	60° sector
Non-involved Dwelling	60° sector with turbines

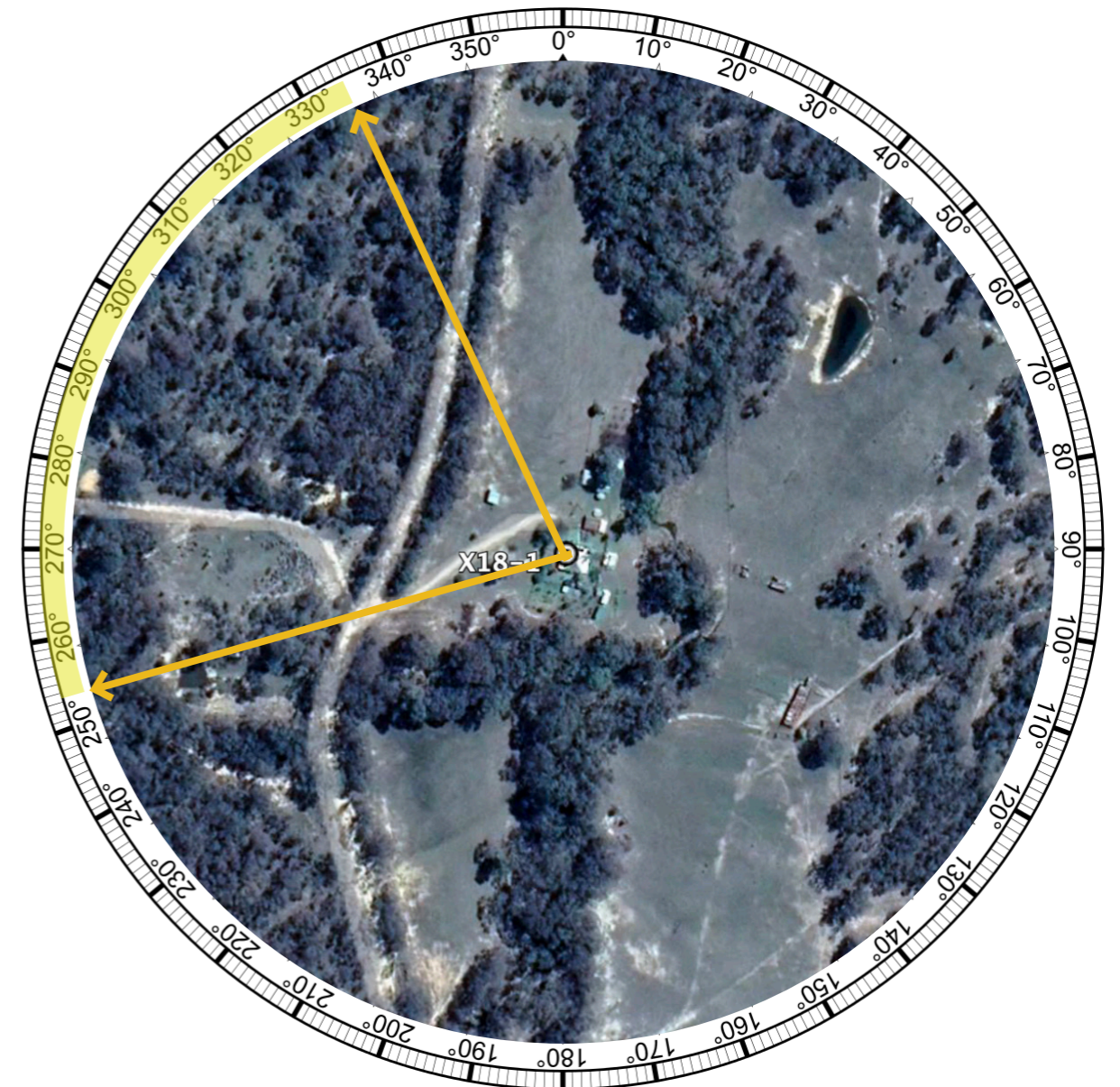
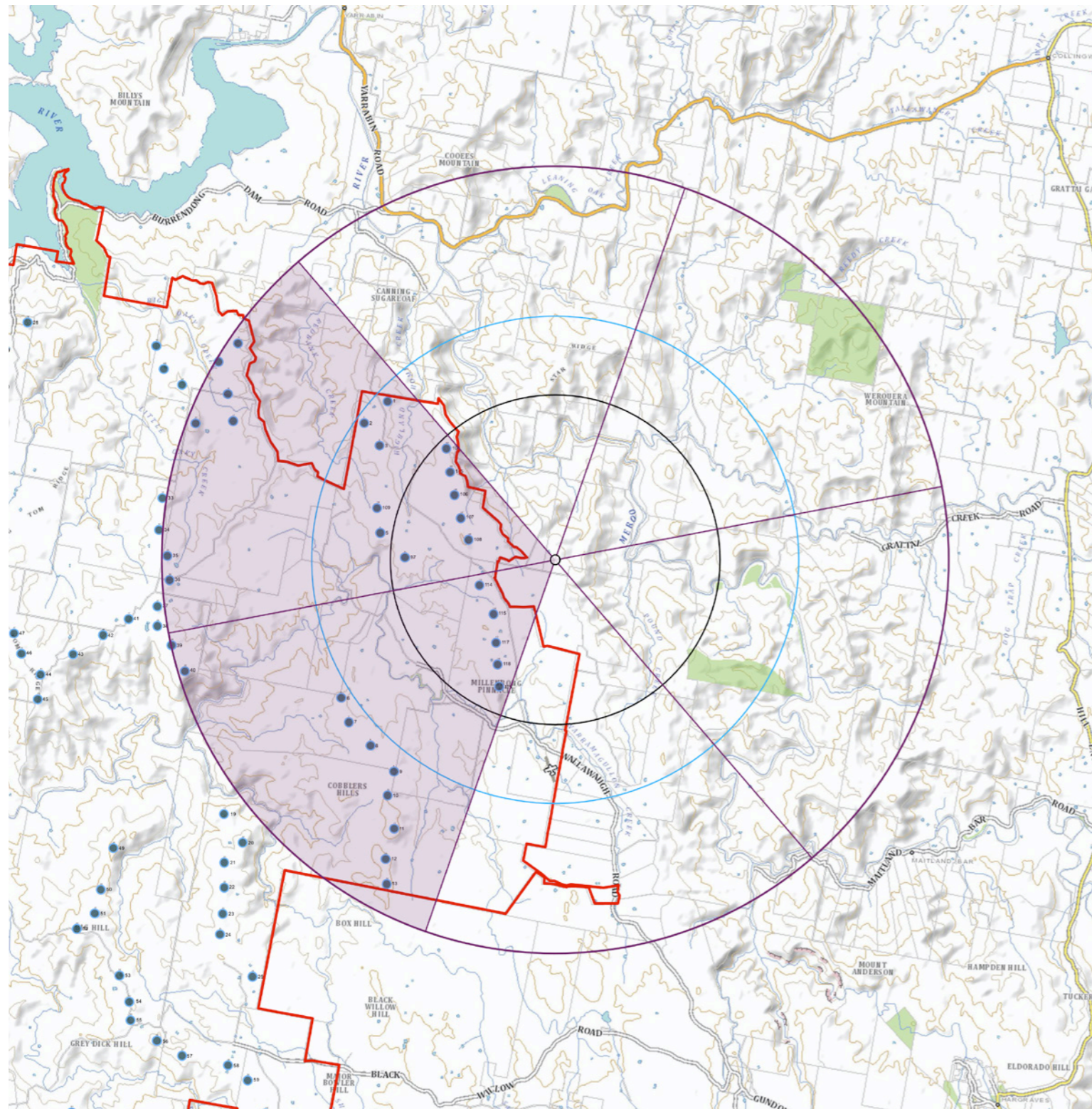


Figure A.2 Aerial Image Dwelling X18-1 (Source: Google Earth Imagery Date: 18.10.2019)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	3.778 km
Number of proposed turbines within Black Line (3,350 m):	NIL
Number of theoretical 60° sectors (Based on 2D assessment):	Two (2)
Number of potentially visible turbines:	20 19 at hub 1 blade

A3. Dwelling V13-1 Preliminary Assessment Tools



LEGEND

Project Boundary	3,350 m from nearest turbine (Black Line)
Proposed Turbine Location	4,950 m from nearest turbine (Blue Line)
Proposed Turbine in excess of 8000 m from dwelling	8,000 m from nearest turbine
Involved Dwelling	60° sector
Non-involved Dwelling	60° sector with turbines

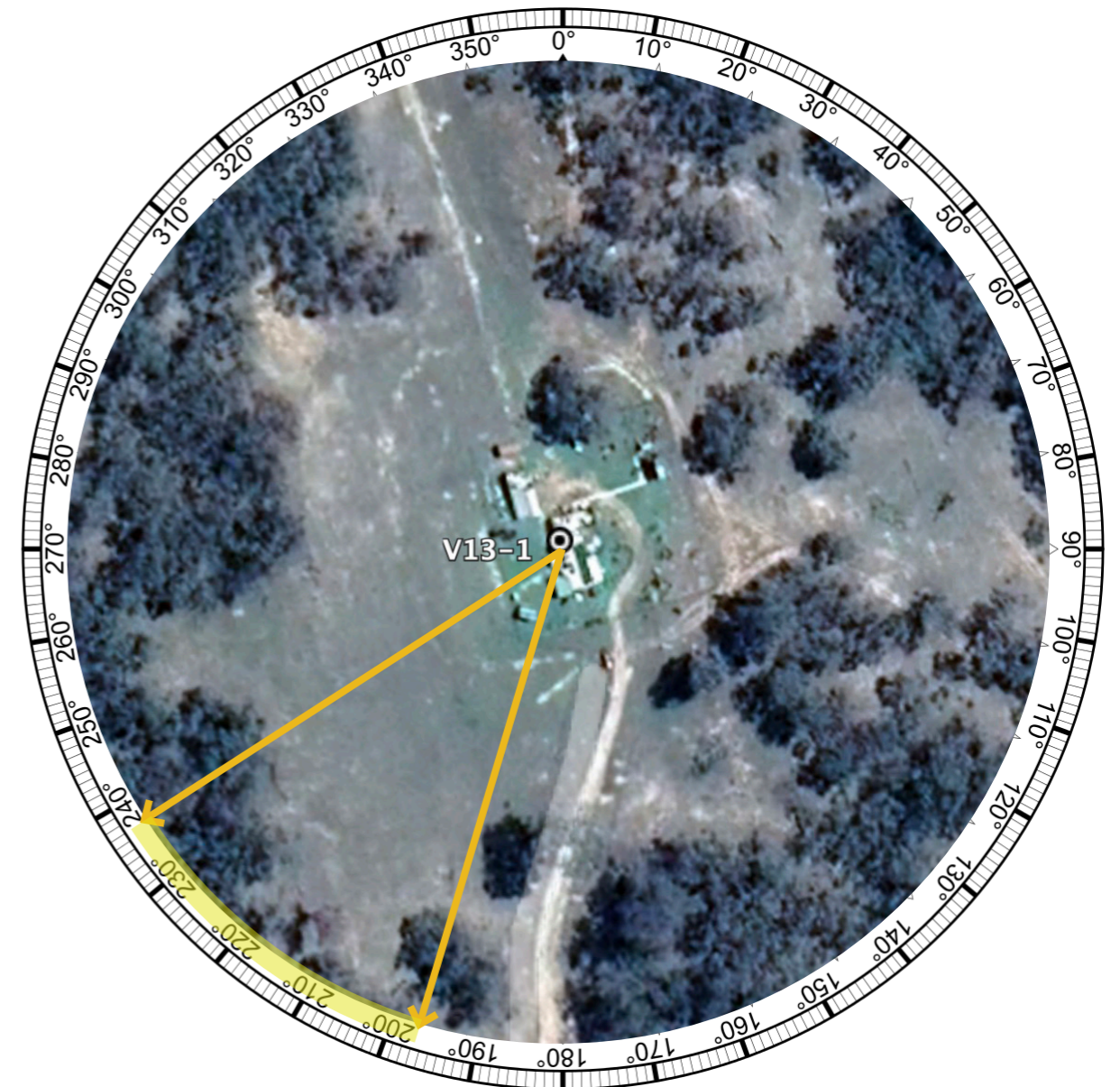
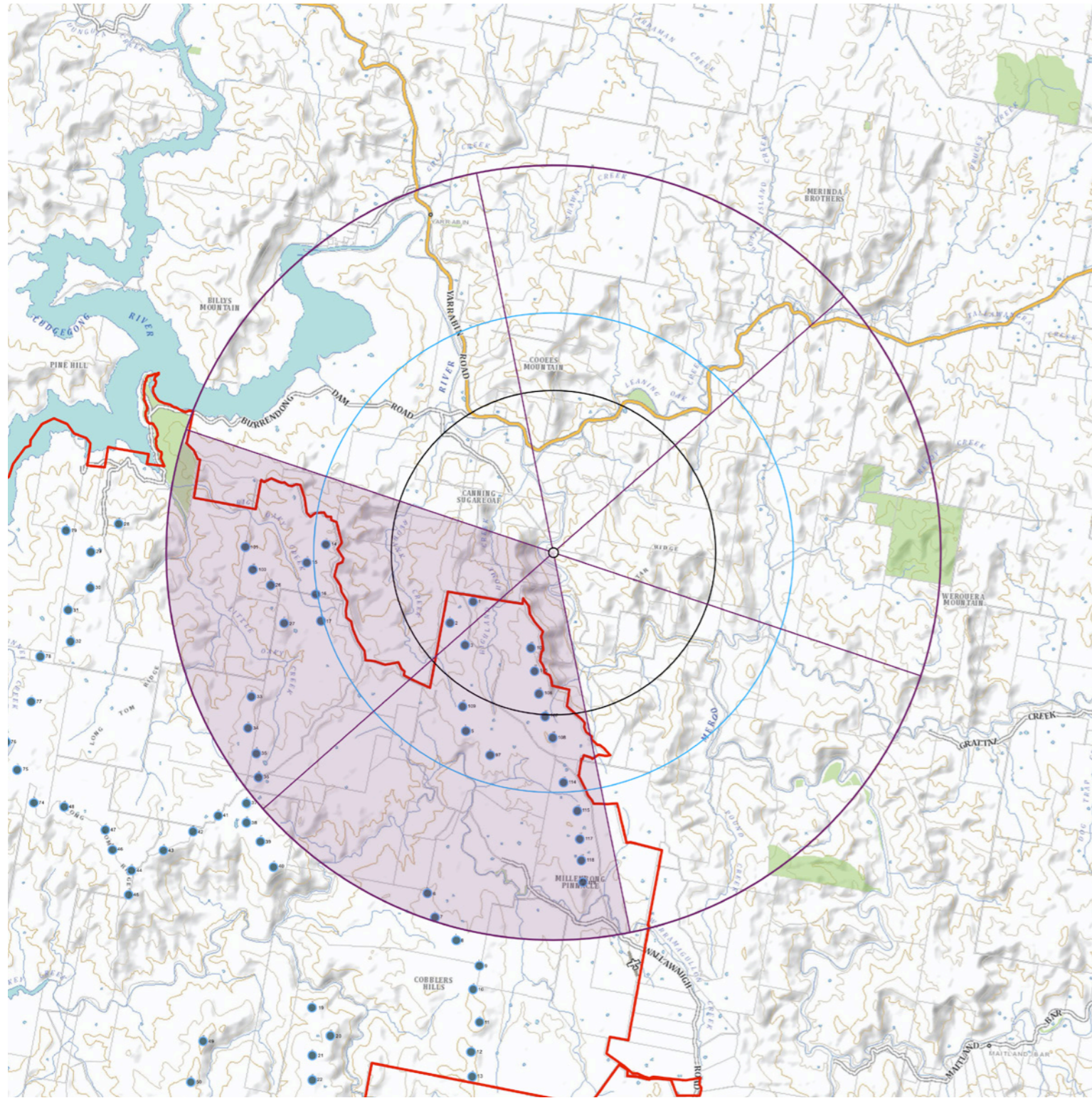


Figure A.3 Aerial Image Dwelling V13-1 (Source: Google Earth Imagery Date: 18.10.2019)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	1.623 km (114)
Number of proposed turbines within Black Line (3,350 m):	11
Number of theoretical 60° sectors (Based on 2D assessment):	One (1)
Number of potentially visible turbines:	4 4 hubs, 0 blades

A4. Dwelling U9-2 Preliminary Assessment Tools



LEGEND

Project Boundary	3,350 m from nearest turbine (Black Line)
Proposed Turbine Location	4,950 m from nearest turbine (Blue Line)
Proposed Turbine in excess of 8000 m from dwelling	8,000 m from nearest turbine
Involved Dwelling	60° sector
Non-involved Dwelling	60° sector with turbines

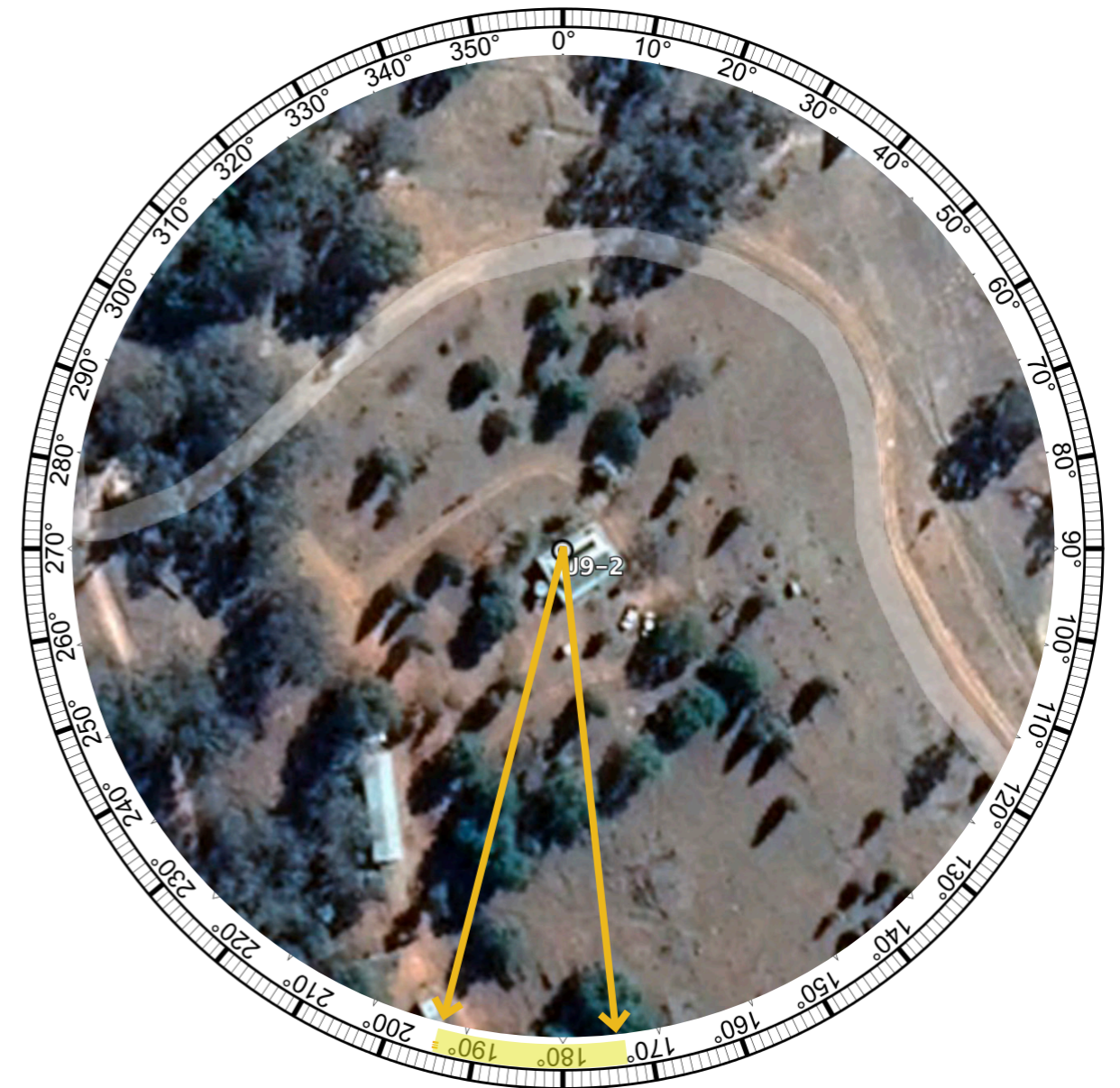
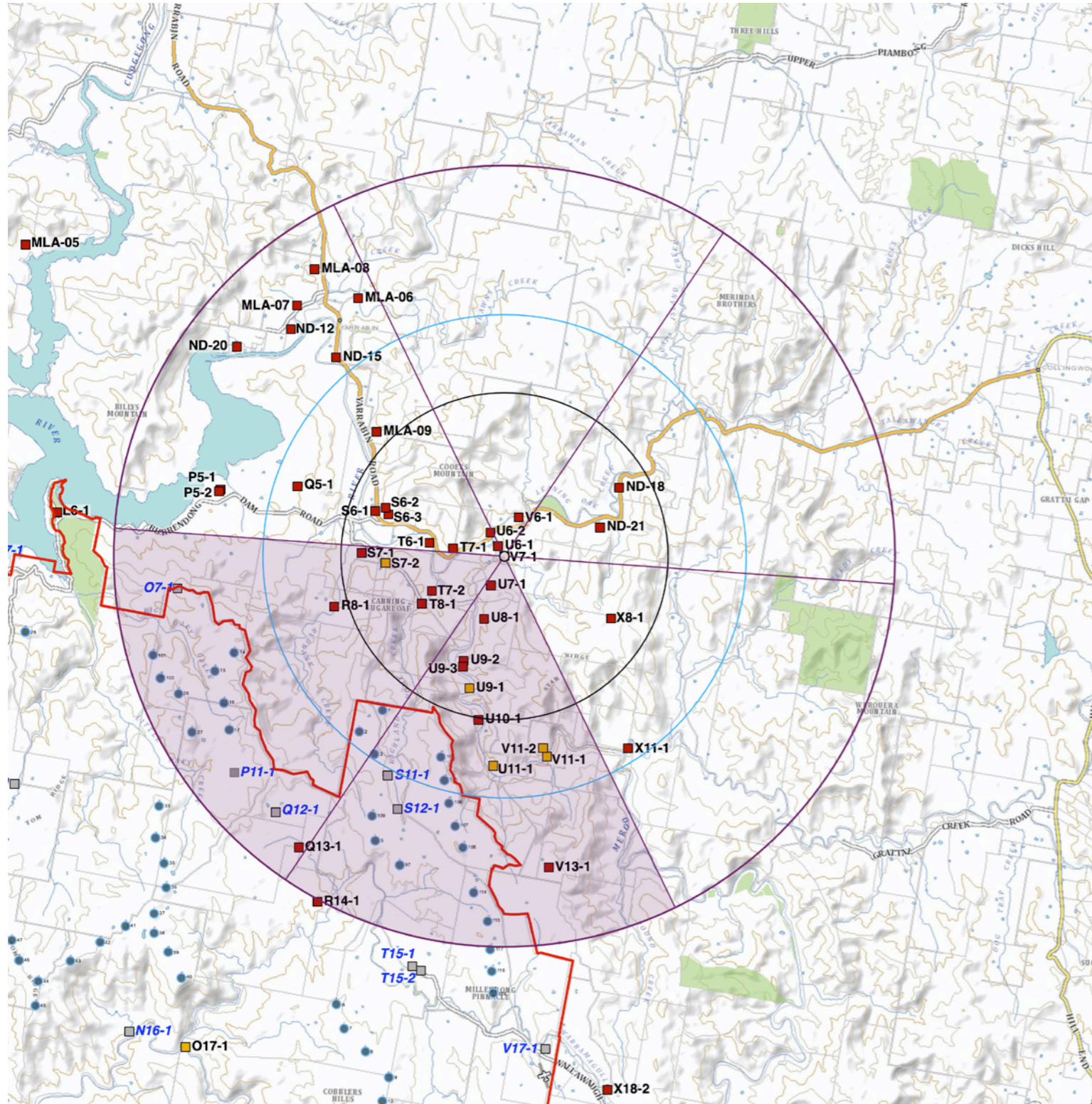


Figure A.4 Aerial Image Dwelling U9-2 (Source: Google Earth Imagery Date: 18.10.2019)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	1.944 km
Number of proposed turbines within Black Line (3,350 m):	6
Number of theoretical 60° sectors (Based on 2D assessment):	Two (2)
Number of potentially visible turbines:	6 3 hubs 3 blades

A5. Dwelling V7-1 Preliminary Assessment Tools



LEGEND

Project Boundary	3,350 m from nearest turbine (Black Line)
Proposed Turbine Location	4,950 m from nearest turbine (Blue Line)
Proposed Turbine in excess of 8000 m from dwelling	8,000 m from nearest turbine
Involved Dwelling	60° sector
Non-involved Dwelling	60° sector with turbines

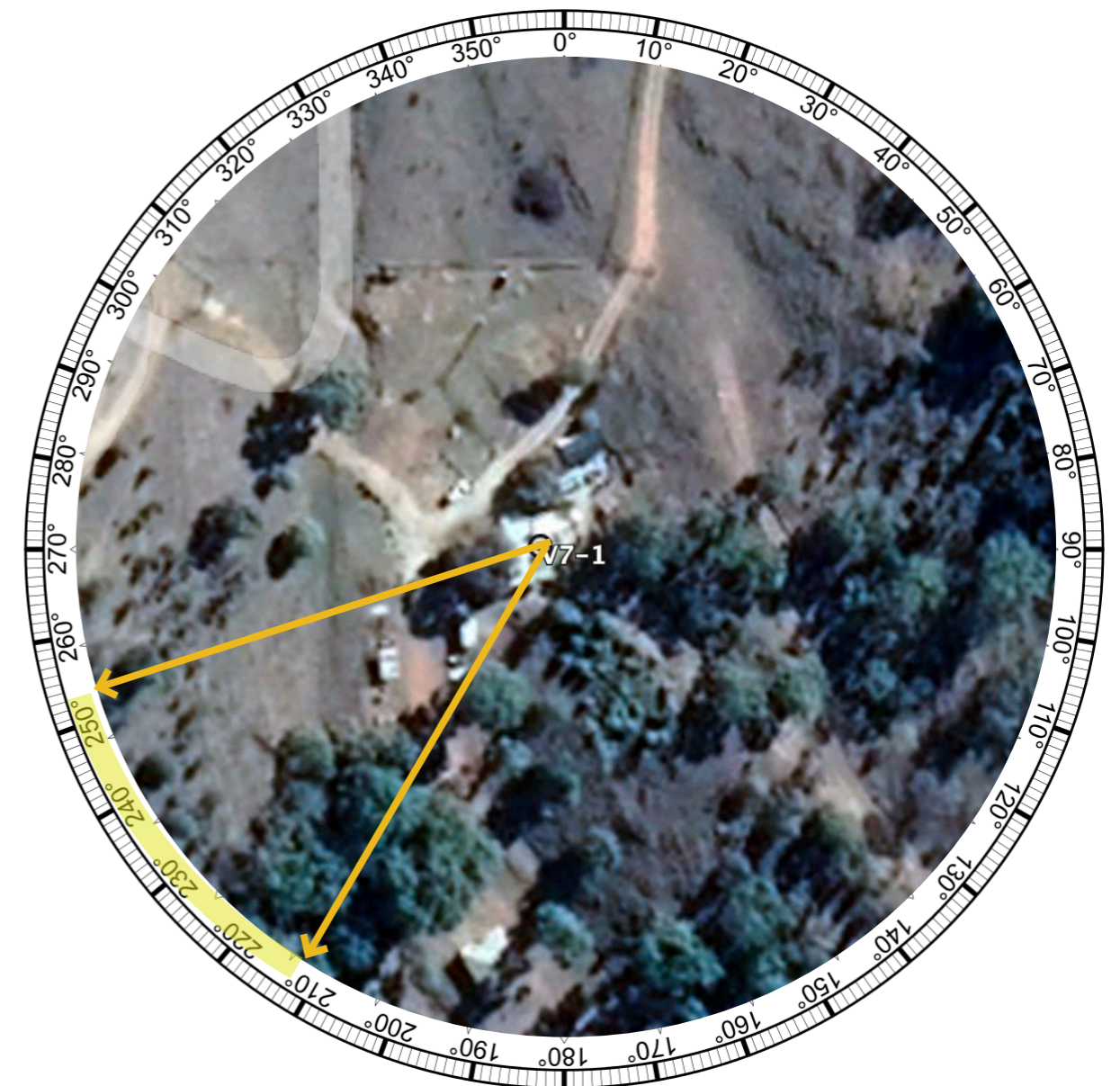
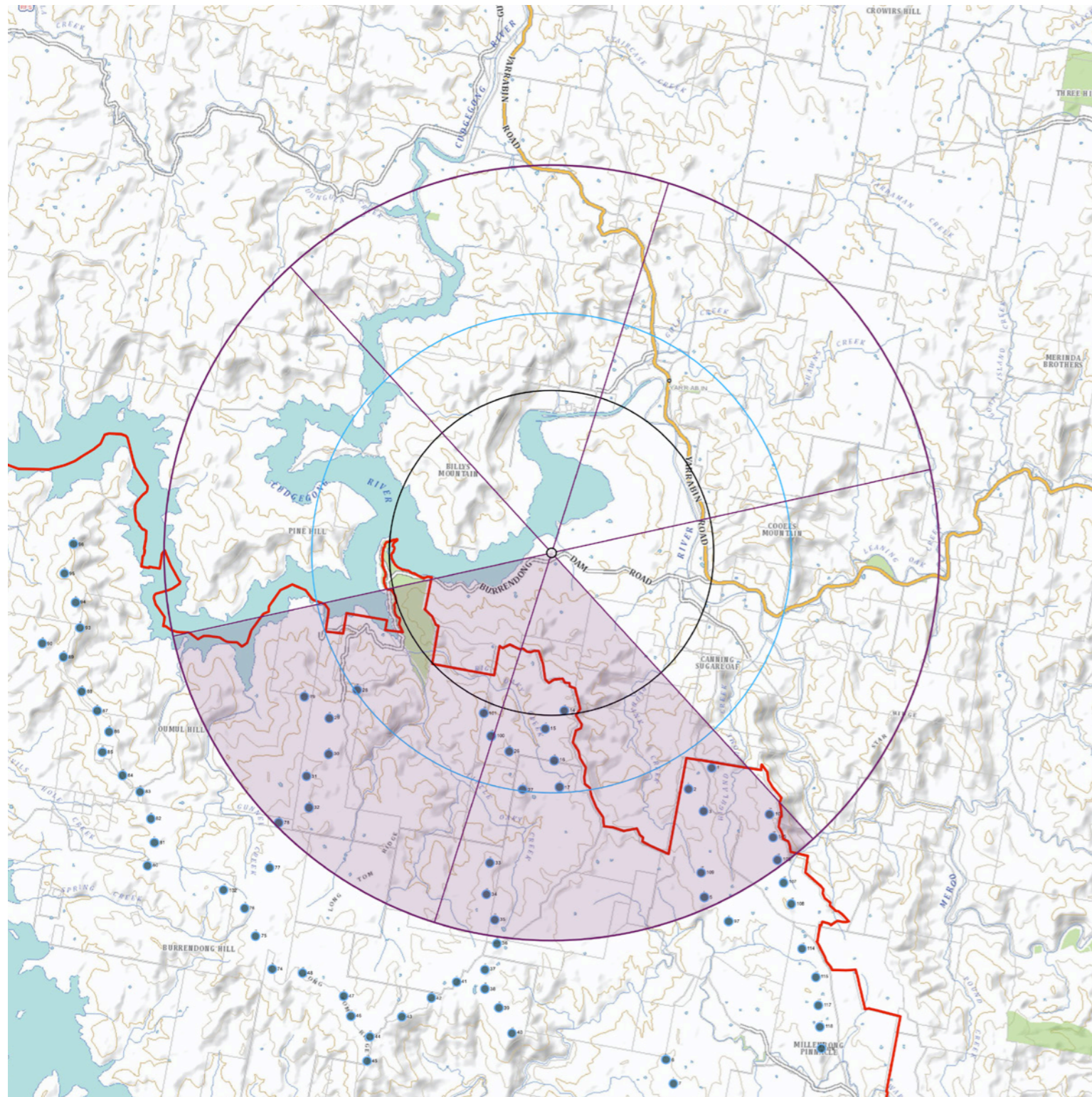


Figure A.5 Aerial Image Dwelling V7-1 (Source: Google Earth Imagery Date: 18.10.2019)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	4.024 km
Number of proposed turbines within Black Line (3,350 m):	NIL
Number of theoretical 60° sectors (Based on 2D assessment):	Two (2)
Number of potentially visible turbines:	11 5 at hub 6 blades

A6. Dwelling P5-2 Preliminary Assessment Tools



LEGEND

Project Boundary	3,350 m from nearest turbine (Black Line)
Proposed Turbine Location	4,950 m from nearest turbine (Blue Line)
Proposed Turbine in excess of 8000 m from dwelling	8,000 m from nearest turbine
Involved Dwelling	60° sector
Non-involved Dwelling	60° sector with turbines

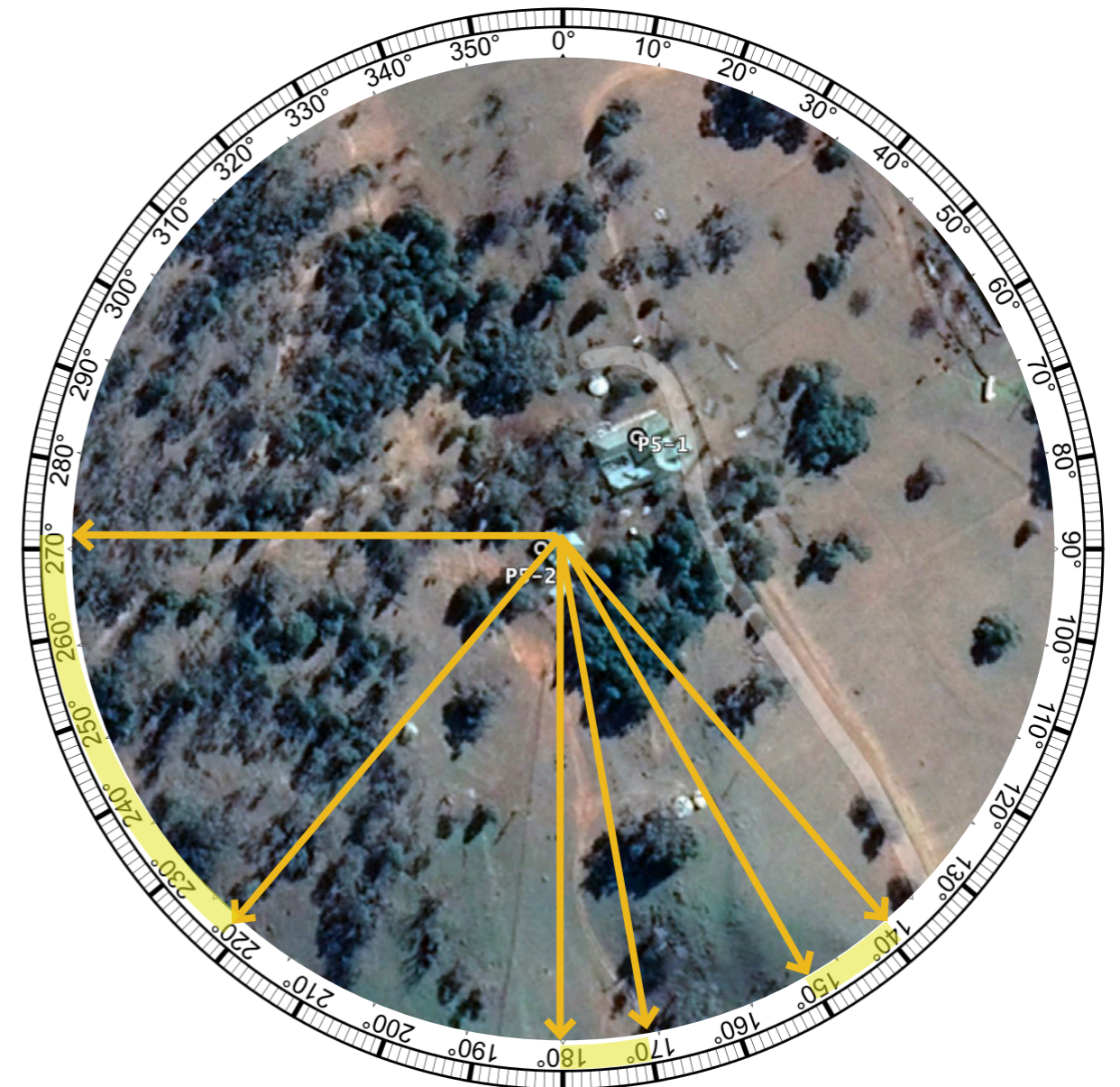


Figure A.6 Aerial Image Dwelling P5-2 (Source: Google Earth Imagery Date: 18.10.2019)

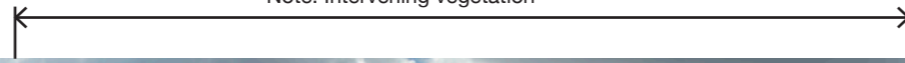
Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	3.318 km
Number of proposed turbines within Black Line (3,350 m):	1
Number of theoretical 60° sectors (Based on 2D assessment):	Two (2)
Number of potentially visible turbines:	30 24 hubs, 6 blades

B

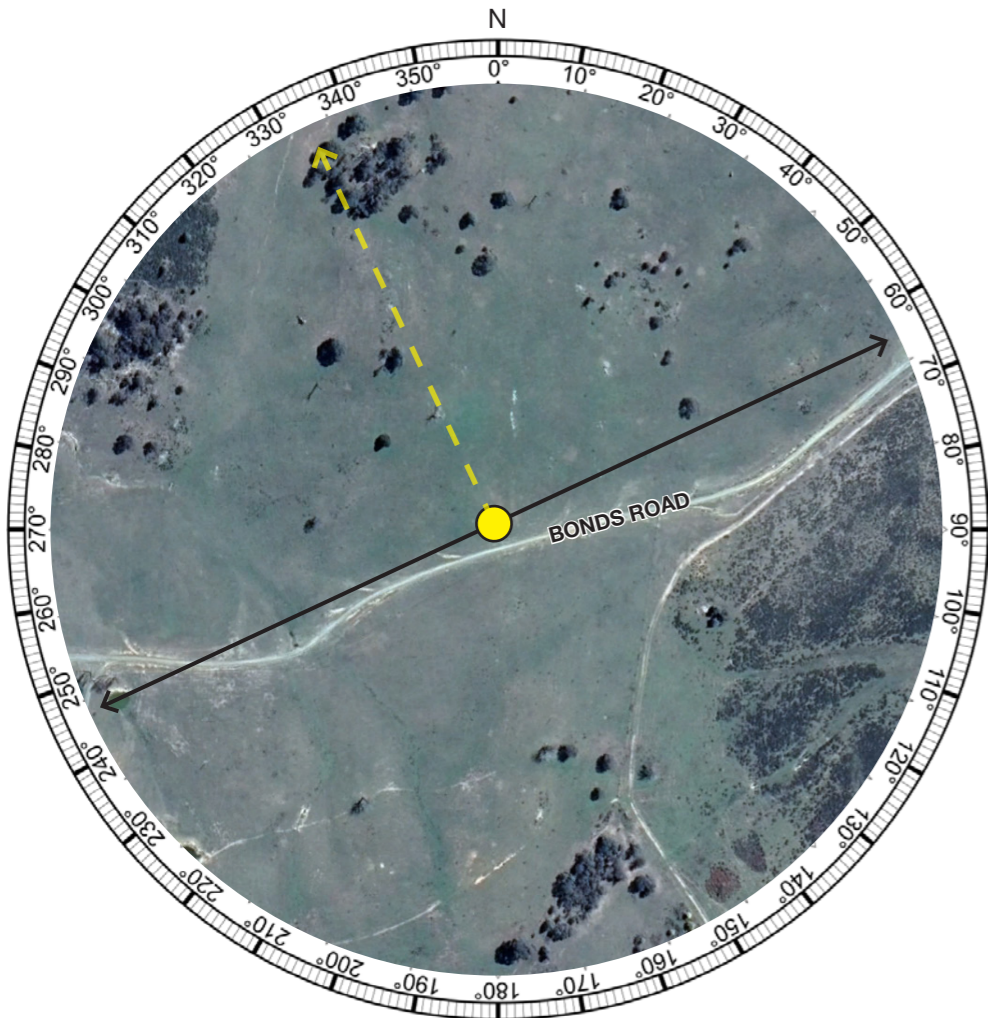
Preliminary Viewpoint
Assessments

BWF01 Bonds Road, Hargraves.

Approximate extent of visible wind turbines
 Note: Intervening vegetation



Existing View



Aerial Image BWF01 (Aerial Image Source: Six Maps)

VIEWPOINT BWF01

Viewpoint Summary:	
Location:	Elevation:
Bonds Road, Hargraves	885m
Coordinates:	Viewing Direction:
32°49'22.63"S 149°22'18.91"E	Northwest
Distance to nearest turbine:	Visibility Distance Zone:
8.03km	Near Background (NB)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU02 Yarrabin / Hargrave Farmlands	Moderate

Existing Landscape Character Description:
View from Bonds Road, approximately 8 kilometres south of the Project Site. Bonds Road is an unsealed minor road which provides access to several isolated rural dwellings. Land in this area is largely cleared for grazing and slightly undulating. Views extend to the vegetated hills to the north.
Potential Visual Impact:
From this location, it is likely views to the Project would be available to the north of the viewpoint, in excess of 8 kilometres to the north of this viewpoint. Existing vegetation is likely to fragment views to the turbines.

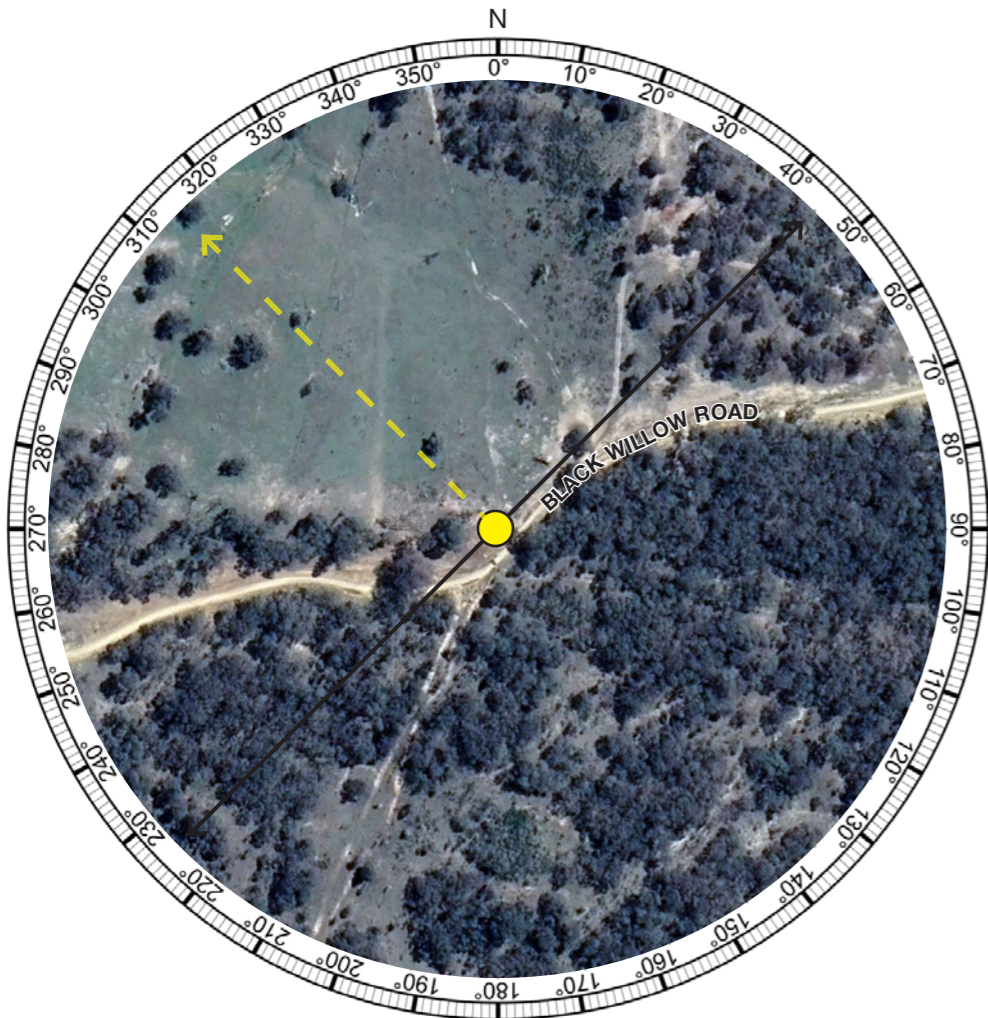
BWF02 Black Willow Road, Hargraves.

Note: turbines will be fragmented by roadside vegetation typical of Black Willow Road.

Approximate extent of visible wind turbines



Existing View



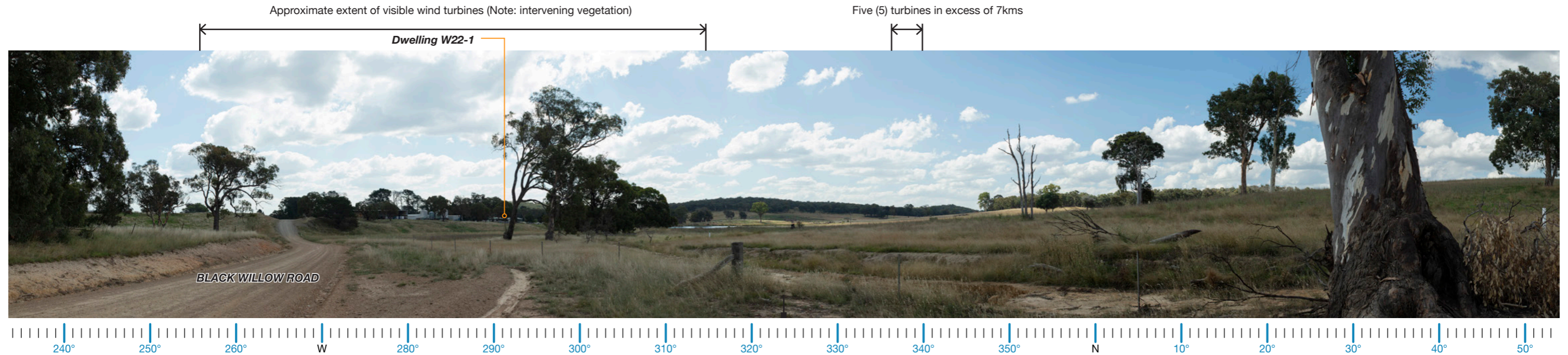
VIEWPOINT BWF02

Viewpoint Summary:	
Location:	Elevation:
Black Willow Road, Hargraves	834m
Coordinates:	Viewing Direction:
32°47'14.22"S 149°20'40.59"E	Northwest
Distance to nearest turbine:	Visibility Distance Zone:
3.88 km	Near Middleground (NM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU02 Yarrabin / Hargrave Farmlands	Moderate

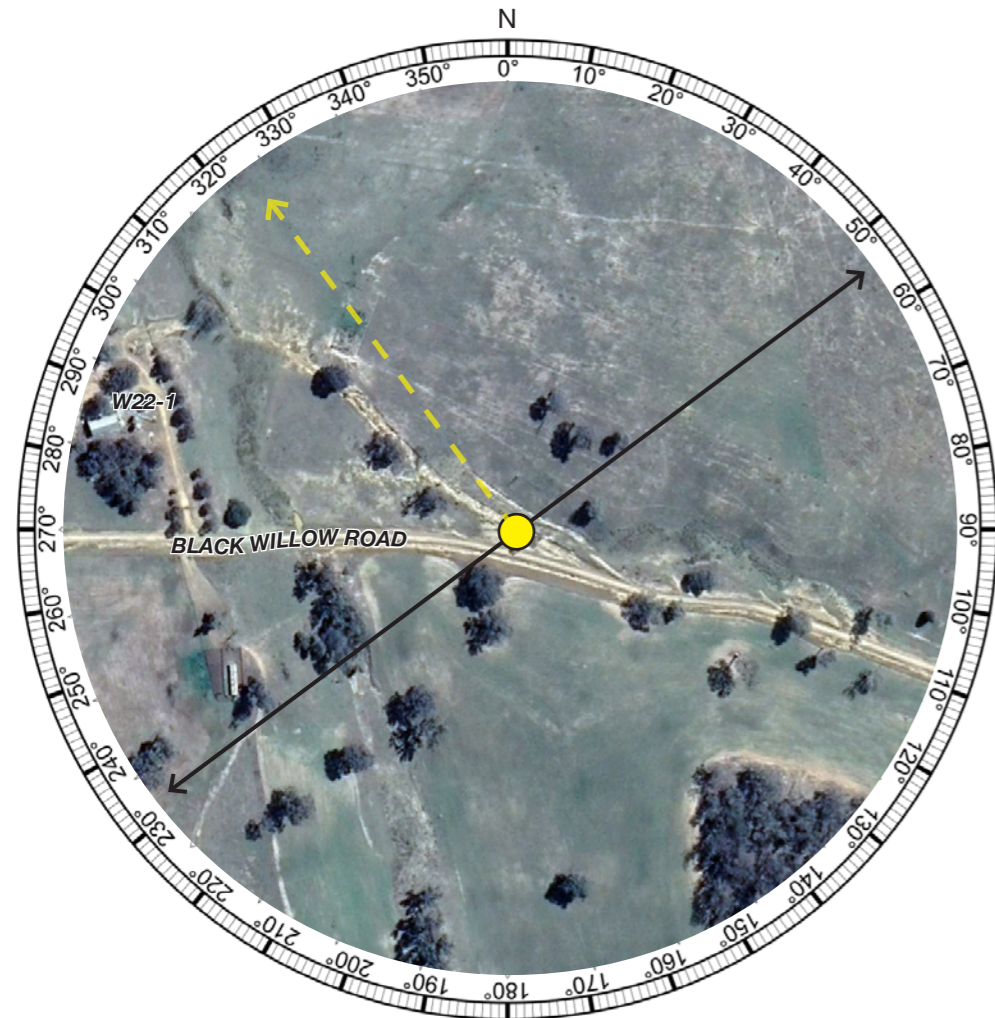
Existing Landscape Character Description:	
View from a cleared section of Black Willow Road, approximately 3.8 kilometres east of the nearest turbine. Black Willow Road is an unsealed minor road which provides access to isolated rural dwellings. The undulating land in this area is a combination of vegetated hills with foothills areas that have been cleared for grazing. Roadside vegetation typical of Black Willow Road is visible to the west in the viewpoint. Views extend to the vegetated hills to the north.	
Potential Visual Impact:	
From this location, it is likely views to the nearest turbines will be screened by vegetation to the west. The nearest visible turbine Project will be approximately 4.6 km to the NNW of this viewpoint.	

Aerial Image BWF02 (Aerial Image Source: Six Maps)

BWF03 Black Willow Road, Hargraves



Existing View



Aerial Image BWF03 (Aerial Image Source: Six Maps)

VIEWPOINT BWF03

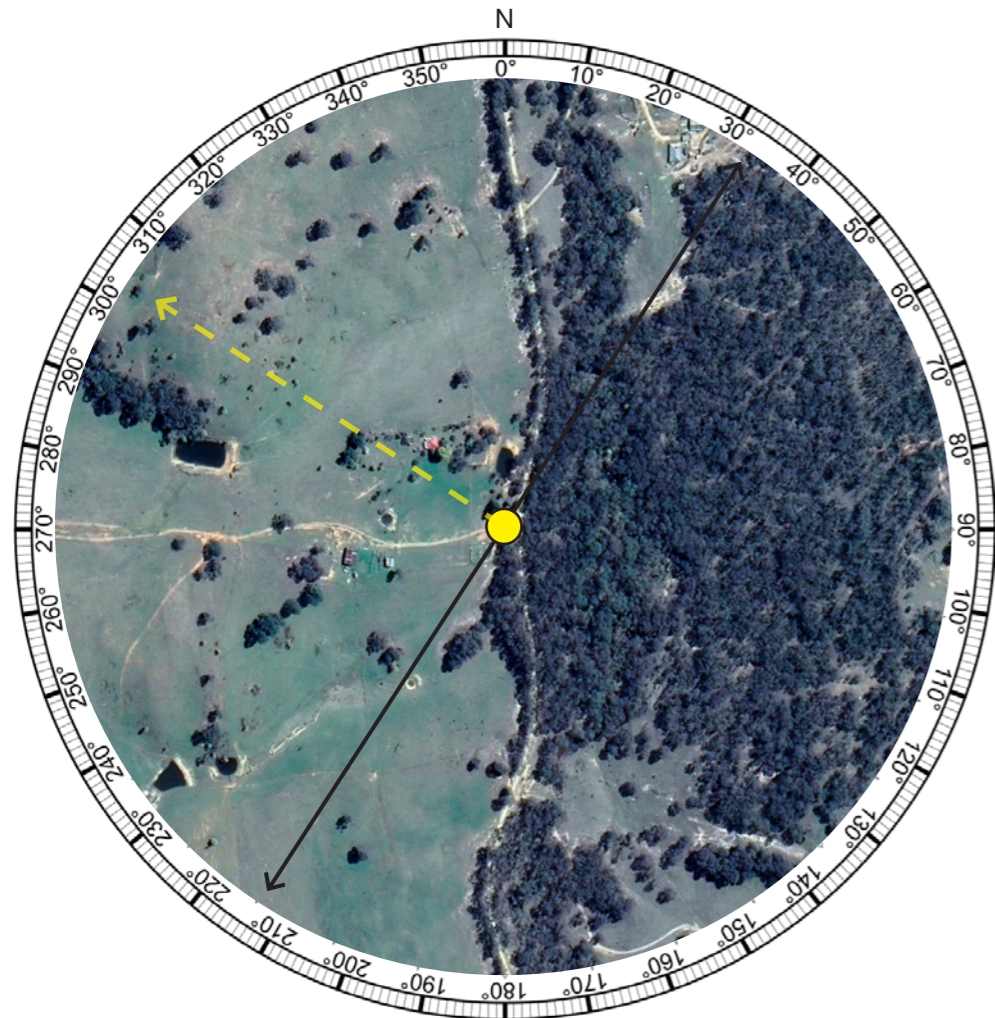
Viewpoint Summary:	
Location:	Elevation:
Black Willow Road, Hargraves	807m
Coordinates:	Viewing Direction:
32°46'26.48"S 149°22'48.72"E	Northwest
Distance to nearest turbine:	Visibility Distance Zone:
5.63km	Far Middleground (FM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU02 Yarrabin / Hargrave Farmlands	Moderate

Existing Landscape Character Description:
View from Black Willow Road, approximately 330 metres south east of Dwelling W22-1 and W23-1. Land in this areas is undulating and predominately cleared, with some scattered remnant vegetation and dense vegetation visible on the ridge to the north west. Dense wind break planting is visible surrounding Dwellings W22-1 and W23-1.
Potential Visual Impact:
From this location, views to the Project will be available in excess of 5 kilometres to the west. Existing vegetation associated with Dwellings W22-1 and W23-1 is likely to fragment views to the Project. Approximately five (5) turbines will be visible to the NNW, in excess of 7 kilometres from the viewpoint.

BWF04 Wallawaugh Road, Hargraves



Existing View



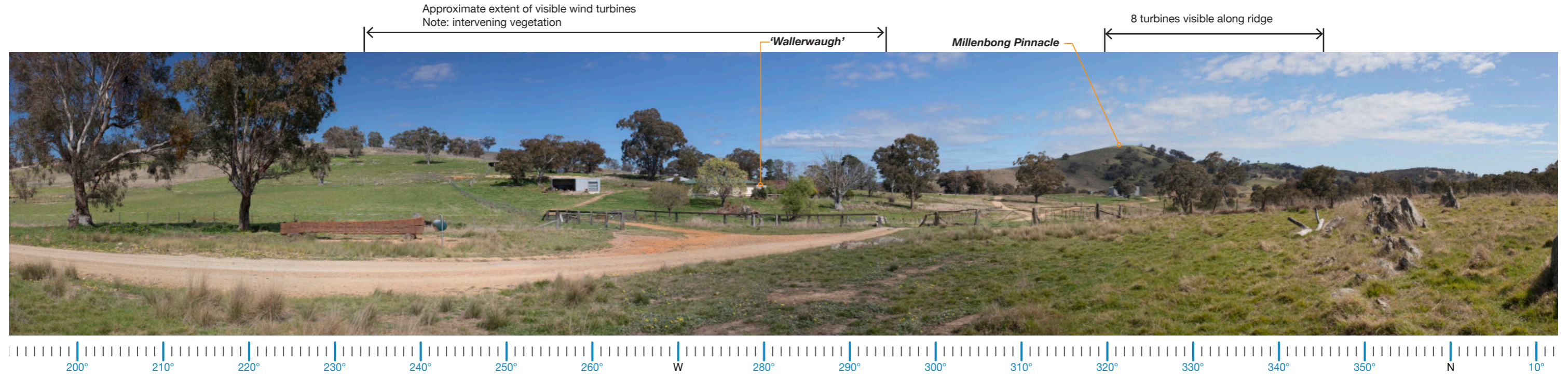
Aerial Image BWF04 (Aerial Image Source: Six Maps)

VIEWPOINT BWF04

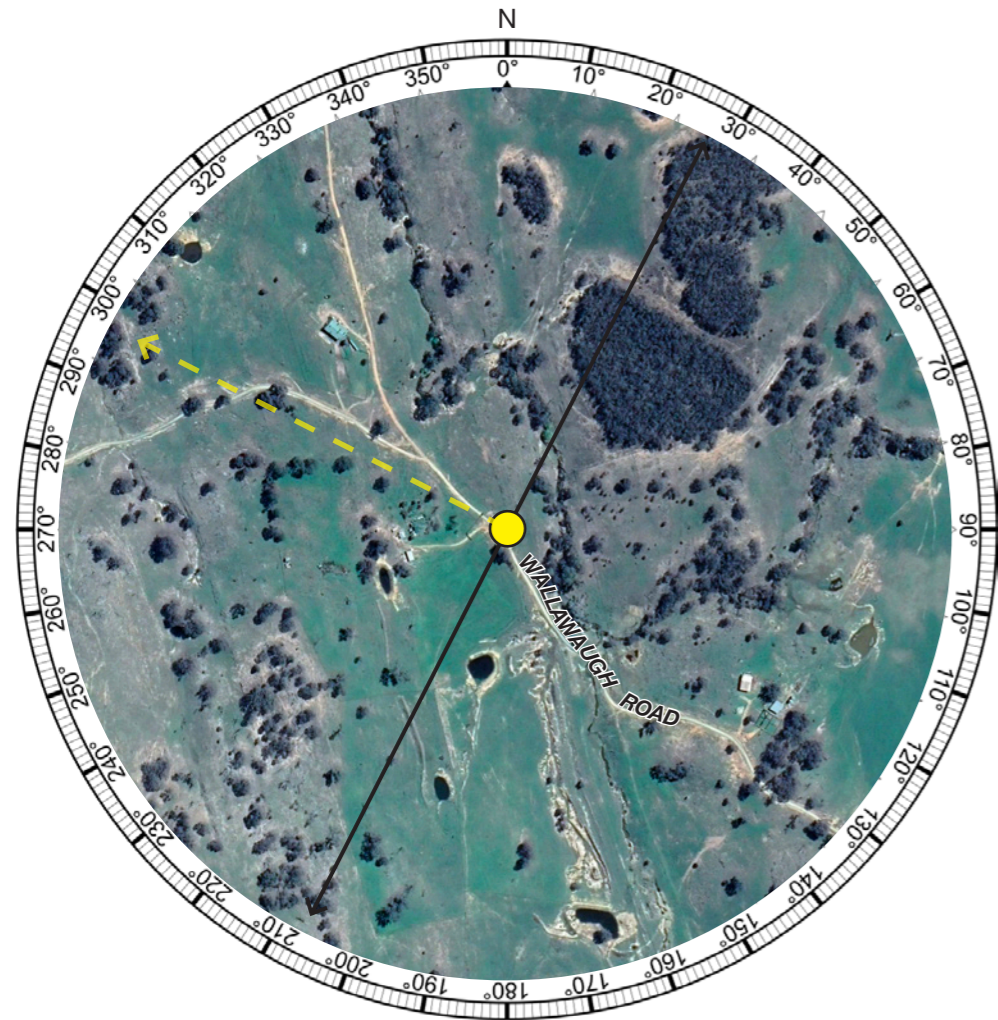
Viewpoint Summary:	
Location:	Elevation:
460 Wallawaugh Rd, Hargraves.	755m
Coordinates:	Viewing Direction:
32°44'51.28"S 149°22'43.36"E	Northwest
Distance to nearest turbine:	Visibility Distance Zone:
4.68km	Far Middleground (FM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU02 Yarrabin / Hargrave Farmlands	Low - Moderate

Existing Landscape Character Description:
View from Wallawaugh Road, at the entry to Dwelling X20-2. Land in this area is characterised by undulating farmland which has been cleared in some areas, however dense vegetation is still evident in some areas.
Potential Visual Impact:
Wallawaugh Road has remnant roadside vegetation containing views towards the Project for the most part. Views to the Project are unlikely to be available from this location due to the roadside vegetation.

BWF05 Wallawaugh Road, Hargraves



Existing View



Aerial Image BWF05 (Aerial Image Source: Six Maps)

VIEWPOINT BWF05

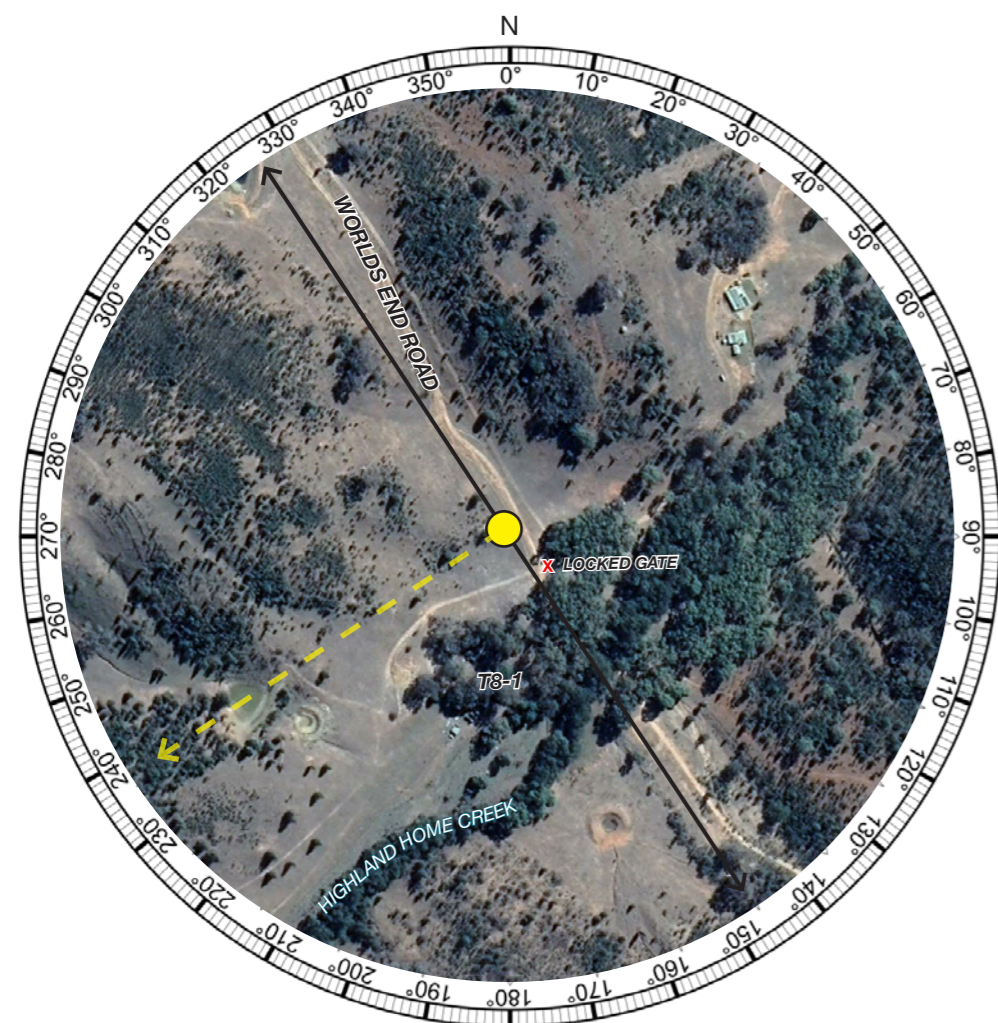
Viewpoint Summary:	
Location:	Elevation:
Wallawaugh Road, Hargraves.	694m
Coordinates:	Viewing Direction:
32°43'10.37"S 149°21'36.89"E	Northwest
Distance to nearest turbine:	Visibility Distance Zone:
1.18km	Near Middleground (NM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU02: Yarrabin / Hargraves Farmlands	Low - Moderate

Existing Landscape Character Description:
View from Wallawaugh Road, approximately 130 metres south east of the intersection with Highland Home Road. Land in this areas is undulating, with views contained by a rise in topography to the west and steep rise to the north west associated with Millenbong Pinnacle. Wallerwaugh Homestead is visible in the foreground.
Potential Visual Impact:
From this location turbines associated with the Project will be a visible feature in the landscape to the north west. Views to turbines to the west are likely to be fragmented by vegetation in the foreground. Refer to Photomontage 05 (Appendix C).

BWF06 Worlds End Rd, Yarrabin



Existing View



VIEWPOINT BWF06

Viewpoint Summary:

Location:	Elevation:
Worlds End Rd, Yarrabin. Dwelling T8-1	418m
Coordinates:	Viewing Direction:
32° 38'20.40"S 149°20'5.83"E	Southwest
Distance to nearest turbine:	Visibility Distance Zone:
2.41km	Near Middleground (NM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU07: Worlds End	Moderate

Existing Landscape Character Description:

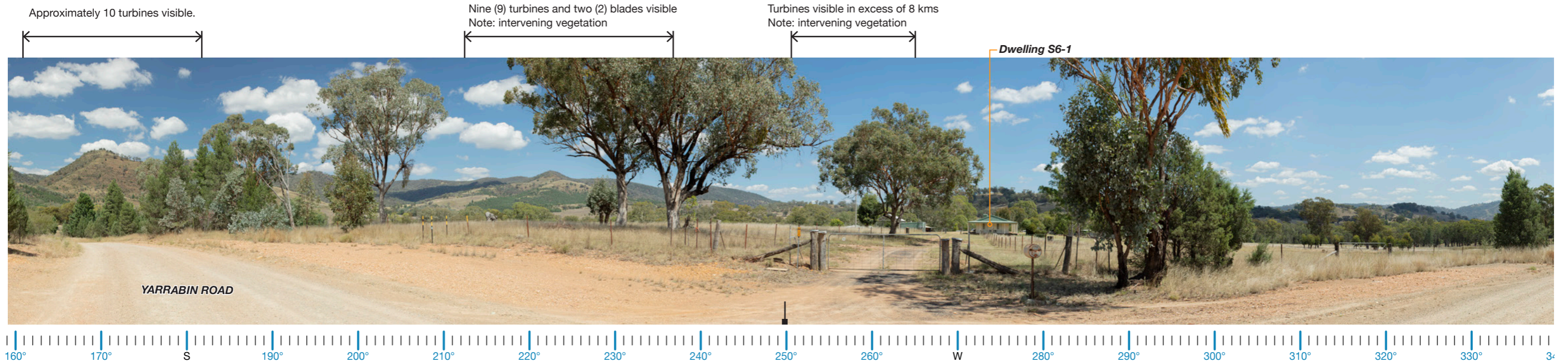
View from Worlds End Road, near Highland Home Creek. This is the furthest point of travel along Worlds End Road before a locked gate prevents public access. Land in this area is typical of the Worlds End Landscape Character Unit, defined as the valley floor associated with the eastern extent of the Meroo River. Steep vegetated hills surround the valley floor.

Potential Visual Impact:

From this location, views will be available to three (3) turbines to the south. Existing vegetation surrounding dwelling T8-1 is likely to reduce visibility, however it is anticipated the tips of turbines will likely be visible above the vegetation.

Aerial Image BWF06 (Aerial Image Source: Six Maps)

BWF07 Yarrabin Road, Yarrabin



Existing View



Aerial Image BWF07 (Aerial Image Source: Six Maps)

VIEWPOINT BWF07

Viewpoint Summary:

Location:	Elevation:
Yarrabin Rd, Yarrabin. Dwelling S6-1,2,3	383m
Coordinates:	Viewing Direction:
32° 37'22.88"S 149° 19'31.00"E	Southwest
Distance to nearest turbine:	Visibility Distance Zone:
4.00km	Far Middleground (FM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU04: Cudgegong River Valley	Moderate

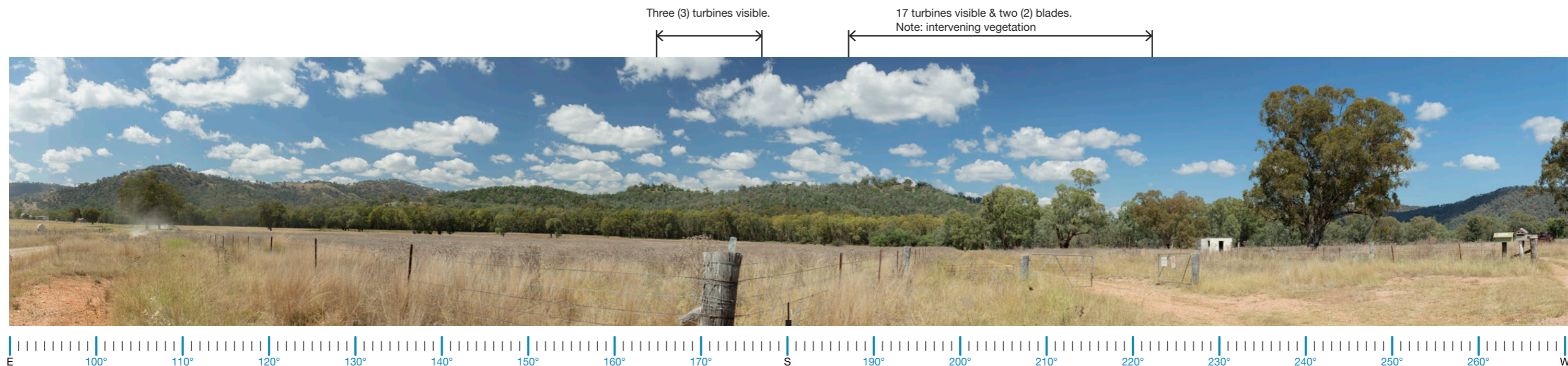
Existing Landscape Character Description:

View from the driveway entry to Dwelling S6-1 on Yarrabin Road. This viewpoint is located approximately 300 m north of the intersection with Burrendong Dam Road. Dwellings S6-3 and S7-1 are located to the west of this viewpoint. Land is typically flat and cleared with the exception of some scattered vegetation, roadside vegetation and plantings surrounding the dwelling in the foreground.

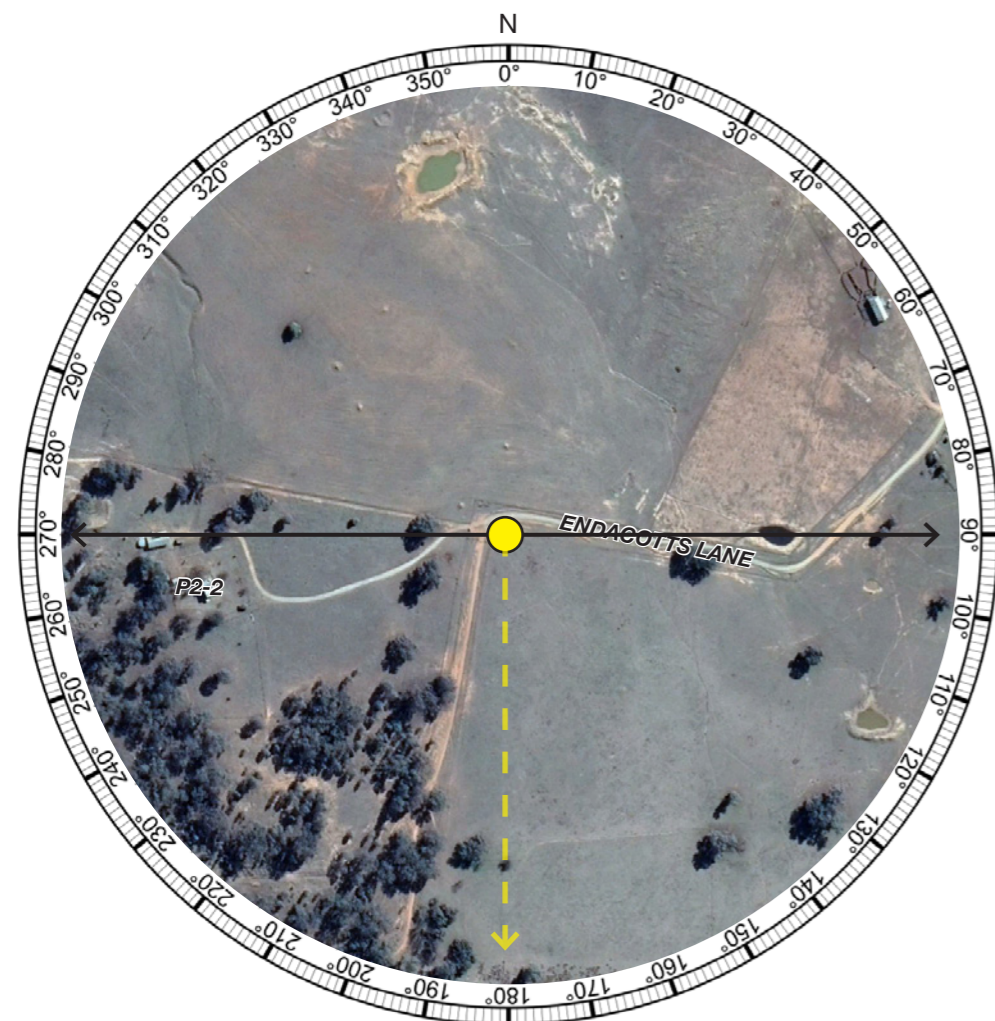
Potential Visual Impact:

From this location, views will be available to turbines associated with the Project to the south and south south-west. Vegetation in the foreground is likely to fragment views to the Project in some locations.

BWF08 Endacotts Lane, Yarrabin



Existing View



VIEWPOINT BWF08

Viewpoint Summary:

Location:	Elevation:
Off Endacotts Ln, Yarrabin. Entrance gate of Dwelling ND-20	366m
Coordinates:	Viewing Direction:
32° 35'23.99"S 149°18'1.40"E	South
Distance to nearest turbine:	Visibility Distance Zone:
6.63km	Far Middleground (FM)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
LCU04: Cudgegong River Valley	Moderate

Existing Landscape Character Description:

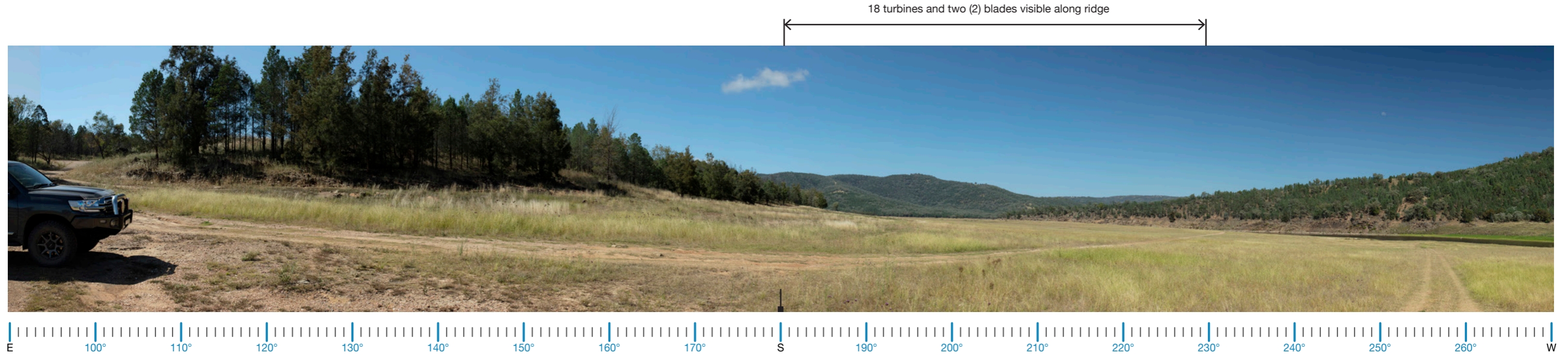
Viewpoint was taken from Endacotts Lane, a low use, unsealed road which runs in a generally south west direction from Yarrabin and provides access to several dwellings. Land is generally flat, associated with the bank of the Meroo River, with surrounding vegetated hills containing views. Dwelling P2-2 is located approximately 250 m west of this viewpoint and ND-20 is located approximately 1.2 km south west (surrounded by vegetation).

Potential Visual Impact:

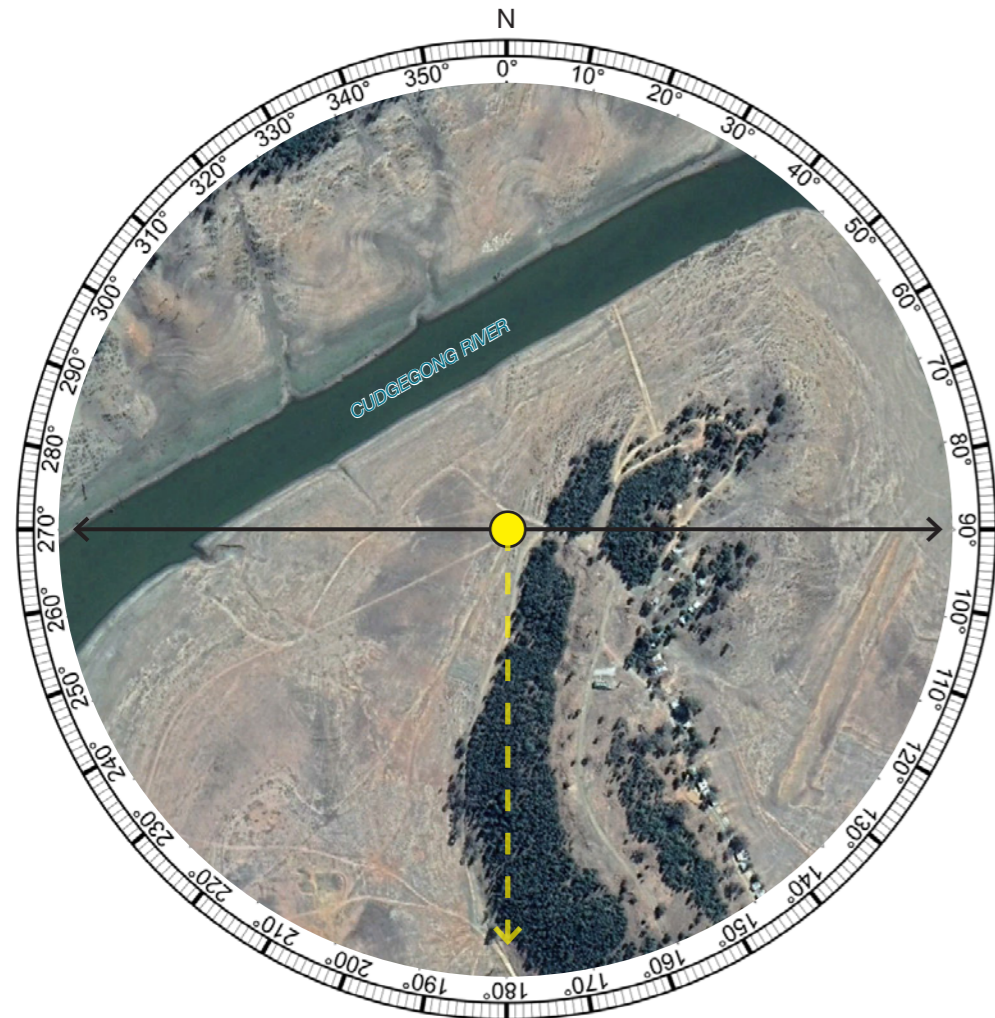
From this location, an assessment based on topography alone identified up to 20 turbines and two (2) blades would be visible from this location, however vegetation which is typical of the area is likely to fragment views to the turbines, particularly to the SSW.

Aerial Image BWF08 (Aerial Image Source: Six Maps)

BWF09 Edge of Cudgegong River Park, Lake Burrendong.



Existing View



Aerial Image BWF09 (Aerial Image Source: Six Maps)

VIEWPOINT BWF09

Viewpoint Summary:	
Location:	Elevation:
Edge of Cudgegong River Park, Lake Burrendong.	355m
Coordinates:	Viewing Direction:
32°37'9.47"S 149°15'9.90"E	South
Distance to nearest turbine:	Visibility Distance Zone:
3.04km	Near Middleground (NM)
Land Use:	Viewer Sensitivity Level:
Recreation	Moderate (Level 2)
LCU:	Scenic Quality Rating:
LCU04: Cudgegong River Valley	Moderate

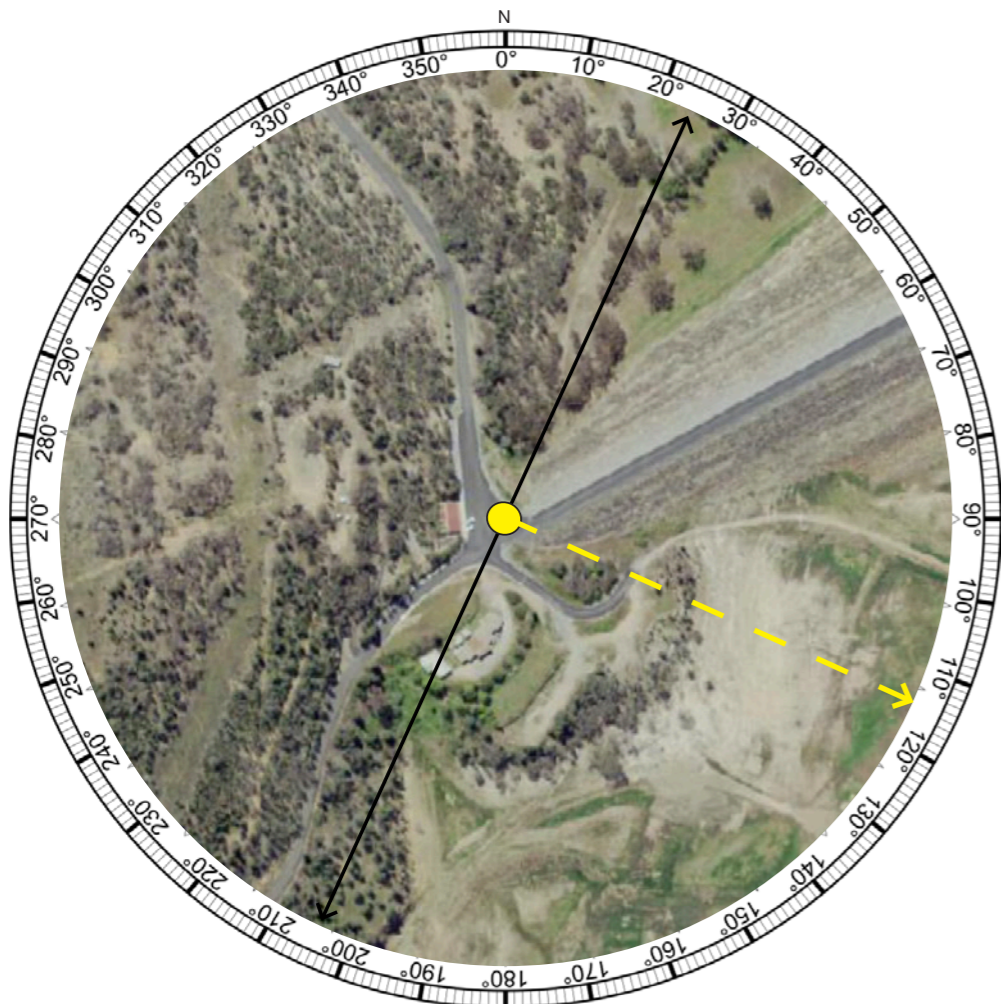
Existing Landscape Character Description:
Viewpoint was taken from boat ramp access to the Cudgegong River at Cudgegong River Park, located at the end of Burrendong Dam Road. Cudgegong River Park is a large holiday park accommodating long stay and temporary visitors. Land in this area is generally characterised by the large vegetated hills surrounding the Cudgegong River.
Potential Visual Impact:
A desktop assessment determined up to 20 turbines would be visible along the vegetated ridgeline to the south of this location.

BWF10 Lake Burrendong Dam Wall

Approximate extent of visible wind turbines



Existing View



VIEWPOINT BWF10

Viewpoint Summary:	
Location:	Elevation:
Lake Burrendong Dam	359.5
Coordinates:	Viewing Direction:
32°40'12.34"S 149° 6'5.71"E	East
Distance to nearest turbine:	Visibility Distance Zone:
8.45km	Near Background (NB)
Land Use:	Viewer Sensitivity Level:
Low Use Viewpoint	Level 2
LCU:	Scenic Quality Rating:
LCU03: Lake Burrendong	Moderate

Existing Landscape Character Description:
View from Lake Burrendong Dam wall looking towards the east across Lake Burrendong towards vegetated hills associated with the Project Site.
Potential Visual Impact:
From this viewpoint, it is likely the Project would be visible to the east in excess of 8 kilometres from the dam. <i>Refer to Photomontage 06 (Appendix C).</i>

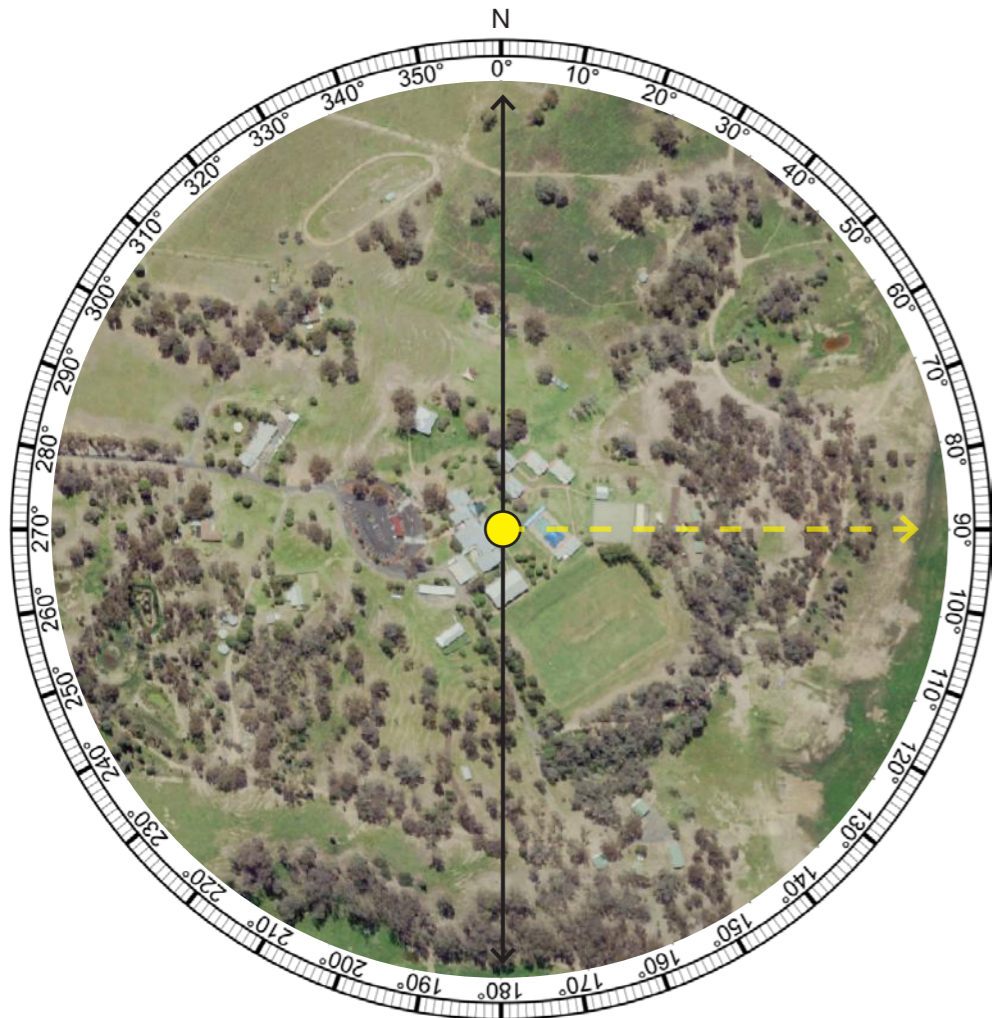
Aerial Image BWF10 (Aerial Image Source: Six Maps)

BWF11 Lake Burrendong Sport and Recreation Centre

Approximate extent of visible wind turbines



Existing View



Aerial Image BWF11 (Aerial Image Source: Six Maps)

VIEWPOINT BWF11

Viewpoint Summary:

Location:	Elevation:
Lake Burrendong Sport & Recreation Centre	373.7m
Coordinates:	Viewing Direction:
32°42'28.94"S 149° 7'8.62"E	East
Distance to nearest turbine:	Visibility Distance Zone:
8.45km	Near Background (NB)
Land Use:	Viewer Sensitivity Level:
Recreation	Level 2
LCU:	Scenic Quality Rating:
LCU06: Mumbil	Moderate

Existing Landscape Character Description:

View from Burrendong Sport and Recreation Centre, in excess of 8 km west of the Project. The Sport and Recreation Centre is utilised for school camps, sports camps and accommodation for large groups.

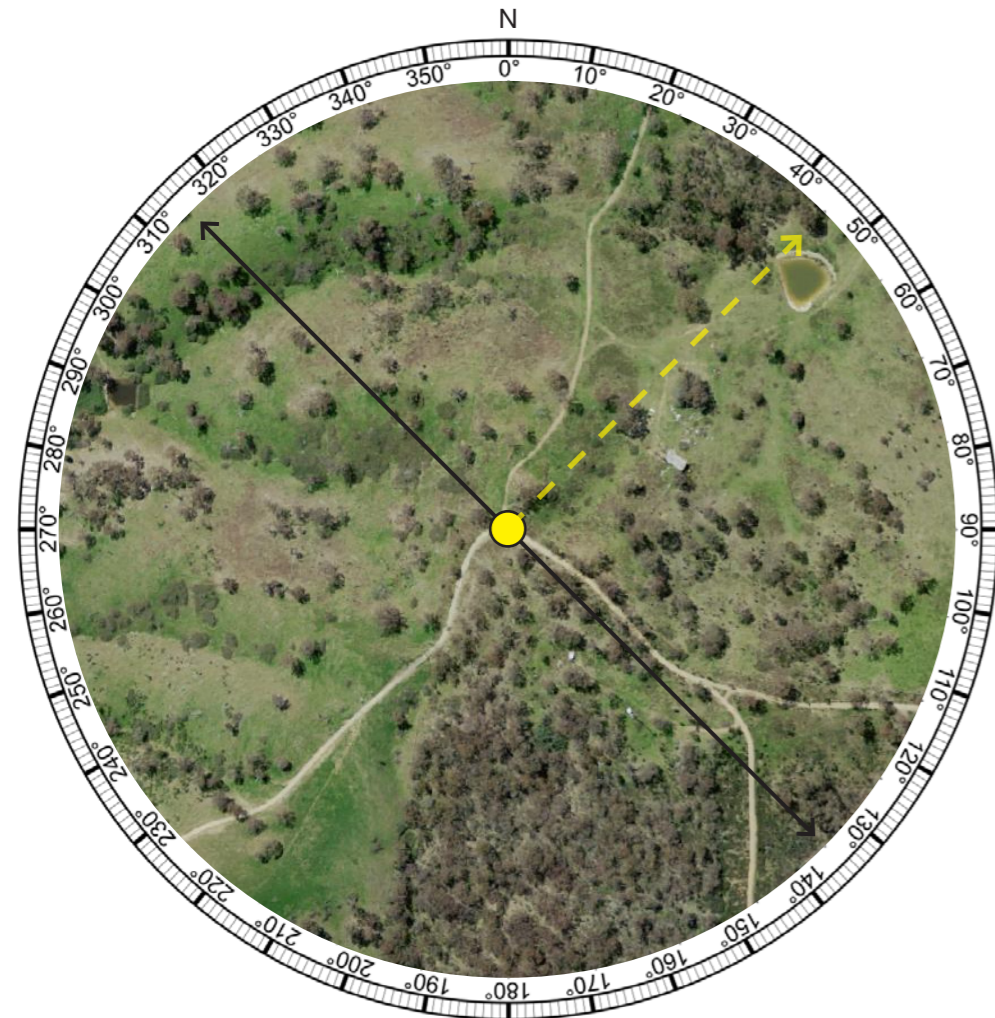
Potential Visual Impact:

From this viewpoint, it is likely the Project would be visible in it the break in vegetation to the east. The turbines are located in excess of 8 kilometres from the viewpoint.

BWF12 Mount Aquila Rd, Mount Aquila.



Existing View



VIEWPOINT BWF12

Viewpoint Summary:	
Location:	Elevation:
Mount Aquila Rd, Mount Aquila.	787.6m
Coordinates:	Viewing Direction:
32°49'46.60"S 149° 9'8.56"E	Northeast
Distance to nearest turbine:	Visibility Distance Zone:
11.03km	Near Background (NB)
Land Use:	Viewer Sensitivity Level:
Minor Road	Low (Level 3)
LCU:	Scenic Quality Rating:
N/A	N/A

Existing Landscape Character Description:
View from Mount Aquila Road looking in a generally north east direction towards the Project Site. Mount Aquila Road is an unsealed road with a low frequency of use which is utilised to access a small number of isolated dwellings to the east of the Macquarie River. Views along Mount Aquila Road are generally contained by vegetation typical of the surrounding areas, however infrequent openings in the vegetation provide expansive views to the vegetated ranges to the north.
Potential Visual Impact:
From this viewpoint, it is likely the Project would be visible in its entirety (in excess of 11 km). Some vegetation in the middleground is likely to fragment views to the distance turbines. It is likely the Approved Ungula Wind Farm would be visible beyond the BWF Project.

Aerial Image BWF12 (Aerial Image Source: Six Maps)