

APPENDIX C PRELIMINARY VISUAL IMPACT ASSESSMENT



Preliminary Visual Impact Assessment

Keri Keri Wind Farm



Prepared for: Environmental Resources Management Australia Pty. Ltd.

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1.0 Introduction

1.1 Introduction

Moir Landscape Architecture has been commissioned by Environmental Resources Management Australia Pty Ltd (ERM) to prepare a Preliminary Visual Impact Assessment (PVIA) for the proposed Keri Keri Wind Farm (the Project).

The PVIA for the Project has been prepared in accordance with the *Wind Energy: Visual Assessment Bulletin December 2016*. The PVIA will form part of the Scoping Report seeking the Secretary's Environmental Assessment Requirements (SEARs). 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 Landscape Architecture Pty Ltd 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) - EIS Submitted November 2020*
- *Thunderbolt Energy HUB Stage 1 (Kentucky, NSW) - EIS Submitted March 2022*
- *Valley of the Winds Wind Farm LVIA (Coolah, NSW) - EIS Submitted March 2022*
- *Jeremiah Wind Farm PVIA (Gundagai, NSW) - SEARs issued June 2021*
- *Burrawong Wind Farm PVIA (Balranald, NSW) - SEARs issued July 2021*
- *Barneys Reef Wind Farm PVIA (Gulgong, NSW) - SEARs issued September 2021*
- *Winterbourne Wind Farm LVIA (Walcha, NSW) - SEARs Issued September 2020*
- *Paling Yards Wind Farm PVIA (Paling Yards, NSW) - Request for SEARs issued February 2022*

1.0 Introduction

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 *Wind Energy: Visual Assessment Bulletin December 2016*.

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

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

This PVIA forms apart of *Phase 1: Preliminary Environmental Assessment* to be submitted to DPIE together with the Scoping Report for the request for SEARs.

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

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

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

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



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

2.0 Study Method

2.1 Study Method

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.
- Identify and assess cumulative visual impacts of other proposed wind farms in the area through desktop assessment.

Site Inspection:

Photographic survey work for the assessment was undertaken in November 2021 to carry out a preliminary assessment of the existing landscape character from publicly accessible land within the Study Area (as defined in Section 3.3). The findings of the site inspection have been included in the PVIA and will form the basis for discussion with the community in the EIS Phase of the Project.

Community Consultation:

Community consultation has been undertaken through the scoping phase of the Project. Results of the community consultation documented in previous studies 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:	
Bulletin Requirements:	Addressed in report:
• 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.	Refer to Section 4.0: Community Consultation
• 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.	Refer to Section 5.0 : Existing Landscape Character
• Results of the preliminary assessment tools for both the visual magnitude and multiple wind turbine parameters.	Refer to Section 6.0: Preliminary Assessment Tools
• 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.	Appendix A & B Preliminary Dwelling and Viewpoint Assessments
• 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').	Refer to Section 7.0: Preliminary Zone of Visual Influence
Summary and Recommendations - Section 10.0	

Table 1 Overview of Report Structure

3.0 Project Overview

3.1 Regional Context

The proposed Keri Keri Wind Farm (Project Area) is located within the Murray River Council area in the Riverina region of New South Wales. It is situated approximately 90 kilometres (km) southwest of Hay and approximately 45 km southeast of Balranald. The Project Area is located on the land associated with the Keri Keri merino stud. The Project Area can be accessed via Sturt Highway and Dry Lake Road (refer to **Figure 2**).

The Project Area is located within the South-West Renewable Energy Zone (REZ) near the town of Hay. Although the South-West REZ is in its early planning stages and its geographical extent is yet to be finalized, the NSW Governments Electricity Strategy states that the area has a transmission capacity of 1.2 GW (Energy NSW, 2021). The Project is therefore strategically located in a broad area identified as suitable for renewable energy project.

The South-West Region has been identified as having high solar and wind renewable energy resource potential. Preliminary wind and solar studies undertaken by the Proponent have guided the development of the preliminary turbine layout for the Project. The Project Area is located next to the existing 220 kV transmission line which is planned to be upgraded to a capacity of 330 kV to serve as the NSW-SA interconnector under Project Energy Connect (Energy NSW, 2021).

The Project currently consists up to 176 wind turbines spread across an area of 18,055 hectares (ha), with a maximum capacity of approximately 1003 MW, and the potential installation of a 200MW/800MWh battery energy storage system (BESS). The Keri Keri Renewable Energy Project also includes a proposed 500MWp (MWpeak) solar farm located in the south west portion of the Project Area spread across an area of 1,322 ha. The Keri Keri Renewable Energy Project - Solar Farm is subject to a separate State Significant Development (SSD) application. The projects (wind and solar) may share ancillary infrastructure including substations and operations and maintenance facilities. For the purpose of this assessment, the Project Area is defined by the extents of the Keri Keri Wind Farm.

The Project is in the preliminary stages of design and Moir LA will provide input and recommendations in regards to visual impacts to assist in refining of the design layout.

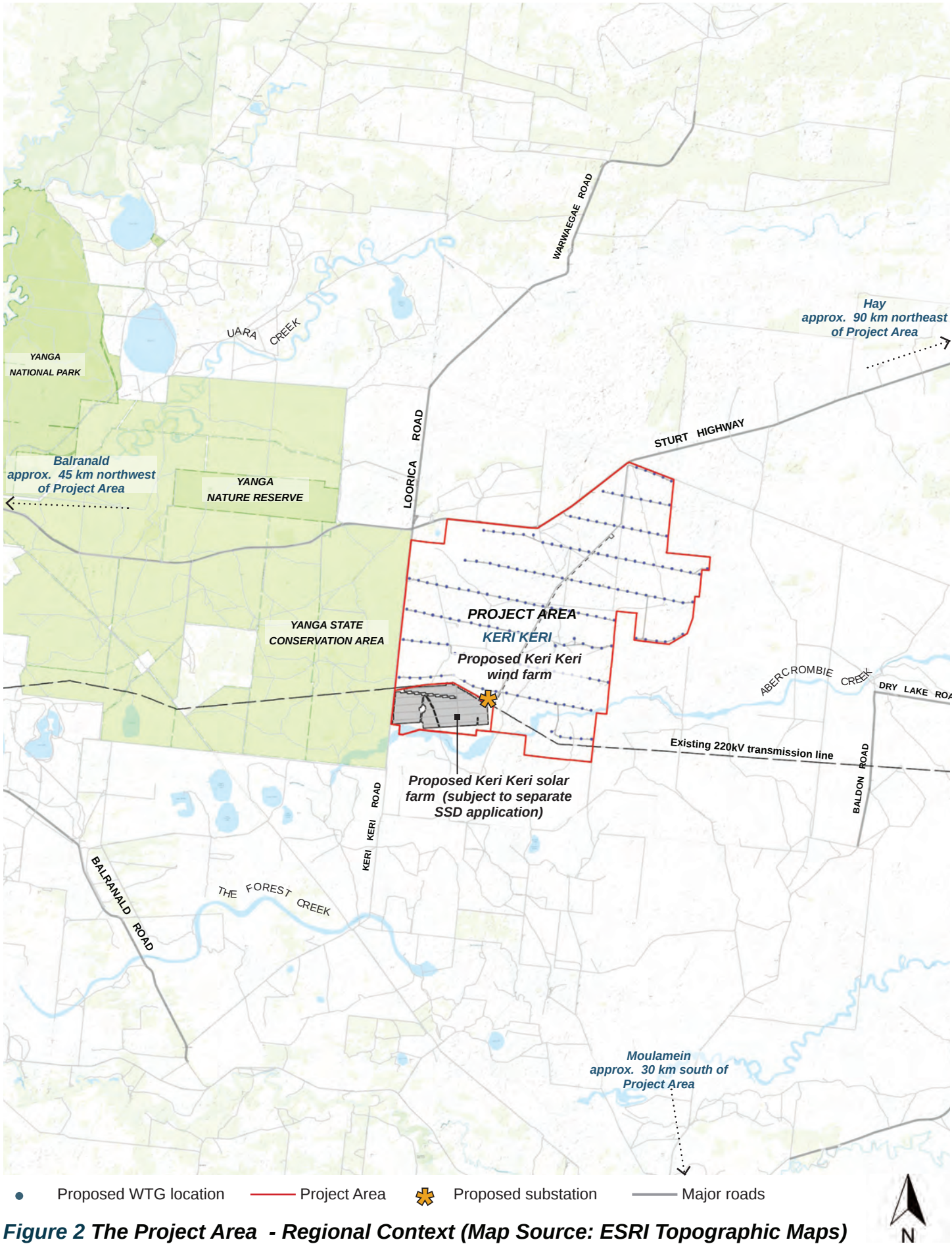


Figure 2 The Project Area - Regional Context (Map Source: ESRI Topographic Maps)

3.0 Project Overview

3.2 The Project Area

The Project Area encompasses three (3) freehold properties with 66 allotments covering approximately 18,055 hectares (ha). These properties are primarily utilised for sheep grazing activities. 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.

3.3 The Study Area

Referred to in this report, the Study Area is generally defined as the Project Area and surrounding land which requires assessment. The Study Area is generally defined as the land up to 8,000 m from the nearest turbine. Towns and settlements located in closest proximity are Balranald and Hay as shown in **Figure 2**.

3.4 The Project

The Keri Keri Renewable Energy Project as a whole (wind and solar) includes the construction and operation of approximately 176 wind turbines spread across an area of 18,055 ha, solar panels spread across an area of 1,322 ha and associated infrastructure. Associated infrastructure includes operation and maintenance buildings, battery storage, internal access roads, civil works and electrical infrastructure (including 2 substations and 1 switching station) required to connect to the existing electricity transmission network. The solar farm is subject to a separate state significant development application, with shared infrastructure such as substations and Operations and Maintenance Facility. The shared infrastructure will be considered in the wind farm application.

The Keri Keri Wind Farm will have a capacity of approximately 1003 gigawatts (GW) and the potential Keri Keri Solar Farm will have a capacity of 500 MWp, with the potential to power approximately 900,000 homes. The new substation locations are proposed to be constructed on the northeastern, central and southeastern sides of the Project Area where it can be accessed via Keri Keri Road and the point of connection into the grid is expected to be via the proposed 330kV NSW-SA interconnector known as 'Project Energy Connect'.

The preliminary layout for the Keri Keri Wind Farm (refer to **Figure 4**) has been prepared to locate the turbines within areas identified as having high wind resources, and land that has been subject to historical and on-going agricultural land uses. **Figure 4** also includes the locations of involved and non-involved dwellings mapped from aerial photographs. These locations are subject to further groundtruthing.

Key components of the Keri Keri Wind Farm include:

- approximately 176 (3 blade steel) wind turbines with a total height (tip height) of approximately 291.5m and hub height of 200m.
- electrical connections between the proposed wind turbines consisting of a combination of underground cables and overhead powerlines
- Three (3) new substations and transmission connections to connect the proposed turbines to the network
- other associated infrastructure including internal access roads and tracks, operation and maintenance buildings and construction facilities (all facilities subject to further detailed design)
- temporary on-site concrete batching plant during the construction phase
- Battery Energy Storage System

The proposed infrastructure would be contained within the Project Area 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.

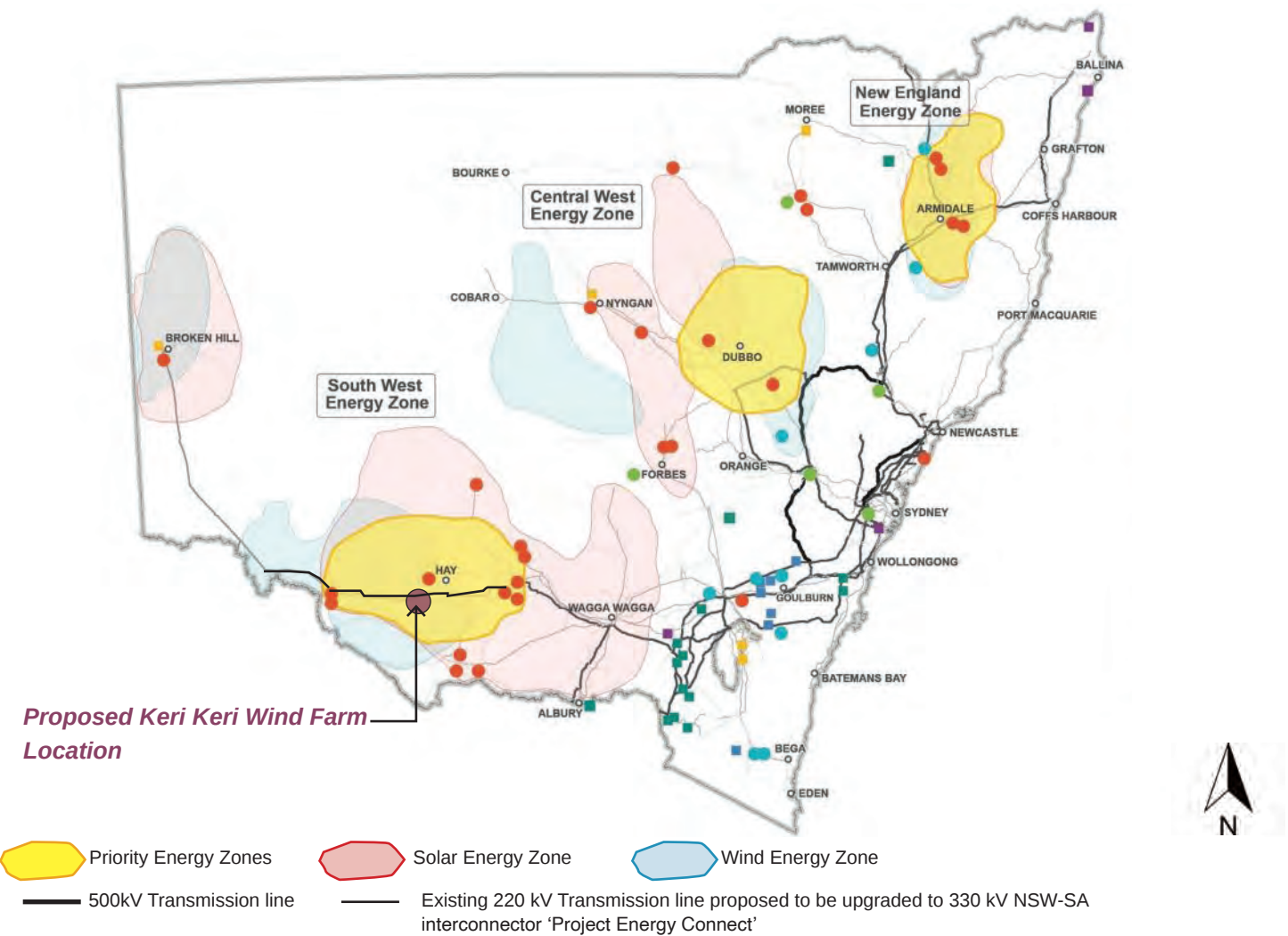
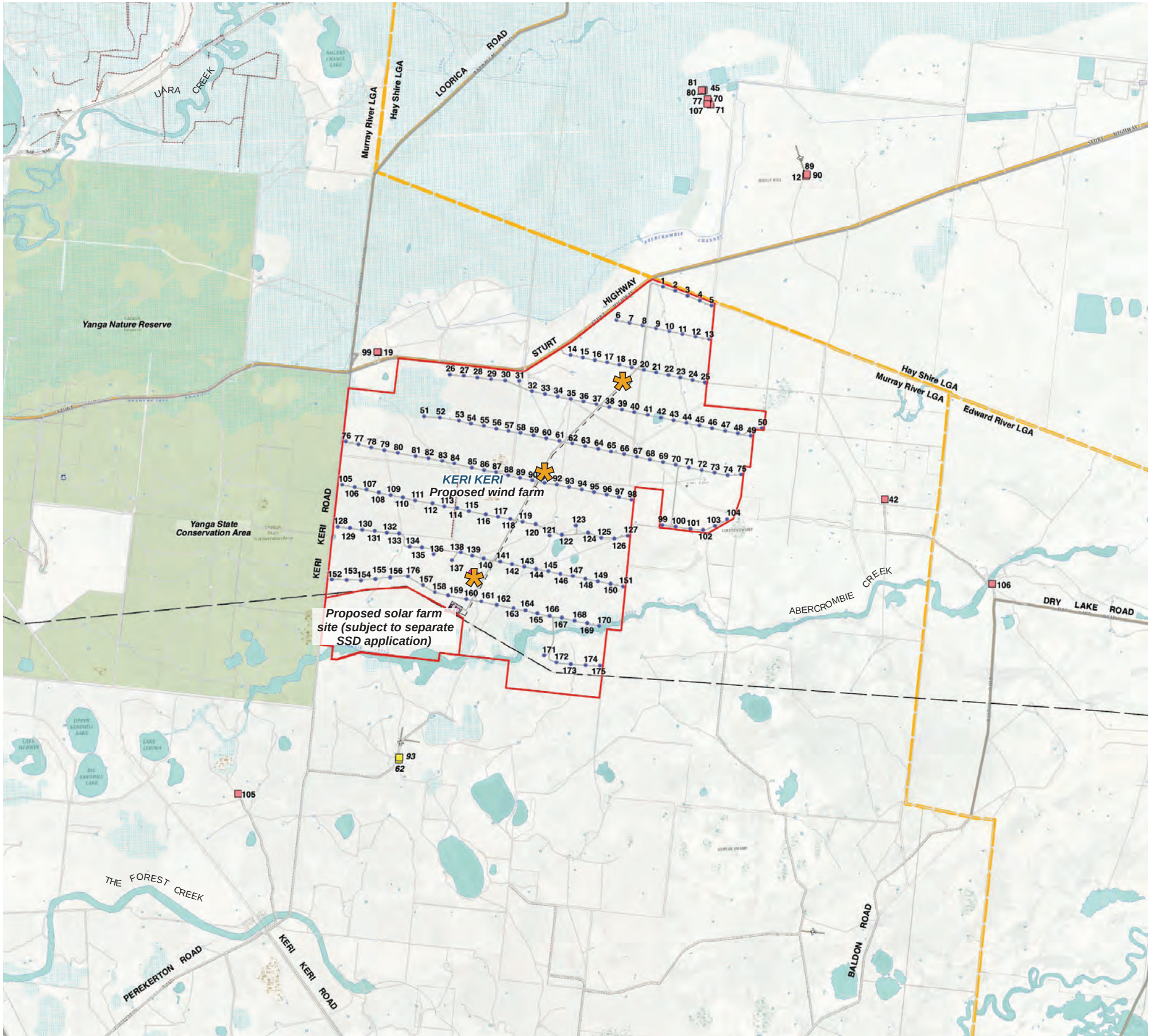


Figure 3 Potential Energy Zones (Source: NSW Department of Planning & Environment, 2018)

3.0 Project Overview



Preliminary Project Layout
Proposed Keri Keri Wind Farm

- LEGEND
- Project Area
 - Access tracks
 - 25 Proposed 291.5 m Turbine Location
 - 62 Involved dwellings
 - 91 Non-involved dwellings within 10 km of Project Area
 - Proposed Substations
 - Proposed transmission line
 - Existing 220kV transmission line
 - Main Road
 - Minor Road
 - Nature Reserve / State Conservation Area
 - LGA Boundary

Figure 4 Preliminary 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 area, likely corridors of development, or preliminary turbine layouts and must involve people from the visual catchment.*

The purpose of community consultation was to:

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

Community engagement will continue through the EIS Phase and provide the community with further opportunities to provide input into the Visual Baseline Study of the LVIA.

4.2 Results of Community Consultation

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

In accordance with the Bulletin, ongoing community consultation has been undertaken by members of the Acciona Project team, this has included face-to-face meetings; on-line presentations; public information sessions; provision of printed material including Factsheets, Flyers; a website; an On-Line Engagement Hub; emails, phone calls and a questionnaire. Represented stakeholders have included Murray River Council, Balranald Shire Council and Hay Shire Council, as well as local business groups, involved and non-involved landholders, located within the vicinity of the Project Area. The survey was also placed on the Project website. As of 23 February 2022, a total of six (6) surveys have been completed, the results of which have been outlined in the following section.

None of the survey respondents identified that likely visual changes to the landscape were a concern.

During consultation with the Murray River Regional Council, it was noted that the Project would be visible for some residents within the LGA, however Council did not express particular concerns in

relation to visual amenity.

Information obtained from respondents and attendees to the presentations and information sessions, described the area as flat plains with no trees, '*therefore a perfect place for a wind farm*'.

4.2.1 Landscape Features and Values

In addition to a review of existing landscape maps and detailed field work undertaken by Moir LA (see **Section 5.0**) the community consultation questionnaire asked respondents to identify key landscape features of importance to them. There were four (4) responses (from the six completed questionnaires) to the question: '*What are the key landscape features of importance to you in the area? Which of these features do you value most highly?*'. The following landscape features were identified by the community:

- River Environs
- Big tree on the river
- Heritage Village
- Cultural Heritage
- Flat Plains

A comparative assessment of the Project with other wind farms proposed in the area will help identify cumulative impacts of these developments in relation to the identified key landscape values. This has been discussed in **Section 9.0** of the PVIA.

4.2.2 Key Public Viewpoints

Key viewpoints identified by the community for further assessment include:

- The Willows Campground, Yanga SCA
- Willowvale Rest Area, Sturt Highway

Where possible, these features and viewpoints have been mapped in **Section 5.0** of this PVIA. Additional consultation and further detailed assessment of these features and viewpoints will be undertaken during the EIS phase.

5.0 Existing Landscape Character

5.1 Overview of Bioregion

The Project Area sits within the Riverina Bioregion (see **Figure 5**) in southwest NSW. The area is characterised by extensive saltbush plains with small depressions and isolated low rises.

Topography is generally flat with very minor and isolated rises of coarse-textured aeolian material (Walker, 1991). Grey cracking clays, red brown earths and compact brown clays are predominant in the region (NPWS, 2003). The plains are dominated by saltbush with old man saltbush, cottonbush, myall and grasses. Vegetation communities on channels and swamps include black box (*Eucalyptus largiflorens*) and lignum (*Muehlenbeckia florulenta*). A detailed description of this character is defined in **Section 5.3** of this report. **Images 1 - 2** illustrate the typical character of the landscape within the Study Area.



Image 1 Riverina saltbush plains



Image 2 Typical character of the Riverina plains in the area - intermittent stands of Black box and Lignum trees with saltbush and grasses.

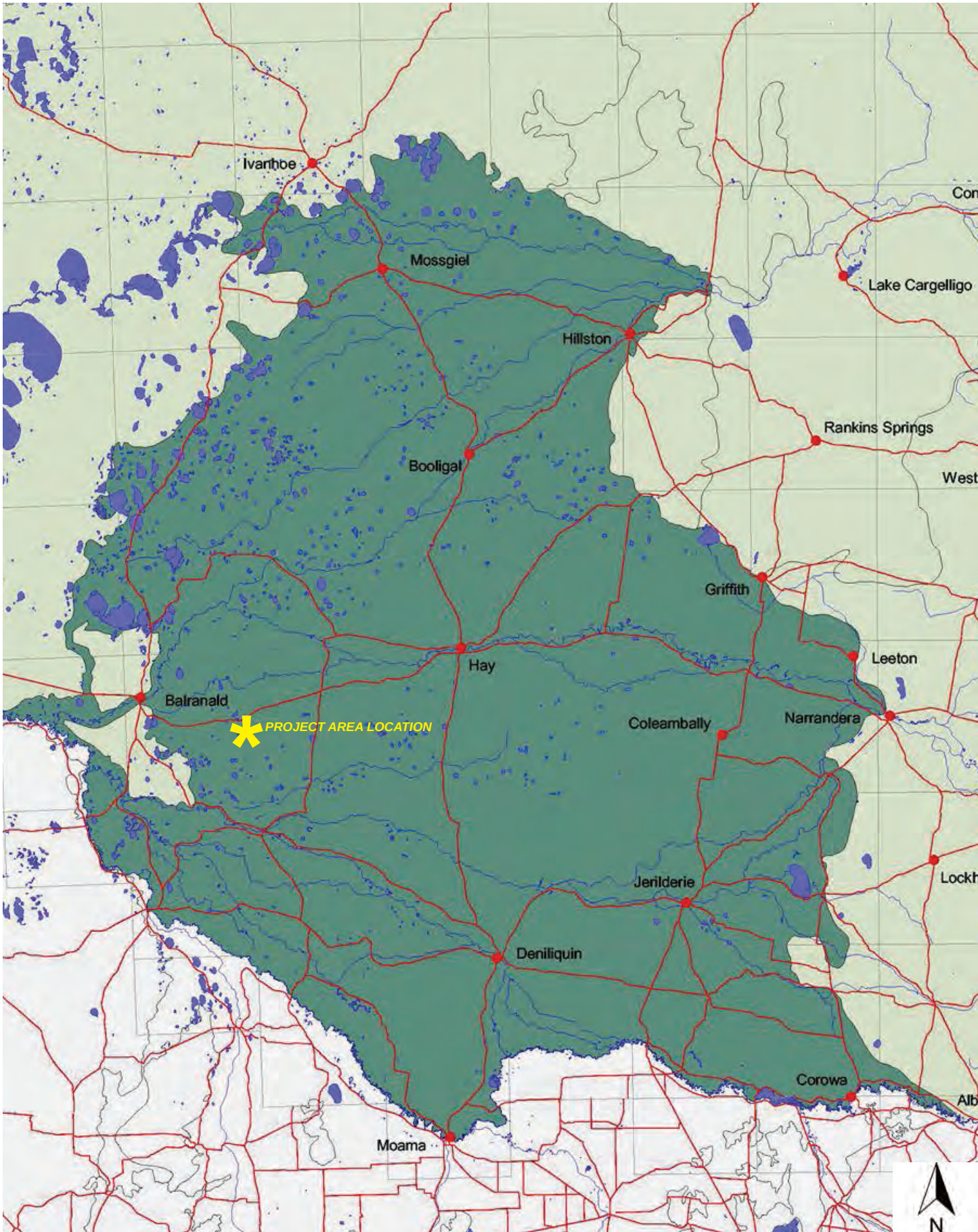


Figure 5 NSW Riverina Bioregion (Sources: NPWS 2016)

5.0 Existing Landscape Character

5.2 Land Use

5.2.1 Land Use Zoning

The Project Area is located within the extents of Murray River Council which is an amalgamation of former Wakool Shire Council and Murray Council. The Draft Murray River LEP 2021 mentions that the objectives laid out in the former LEPs continues to apply to the land within the Murray River Local Government Area (LGA). Hence, the Wakool Shire LEP 2013 applies to the Project. The northern-most boundary of the Project Area sits on the LGA boundary. To the north lies Hay Shire LGA and to the east is Edward River LGA. Further to the west of Yanga National Park is Balranald Shire Council which is an important town in the Riverina region. The following gives an overview of the main land use zoning within the Study Area (see **Figure 6**):

RU1 - Primary Production

The Project Area and majority of the surrounding land is zoned *RU1 - Primary Production*. The Wakool Shire LEP 2013 states the following objectives of the RU1 zoning relevant to the visual impact assessment:

- *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 allow the development of contemporary non-agricultural land uses that are compatible with the character of the zone.*

C1 - National Parks and Nature Reserves

Yanga National Park, Nature Reserve and State Conservation Area (SCA) fall within the extents of land that is categorised as *C1- National Parks and Nature Reserves*. The Project’s western boundary is shared with Yanga State Conservation Area’s eastern boundary. A major portion of the SCA lies further west of the Project Area.

According to the Yanga National Park, Nature Reserve and State Conservation Area Plan of Management, the area, referred to as ‘the parks’ in the Plan of Management, signifies ‘*a unique transition between landscapes formed by fluvial processes to the east and aeolian processes to the west*’ (NPWS, 2020). The State Conservation Area’s landscape, biological, cultural and educational values are as follows:

- *Due to the varying landscape processes that occurred in the area, an unusual landform, vegetation and soil types sit side-by-side.*

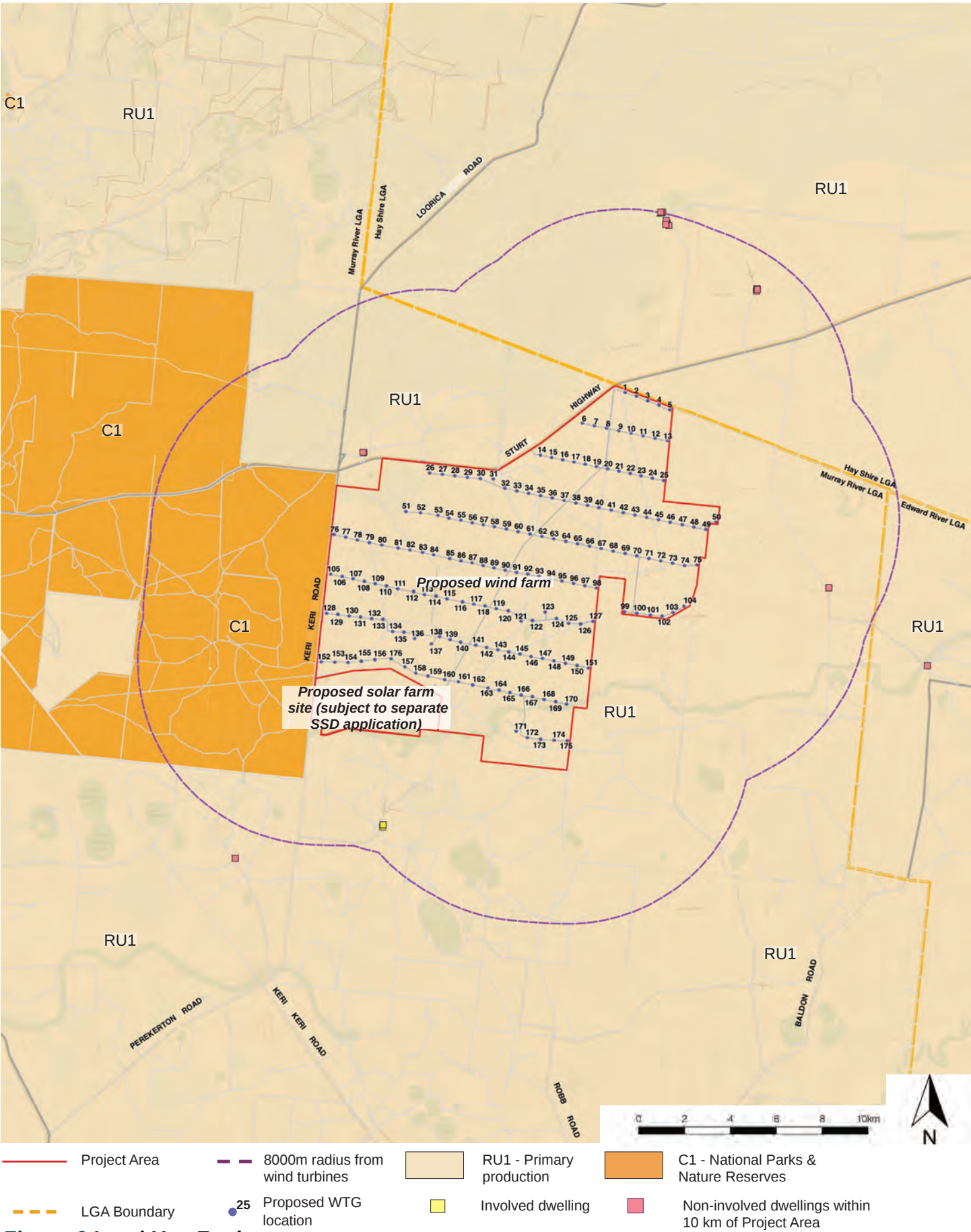


Figure 6 Land Use Zoning
(Sources: NPWS, Environment NSW 2016; Map Source: SIX Maps)

5.0 Existing Landscape Character

- The parks are one of the most biologically diverse areas in the Riverina region most famous for the large-scale river red gum conservation in NSW. Other prominent vegetation includes black box woodlands, lignum shrublands, nitre goosefoot shrubland and three endangered ecological communities.
- Rich Aboriginal associations highlight the cultural significance of the parks. Recorded Aboriginal heritage sites include burial sites, modified trees, artefacts, middens, earth mounds, spiritual sites and creation stories.
- The parks form a rich cultural landscape which have multi-layered historical associations - both indigenous and colonial - in the form of historic structures, plants, managed woodlands and recreational areas. Community values of the parks continue to thrive with various recreational associations in Yanga Lake and Murrumbidgee River/Valley surrounds.
- The region provides immense opportunity for environmental restoration, education and continuing research into recovery processes.

5.2.2 Land Use

Land use within and around the Project Area predominantly comprises agricultural production activities. The Project will be situated in areas that are currently dedicated to dryland cropping and grazing pastures (see **Figure 7**). Yanga SCA and Nature Reserve are subjected to minimal use due to their significant natural, landscape, cultural and educational values. It's immediate surrounds consist of natural and improved pastures, dryland and irrigated cropping.

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

Sturt Highway serves as an important commuting corridor since it provides connection to the towns of Balranald, Hay, Wagga Wagga and others. Minor road connections are provided by Loorica Road, Keri Keri Road, Maude Road and Dry Lake Road.

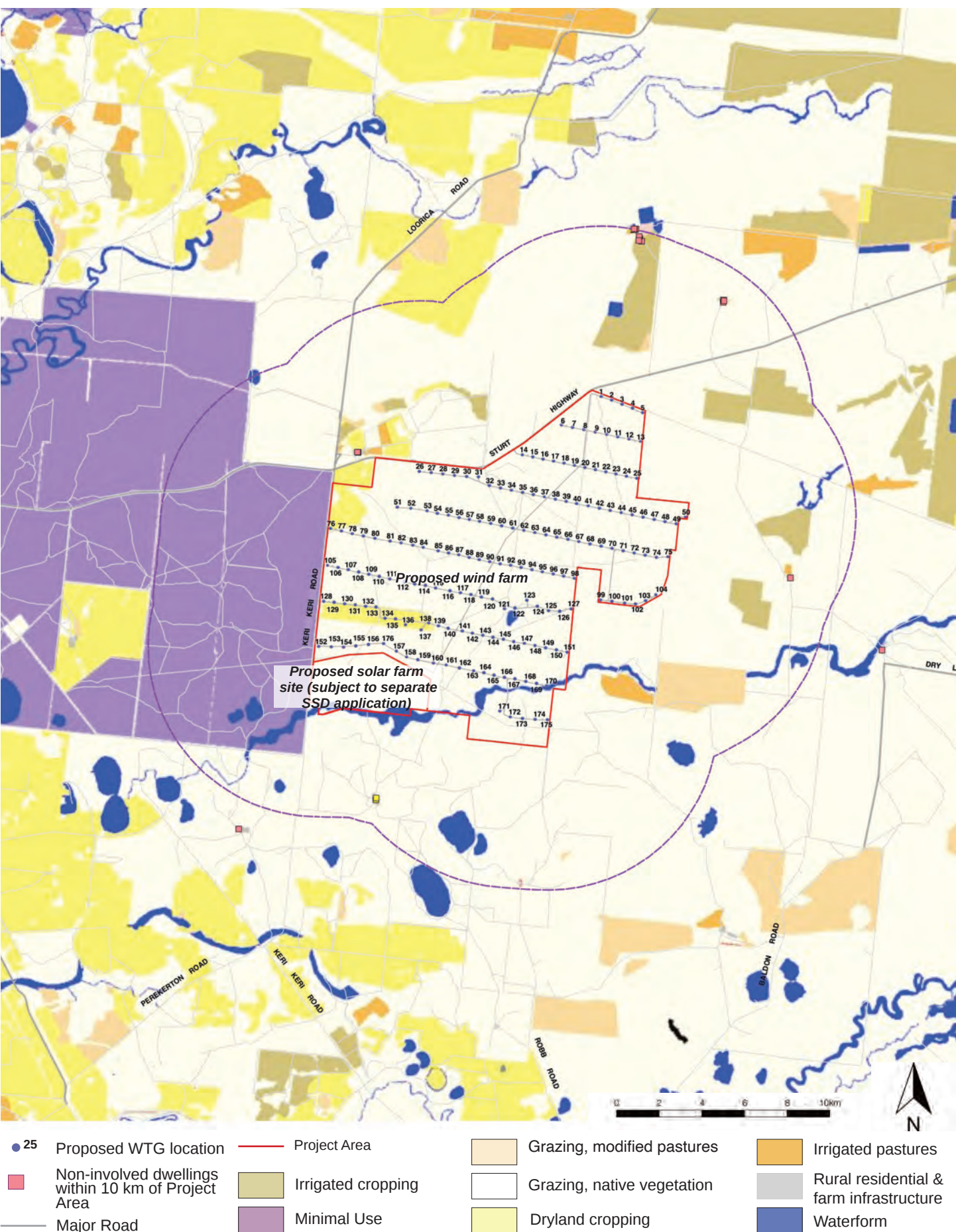


Figure 7 Land uses within and around the Project Area (Source: Environment NSW, 2021)

5.0 Existing Landscape Character

5.3 Key Landscape Features & Viewpoints

The Bulletin states proponents must identify key landscape features, dwelling locations and key public viewpoints. The following section provides an overview of the key features identified within and around the Study Area. Refer to **Figure 8**.

Geology and Landform

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

Vegetation Character

Lack of water and dry, arid conditions support scattered stands of belah trees, saltbush and speargrass communities (NPWS, 2003). Saltbush varieties dominate the region with very sparse tree communities, thus yielding clear, open views of the expanse (Environment NSW, 2011). The lack of tall canopy species allows higher wind speeds with continual wind actions on the landscape. Mid-canopy species such as lignum and nitre goosefoot are occasionally visible in the landscape (Environment NSW, 2011) and are favoured for emu grazing. Predominance of low-storey vegetation allows easier grazing opportunities for sheep, thus rendering the area favourable for livestock grazing. Tall canopy cover is most prominent within the extents of the Yanga National Park, SCA and Nature Reserve extents.

Creeks, Swamps and Dry Lakes

Given the dry and arid conditions of the region, the lakes and creeklines remain dry through most of the year. The most significant hydrological features in close proximity of the Project Area include Abercrombie Creek, The Forest Creek, Dry Lake and Gunyah Swamp.

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

The closest and largest fresh water source is Yanga Lake which is located approximately 25 km west of the Project Area.

Nature Reserves, State Conservation Area and National Park

Yanga National Park, Nature Reserve and State Conservation Area (SCA) are located to the immediate west of the Project Area. The SCA exhibits characteristics of the Riverina Bioregion's Murrumbidgee subregion. The SCA and Nature Reserve are one of the examples of undisturbed patch of dense belah, mallee, rosewood and sugarwood communities with abundant grasses and dillon bush (NPWS, 2003; NPWS, 2020). A combination of these remnant native vegetation patches forms the Murrumbidgee Valley Parks that are a testimony to the endemic landscape characteristics of the western Riverina region. The region also has significant historic and cultural associations such as Aboriginal burial sites, middens, spiritual sites, woolsheds and other structures established during colonial settlement. The parks also host biologically diverse areas that provide habitat for 24 threatened species (NPWS, 2020).

Campgrounds and Points of Interest

Recreational associations occur mostly within the extents of the Yanga National Park, Nature Reserve and State Conservation Area (SCA). The Willows Campground and Willows Visitor Access Trail is the closest recreation spot which offers opportunities for short bushwalks and birdwatching. Dense mallee, belah and rosewood communities dominate the region. Yanga Lake and Homestead are located further about 25 km west of the Project Area.

The Keri Keri Merino stud is another key landmark located south of the Project Area and is one of the oldest sheep breeding stations that has been instrumental in providing livestock to many farmlands in the Riverina and other regions of NSW. Other areas of interest include the Willowvale Rest Area and St Pauls Rest Area on Sturt Highway. These areas serve as important resting spots for commuters travelling towards the towns of Hay or Balranald. For the purposes of this PVIA, an assessment of impacts on Willowvale Rest Area will be relevant due to its close proximity to the Project Area.

5.0 Existing Landscape Character

Landscape Features Proposed Keri Keri Wind Farm

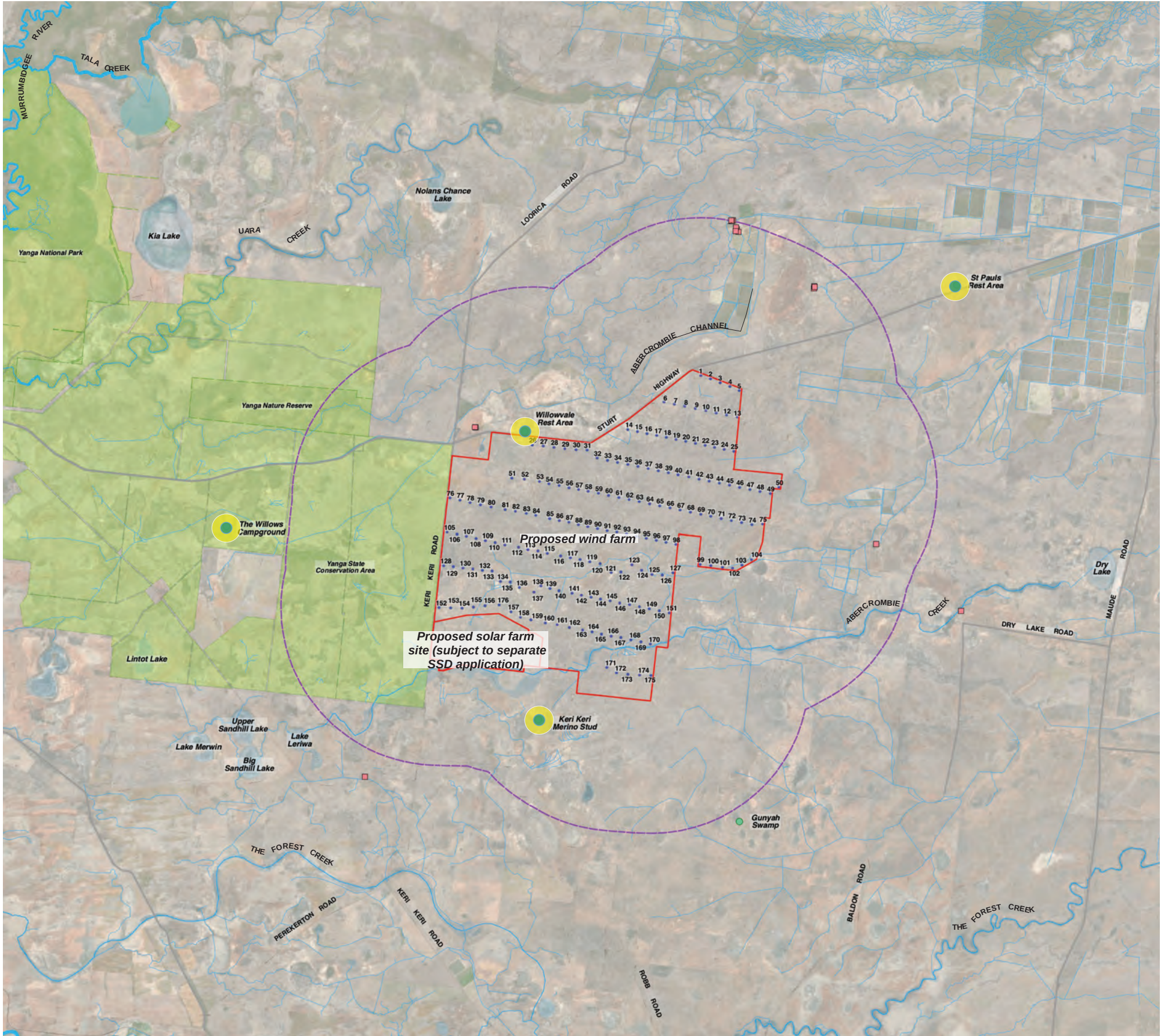


Figure 8 Existing Landscape Features (Map Source: ESRI Aerial Imagery)



5.0 Existing Landscape Character

5.5 Preliminary Landscape Character Units

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

An assessment of existing land use and landscape features suggests that the Project Area and its surrounds exhibit a strong agricultural history of grazing and cropping along with cultural and natural associations of the Yanga SCA and Nature Reserve. A number of Landscape Character typologies exist within the Study Area (refer to **Figure 9**). As apart of the Preliminary Landscape Character Assessment, a total of four (4) key landscape typologies referred to hereafter as Landscape Character Units (LCUs) have been identified.

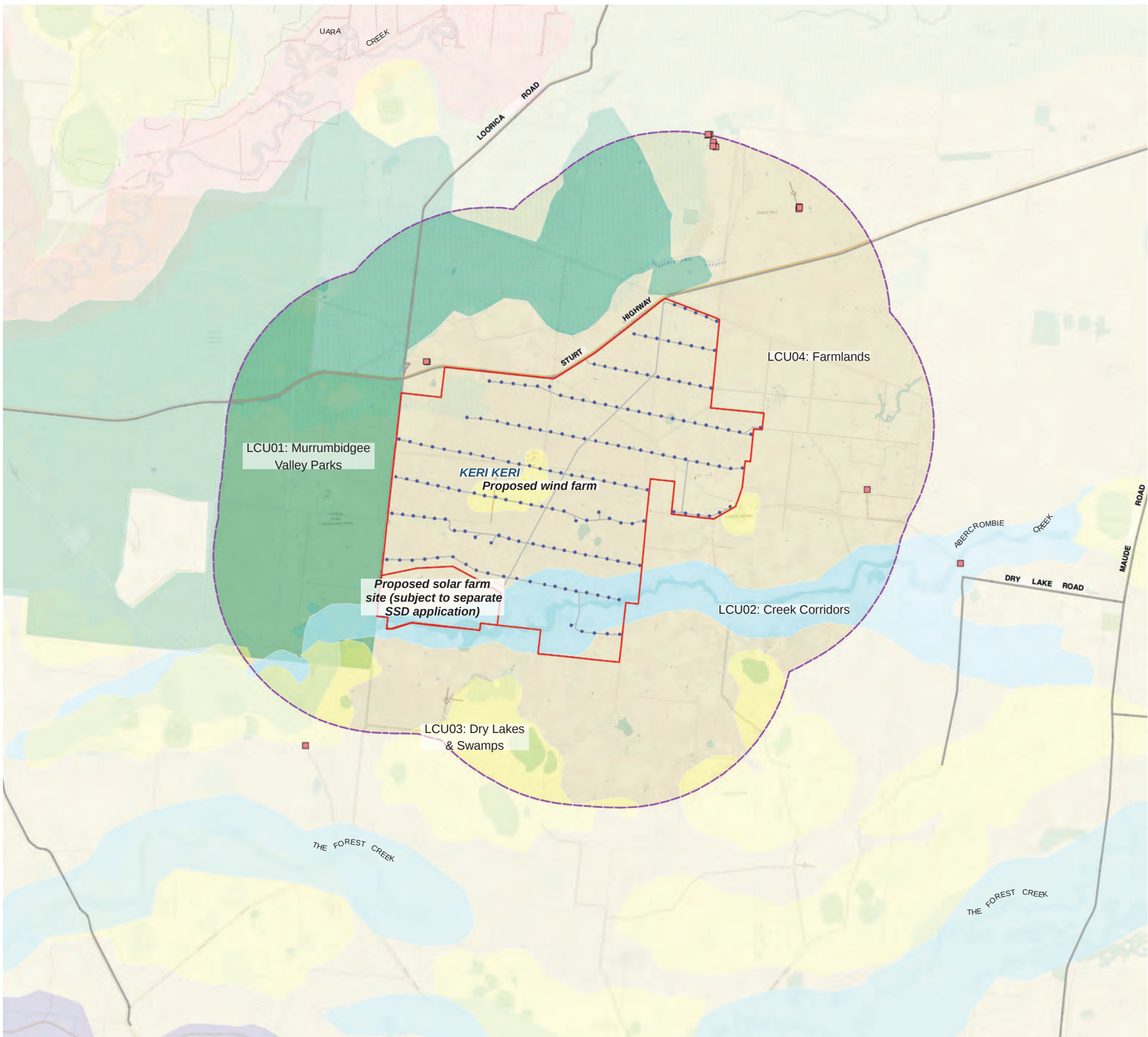
Table 2 provides an overview of the LCUs and preliminary Scenic Quality Ratings applied. These ratings have been developed using a standard frame of reference provided in the Bulletin. The LCUs and Scenic Quality Ratings will be refined in the EIS Phase of the Project to reflect input provided by the community during ongoing consultation.

Table 3 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	Murrumbidgee Valley Parks	Includes the extents of Yanga State Conservation Area, Nature Reserve and National Park as well as floodplains of Uara Creek.	Moderate
LCU02	Creek corridors	Moderately vegetated but dry creek and drainage channels that run across intermittently. Very shallow embankments, almost minor depressions in some areas.	Moderate
LCU03	Dry Lakes & Swamps	Flat, sub-circular, shallow depressions studded across the landscape. Generally vegetated with low storey groundcovers and grasses; utilized for grazing.	Low
LCU04	Farmlands	Clear, flat and open areas used for grazing or cropping. Most prominent character of the region with minor to no elevation changes.	Low

Table 2 Overview of Preliminary Landscape Character Units

5.0 Existing Landscape Character



Preliminary Landscape Character Units
Proposed Keri Keri Wind Farm

LEGEND

- Project Area
- Proposed 291.5 m Turbine Location
- Non-involved dwellings within 10 km of Project Area
- Main Road
- Minor Road
- 8000 m from turbines
- LCU01: Murrumbidgee Valley Parks
- LCU02: Creek Corridors
- LCU03: Dry Lakes & Swamps
- LCU04: Farmlands

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

5.0 Existing Landscape Character

LCU01: Murrumbidgee Valley Parks

This LCU is defined by the densely vegetated Riverina plains that fall within the extents of the Yanga SCA, Nature Reserve and National Park. Land is subjected to minimal use and represents unique characteristics defined by the flat topography and dense mallee, black box and belah woodlands. Recreational associations have been identified within the extents of the Murrumbidgee Valley Parks, the closest being the Willows campground.

Scenic quality rating: Moderate

See Images 7 and 8.

LCU02: Creek Corridors

The Creek Corridors LCU is defined by generally flat vegetation corridors. Most creek and drain channels remain dry and are characterised by shallow depressions or elevation changes that are covered with speargrass and saltbush, and moderately dense black box woodland. The density of trees varies in different locations. The Forest Creek also represents similar character and is defined by denser vegetation corridors.

Scenic quality rating: Moderate

See Images 9 and 10.



Image 7
The Willows campground comprises of picnic areas and caravan parking surrounded by dense woodlands of belah & black box communities.



Image 8
General character of the Yanga SCA & Nature Reserve defined by vast, open expanses with scrubby saltbush communities and dense woodlands.



Image 9
View of vegetation corridor associated with the Abercrombie Creek as seen in close proximity of the Project Area.



Image 10
Typical view of the Abercrombie Creek bed - minor elevation changes lined with grasses and saltbush along with scattered to moderately dense stands of black box communities.

5.0 Existing Landscape Character

LCU03: Dry Lakes & Swamps

The LCU is defined by flat, shallow sub-circular depressions that are spread across the landscape. Characterised by dry, grey cracking clays and scribbly groundcovers, these lakes and swamps remain dry through most of the year. Prominent vegetation includes stands of nitre goosefoot and lignum shrubs, saltbush, canegrass and dillonbush.

Scenic quality rating: Low

See Images 11 and 12.



Image 11

Large, open expanses of saltbush communities over flat land parcels with no water define the LCU's typical character.



Image 12

View of Dry Lake which is located east of the Project Area.

LCU04: Farmlands

The Farmlands LCU is defined by vast, open land parcels that are utilised for sheep and cattle 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 saltbushes, speargrass, and forbs. Common land uses include grazing, dryland cropping, modified and irrigated pastures.

Scenic quality rating: Low

See Images 13 and 14.



Image 13

Open, flat land parcels with scrubby groundcovers and grasses typical of the LCU.



Image 14

Character of farmlands south of Keri Keri Station - open, grassy and scrubby grazing lands.

5.0 Existing Landscape Character

Landscape Character Units		
LCU:	Name:	Preliminary Visual Impact Assessment
LCU01	Murrumbidgee Valley Parks	Views from this LCU are often contained by the unique vegetation that defines this LCU. Despite the flat topography, dense woodlands will help reduce and mitigate views towards the Project. Recreational camp sites such as the Willows campground will have minor or no visual impact due to vegetation in the foreground.
LCU02	Creek Corridors	Views towards the Project will be available within this LCU because of the relatively flat topographic character and elevated position of the turbines. Patches of vegetation, however, along the creek channel may help screen views in certain areas.
LCU03	Dry Lake & Swamps	Views of the Project from the Dry Lakes & Swamps LCU will be available from most locations. The flat, low-lying character allows open views. Existing shrubs may help reduce the visual impact in certain areas.
LCU04	Farmlands	The Project is located within the Farmlands LCU which is also the most prominent character of the region. Isolated dwellings are scattered across the farmlands. Agricultural activities include grazing pastures and dryland cropping. Views are generally open with minimal obtrusive elements.

Table 3 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 study area. The tools provide an early indication of where placement of turbines will require further assessment and justification, and where consultation with potentially affected landowners needs to be focused – including discussions for landholder agreements.*

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

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

Once 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 **291.5 metres**. The ‘black line’ intersects at a distance of **3,900 metres** and the ‘blue line’ intersects at **5,700 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.

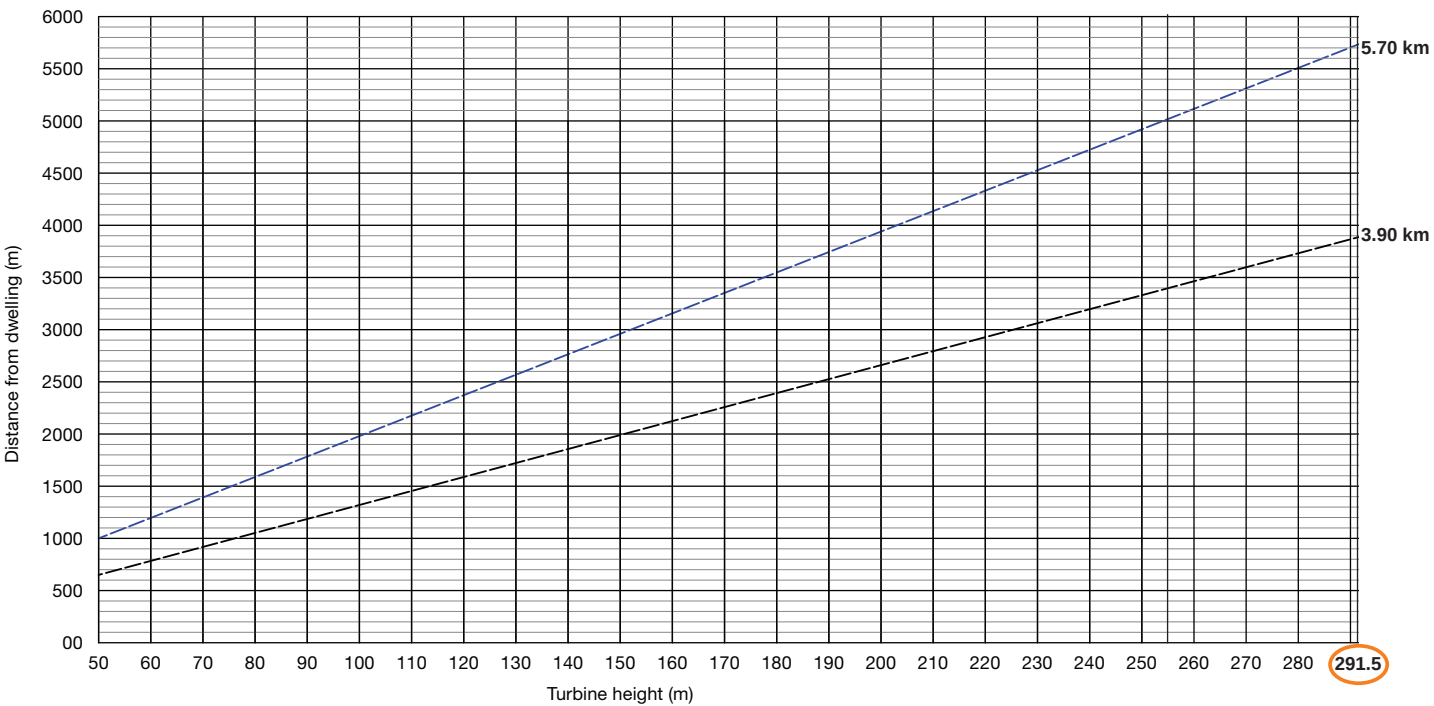


Figure 10 Visual Magnitude thresholds for Keri Keri Energy Park Project Layout

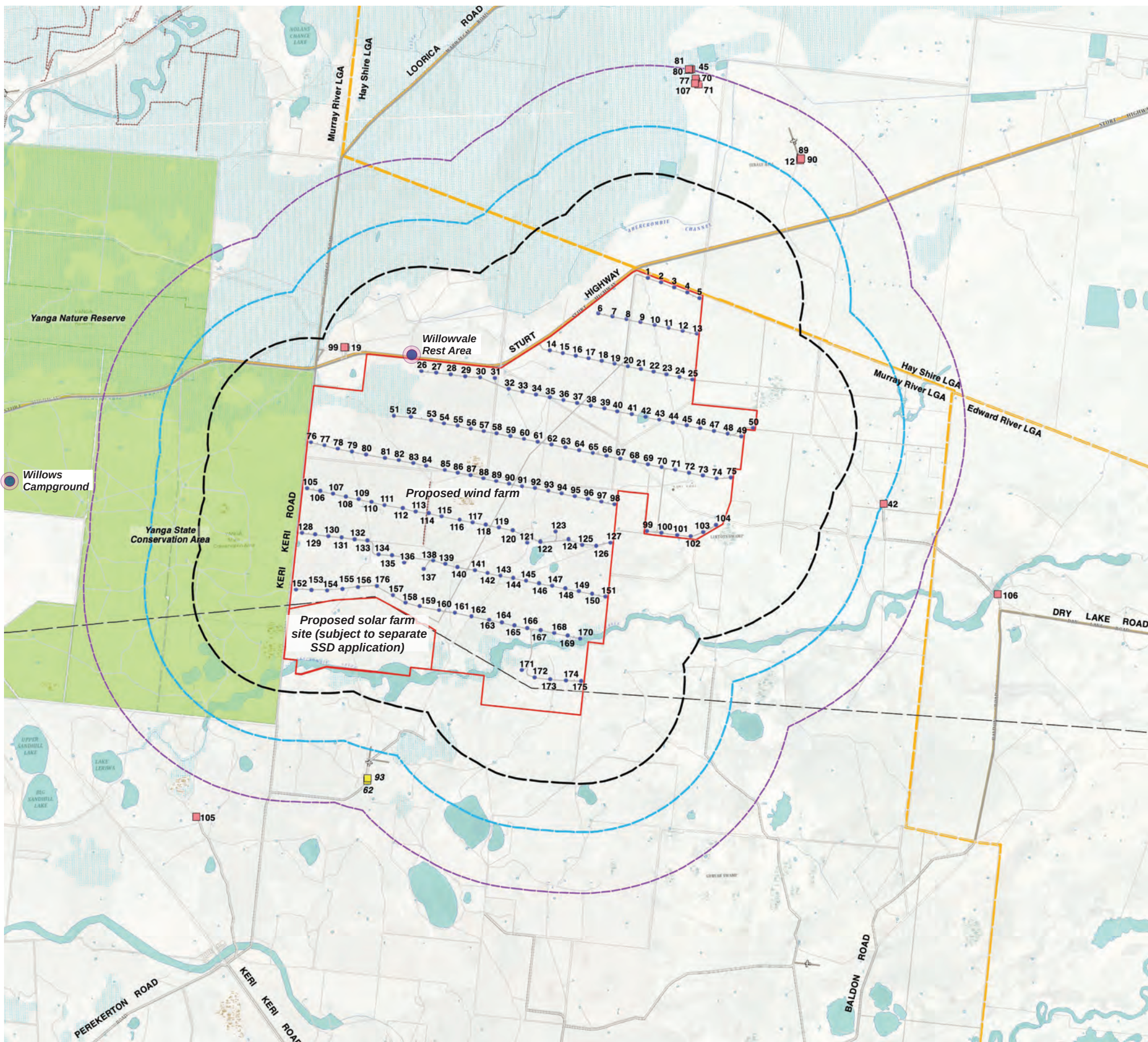
(Source: Adapted from Visual Assessment Bulletin)

6.3 Results of Preliminary Assessment Tool 1: Visual Magnitude

Application of the Preliminary Assessment Tools to the Keri Keri Wind Farm identified dwellings which require further assessment in accordance with the Bulletin. Non-involved dwellings identified within 8,000 metres of the nearest proposed turbine are shown on **Figure 11**.

- Two (2) non-involved dwellings have been identified within 3,900 metres of the proposed wind turbine locations (within black line of visual magnitude).
- Additionally, nine (9) non-involved dwellings are located within 8,000 metres of the proposed wind turbine locations. No dwellings were identified between the black & blue lines.
- Preliminary site assessment identified that existing vegetation would reduce visibility from both non-involved dwellings within the black line of visual magnitude.
- Preliminary assessment of five (5) representative sensitive receptors within 8000m of the proposed turbines have been included in **Appendix A**. These assessments illustrate that existing intervening vegetation that surrounds these non-involved dwellings is likely to reduce views to turbines. Further detailed assessment and site inspections of sensitive receptors to ground truth this analysis will be undertaken during the EIS phase.

6.0 Preliminary Assessment Tools



Visual Magnitude
Proposed Keri Keri Wind Farm

LEGEND

- Project Area
- 24 Proposed 291.5 m Turbine Location
- 42 Non-involved dwellings within 10 km of Project Area
- 62 Involved dwelling
- Key public viewpoints
- Main Road
- Minor Road
- 3900 m from turbines
- 5700 m from turbines
- 8000 m from turbines
- LGA Boundary
- Existing 220kV transmission line
- SCA / Nature Reserves

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



Figure 11 Preliminary Assessment Tool 1: Visual Magnitude - Keri Keri Renewable Energy Park (Map Source: Six Maps)

6.0 Preliminary Assessment Tools

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 kilometres of each dwelling or key public viewpoint. Key public viewpoints identified within 8,000 m of the nearest turbine includes Willowvale Rest Area located on the Sturt Highway. **Figure 12** 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 13 provides an overview of the number of 60° sectors visible from each of the dwellings identified within 8 kilometres.

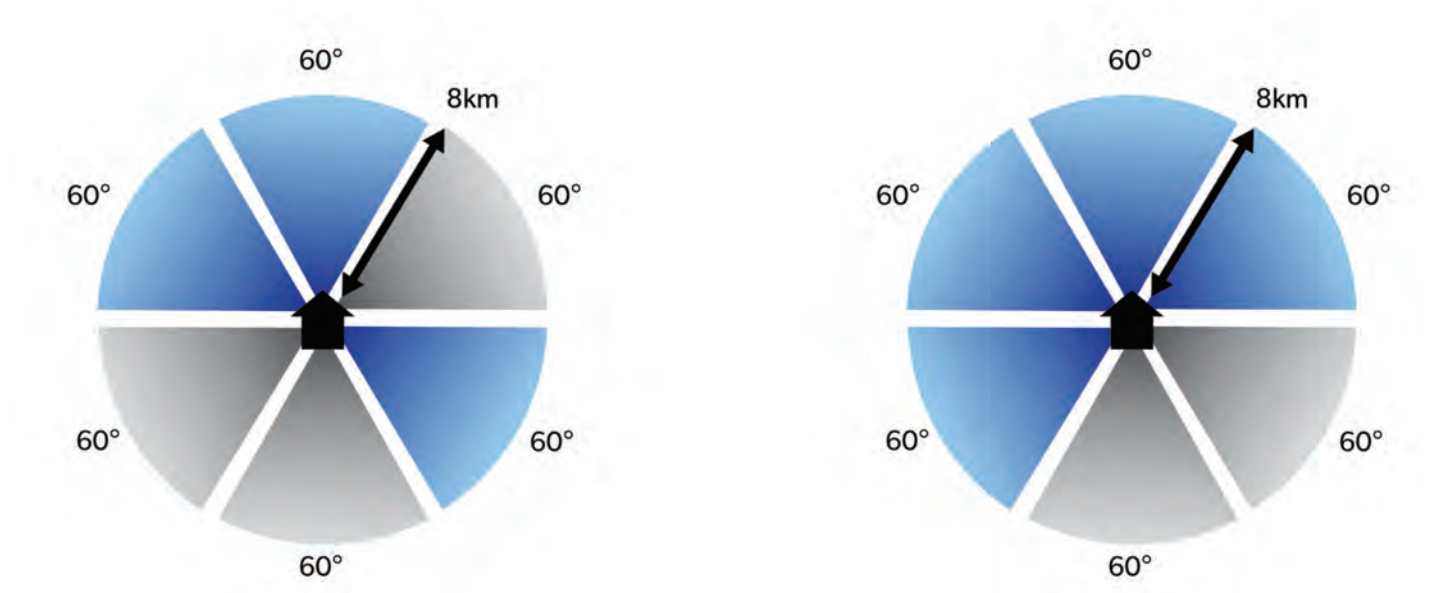


Figure 12 Preliminary Assessment Tool: Multiple Wind Turbines
(Source: Visual Assessment Bulletin)

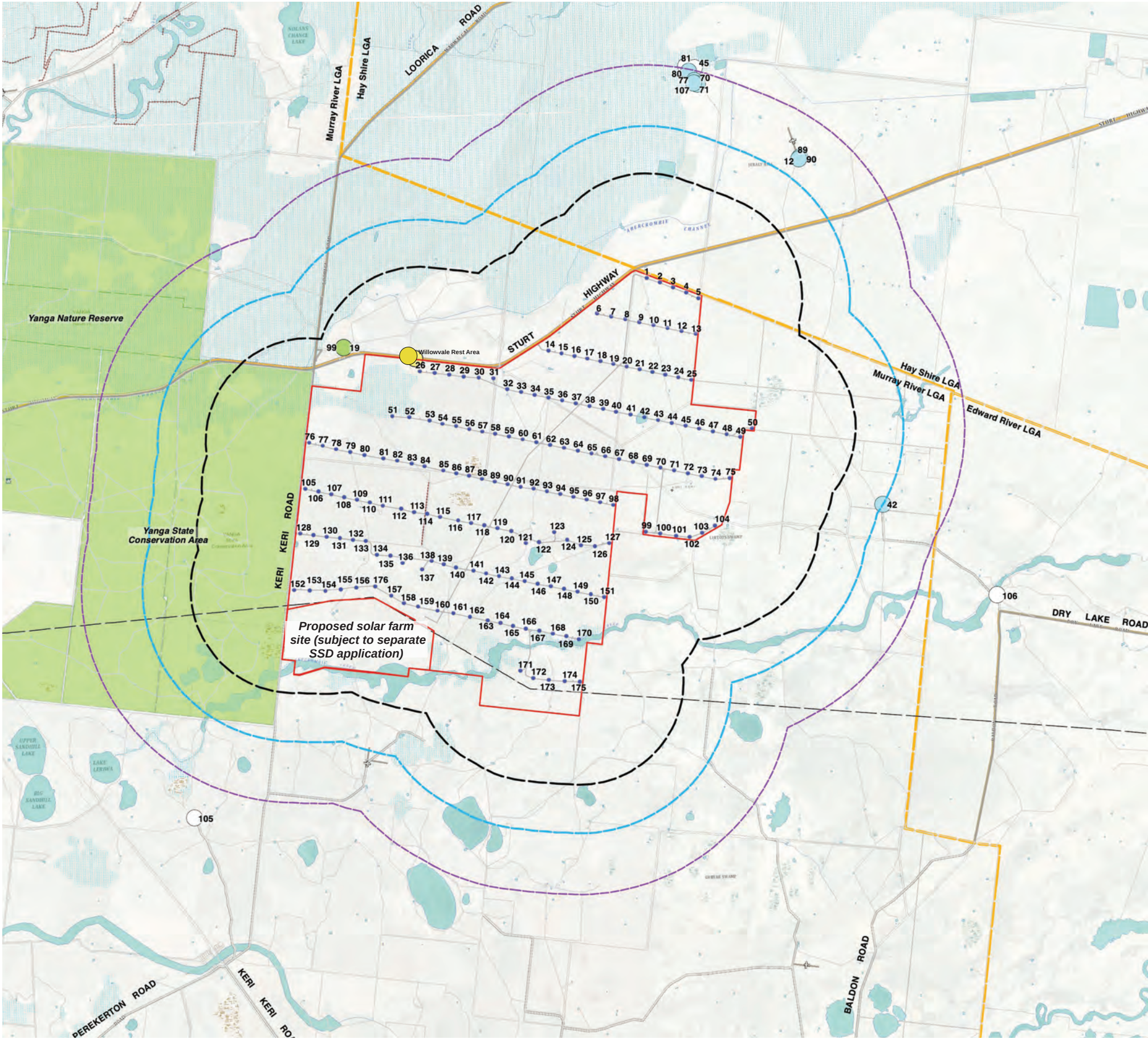
6.5 Results of Preliminary Assessment Tool 2: Multiple Wind Turbine Tool

When applied to the Project, the 2D Multiple Wind Turbine Tool (see **Figure 13**) identified two (2) non-involved dwellings with two (2) sectors of visible turbines within 8000 m of the proposed wind trubines. The remaining nine (9) non-involved dwellings within 8000 m of the proposed wind turbines are likely to have views to turbines in up to one (1) 60 degree sector which is deemed acceptable.

The 2D Multiple Wind Turbine Tool identified views in upto three (3) 60 degree sectors for Willowvale Rest Area which is a key public viewpoint on Sturt Highway. An assessment of potential visual impacts on this viewpoint has been discussed in **Appendix B**.

Further assessment of these dwellings using 3D topographic mapping has delivered the same results. Existing screening factors (including vegetation and structures) may reduce visibility of the turbines.

6.0 Preliminary Assessment Tools



Multiple Wind Turbine Tool
Proposed Keri Keri Wind Farm

LEGEND:

- Project Area
- 24 Proposed Keri Keri Wind Turbine Location (291.5 m high)
- 42 Non-involved dwellings within 10 km of Project Area
- Main Road
- Minor Road
- 8000 m from turbines
- Existing 220kV transmission line
- SCA / Nature Reserves

MWTT Results for Non-involved Dwellings within 8000m of turbines:

- Dwellings in excess of 8km
- One (1) 60° Sector (60°)
- Up to two (2) 60° Sectors (120°)
- Up to three (3) 60° Sectors (180°)

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 13 Preliminary Assessment Tool 2: Multiple Wind Turbine Tool (Map Source: Six Maps)

7.0 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 291.5 metres.

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

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

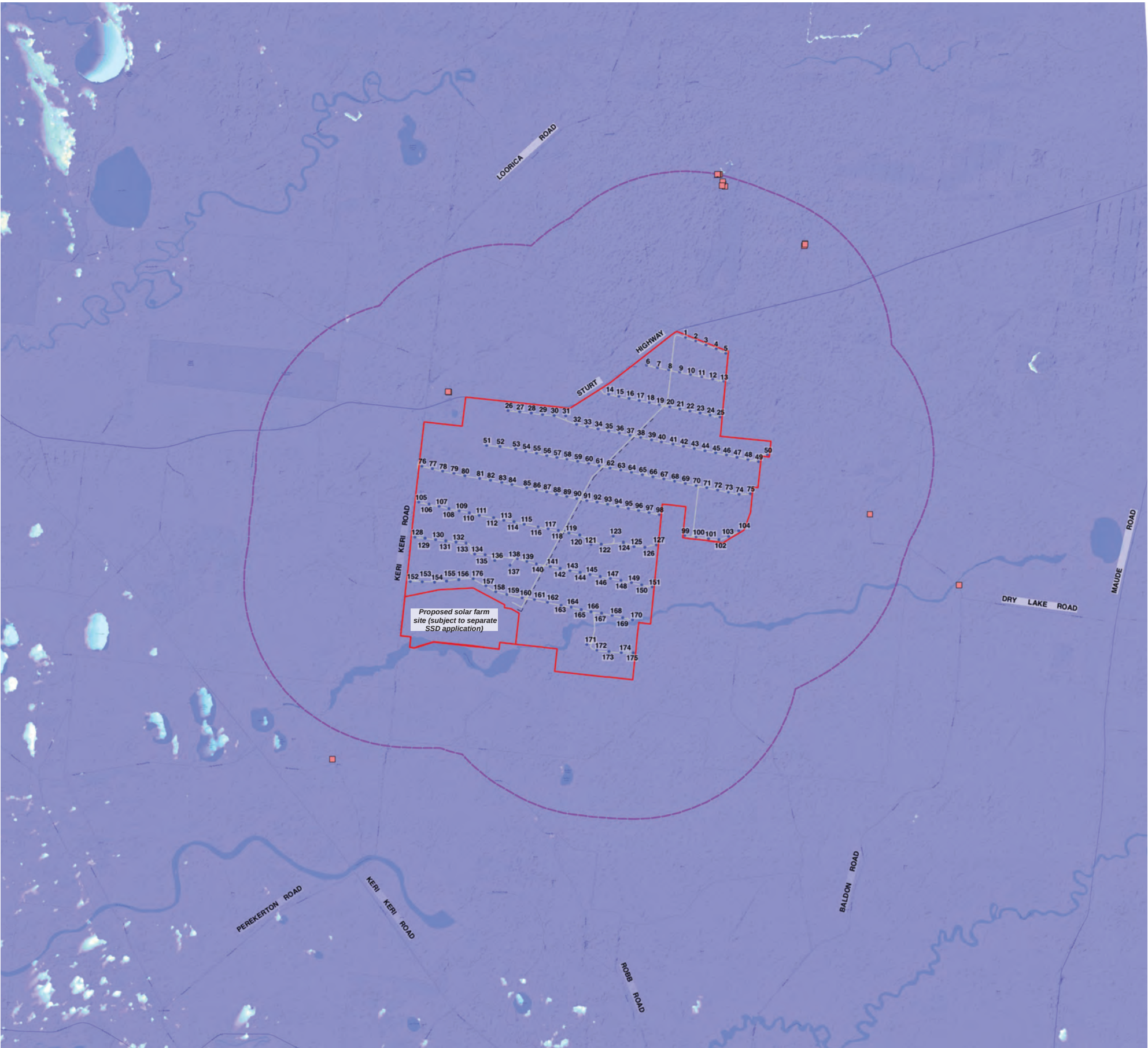
7.2 Summary of Preliminary Zone of Visual Influence

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

- Due to the relatively flat topography that characterizes this landscape, the majority of turbines associated with the Project are likely to be visible from most areas around the Project Area.
- Certain areas such as the dry lake systems that form a part of the Yanga Parks and parts of the Murrumbidgee Valley that are located generally northwest/west of the Project Area have been identified in the ZVI as areas with views limited by topography.
- Views to the majority of turbines associated with the Project are likely to be available for all dwellings within 8 kilometres of the wind turbines. This assessment is based on a consideration of topography alone and does not consider intervening elements such as vegetation and existing structures.
- Following the development of the ZVI, detailed site investigations (in the form of a viewpoint analysis inventory and dwelling assessments) have been undertaken to ground truth the findings (see **Appendix B**). Preliminary viewpoint analysis (from 10 public locations) and assessment of 5 representative sensitive receptors have been included in **Appendix A** and **Appendix B**. These assessments illustrate existing intervening vegetation that surrounds non-involved dwellings is likely to reduce views of turbines from a number of locations.
- 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 with no consideration of vegetation or structures. Ground truthing during field work will ascertain potential visibility taking into account structures and vegetation.

7.0 Preliminary Zone of Visual Influence



Zone of Visual Influence
Blade Tip Height 291.5 m
Proposed Keri Keri Wind Farm

LEGEND

- Project Area
- 24 Proposed 291.5 m Turbine Location
- Non-involved dwellings within 10 km of Project Area
- 8000 m from turbines

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

0
1-66
67-131
132-176

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 (291.5 metres)

8.0 Preliminary Dwelling and Viewpoint Assessments

8.1 Preliminary Assessment of Dwellings

Examples of the preliminary assessment tools applied to five (5) representative non-involved dwellings (as shown on **Figure 15**) within 8,000 m of the nearest turbine have been included in **Appendix A**.

The preliminary assessment identifies existing vegetation surrounding many of the dwellings which would reduce the potential visual impacts identified by the preliminary assessment tools and Zone of Visual Influence. A summary of these findings is provided in **Table 4**.

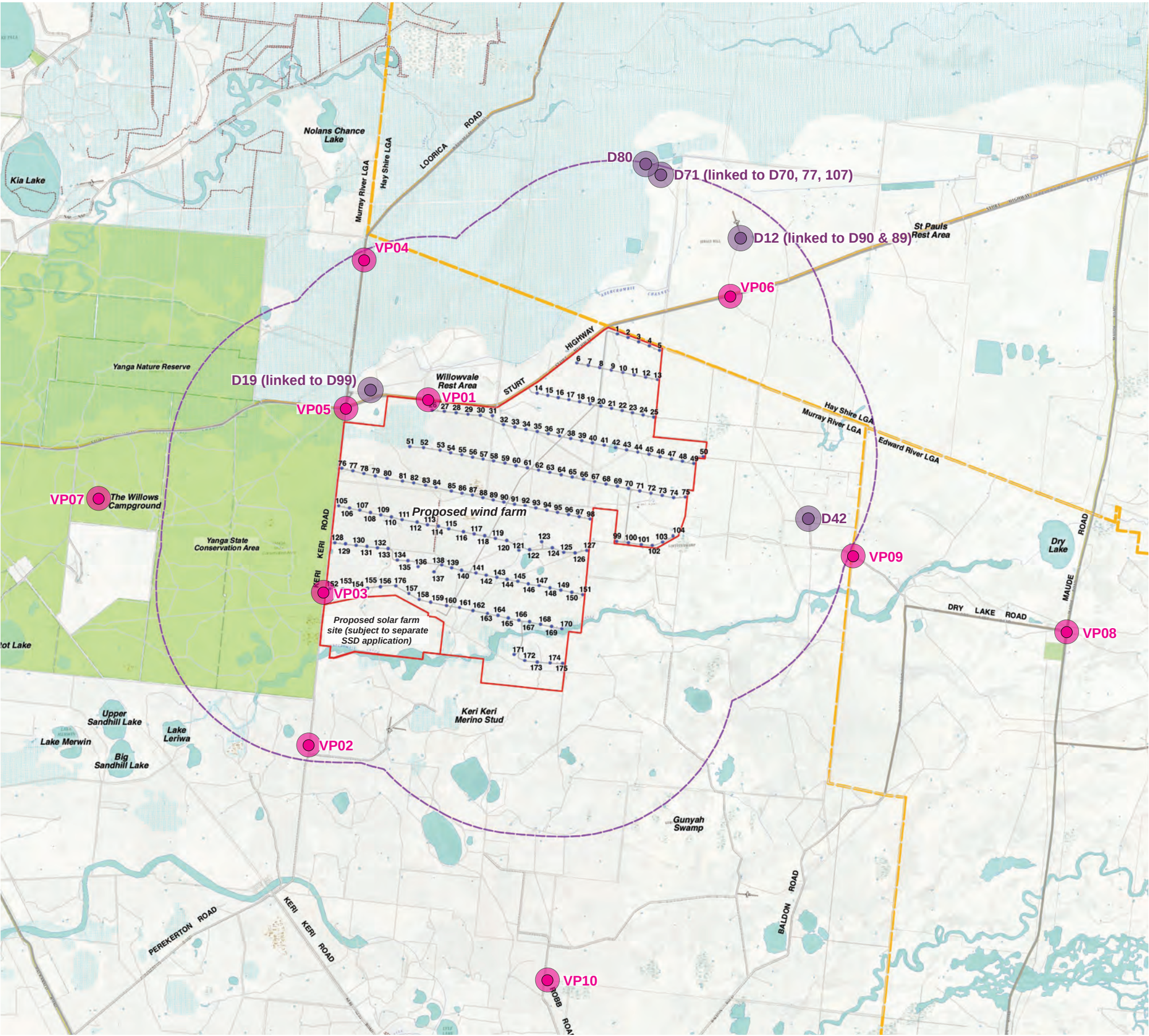
8.2 Preliminary Assessment of Public Viewpoints

Appendix B provides preliminary assessments from Public Viewpoints. A total of 10 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 15**).

Non-involved dwellings within 3900 metres of nearest WTG (Black Line of Visual Magnitude)					
Dwelling ID:	Location	Approx distance to nearest WTG (km)	Nearest WTG	Number of 60° sectors (Based on 2D Assessment)	Approx. number of potentially visible WTGs (Based on ZVI)
Non-involved:					
Dwelling 19	'Willow Vale', Sturt Highway	3.00 km	26	2	176
	Views likely to be available of all proposed turbines to the southeast. Existing vegetation in the dwelling's foreground to the east southeast will help fragment majority of the views.				
Dwelling 99	West of Dwelling 19	3.03 km	26	2	176
	Views likely to be available of all proposed turbines to the southeast. Dwelling is located to the west of Dwelling 19. Most views will be fragmented by Dwelling 19 and associated vegetation.				
Non-involved dwellings within 8000 metres of nearest WTG					
Dwelling ID:	Location	Approx distance to nearest WTG (km)	Nearest WTG	Number of 60° sectors (Based on 2D Assessment)	Approx. number of potentially visible WTGs (Based on ZVI)
Non-involved					
Dwelling 42	'Keri East', off Dry Lake Road	5.70 km	50	1	176
	Views are likely to be fragmented by existing dense vegetation located west of the dwelling. Predominant viewing direction is west.				
Dwelling 12	'Jeraly', off Sturt Highway	6.43 km	5	1	176
	Views likely to be available in southwest. Most views will be fragmented by existing vegetation that surrounds the house.				
Dwelling 89	North of Dwelling 12	6.51 km	5	1	176
	Views likely to be available in southwest. Majority of the views will be screened by existing structures in the foreground.				
Dwelling 90	Northeast of Dwelling 12	6.48 km	5	1	176
	Existing vegetation highly likely to fragment Project views in the southwest. Dwelling 12 also likely to fragment views for this residence.				
Dwelling 70	Off Sturt Highway	7.61 km	1	1	176
	Views towards south likely to be screened by existing boundary vegetation. Views in all other directions also likely to be screened.				
Dwelling 71	Off Sturt Highway	7.54 km	1	1	176
	Existing vegetation likely to partially fragment views of Project. Visibility of Project, however, likely to be limited.				
Dwelling 77	Off Sturt Highway	7.52 km	1	1	176
	Views likely to be fragmented by Dwelling 70 and existing vegetation along the dam's southern boundary. Predominant viewing direction is south.				
Dwelling 107	Off Sturt Highway	7.52 km	1	1	176
	Views likely to be open and available in the south/southwest. Majority of the views, however, will be distant with limited visibility.				
Dwelling 80	Off Sturt Highway	8.00 km	1	1	176
	Views likely to be fragmented by existing vegetation in the foreground. Limited views due to distance of turbines.				

Table 4 Overview of Preliminary Assessment for non-involved dwellings within 8000 metres

8.0 Preliminary Dwelling and Viewpoint Assessments



Preliminary Dwelling & Viewpoint Assessment Locations Proposed Keri Keri Wind Farm

- LEGEND**
- Project Area
 - 24 Proposed Keri Keri Wind Turbine Location (291.5 m high)
 - Main Road
 - Minor Road
 - 8000 m from turbines
 - LGA Boundary
 - National Parks / Nature Reserves
 - Preliminary Dwelling Assessment locations
Refer to Appendix A.
 - Preliminary Viewpoint Assessment locations
Refer to Appendix B.

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

9.0 Cumulative Visual Impact Assessment

9.1 Overview of Cumulative Visual Impacts

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

The existing landscape character of the region allows for optimum harvest of wind energy due to the flat terrain and large expanses of uninhabited land with minimal obstructions in the landscape. These characteristics are beneficial to the output of wind energy and it is inevitable that overtime this will be utilised for the development of wind farm projects. **Figure 16** shows the solar farms that are currently proposed within the extents of the REZ. The potential to tap into wind energy sources is centred around the western part of the REZ near the towns of Hay, Balranald and Kyalite.

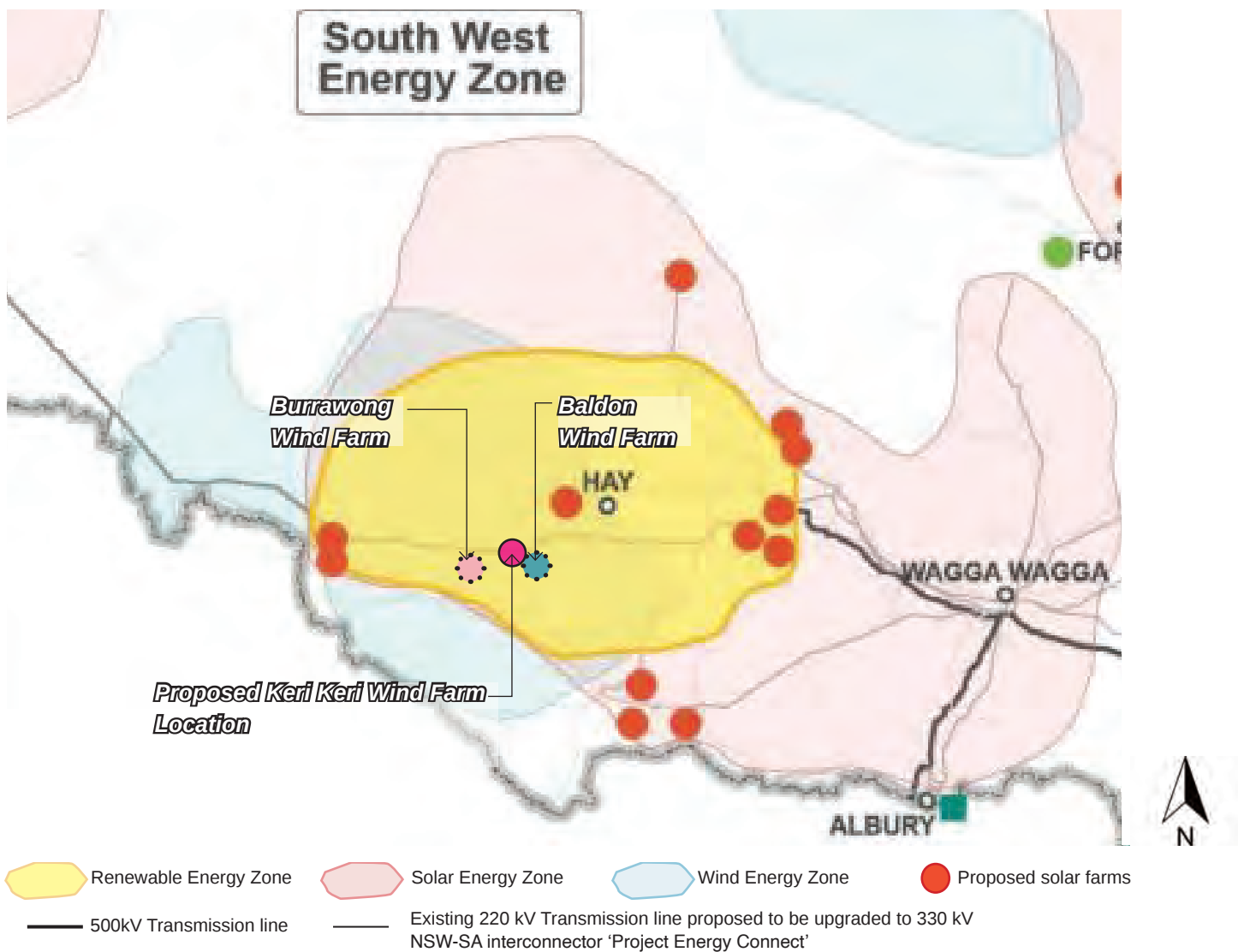


Figure 16 Wind Farms in South West Energy Zone
(Map Source: NSW Department of Planning & Environment, 2018)

9.2 Nearby Wind Farm Projects

Currently, two (2) other wind farm projects have been proposed in the area (refer **Figure 17**):

- Burrawong Wind Farm
- Baldon Wind Farm

Burrawong Wind Farm:

Burrawong Wind Farm's preliminary layout comprises of 107 turbines that are spread across an area of approximately 10,700 ha. The Project would be potentially located 10 km northeast of Kyalite and 15 km south of Balranald. SEARs were issued for the Burrawong Wind Farm Project in December 2021.

Baldon Wind Farm:

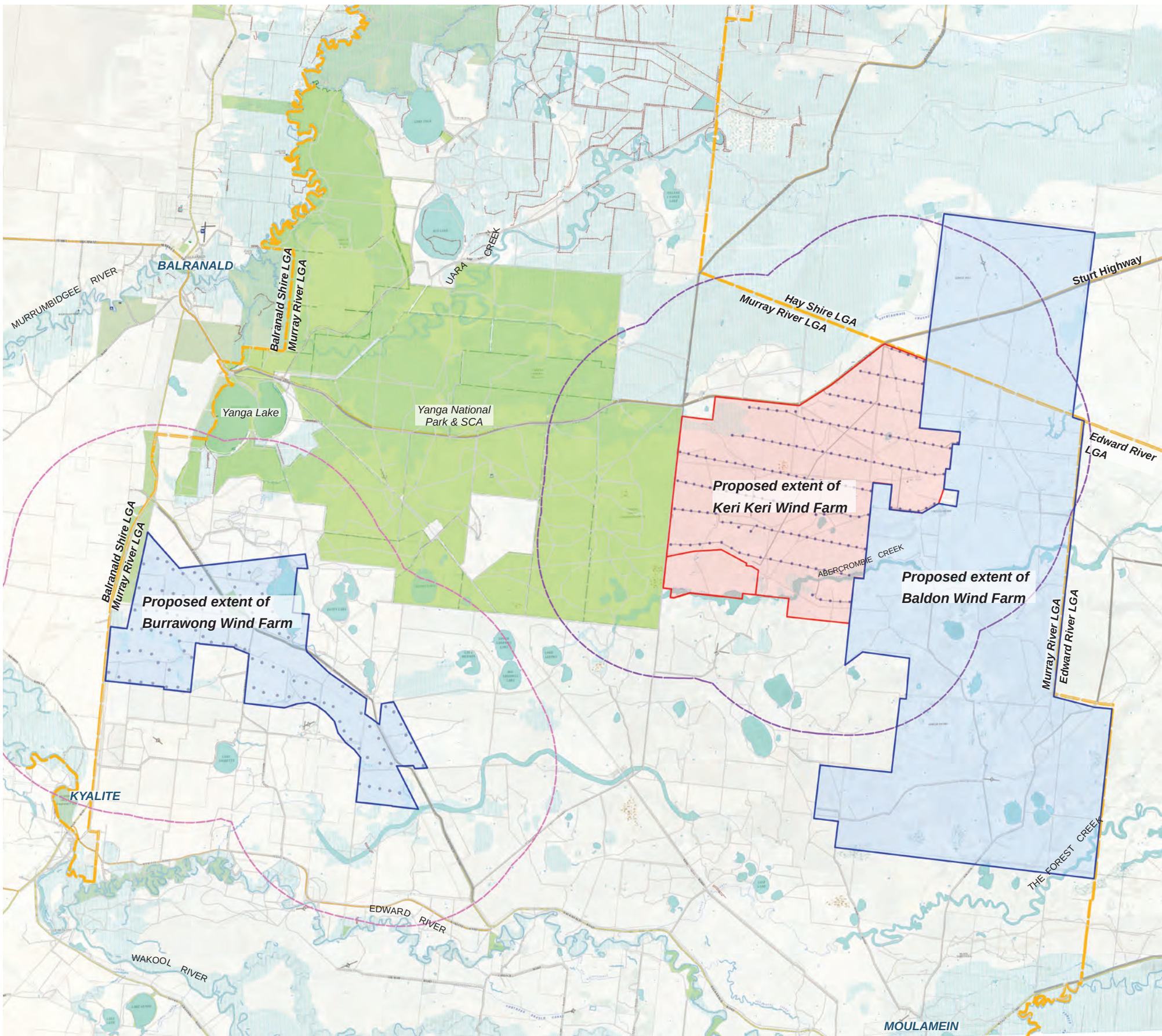
Baldon Wind Farm's preliminary layout comprises of between 140 and 170 turbines that are spread across an area of approximately 43,116 ha. The Project would be potentially located 20 km southwest of adjacent to the Keri Keri Renewable Energy Project - Wind Farm. Based on information on the project website (as of March 2021) Baldon Wind Farm Project is in the preliminary stages and no scoping report has been issued.

9.3 Cumulative Impact on Broader Landscape Character

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

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

9.0 Cumulative Visual Impact Assessment



Nearby Wind Farm Projects Proposed Keri Keri Wind Farm

- LEGEND**
- Project Area (Keri Keri Wind Farm)
 - Project Area (Nearby Wind Farms)
 - Proposed Keri Keri Wind Turbine Location (291.5 m high)
 - Proposed Burrawong Wind Turbine Location (300 m high)
 - Main Road
 - Minor Road
 - 8000 m from Keri Keri Wind Farm turbines
 - 8000 m from Burrawong Wind Farm turbines
 - LGA Boundary
 - National Parks / Nature Reserves / SCA



Figure 17 Nearby Wind Farm Projects (Map Source: Six Maps)

10.0 Summary and Recommendations

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 Secretary’s Environmental Assessment Requirements 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.

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.

Existing Landscape Character

This PVIA provided a detailed assessment of the existing landscape character of the Study Area through the following:

- Identified land uses, key landscape features and key viewpoints,
- Categorisation of four (4) preliminary Landscape Character Units (LCUs),
- Application of preliminary scenic quality ratings to each of the LCUs ranging from Low - Moderate,
- A brief preliminary overview of the potential visual impacts has been provided for each LCU.

Next Steps:

- Utilise the landscape character assessment to prepare a detailed Visual Baseline Study.
- Identify any additional key features, key viewpoints valued by the community through ongoing consultation.
- Refine the Landscape Character Units and allow the community to provide feedback on the relative

- scenic quality ratings of LCUs.
- Determine the Visual Influence Zone of key viewpoints and assess against the objectives outlined in the Visual Assessment Bulletin.

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 11 non-involved dwellings within 8000m of the nearest proposed turbine.
- The MWTT identified two (2) dwellings with turbines in up to two (2) 60 degree sectors. The remaining nine (9) dwellings have turbines in up to one (1) 60 degree sector.
- Willowvale Rest Area was identified as a key public viewpoint within 8 km of the Project. It is likely that the Project will be visible in up to three (3) 60 degree sectors at this location. An assessment of the potential visual impact is discussed in **Appendix B**.

Next Steps:

- Groundtruthing of all identified non-involved dwellings.
- Undertake site inspection and detailed dwelling assessment at sensitive non-involved 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.

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 291.5 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

10.0 Summary and Recommendations

photomontages will be provided in the EIS phase.

Cumulative Visual Impacts of Surrounding Wind Farms

The Project is located within the NSW South West REZ and is potentially located in close proximity of two (2) other wind farms (Burrawong Wind Farm and Baldon Wind Farm). It is important that the Project considers potential cumulative effects on the immediate and broader regional context that it forms a part of.

Next Steps:

Further assessment and justification for placement of 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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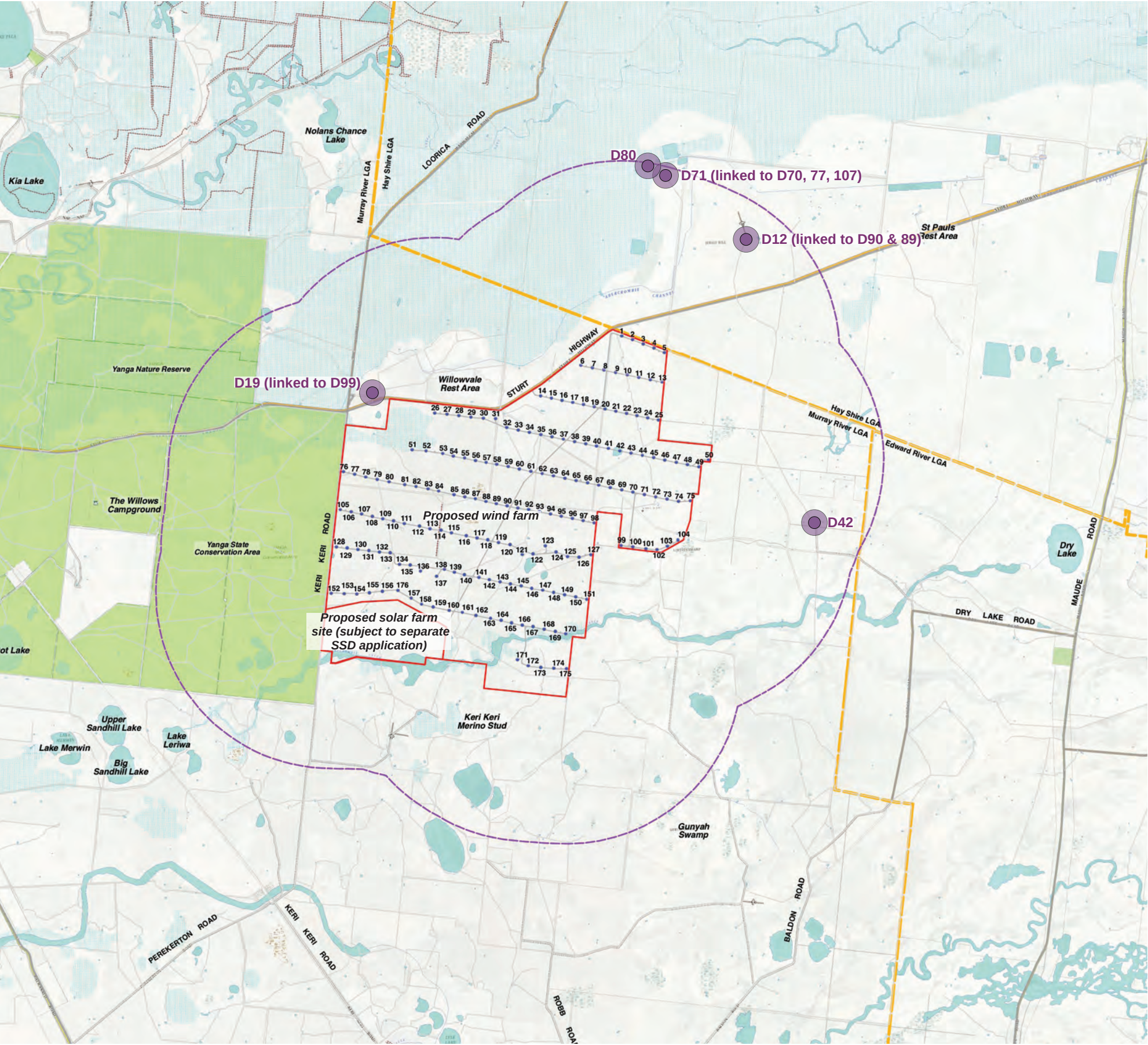
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Appendix A

Preliminary Dwelling Assessments

Preliminary Dwelling Assessment Locations



Preliminary Dwelling Assessment Locations Proposed Keri Keri Wind Farm

- LEGEND**
- Project Area
 - 24 Proposed Keri Keri Wind Turbine Location (291.5 m high)
 - Main Road
 - Minor Road
 - 8000 m from turbines
 - LGA Boundary
 - SCA / Nature Reserves
 - Preliminary Dwelling Assessment locations

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

A.1. Dwelling 12 (Linked to Dwellings 89 & 90)

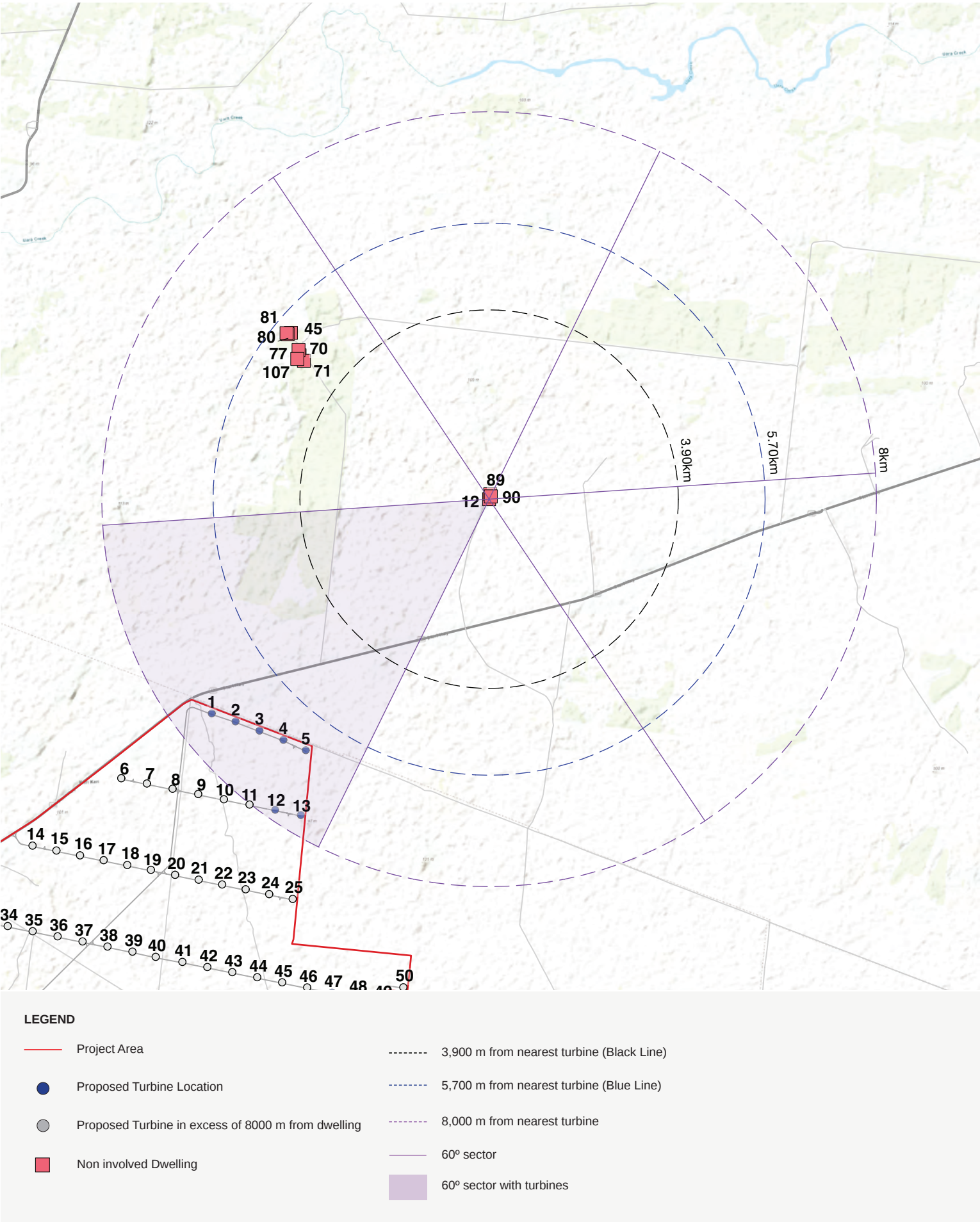


Figure A.1 Aerial Image Dwelling 12 (Aerial Image Source: SixMaps)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	6.43 km
Number of proposed turbines within the black line (3,900 m) of visual magnitude:	0
Number of theoretical 60° sectors (Based on 2D assessment):	1
Number of potentially visible turbines within 8,000m (based on topography alone):	7 Turbines (All at hub height)

A.2. Dwelling 19 (Linked to Dwelling 99)

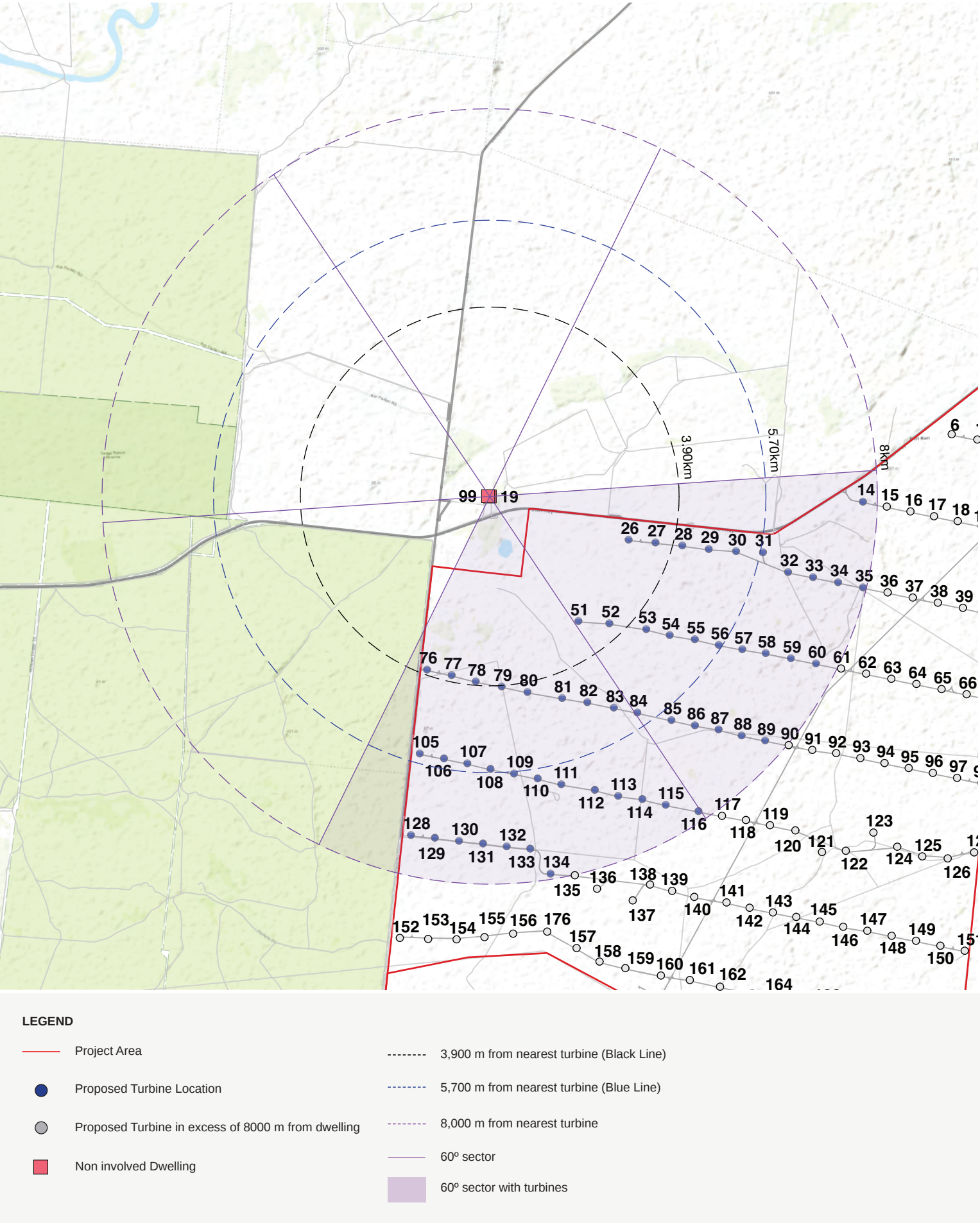


Figure A.2 Aerial Image Dwelling 19 (Aerial Image Source: SixMaps)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	3.00 km
Number of proposed turbines within the black line (3,900 m) of visual magnitude:	7
Number of theoretical 60° sectors (Based on 2D assessment):	2
Number of potentially visible turbines within 8,000m (based on topography alone):	54 Turbines (All at hub height)

A.3. Dwelling 42

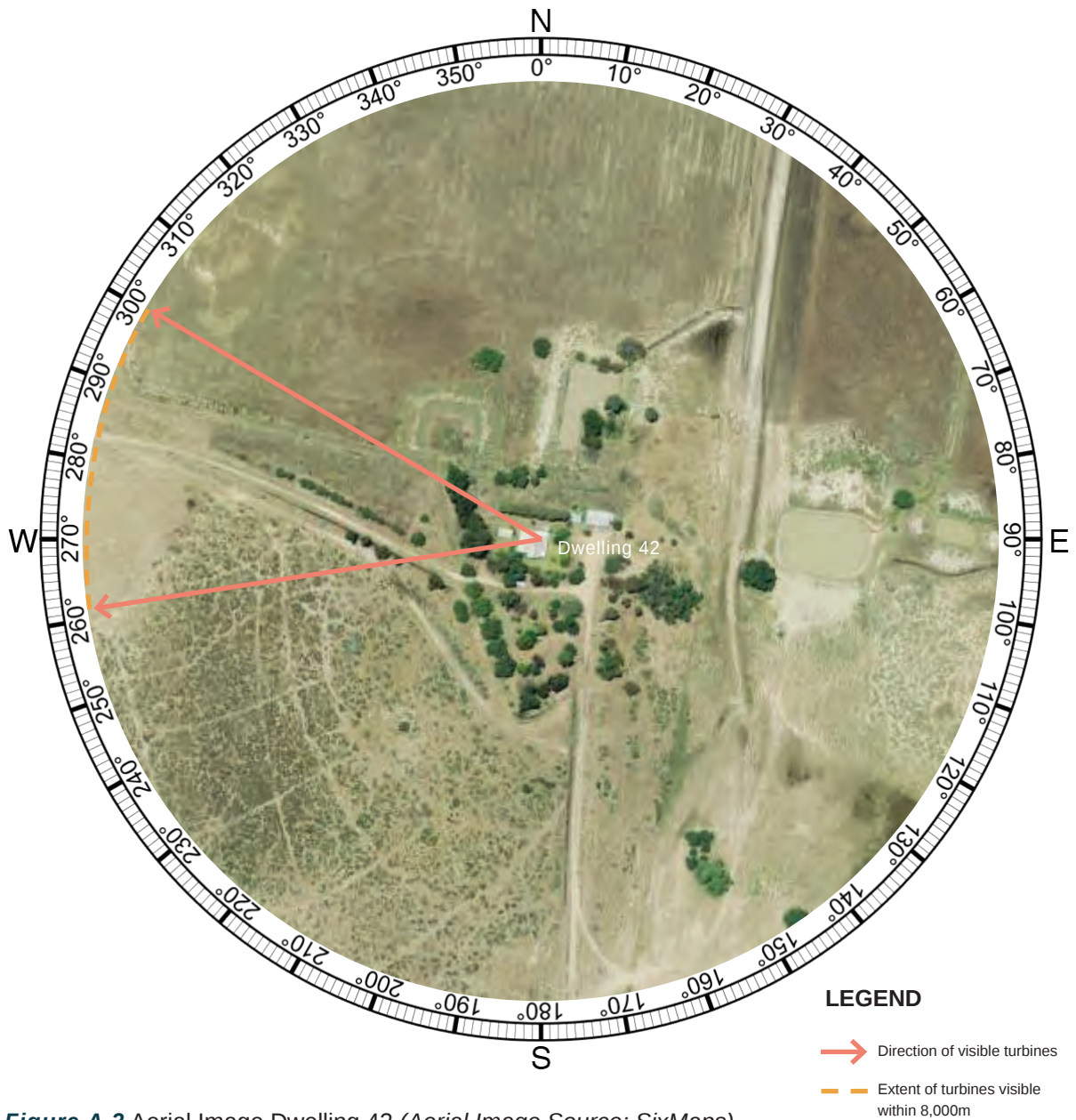
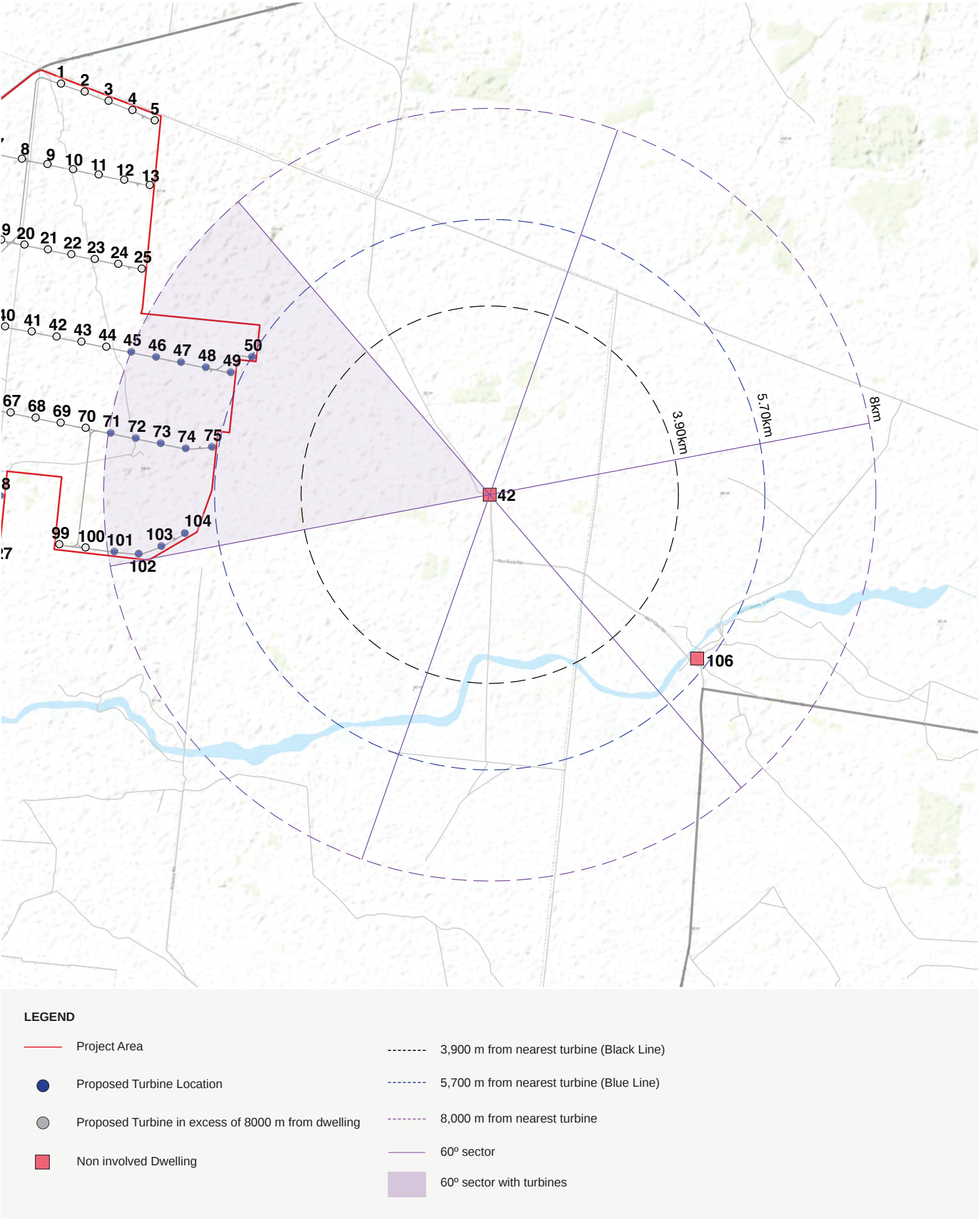


Figure A.3 Aerial Image Dwelling 42 (Aerial Image Source: SixMaps)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	5.70 km
Number of proposed turbines within the black line (3,900 m) of visual magnitude:	0
Number of theoretical 60° sectors (Based on 2D assessment):	1
Number of potentially visible turbines within 8,000m (based on topography alone):	15 Turbines (All at hub height)

A.4. Dwelling 71 (Linked to Dwellings 70, 77 & 107)

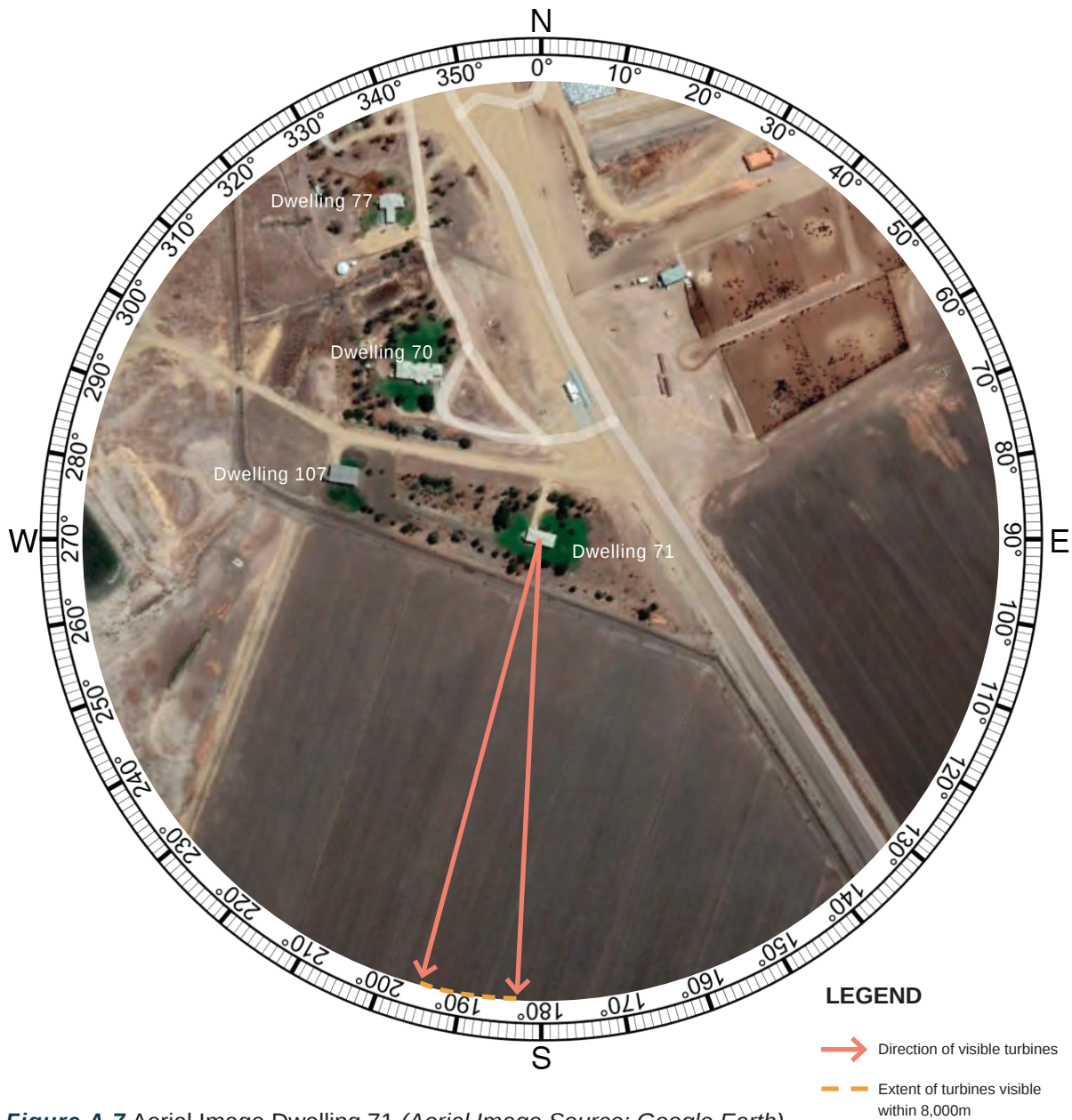
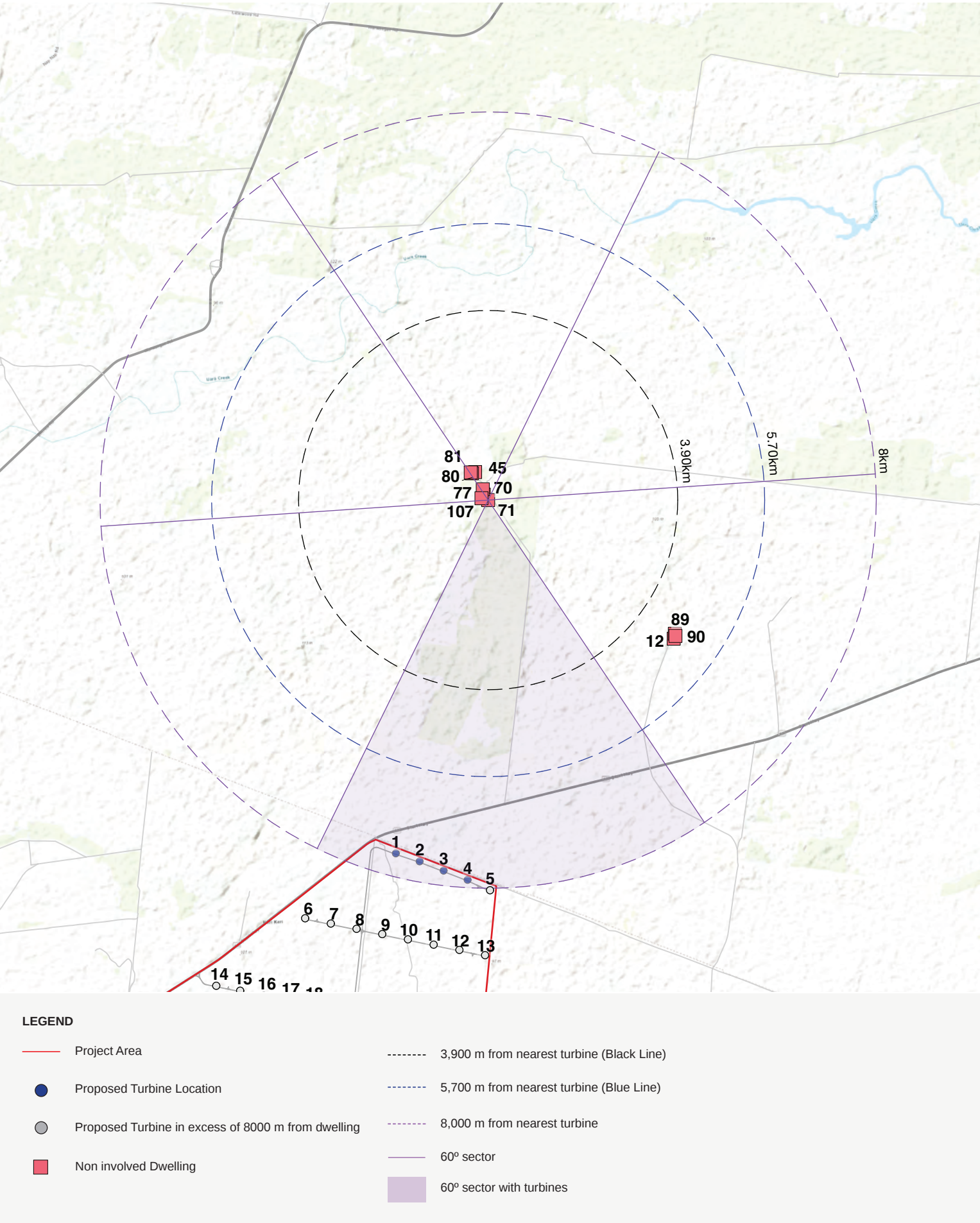


Figure A.7 Aerial Image Dwelling 71 (Aerial Image Source: Google Earth)

Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	7.54km
Number of proposed turbines within the black line (3,900 m) of visual magnitude:	0
Number of theoretical 60° sectors (Based on 2D assessment):	1
Number of potentially visible turbines within 8,000m (based on topography alone):	4 Turbines (All at hub height)

A.5. Dwelling 80

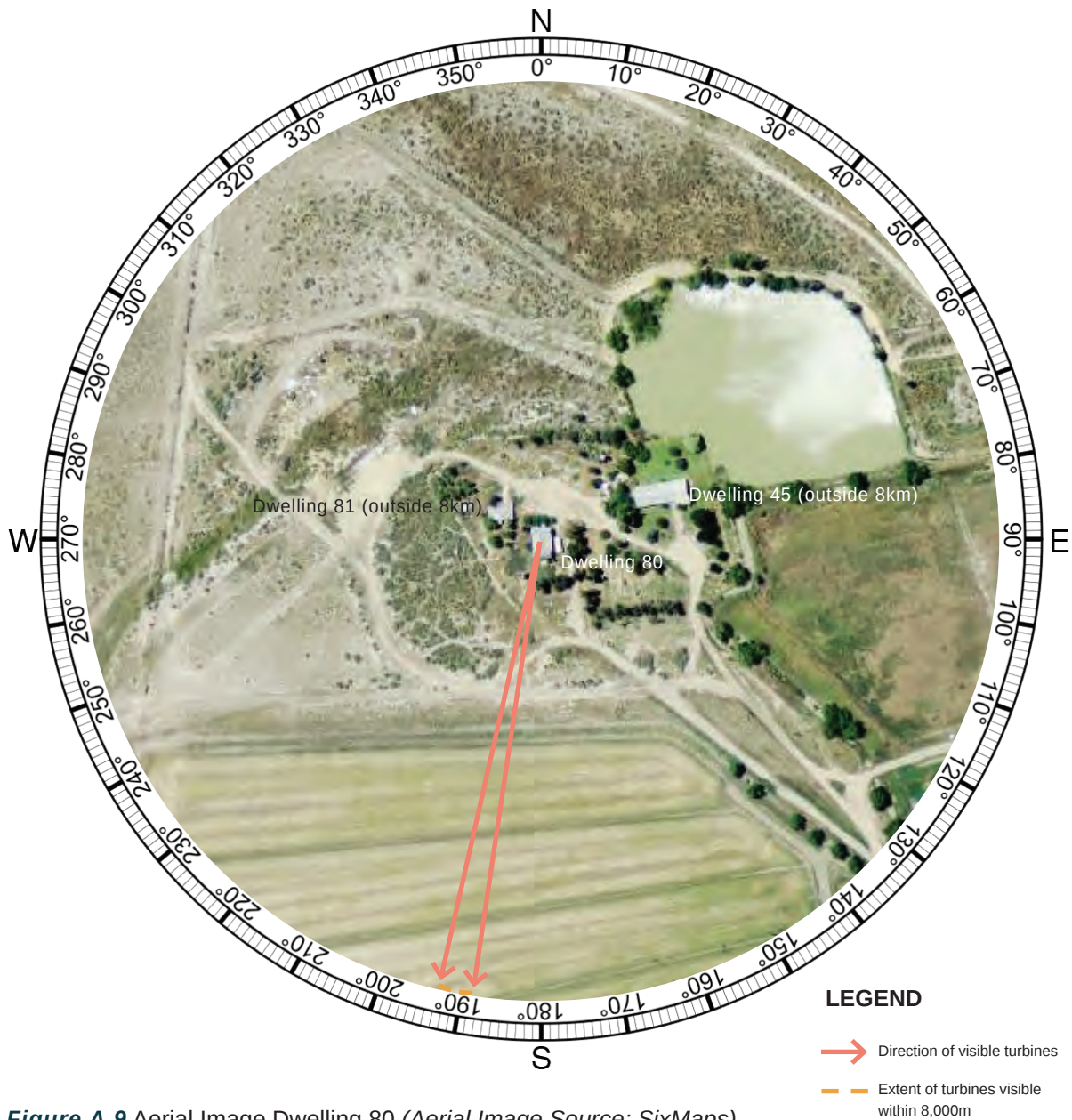
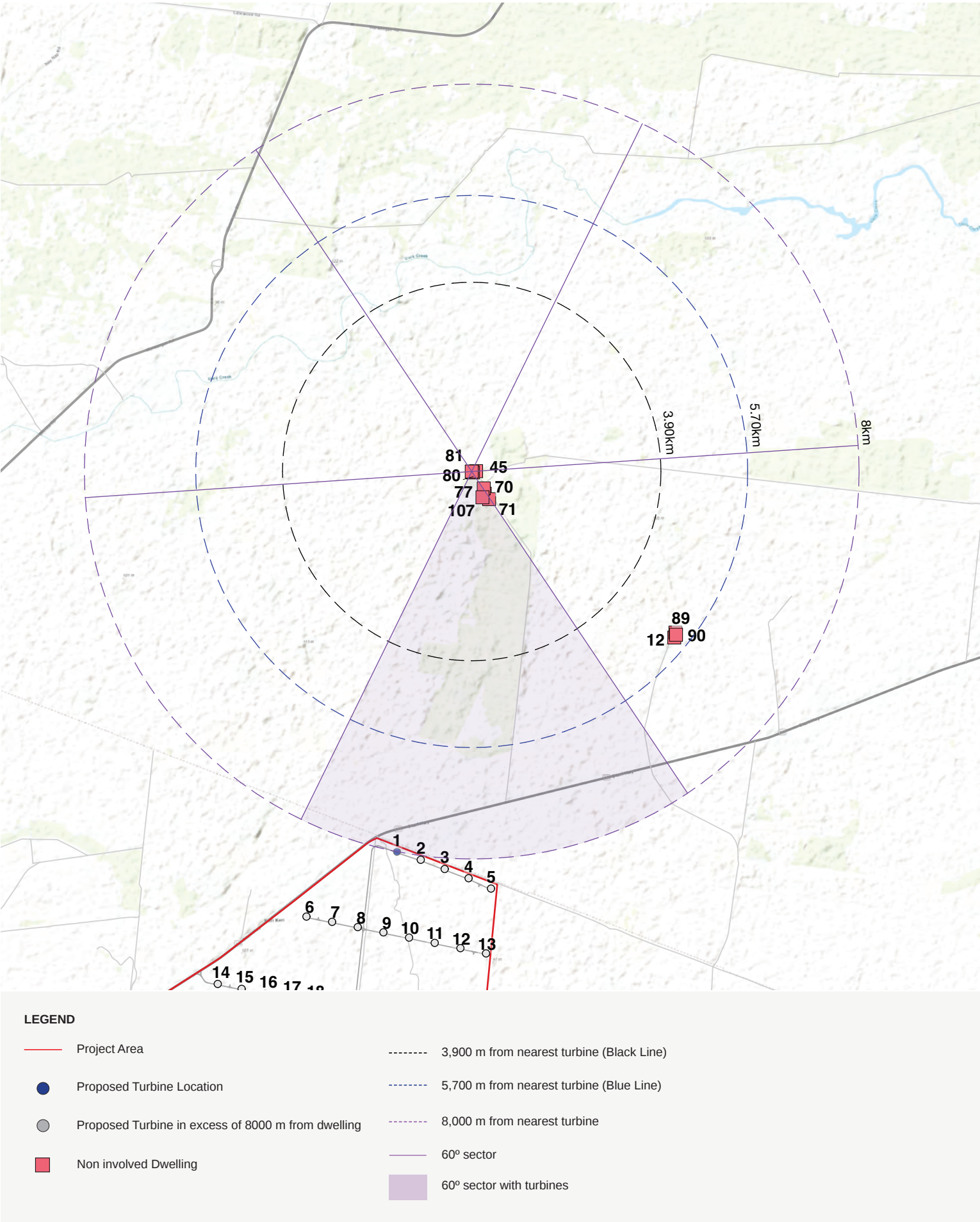


Figure A.9 Aerial Image Dwelling 80 (Aerial Image Source: SixMaps)

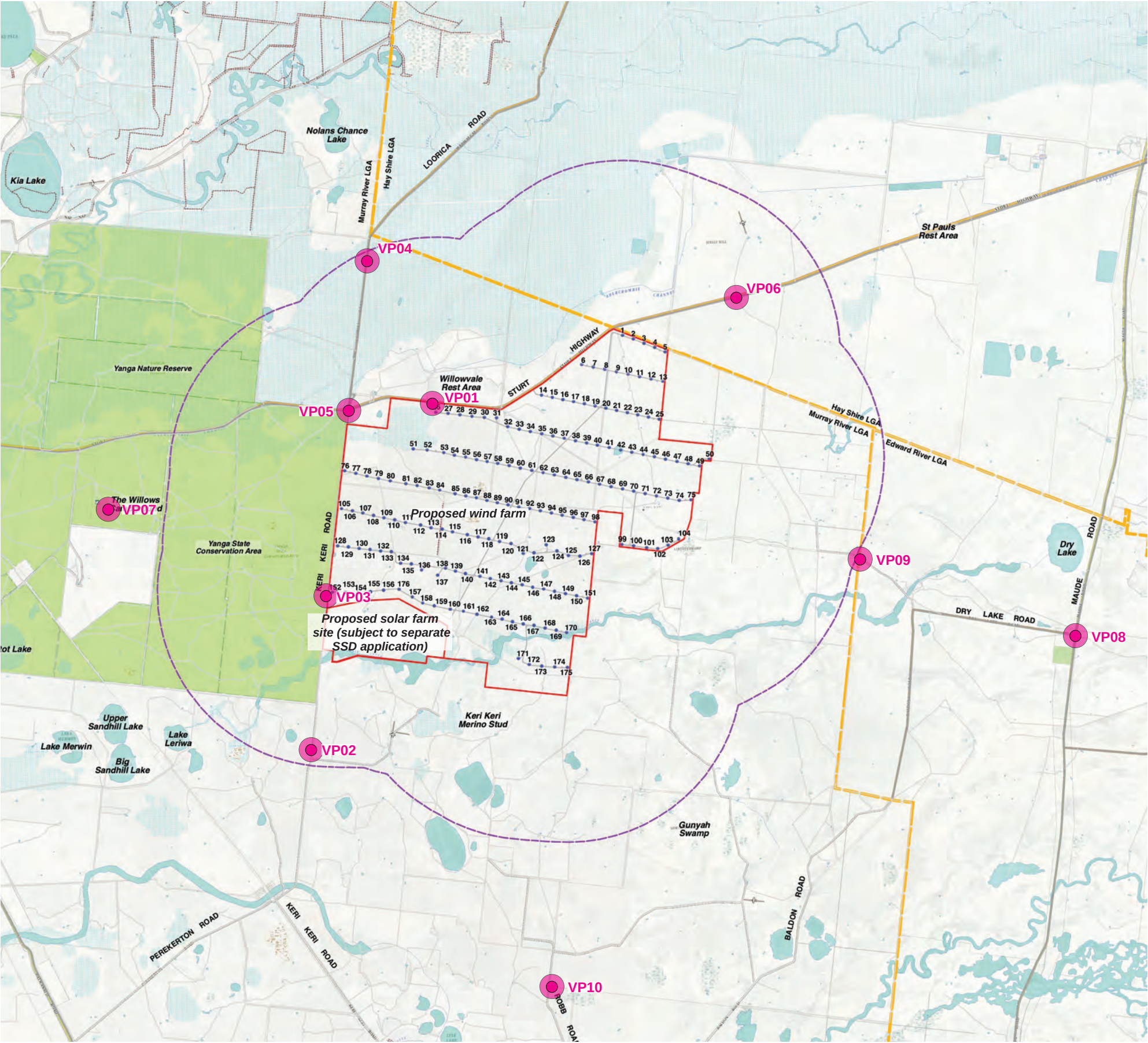
Summary of Preliminary Assessment Tools:	
Distance to Nearest Turbine:	8.00km
Number of proposed turbines within the black line (3,900 m) of visual magnitude:	0
Number of theoretical 60° sectors (Based on 2D assessment):	1
Number of potentially visible turbines within 8,000m (based on topography alone):	1 Turbine at hub height



Appendix B

Preliminary Public Viewpoint Assessments

Preliminary Viewpoint Assessment Locations



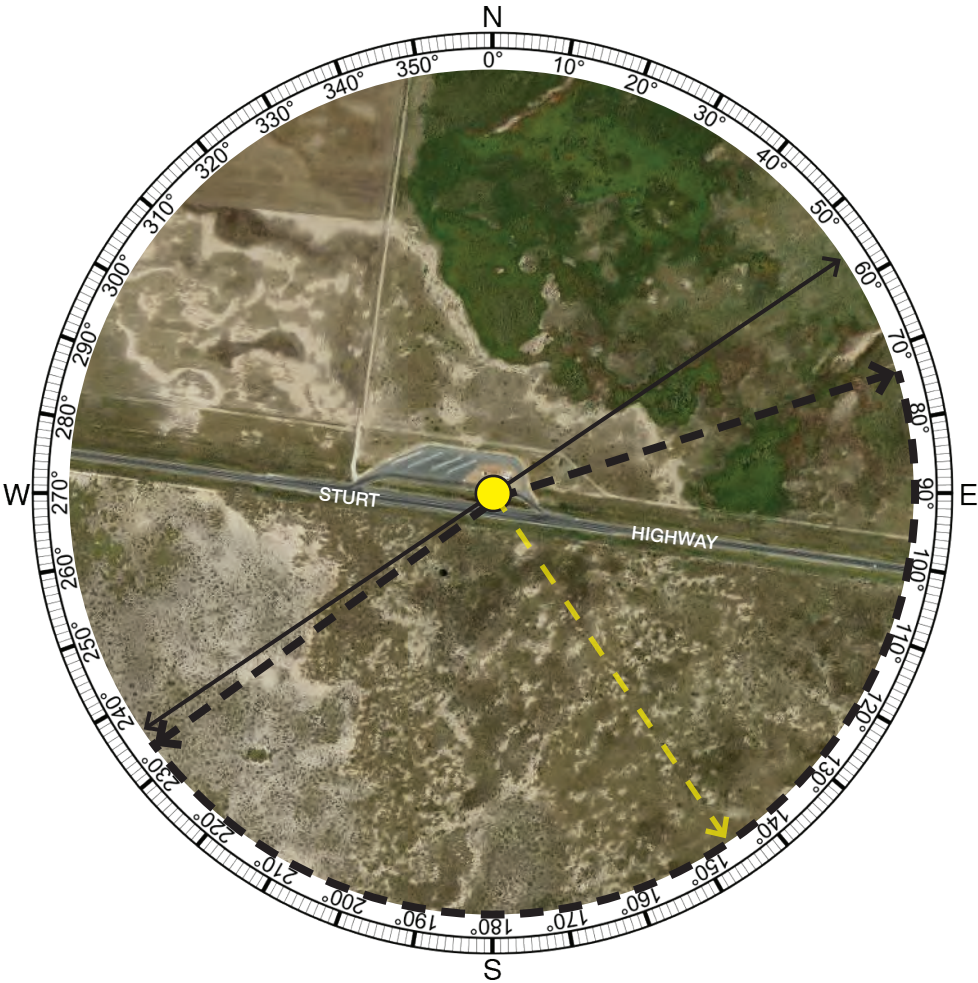
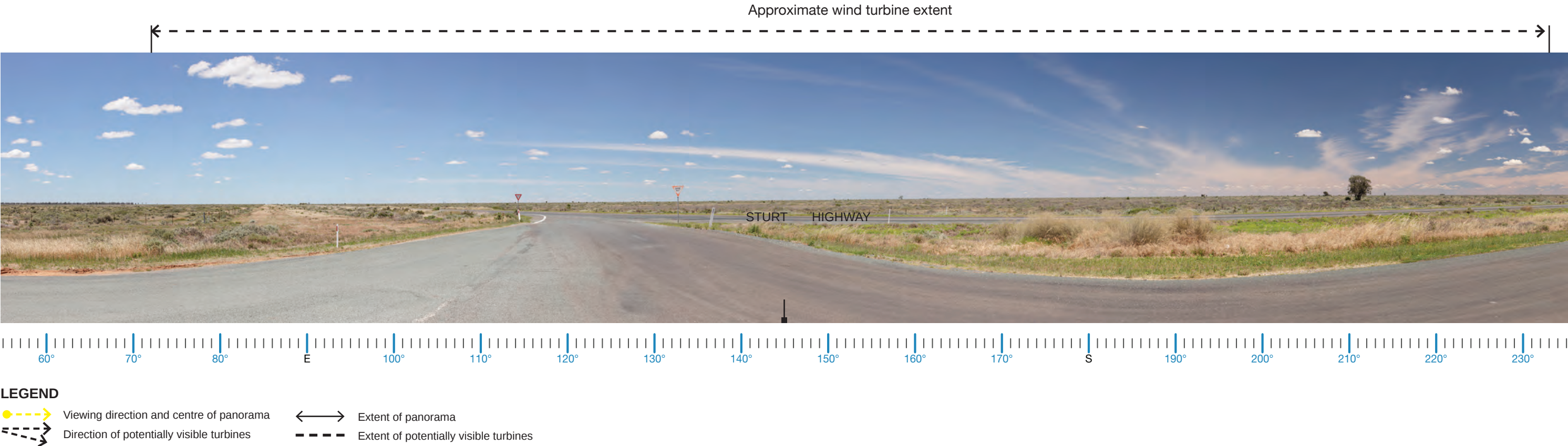
Preliminary Viewpoint Assessment Locations Proposed Keri Keri Wind Farm

- LEGEND**
- Project Area
 - 24 Proposed Keri Keri Wind Turbine Location (291.5 m high)
 - Main Road
 - Minor Road
 - 8000 m from turbines
 - LGA Boundary
 - National Parks / Nature Reserves
 - Preliminary Viewpoint Assessment locations



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

VP01 Willowvale Rest Area, Sturt Highway, Keri Keri



VIEWPOINT VP01

Viewpoint Summary:	
Location:	Elevation:
Willowvale Rest Area, Sturt Highway, Keri Keri	70 m
Coordinates:	Viewing Direction:
34°43'25.24"S 143°55'42.21"E	Generally southeast
Distance to nearest WTG:	Visibility Distance Zone:
0.50 km	Mid Foreground (MF)
Land Use:	Viewer Sensitivity Level:
Major Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low

Multiple Wind Turbine Tool:	
Three (3) 60° Sectors with turbines within 8000 m.	

Existing Landscape Character Description:

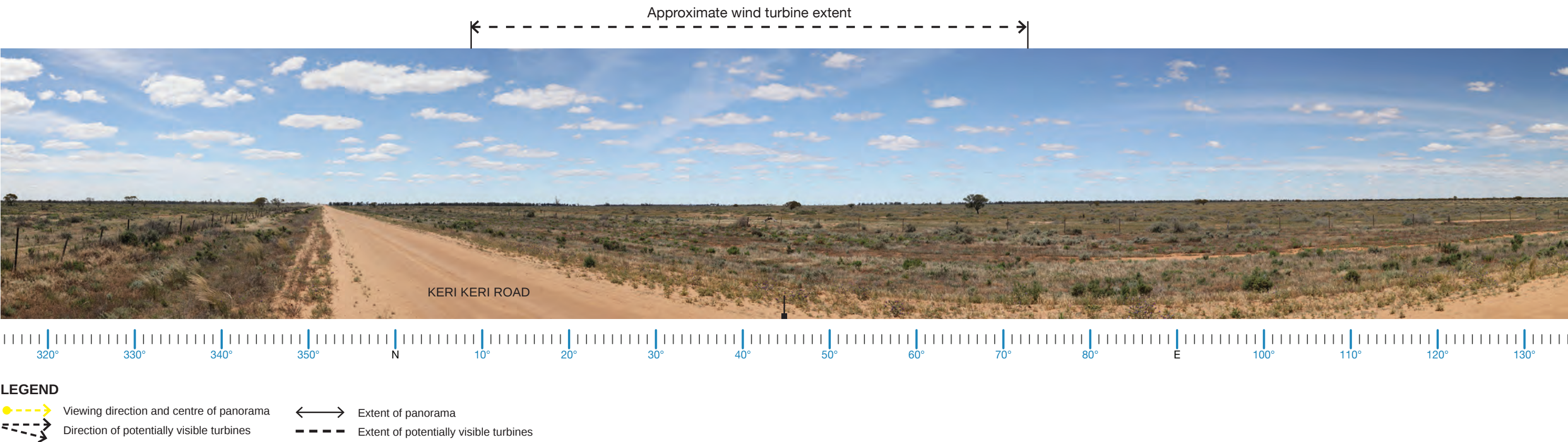
This viewpoint was taken from Willowvale Rest Area which is a frequently used rest stop for commuters travelling between the towns of Hay and Balranald on the Sturt Highway. The rest stop has been identified as a key viewpoint as per the data received from community consultation. Although this has been identified as a key viewpoint, the rest area serves as a temporary stop with parking facilities and amenities that do not have any significant scenic value. Surrounding land is predominantly used for livestock grazing and some areas are dedicated to dryland cropping. Sturt Highway runs east - west and provides access to scattered rural dwellings in the area. The terrain is flat with intermittent stands of tree cover. Views are generally open, expansive and unhindered.

Potential Visual Impact:

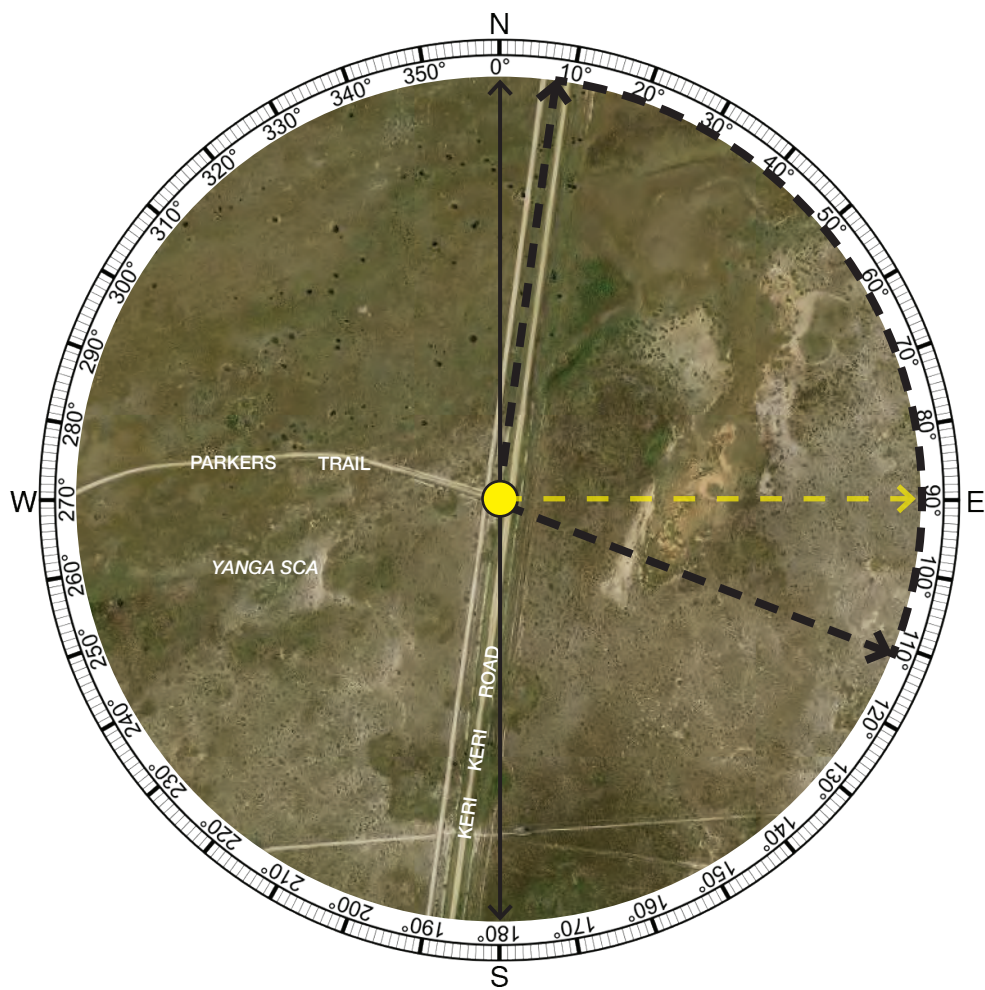
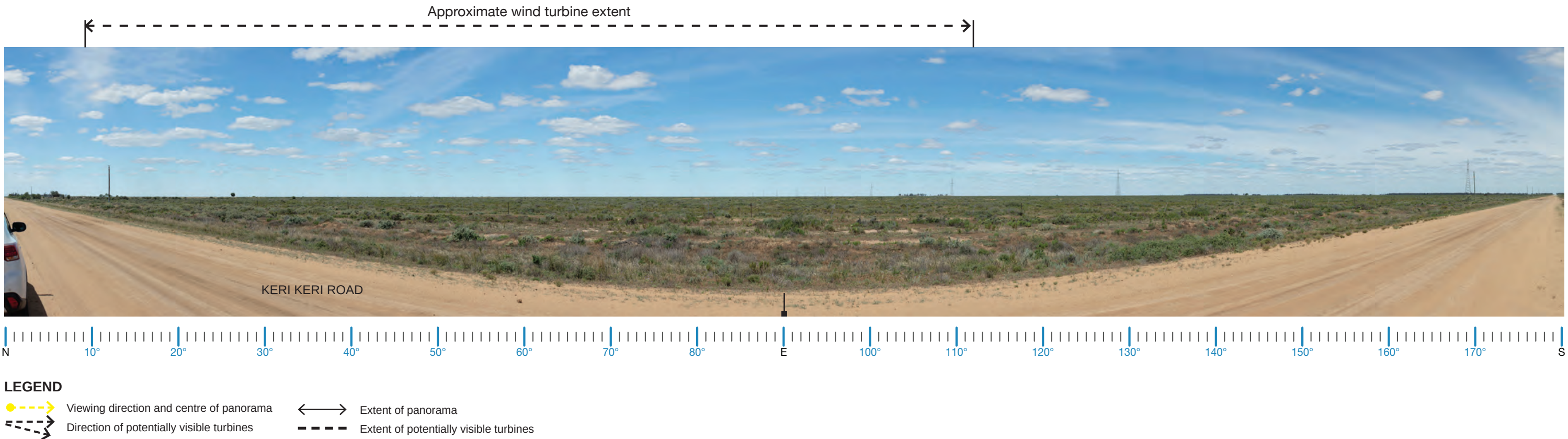
Open and flat farmlands define the character extensively. Majority of the Project will be visible due to lack of intervening elements, thus yielding clear, open views of surroundings.

Aerial Image VP01 (Aerial Image Source: Six Maps)

VP02 Keri Keri Road, Keri Keri



VP03 Intersection of Keri Keri Road & Parkers Trail, Keri Keri



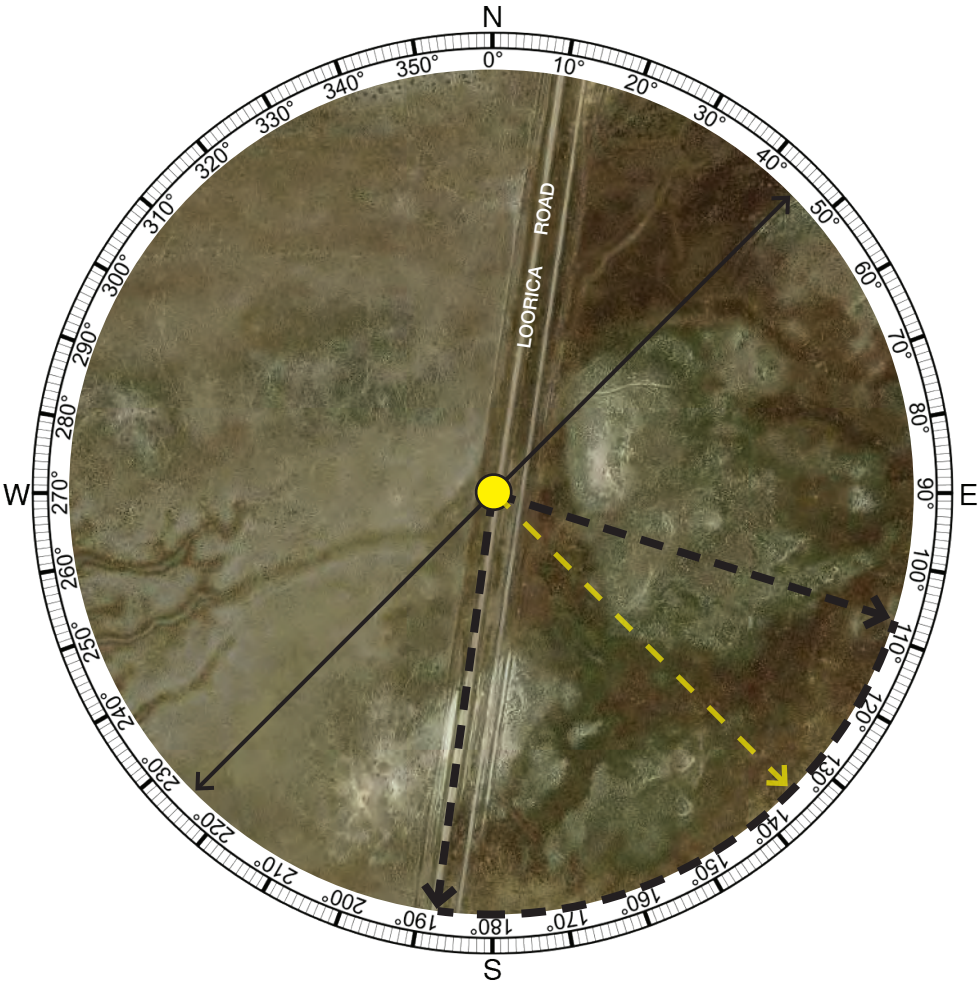
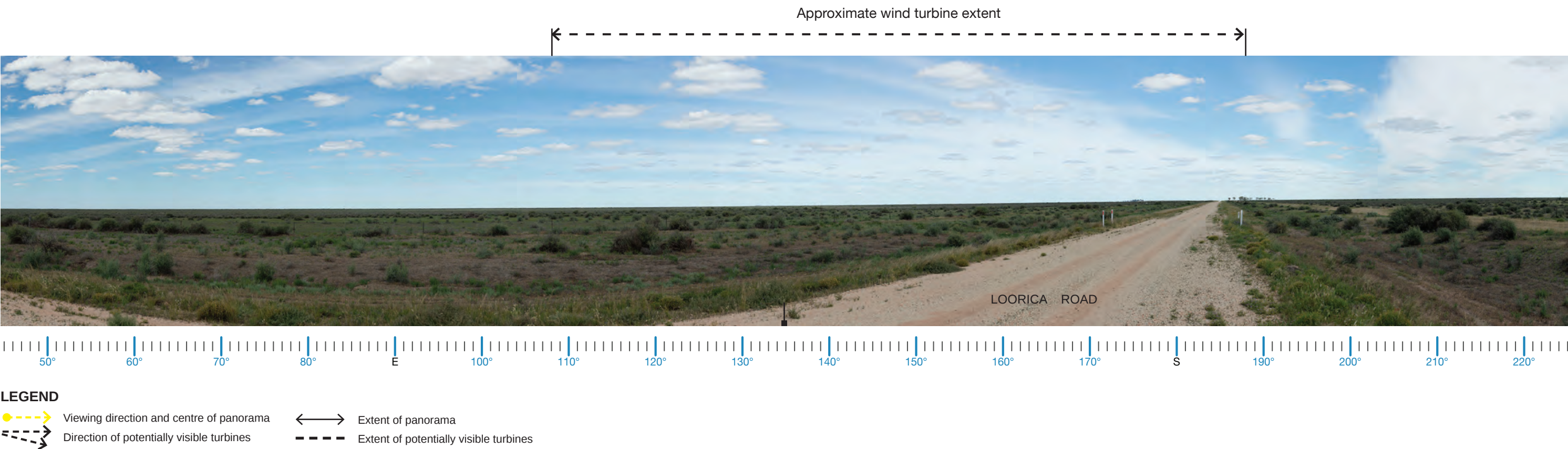
VIEWPOINT VP03

Viewpoint Summary:	
Location:	Elevation:
Intersection of Keri Keri Road & Parkers Trail, Keri Keri	68 m
Coordinates:	Viewing Direction:
34°48'3.97"S 143°52'26.47"E	East
Distance to nearest WTG:	Visibility Distance Zone:
0.24 km	Near Foreground (NF)
Land Use:	Viewer Sensitivity Level:
Low Use Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low
Multiple Wind Turbine Tool:	
Two (2) 60° Sectors with turbines within 8000 m.	

Existing Landscape Character Description:
This photograph was taken at the intersection of Keri Keri Road and Parkers Trail. Surrounding lands are flat and utilised for grazing and dryland cropping. The terrain is generally flat with open, expansive views. Patchy riparian vegetation associated with Abercrombie Creekbed can be seen towards the north. Prominent vegetation species include saltbush and scrubby groundcovers or low-growing bushes. The existing 220 kV transmission lines run through the landscape, visible in the middleground in the south east.
Potential Visual Impact:
Lack of tree cover and flat topography contribute to clear, open views of both wind turbines.

Aerial Image VP03 (Aerial Image Source: Six Maps)

VP04 Loorica Road, Keri Keri



Aerial Image VP04 (Aerial Image Source: Six Maps)

VIEWPOINT VP04

Viewpoint Summary:	
Location:	Elevation:
Loorica Road, Keri Keri	71 m
Coordinates:	Viewing Direction:
34°39'56.05"S 143°53'54.44"E	Southeast
Distance to nearest WTG:	Visibility Distance Zone:
7.49 km	Far Middleground (FM)
Land Use:	Viewer Sensitivity Level:
Low Use Road	Low
LCU:	Scenic Quality Rating:
LCU01: Murrumbidgee Valley Parks	Moderate
Multiple Wind Turbine Tool:	
One (1) 60° Sector with turbines within 8000 m.	

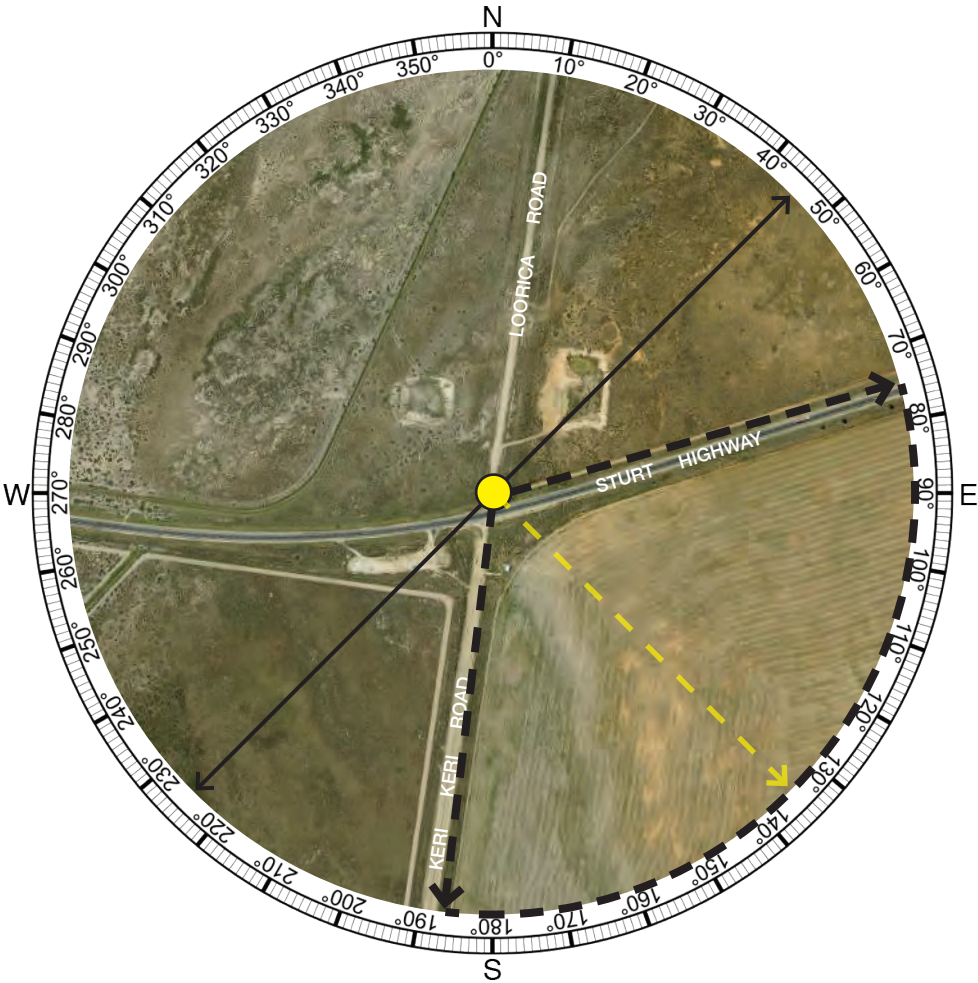
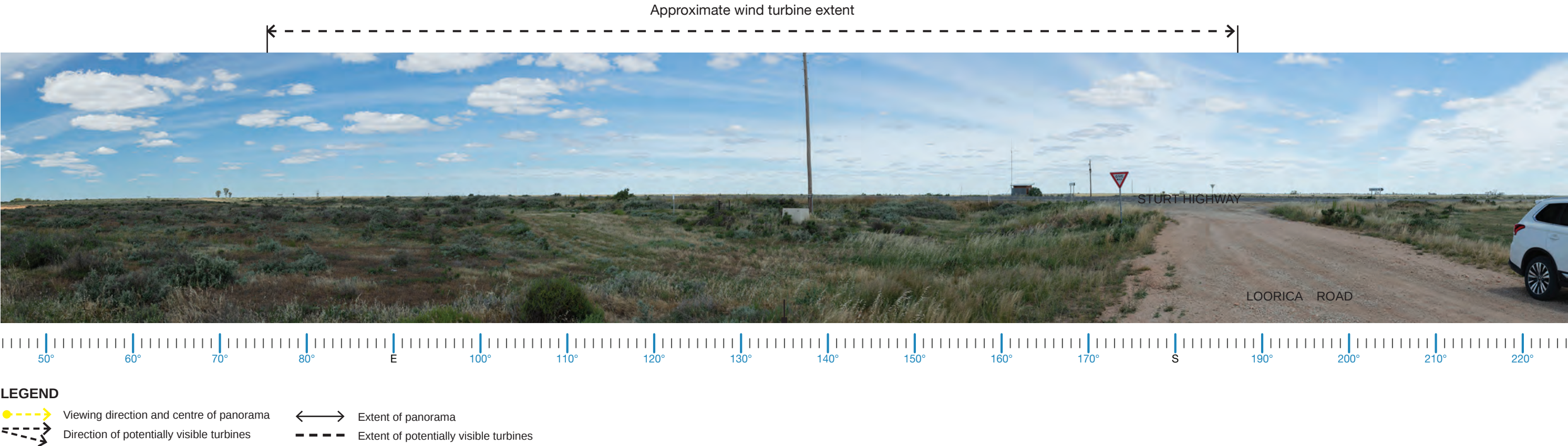
Existing Landscape Character Description:

This viewpoint is located on Loorica Road which is a low use road that emerges from the Sturt Highway. The road provides access to farmlands and rural dwellings north of the Project Area. The terrain is generally flat with open, expansive views and forms a part of the floodplains of the Murrumbidgee Valley Parks. These floodplains lack riparian vegetation and are characterised by scrubby, low growing bluebush and saltbush species that are typical of the Riverina Bioregion. The lands are utilised intermittently for sheep grazing. No detrimental features were identified for this viewpoint.

Potential Visual Impact:

Clear, open and expansive views of the Project will be available at this location due to the flat topography and lack of canopy cover. An assessment based on topography alone suggests that the Project will be a visible element at this location.

VP05 Intersection of Sturt Highway & Loorica Road, Keri Keri

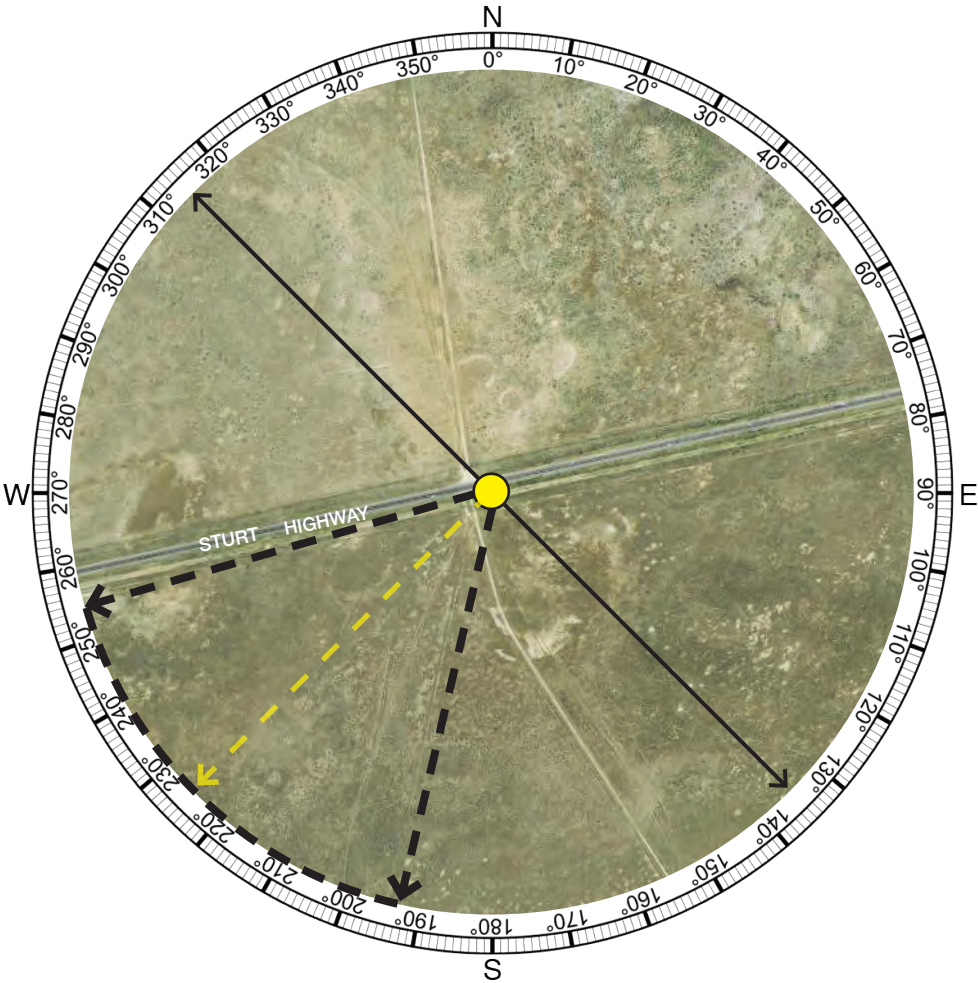
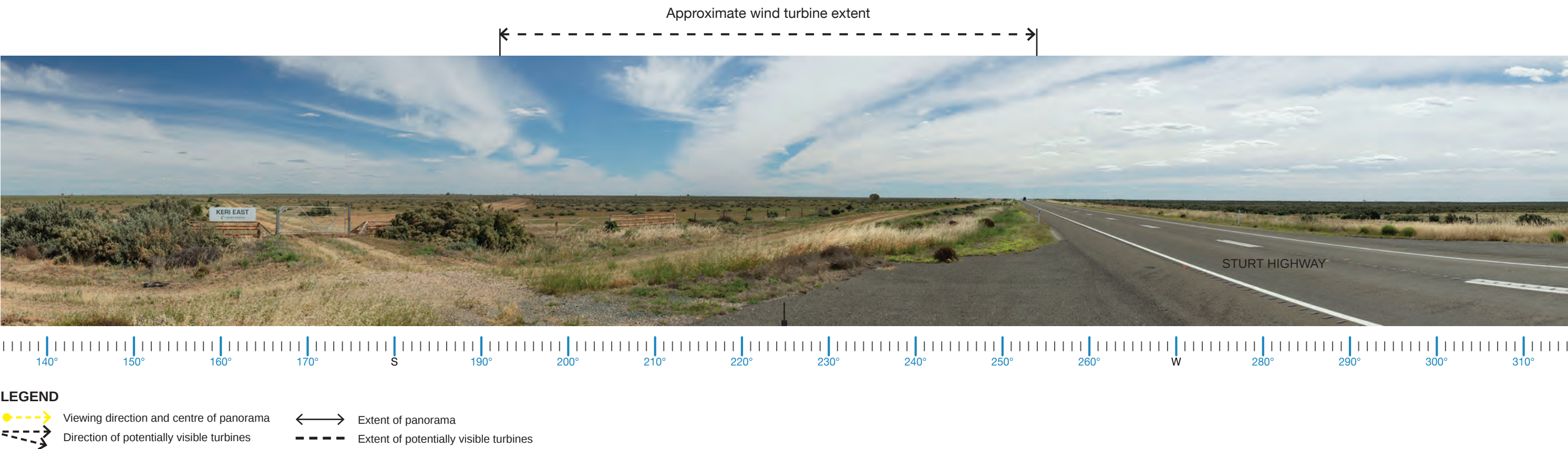


VIEWPOINT VP05	
Viewpoint Summary:	
Location:	Elevation:
Intersection of Sturt Highway & Loorica Road, Keri Keri	69 m
Coordinates:	Viewing Direction:
34°43'30.98"S 143°53'14.96"E	Southeast
Distance to nearest WTG:	Visibility Distance Zone:
2.84 km	Near Middleground (NM)
Land Use:	Viewer Sensitivity Level:
Low Use Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low
Multiple Wind Turbine Tool:	
Two (2) 60° Sectors with turbines within 8000 m.	

Existing Landscape Character Description:	
The viewpoint is located at the intersection of Loorica Road and Sturt Highway near Dwellings 19 & 99. Surrounding lands are associated with these rural dwellings and utilised as grazing lands with minimal activity. Intermittent patches of 2-3 trees are visible across the horizon in the photograph's background. The terrain is flat with very minor or no undulations. It offers open, clear views. Power lines and a junction box are visible from this viewpoint in the southern direction.	
Potential Visual Impact:	
Cleared, open farmlands define the character of this viewpoint. The terrain and vast openness offer clear views to all turbines associated with the Project.	

Aerial Image VP05 (Aerial Image Source: Six Maps)

VP06 Sturt Highway, Maude



VIEWPOINT VP06

Viewpoint Summary:	
Location:	Elevation:
Sturt Highway, Maude	74 m
Coordinates:	Viewing Direction:
34°41'2.64"S 144° 4'58.10"E	Southwest
Distance to nearest WTG:	Visibility Distance Zone:
4.15 km	Far Middleground (FM)
Land Use:	Viewer Sensitivity Level:
Major Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low

Multiple Wind Turbine Tool:
Two (2) 60° Sectors with turbines within 8000 m.

Existing Landscape Character Description:

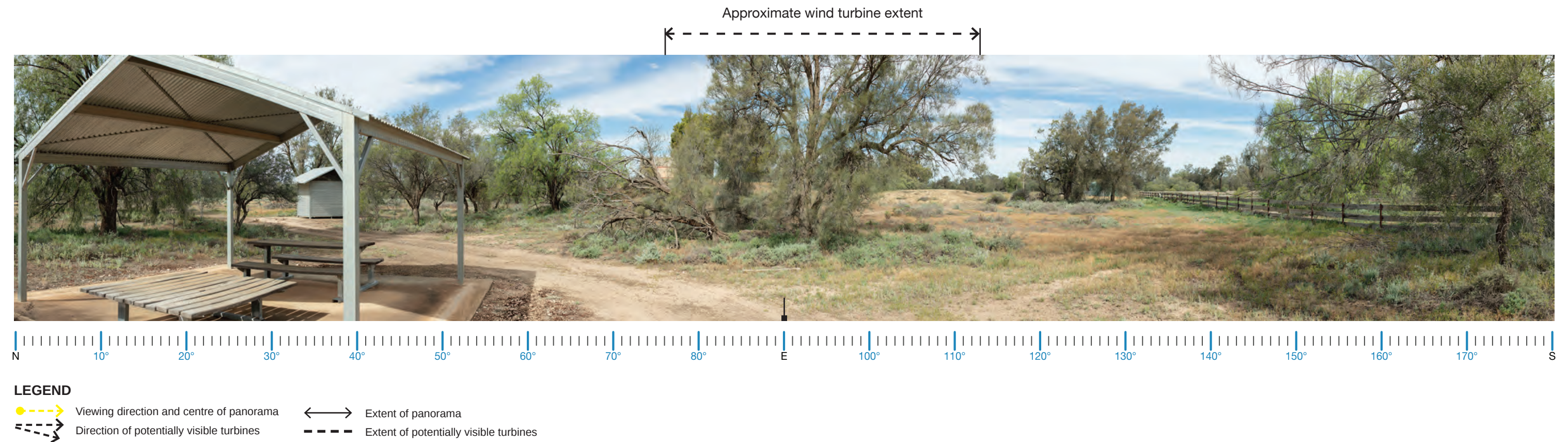
This photograph was taken from Sturt Highway near one of the gates of 'Keri East' (Dwelling 42) and opposite the entrance gate of 'Jeraly' (Dwellings 12,89-90). Both these rural properties are characterised by flat expanses of native scrubby vegetation which is typical of the Riverina Bioregion. The farmlands are used for sheep and cattle grazing. Lack of canopy cover offers clear, open views. The flat land parcels present occasional and intermittent stands of shrubs.

Potential Visual Impact:

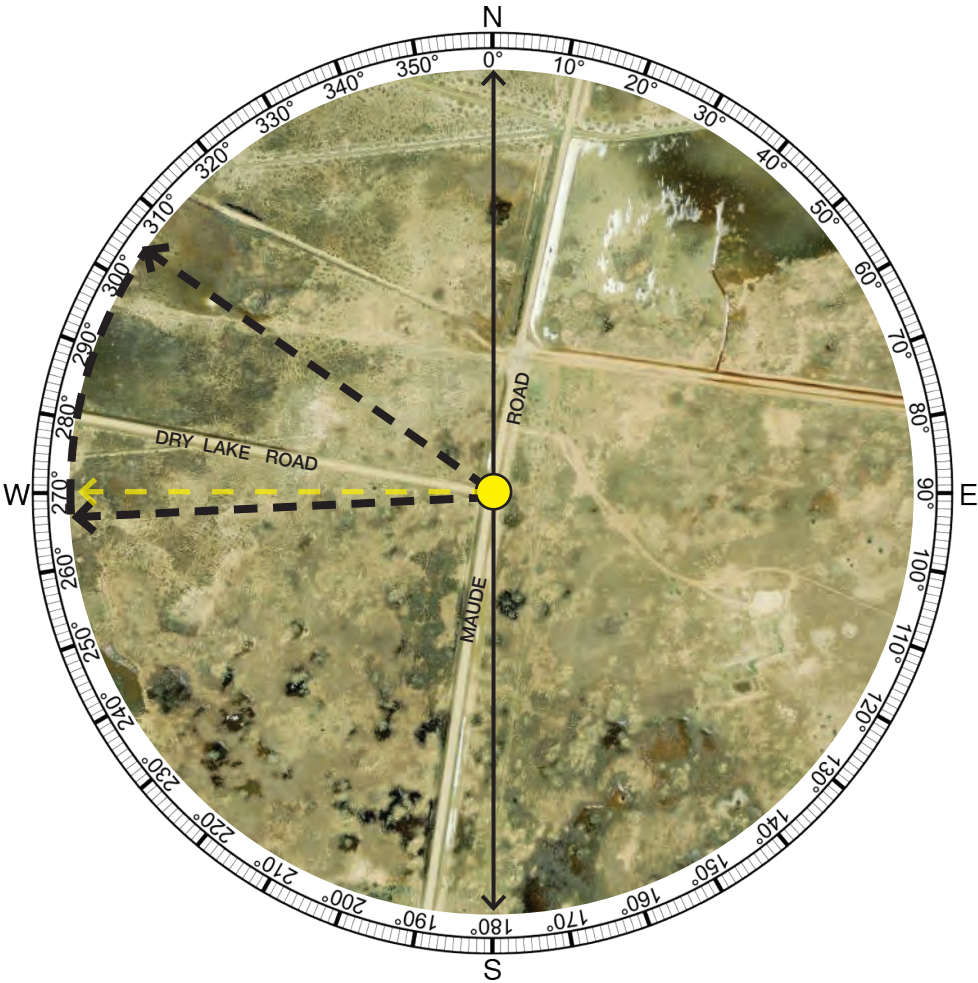
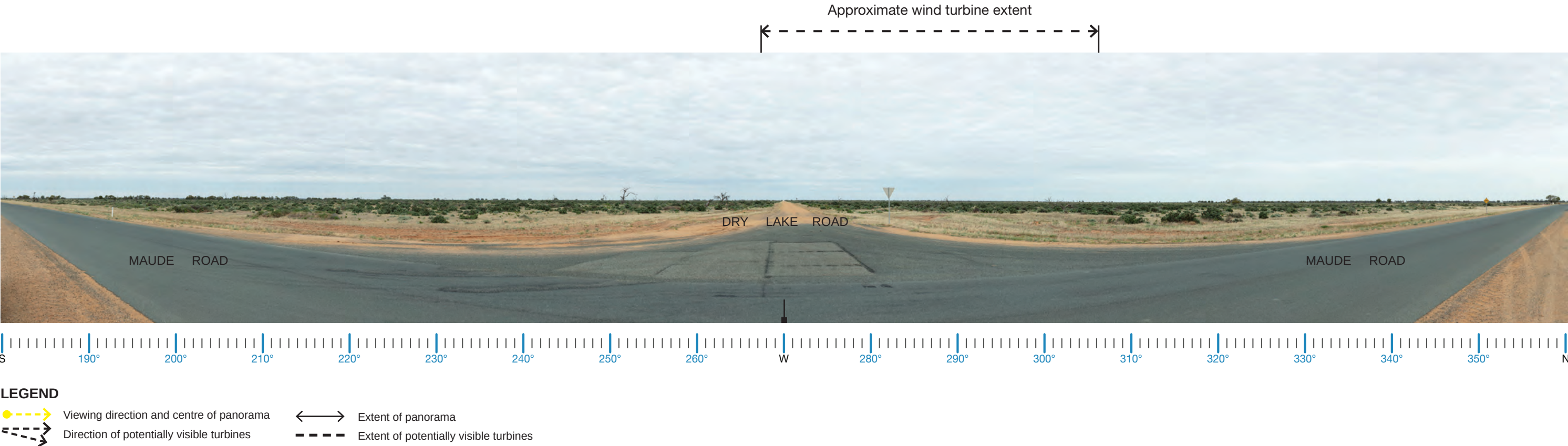
Lack of tree cover and flat topography contribute to clear, open views of surroundings.

Aerial Image VP06 (Aerial Image Source: Six Maps)

VP07 The Willows Picnic Area & Campground, Yanga State Conservation Area, Yanga



VP08 Intersection of Maude Road and Dry Lake Road, Maude



VIEWPOINT VP08

Viewpoint Summary:	
Location:	Elevation:
Intersection of Maude Road and Dry Lake Road, Maude	75 m
Coordinates:	Viewing Direction:
34°49'38.08"S 144°14'48.88"E	West
Distance to nearest WTG:	Visibility Distance Zone:
18.69 km	Far Background (FB)
Land Use:	Viewer Sensitivity Level:
Moderate Use Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low
Multiple Wind Turbine Tool:	
No turbines within 8000 m.	

Existing Landscape Character Description:

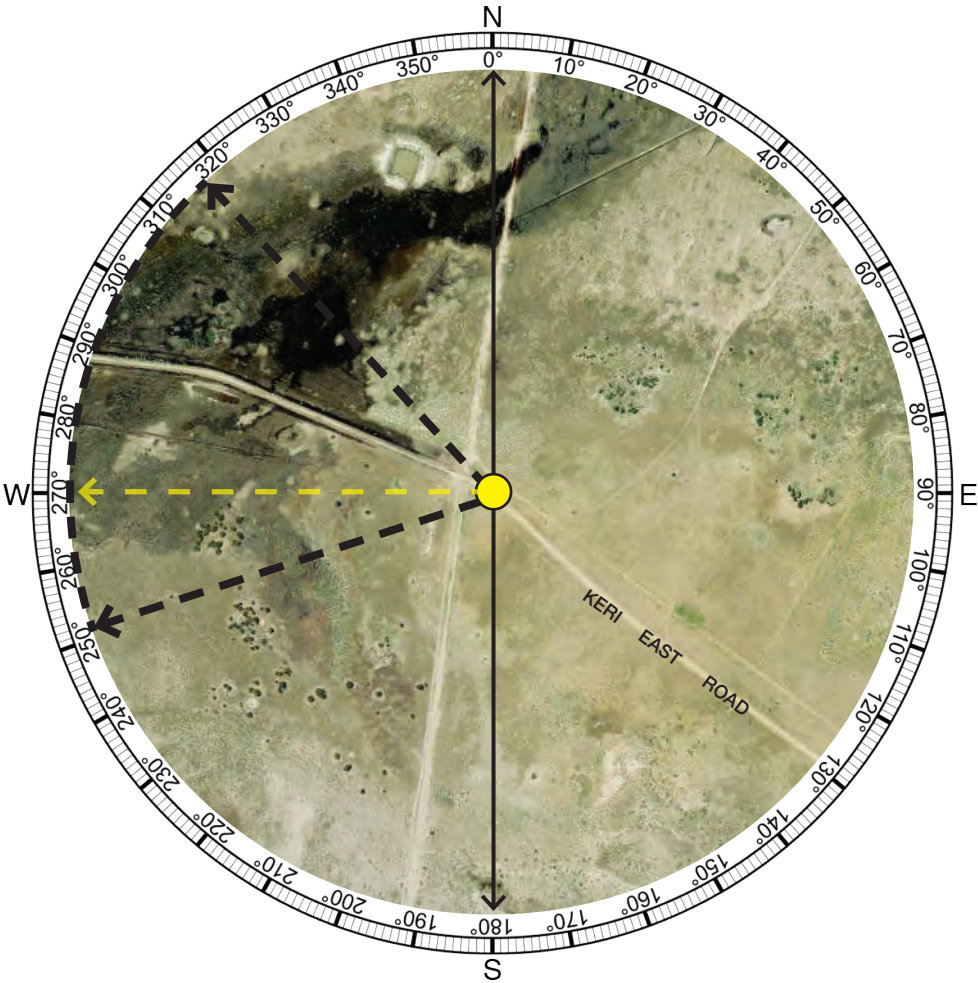
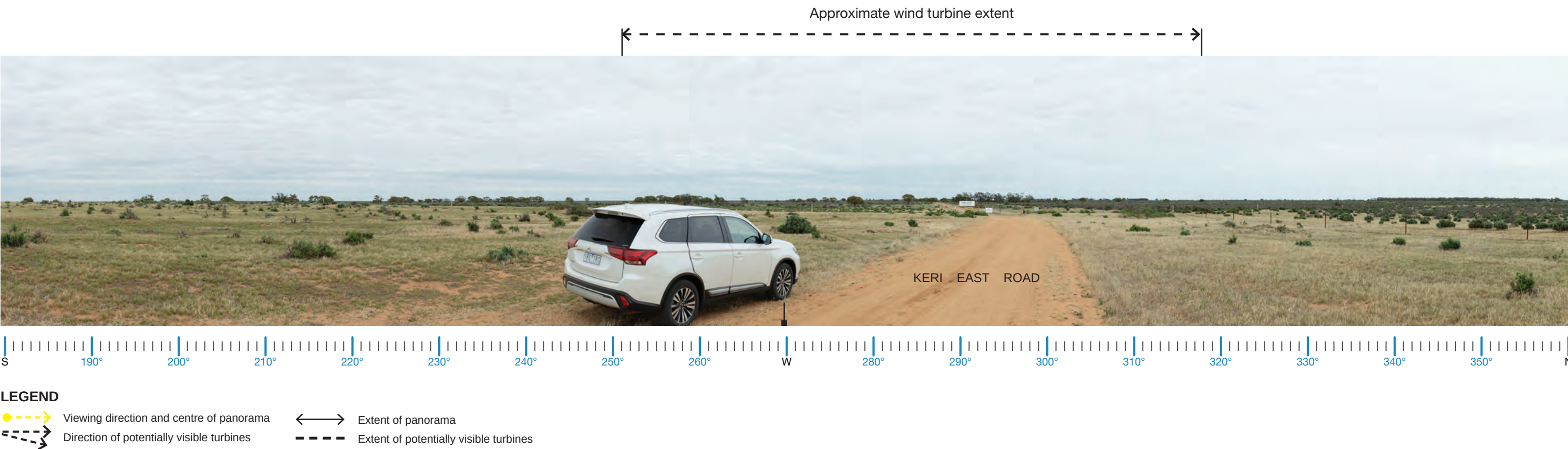
This photograph was taken on Muade Road and looks west towards Dry Lake Road. Surrounding lands have isolated dwellings scattered amidst farmlands with native vegetation that are used for sheep and emu grazing. Vegetation is typical to the Riverina Bioregion and consists of lignum and saltbush grasses spread across the planar topography. Isolated stands of trees can be seen across the horizon. Views are generally open with very few elements to limit/hinder the expanse. Maude Road is a low to moderate use road that connects the Sturt Highway to Moulamein and other areas near Edward River.

Potential Visual Impact:

The viewpoint is located in excess of 18 km from the Project. It is highly unlikely that the Project will be discernible to motorists travelling along this road. All views towards the Project will be distant and fleeting with very limited visibility of turbines.

Aerial Image VP08 (Aerial Image Source: Six Maps)

VP09 Keri East Road, Moulamein



Aerial Image VP09 (Aerial Image Source: Six Maps)

VIEWPOINT VP09

Viewpoint Summary:	
Location:	Elevation:
Keri East Road, Moulamein	73 m
Coordinates:	Viewing Direction:
34°47'35.32"S 144° 8'27.05"E	West
Distance to nearest WTG:	Visibility Distance Zone:
8.39 km	Near Background (NB)
Land Use:	Viewer Sensitivity Level:
Low Use Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low
Multiple Wind Turbine Tool:	
No turbines within 8000 m.	

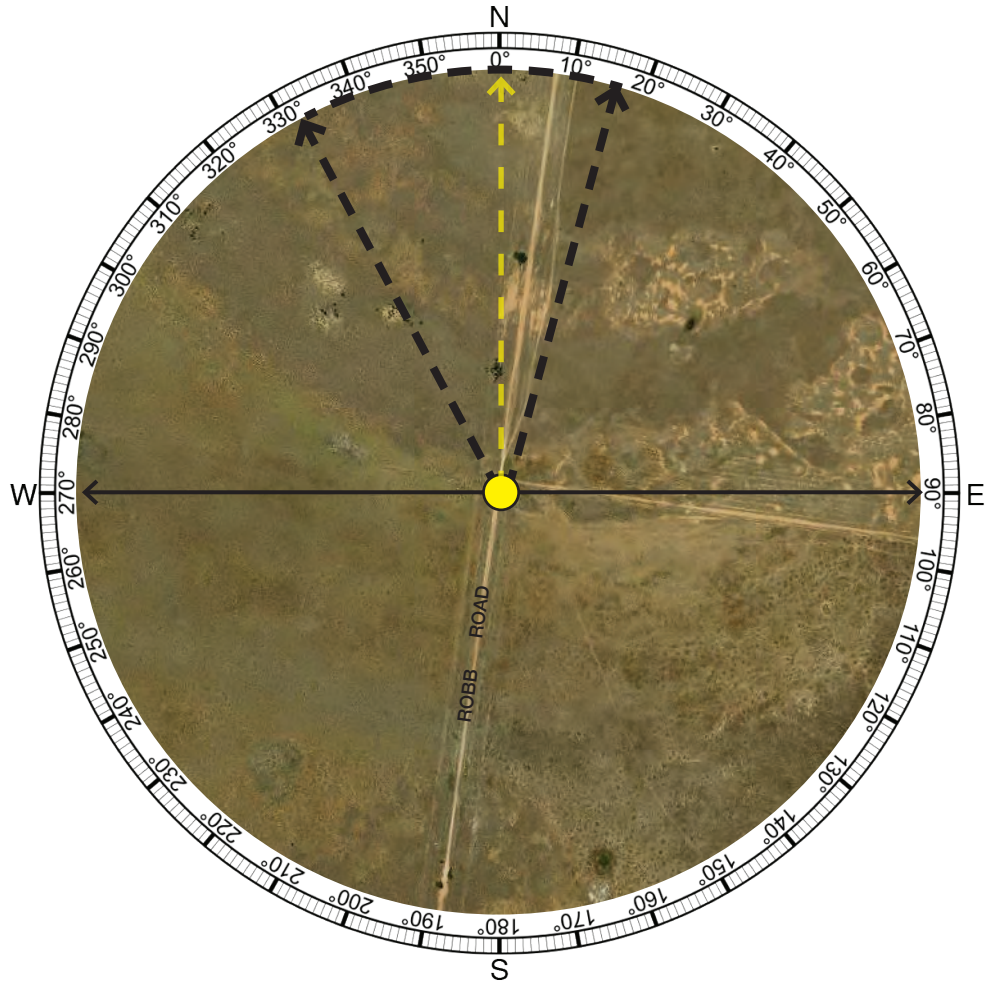
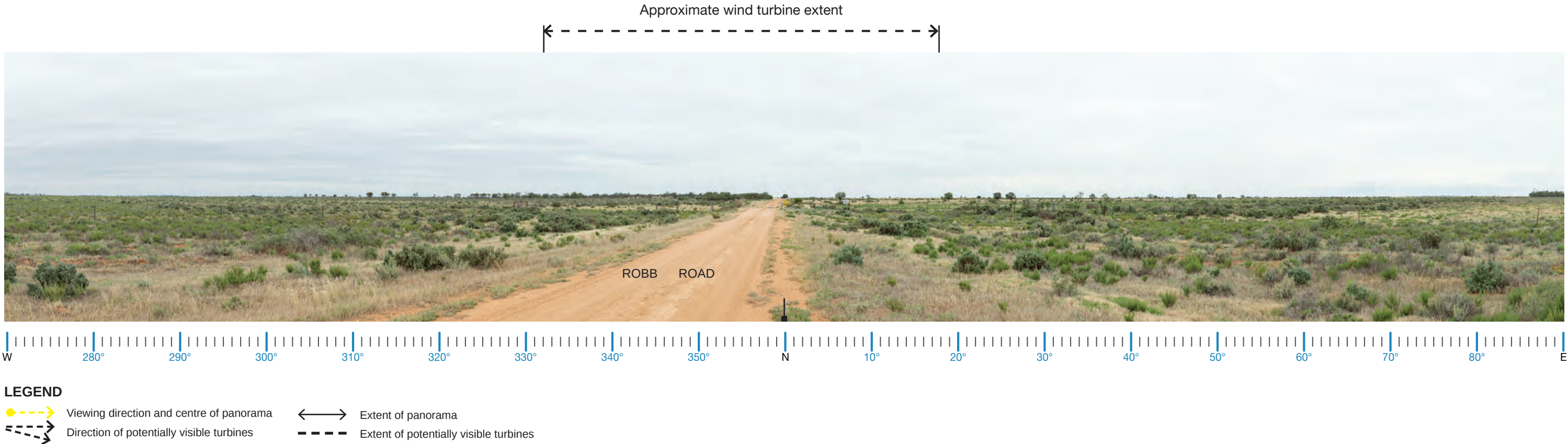
Existing Landscape Character Description:

This viewpoint is located on Keri East Road near the entrance gate of 'Keri East' (Dwelling 42) in Keri Keri. Surrounding topography is generally flat with grasses and scrubby groundcovers interspersed amidst the plains. Predominant land use includes grazing over native pastures for sheep and other livestock. Views are open and unhindered with very few limiting factors. Intermittent patches of tree cover are visible along the horizon. Trees visible generally in the western direction are a part of Keri East homestead's windbreak plantation. Other patches of tree cover visible towards the south are associated with Abercrombie Creek which remains dry through most of the year.

Potential Visual Impact:

The viewpoint is located just outside of the 8 km extent from the wind turbines. Given that the terrain is flat and there are no significant intervening visual elements, the turbines will be visible from this location.

VP10 Robb Road, Keri Keri



VIEWPOINT VP10

Viewpoint Summary:	
Location:	Elevation:
Robb Road, Keri Keri	69 m
Coordinates:	Viewing Direction:
34°57'56.00"S 143°58'43.63"E	North
Distance to nearest WTG:	Visibility Distance Zone:
14.61 km	Mid Background (MB)
Land Use:	Viewer Sensitivity Level:
Low Use Road	Low
LCU:	Scenic Quality Rating:
LCU04: Farmlands	Low
Multiple Wind Turbine Tool:	
No turbines within 8000 m.	

Existing Landscape Character Description:

This photograph was taken from Robb Road at the gate of 'Kingle' (Dwelling 65) to represent views from this property. Predominant land uses include irrigated and grazing pastures used for livestock grazing. The landscape is characterized by a planar topography with very minor undulations. Vegetation comprises generally of low - mid storey saltbush communities. A dense row of trees can be seen generally in the northern direction and the rest of the horizon presents intermittent clumps of canopy cover. Views are generally open and expansive but the row of trees visible generally in the northern direction will help screen views of the Project.

Potential Visual Impact:

The viewpoint is located beyond the 8 km extent from the wind turbines. Turbines would be partially visible as distant objects in the landscape.

Aerial Image VP10 (Aerial Image Source: Six Maps)