

Marri Wind Farm

Landscape and Visual Impact Assessment

Alinta Energy

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Executive Summary

Aurecon Australasia Pty Ltd (Aurecon) has been engaged by Marri WF Pty Ltd ATF Marri WF Unit Trust to facilitate the environmental and planning assessments and approvals for the Marri Wind Farm Project (the Project). The Project is situated approximately 120 kilometres (km) north of Perth within the Shire of Dandaragan Local Government Area, in the northern Wheatbelt region of Western Australia. The Project encompasses around 12,555 hectares (ha) agricultural land with areas of remnant native vegetation. The Project is located approximately 20 km south of the town of Dandaragan, while the town of Gingin lies about 45 km south of the Project within the Shire of Gingin.

The Project involves the construction of up to 82 wind turbines that extend up to 275m in height, with a maximum total generation capacity of 550 MW. The Project includes internal access tracks, Battery Energy Storage System, terminal stations and substation, permanent meteorological monitoring masts, internal transmission lines and other ancillary infrastructure

The landscape and visual baseline

The Landscape and Visual Impact Assessment (LVIA) has been prepared with reference to the **Visual Landscape Planning in Western Australia: A Manual for Evaluation Assessment, Siting and Design (WAPC, 2007) guideline** together with additional supporting guidance.

The LVIA Study Area has been defined within a radius of 10 kilometres (km) from the location of the Project area. The Study Area captures where the Project will potentially have the highest impacts, based upon the height of turbines, topographical characteristics and intervening elements in the surrounding area.

Based on the height of the proposed turbines, the zone of theoretical visibility (ZTV) is up to 4 km, which is the broader extent of the Study Area. However, in this assessment, the objective is to identify landscape and visual impacts of higher perceived risk. At distances in excess of 4 km, turbines may still be visible but will result in a lower level of perceived visual significance.

The Study Area falls within the Shire of Dandaragan. Relevant planning policies and legislation have been reviewed to understand any specific landscape or visual designations relating to the Study Area, as well as a desktop study to understand the various physical elements that combine to create landscape and visual character.

The study identifies landscapes of regional value within the Study Area including the Dryandra Uplands landscape character subtype. This landscape has been considered in the identification of Landscape Character Zones (LCZs) and key viewpoints.

The baseline assessment identified a total of three distinct LCZs within the Study Area. These were identified based on the consideration attributes including land use, landscape features and previous studies and referred to in local planning schemes. LCZs include:

- LCZ 1 – Agricultural pasture
- LCZ 2 – Valley Systems
- LCZ 3 – Bushland reserves and native vegetation patches

There were 8 public viewpoints identified within the Study Area, representative of sensitive receptors including rural residential dwellings and places with scenic lookouts. The development of maps showing Zone of Theoretical Visibility (ZTV), provided identification of areas in which the proposed turbines would potentially be visible, and the extent of visibility based on the height of the turbines. Representative viewpoints were selected in and around the Project area at different distances to gain an understanding of impacts of the current layout, and to best depict represent viewpoints of associated private rural residential dwellings, based on distance, elevation and breaks in vegetation.

There are several sensitive receptors within close proximity to the transmission lines proposed as part of the Project. Given there are existing transmission lines and towers in the same location, assessment of transmission lines were not included as part of this assessment and scope of this report. It is noted that impacts in these locations are likely to be minimal given the existing conditions.

Landscape and visual assessment findings

The predicted landscape and visual impacts are determined through the combination of sensitivity and level of modification applied by the Project as outlined in the methodology, with the resulting impact rating calculated through a determination matrix (refer Section 3.6.4).

The Project is located within the LCZ 1 Agricultural plains. Due to the visual influence dictated by the height of the turbines, there is a potential for landscape impacts to adjacent LCZs. Table 1-1 outlines the potential for impacts on the LCZs.

Table 1-1 Summary of impacts to landscape character

LCZ	Discussion	Potential Landscape Impact
LCZ 1 – Agricultural pasture	<ul style="list-style-type: none"> The scale and geographical extent of proposed wind turbines will result in them being noticeable from a large area and whilst existing agricultural practices will remain, 'wind farming' will be a new prominent element to the character. <p>This LCZ is a relatively small portion of what is a widely distributed and expansive LCZ, and note that there are already windfarms further north that are creating this change to the LCZ.</p>	Low impact
LCZ 2 – Valley Systems	<ul style="list-style-type: none"> Changes are indirect to the LCZ, with no effects to the key characteristics. <p>Due to the depth and high density of vegetation in the valleys this would limit views to outside of the valley walls including turbines.</p>	Low impact
LCZ 3 – Bushland reserves and native vegetation patches	The presence of turbines adjacent to bushland, introduces built structures of high contrast, potentially noticeable to the perimeter of bushland areas.	Low impact

The limited variation in the type of visual receptors who experience views (predominantly rural residents and workers due to their familiarity with their surroundings and the frequency with which they experience views) means that the major defining factor in the level of visual impact expected from individual representative viewpoints is the proximity of the viewpoint to the turbines.

The assessment findings indicate a high impact to rural residential settings, particularly where there are open views and limited intervening vegetation and landform.

The visual impacts are summarised in Table 1-2.

Table 1-2 Summary of visual impacts

Representative viewpoint no.	Description of magnitude of change	Potential visual impacts
RVP_A	<p>High degree of visual modification including:</p> <p>Visibility of a high number of turbines covering 145° of viewpoint in the middle and background of the image. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.</p>	High - Moderate sensitivity and High magnitude of change
RVP_B	<p>High degree of visual modification including:</p> <p>Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.</p>	High - Moderate sensitivity and High magnitude of change
RVP_C	<p>High degree of visual modification including:</p> <p>A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.</p> <p>Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away, with likely intervening vegetation providing screening.</p>	Moderate - Moderate sensitivity and Moderate magnitude of change
RVP_D	<p>High degree of visual modification including:</p> <p>Potential visibility of three turbines within zone of visual prominence with a high number of turbines in the background of the view, covering up to 180°.</p>	High - Moderate sensitivity and High magnitude of change

Representative viewpoint no.	Description of magnitude of change	Potential visual impacts
RVP_E	High degree of visual modification including: Visibility of a high number of turbines extending into the horizon of viewpoint. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	High - Moderate sensitivity and High magnitude of change
RVP_F	High degree of visual modification including: Visibility of a high number of turbines covering 90° of viewpoint within a short distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	High - Moderate sensitivity and High magnitude of change
RVP_G	Moderate degree of visual modification: Whilst there is a high number of turbines visible from the highway, there is anticipated to be a lot of roadside vegetation that screens the turbines. In addition, there are two existing wind farms in the vicinity (Wind Hill <30km, and Yandin Wind Farm, less than 10km away, and the proposed Yathroo Wind Farm immediate north of the Project area. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.	High - Moderate sensitivity and High magnitude of change
RVP_H	High degree of visual modification: Whilst there is a high number of turbines visible from the highway, desktop analysis identified a lot of roadside vegetation that screens the turbines. In addition, there are two existing wind farms in the vicinity (Wind Hill <30km, and Yandin Wind Farm, less than 10km away, and the proposed Yathroo Wind Farm immediate north of the Project area. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.	Low - Moderate sensitivity and Low magnitude of change

Cumulative impact findings

Yandin Wind Farm, Yathroo Wind Farm and the Project together create one continuous area of wind farm production, extending approximately 30 km as you travel north along the Brand Highway from the Regans Ford / Dandaragan Road intersection. This significant area extends from Regans Ford in the southwest, to Cataby in the northwest, across to Dandaragan in the northeast and down to near the Moore River in the south, creating a large change in the landscape for the workers and residents of this area.

There is the potential for sensitive receptors in this area to feel surrounded by wind turbines, with increased local scale cumulative impacts to occur as a result of the Project. It is noted however, that most dwellings are associated with one of the wind farm projects. There are 6 identified sensitive receivers that are not part of any wind farm projects located in area.

Ground-truthing will be undertaken to confirm the extent of intervening vegetation or structures which would have bearing on views from rural dwellings.

Note that the turbine visibility outputs are limited, and do not take into account the screening effect of intervening vegetation or built form and therefore provide an exaggerated indication of the theoretical extent of visibility of the wind turbines. They were therefore used primarily to guide the desktop studies and inform site visit work.

Recommendations

The following points are recommended to understand and mitigate local impacts:

- Consultation with residents and landowners to undertake further visual assessment from selected sensitive viewpoints on private property, to determine the viewing conditions, and consult on appropriate mitigation measures.
- In a consultative process, consider preparing landscape plans showing trees and vegetation to assist mitigating potential visual impacts of the Project.

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Glossary

Term	Definition
EE Act	<i>Environment Effects Act 1978</i>
EPBC Act	<i>Environment Protection Biodiversity Conservation Act 1999</i>
ESO	Environmental Significance Overlay
FFG Act	Flora and Fauna Guarantee Act 1988
Foreground	The area that immediately surrounds the Project up to a distance of 0.5 kilometres.
HO	Heritage Overlay
Km	kilometre
LVIA	Landscape and Visual Impact Assessment: The assessment of the impacts of the proposal on landscape and visual values. The LVIA is conducted to determine the likelihood of high impacts and assist in determining further assessment and mitigation measures.
Landscape	Its constituent elements, its character and the way this varies spatially, its geographic extent, its condition, the way the landscape is experienced, and the value attached to it.
LCZ	Landscape Character Zones
m	metre
Study Area	The area designated relevant for assessment of the Project, determined by viewshed analysis
the Project	Marri Wind Farm
Project area	Proposed location for the Project
Sensitive receptor	Those visual receptors within the Study Area that are likely to view the Project from their dwelling, a popular or significant viewing location (such as a lookout).
Viewpoint (VP)	Moderate or high sensitivity location from which views to the construction process or components of the Project may be possible.
Viewshed	The area visible from a particular viewing location.
Visual amenity	The qualities of a landscape setting that are appreciated and valued by a viewer.
Visual catchment	The area over which an object can be seen within the landscape based on the line of sight.
Visual impact	The result of assessing the sensitivity level of a viewer and the modification level of a development.
Visual sensitivity	The degree to which various user groups would respond to change based on their expectation of a particular experience in a given setting for example the expectation of a high level of visual amenity in a national park.
ZTV	Zone of Theoretical Visibility

1 Introduction

Aurecon Australasia Pty Ltd (Aurecon) has been engaged by Marri WF Pty Ltd ATF Marri WF Unit Trust to facilitate the environmental and planning assessments and approvals for the Marri Wind Farm Project (the Project), located in the Shire Dandaragan in the northern Wheatbelt of Western Australia.

This report is a Landscape and Visual Impact Assessment (LVIA) and responds to requirements to assess the landscape and visual impacts of the Project for development in Western Australia.

1.1 Purpose

The purpose of the LVIA report is to provide an assessment of any potential impacts to landscape character and visual amenity at construction and operational phases of the Project.

Matters required to be considered under the State and Local Planning Framework are identified and addressed in this report.

The landscape and visual amenity assessment will be undertaken in two stages:

- An assessment of landscape significance to inform the wind farm design process (this report) involving assessments of publicly accessible viewpoints that are representative of sensitive receivers located on private property, and key public viewpoints

The scope for the LVIA is to:

- Review existing landscape studies, National and State policies and guidelines
- Undertake a desktop analysis to assess the landscape and its features
- Define the initial catchment for potential visual and landscape impact for the proposal (e.g. including initial review of current literature on distance thresholds for visual intrusion of wind turbines)
- Undertake a desktop analysis of the site and its surrounds (up to 4km radius of the Project area – refer to Section 3.2). Provide analysis of:
 - Landscape Character Zones
 - Significant landforms and scenic features
 - Culturally significant landscape elements
- Report findings for Landscape Character Zones
- Undertake a Zone of Theoretical Visibility (ZTV) based on initial layout
- Identify sensitive receptors, including dwellings, nearby to the proposed wind farm site
- Identify and categorise dwellings and sensitive viewing locations based on the presence of surrounding vegetation and varying densities
- Define the ‘pattern of viewing’ of sensitive viewpoints to the windfarm site (e.g. Road/touring routes, townships, dwellings, parks and recreational areas / tourism locations, etc) within the viewshed
- Review and assess potential cumulative impacts
- Identification of key sensitive receptors to guide subsequent assessment.
- Suggest potential opportunities to reduce or mitigate any potential adverse effects identified relating to wind turbine height and siting.

The Project methodology is derived from existing best practice in landscape and visual impact assessment with reference to:

- Visual Landscape Planning in Western Australia: A Manual for Evaluation Assessment, Siting and Design (WAPC, 2007) guideline

- Wind Energy Guideline, Technical Supplement for Landscape Character and Visual Impact Assessment, Department of Planning, Housing and Infrastructure, November 2024

1.2 Assumptions and Limitations

The following assumptions and limitations apply to this report:

- The LVIA process is designed to be objective, providing a factual description of potential Project-related changes. Evaluation of significance of changes and impact, however, necessarily involves qualitative judgement. Accordingly, this assessment integrates objective measurement with professional interpretation, recognising that visual assessment is inherently subjective and that conclusions to perceptual responses to the Study Area will vary between individuals.
- The LVIA is based on the Site Layout (as at the time of this report) as shown in Figure 2-2.
- The LVIA is focused on the current land uses and zoning.
- A night-time visual assessment has not been undertaken which would consider potential warning lights to the tops of turbines.
- Access to sensitive viewpoints on private land, such as residences or accommodation, were not undertaken for this LVIA. Where there are expected impacts to private properties, representative viewpoints are assessed from public viewpoints adjacent the property boundaries looking towards the Project area to capture the typical existing visual conditions. It is noted that the accuracy of these viewpoint assessments for private lands are limited to what is visible in the viewpoint.
- Community consultation is expected to be undertaken in future stages. Mitigation measures such as planting trees and vegetation to help mitigate views is expected to be agreed to in a consultative process with affected rural dwellings.
- Sensitive receptors have been identified through mapping of dwellings, property titles, desktop street view analysis and verification through field visits.
- Assessment of transmission infrastructure alignment are excluded – however some commentary has been included on likely impacts.
- Assessment of metrological masts has not been included at a high level based on preliminary information on location and type available at the time of preparing the assessment.
- Assessment of transmission line impact has been based on similar heights and types to existing transmission towers.
- Methodology, program and timing of the construction works are currently indicative and dependent upon planning approvals. Consequently, construction impacts have not been assessed in this report. However, it would be acceptable to predict that there would be impacts during construction and would be similar degree of visual impact to the operational phase assessment findings
- Desktop investigations were undertaken to inform the findings of this report.
- No stakeholder consultation or engagement on environmental matters has occurred.
- As the design is progressing, where amended positioning may result in noticeable visual impact different to previously discussed with the nearest sensitive receiver, additional investigation of impacts and consultation will be undertaken.
- The LVIA is based on the Project Description as outlined in Section 2. As the design layout of the Project is not yet finalised, our advice provides a point in time reference that may be subject to change.
- The methodology adopted for this LVIA assumes visual impact is based on zone of theoretical visibility and field of view only.(i.e. that if the works would not be seen, there is no impact).
- For the purpose of the assessment, unobstructed viewpoints from publicly accessible locations have been used as a worst-case scenario of potential visual impacts.
- The ZTV mapping taken from the location and height of proposed wind turbines assumes that those areas not highlighted in the mapping, cannot see the wind turbine due to intervening topography.

- The Zone of Theoretical Visibility (ZTV) was generated using contour data, as the publicly available Digital Elevation Model (DEM) offers a lower resolution of approximately 30 metres. In contrast, the contour data from the Western Australian Land Information Authority (Landgate) provides finer detail, with intervals ranging from 5 to 10 metres. However, a key limitation of DEMs derived from contour data is the reduced vertical accuracy and spatial resolution. Interpolation between contour lines may fail to capture finer topographic variations present in high-resolution elevation datasets, potentially affecting the accuracy of the visibility analysis.

2 The Project

The following section provides an overview of the Project, including highlighting the key infrastructure components, as well as important details regarding construction and operational information for the Project.

2.1 Project Background

Alinta is proposing to develop the Marri Wind Farm (the Project) in the Shire of Dandaragan, Western Australia, approximately 20km southwest from the township of Dandaragan and approximately 125 km north of Perth. The proposed Project involves the construction of a up to 550 MW wind farm in Dandaragan.

The Project is proposed to consist of up to 82 wind turbines with a maximum tip height of up to 275 meters (m) above ground level with a total generating capacity of up to 550 MW (Megawatts). Underground power and communication cables will connect the wind turbines to the substation. Overhead Transmission lines and towers of up to 15 km of will connect the wind farm substation to the connection substation adjacent to the existing Western Power 330kV/132kV transmission line located to the west of the Project.

2.2 Project area

The Project is located approximately 20 km south of the town of Dandaragan, while the town of Gingin lies about 45 km south of the Project within the Shire of Gingin. Both are small rural townships primarily servicing agriculture and mining sectors.

The Project encompasses approximately 12,500 ha, with the Project boundary location within the Shire of Dandaragan, with associated transmission infrastructure required to connect the Project to the grid located in adjacent Shires. The landscape is predominantly characterised by land that has been cleared for farming activity over many decades. There are limited areas of remnant native vegetation within the various land holdings that make up the Proposed Development Envelope along with isolated paddock trees. The majority of the remnant native vegetation within the Project is located, and has been mapped in, the various road reserves that intersect the Project.

Notable features near the Project include the Moore River, located approximately 730 m to the south, Moore River National Park about 10 km to the south, Gngangara-Moore River State Forest approximately 24.4 km to the southwest, and an unnamed Conservation Park (Reserve R41986) situated roughly 6.8 km to the south. There are two close nature reserves to the Project including Namming Nature Reserve, which borders the western side of the Proposed Development Envelope, and Bundarra Nature Reserve, located around 2 km to the east. These areas provide important ecological habitat and recreational opportunities within the region.

An existing wind farm operated by Alinta Energy (Yandin Wind Farm) is located approximately 15 km to the north of the Project. A second wind farm (Yathroo) that is currently in development is located between the Project and the Yandin Wind Farm.

Up to 15 km of overhead transmission line, supported by lattice or pole towers up to 60 m tall spaced 250–500 m apart with adjustable spans for environmental crossings, will connect the wind farm substation to a nearby existing Western Power line, with a 60 m wide corridor maintained free of tall vegetation and structures around the line.

2.3 Project Description

The Project includes the following permanent and ancillary infrastructure, further details on the Project infrastructure is shown in Table 2-1, Figure 2-1 and Figure 2-2.

Permanent core and ancillary infrastructure

- Up to 82 wind turbines.

- Internal access tracks.
- Power up to 550 MW and Capacity up to 6,600 MWh Battery Energy Storage System (BESS).
- A terminal station.
- Substations.
- Permanent meteorological monitoring masts.
- Internal feeder transmission lines.
- Utility installations and groundwater bores.
- An operation and maintenance building, including a car park and an office.

Temporary ancillary infrastructure:

- A construction office and compounds, including site offices, car parking, storage and amenities.
- Concrete batching plant.
- Temporary civil works.
- Laydown areas.

Table 2-1 Key Parameters

Feature	Parameters	Quantity
Turbines		
Maximum Hub Heights	184 m	82
Maximum Blade Length	91 m	
Maximum Tip Height	275 m	
Rotor Swept Area	36,644 m ²	
Minimum Clearance (space between ground and lowest point of blade)	66 m	
Ancillary Infrastructure - Permanent		
BESS	Up to 8 ha	1
Operation and maintenance building	Up to 4 ha	1
Terminal station	Up to 4 ha	1
Collector station	Up to 4 ha	4
Permanent meteorological monitoring masts.	N/A	3
Ancillary Infrastructure – Temporary		
Construction compound	Up to 10 ha	1
Concrete batching plant	1 ha	1
Hardstand area	0.75ha	82

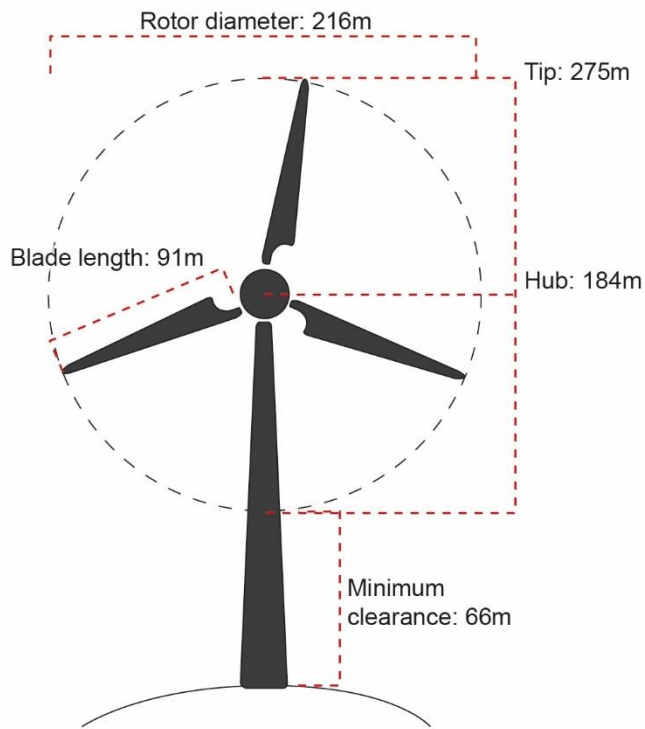


Figure 2-1 Indicative turbine dimensions

2.4 Construction and Operational information

The anticipated construction phase for the Project is anticipated to last for approximately 2 years and the operational life of the Project is expected to be approximately 40 years. Further information is provided below in Table 2-2.

Table 2-2 Construction and Operational Information

Construction Phase	Proposed timing
Establish site offices, compounds and concrete batching batch plants	1-2 weeks
Commence gate installation, commence track construction, commence turbine foundation excavations and hard stands	18 months
Commence electrical work, cables, collectors, internal powerline, the terminal station	18 months
Turbine installation	24 months
Final commissioning and site demobilisation	6 months
Operation of wind farm	40 years
Decommission and make good	12 months

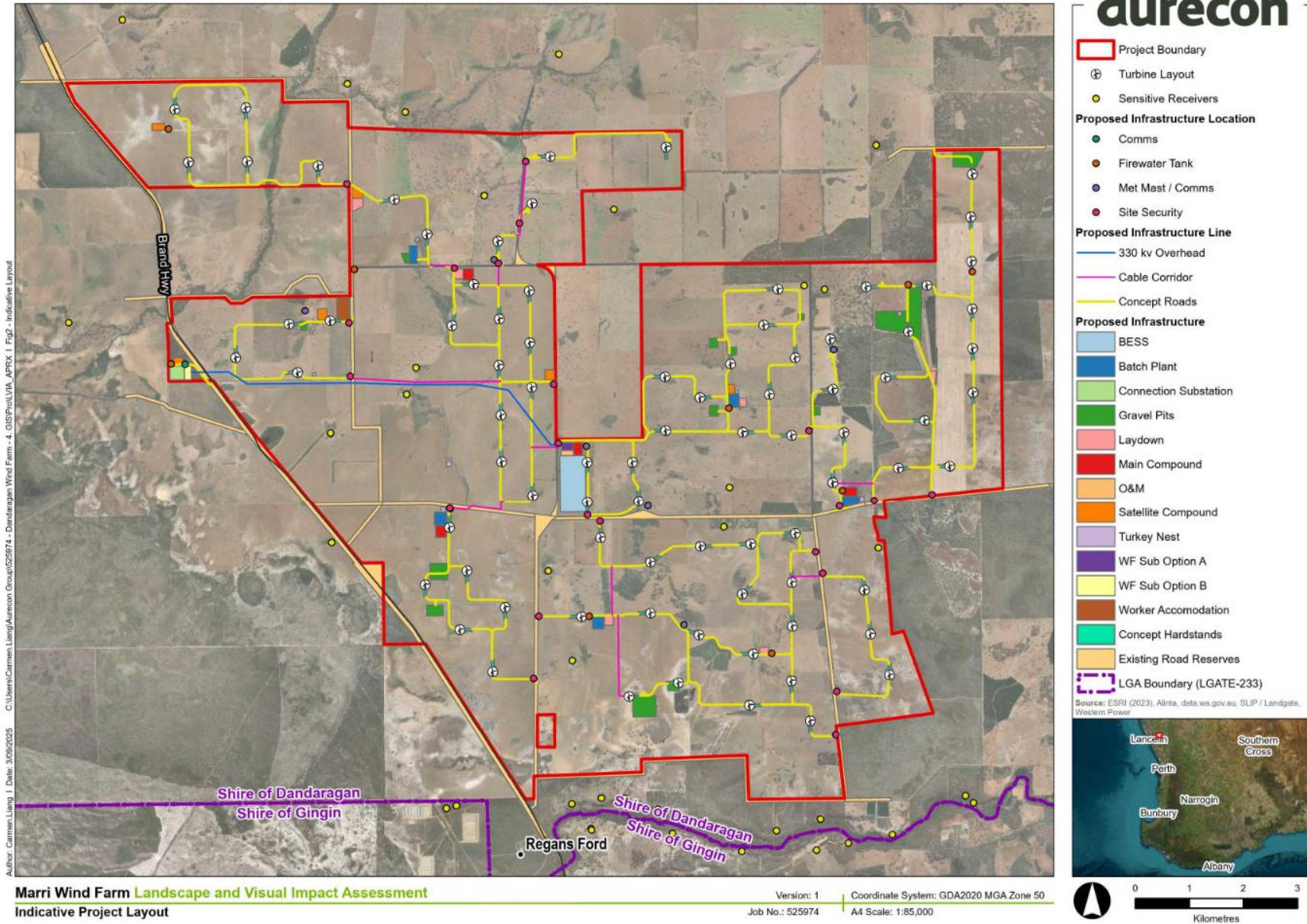


Figure 2-2 Indicative Project Layout

2.5 Links to other Technical Reports

Some of the technical requirements include other aspects and impacts that are not directly related to this report and are covered in the following specialist disciplines:

- Flora and Vegetation
 - Detailed Ecological Assessment
- Fauna including Matters of National Environmental Significance (MNES) species
 - Bird and Bat utilisation Survey
 - Biodiversity Impact Assessment
 - Black Cockatoo Habitat Survey
- Aboriginal Heritage Assessment
- Noise and Vibration Impact Assessment
- Traffic and Transport Impact Assessment
- Telecommunications and EMI Assessment
- Bushfire Assessment
- Social Impact Assessment
- Hydrology Assessment
- Water Resource Impact Assessment.

3 Methodology

This section describes the methodology used to understand the existing conditions and assesses the potential impacts of the Project on the landscape character and visual amenity.

3.1 Assessment approach

The Landscape and Visual Impact Assessment (LVIA) has been prepared to support the Development Application and informs an assessment under the Environment Protection Act 1986 for the visual and broader landscape impacts of the proposed wind energy Project. The referral criteria involves identifying potential significant effects on the environment including;

- potential extensive or major effects on landscape values of regional importance, and;
- potential significant effects on the amenity of a substantial number of residents, due to extensive or major, long-term changes in visual, noise and traffic conditions.

The LVIA comprises a desktop evaluation of the Project and its various components, turbines and ancillary facilities, identifying sensitive viewpoints with the potential of higher impacts. The structure of the assessment is summarised in Table 3-1.

Table 3-1 LVIA report chapter description

Feature	Parameters
Chapter 4 Legislation and Policy Review	An analysis of legislation and policy related to landscape and visual amenity, from local to National level.
Chapter 5 Landscape Context	An analysis of the local context with a focus on landscape features, including topography, land-use, vegetation cover and a review of designated or significant landscapes.
Chapter 6 Cumulative Analysis	Analysis of the sources of potential impact from two or more planned, approved or existing wind farms, and the receptors.
Chapter 7 Baseline Analysis	<p>Landscape Character analysis</p> <p>An analysis of the existing landscape features to divide the landscape into broad homogeneous units to assist with determining the impacts that may result from the Project.</p> <p>Visual baseline analysis</p> <ul style="list-style-type: none"> ■ Desktop analysis to ascertain the visual catchment of the Project area through the preparation of Zone of Theoretical Visibility (ZTV) mapping. ■ Representative viewpoint selection - A review of the ZTV outputs identified dwellings and key viewpoints. Street view images were analysed, matching with key viewpoints identified from the ZTV to gain an understanding of the Project area in context and gather site information. Representative viewpoints have been identified to illustrate a more complete understanding of the Project and potential changes that may arise because of the Project. ■ The potential impacts that have been identified may be subject to further investigations as part of Stakeholder Consultation.
Chapter 8 Potential Impacts	Understanding of the potential change that may arise and provides a summary of matters for the referral which may require further investigation, assessment, management and mitigation.
Chapter 9 Conclusion	Summary of the findings and recommendations from analysis and assessments of the Project

3.1.1 Relevant guidelines

This LVIA has been prepared with reference to the **Visual Landscape Planning in Western Australia: A Manual for Evaluation Assessment, Siting and Design (WAPC, 2007) guideline** together with additional supporting guidance outlined below.

The WAPC manual provides guidance on the methodology for visual landscape assessments, which this LVIA is consistent with, generally based on the following process:

- Step 1: Determine visual management objectives
- Step 2: Describe proponent development
- Step 3: Describe the potential visual impacts
- Step 4: Develop visual management measures
- Step 5: Prepare final recommendations and options for monitoring.

The methodology of this LVIA involves identification of existing landscape characteristics, visibility analysis, and an assessment of the likely changes and impacts of the Project on the specific viewpoints as well as the broader landscape. The assessment also includes identification of groups of stakeholders that may be impacted by the development of the Project infrastructure.

Supporting Guidelines

The following documents have influenced the methodology for this study and are considered best practice within the industry. They set out a clear and systematic approach in documenting the baseline landscape and visual conditions, potential impacts and mitigation.

The below guidelines have been used as a basis for the methodology for this assessment:

- Wind Energy Guideline – Technical Supplement for Landscape and Visual Impact Assessment', NSW Department of Planning, Housing and Infrastructure, November 2024 (the Technical Supplement)
- Australian Wind Energy Association and Australian Council of National Trusts (2007) Wind Farms and Landscape Values: National Assessment Framework; and
- NSW Department of Planning and Environment, Technical Supplement – Landscape and Visual Impact Assessment
- NSW Wind Energy Visual Assessment Bulletin, 2016 (the VIA Bulletin)
- Guidance Note for Landscape and Visual Assessment, Australian Institute of Landscape Architecture 2018
- The Guidance for Landscape and Visual Impact Assessment, Third Edition, 2013, prepared by the Landscape Institute and Institute of Environmental Management & Assessment, UK

The VIA Bulletin and the Technical Supplement are guidelines specifically for the assessment of landscape and visual assessment for wind farms. These have been used to identify assessment parameters including:

- Visual Study Area (see Section 3.2): identifies those dwellings or key public viewpoints that are within the visual magnitude threshold and therefore more likely to experience a higher magnitude of change in foreground and middle ground views (the Technical Supplement).
- Visual magnitude threshold (see Section 3.4.1): distances are guided by the height of the turbines and represent the area where potential impacts of the Project are likely to be more acute (VIA Bulletin); and
- Cumulative assessment Study Area (see Section 3.4.2): identifies effects resulting from changes to the landscape or visual amenity caused by the Project in conjunction with other developments or actions that occurred in the past, present or are likely to occur in the foreseeable future (VIA Bulletin).

3.2 Desktop analysis

Key information sources have been identified and reviewed as part of the desktop analysis. Desktop analysis was undertaken to gain initial understanding of the landscape character and visual amenity of the Project

area. It was also used to understand initial conditions of sensitive receiver environments and similar publicly accessible areas suitable for field survey review. This included reviewing topography and, vegetation cover. These findings were then verified and expanded through field surveys undertaken in July and August 2025.

These sources include:

- Relevant planning schemes, policies and guidelines. (See Section 0).
- Digital satellite aerial imagery (accessed July and August 2025 from Google Earth).
- GIS and cadastral information including roads, property boundaries, rivers and conservation areas etc.
- Other data as provided to the Project.

3.3 Field Survey

Field surveys were undertaken on 14 July 2025 and 1 August 2025 by environmental planners and urban designers with experience in visual impact assessment site photography. The weather on both occasions was sunny and clear. The field surveys were both undertaken in the morning.

The field surveys were used to ground truth findings of the desktop assessments, undertake suitable representative viewpoint selection and photography for photomontages and undertake landscape character assessments and photography.

Photography was undertaken with a camera with a built in Global Positioning System (GPS) to capture imagery metadata.

3.4 Study Area identification

Visual effects from the Project can extend well beyond the Project boundary, due to the large size of the turbines, and because views are potentially available at distant vantage points. Therefore, a Project Study Area has been established for this LVIA.

The Study Area limit has been determined based on the distance that the Project components may become indiscernible to the human eye or would occupy a small proportion of the visual field of view (FOV), where impacts would be considered negligible. This threshold is measured at a minimum of 7,850m based on the Technical Supplement for LVIA as shown in Figure 3-1. This distance is directly related to the scale and height of the Project components and Visual Prominence Rationale, refer to Appendix B. The Study Area has been rounded up to 10,000 m for the assessment of landscape character and visual impacts to ensure the worst-case scenario is considered.

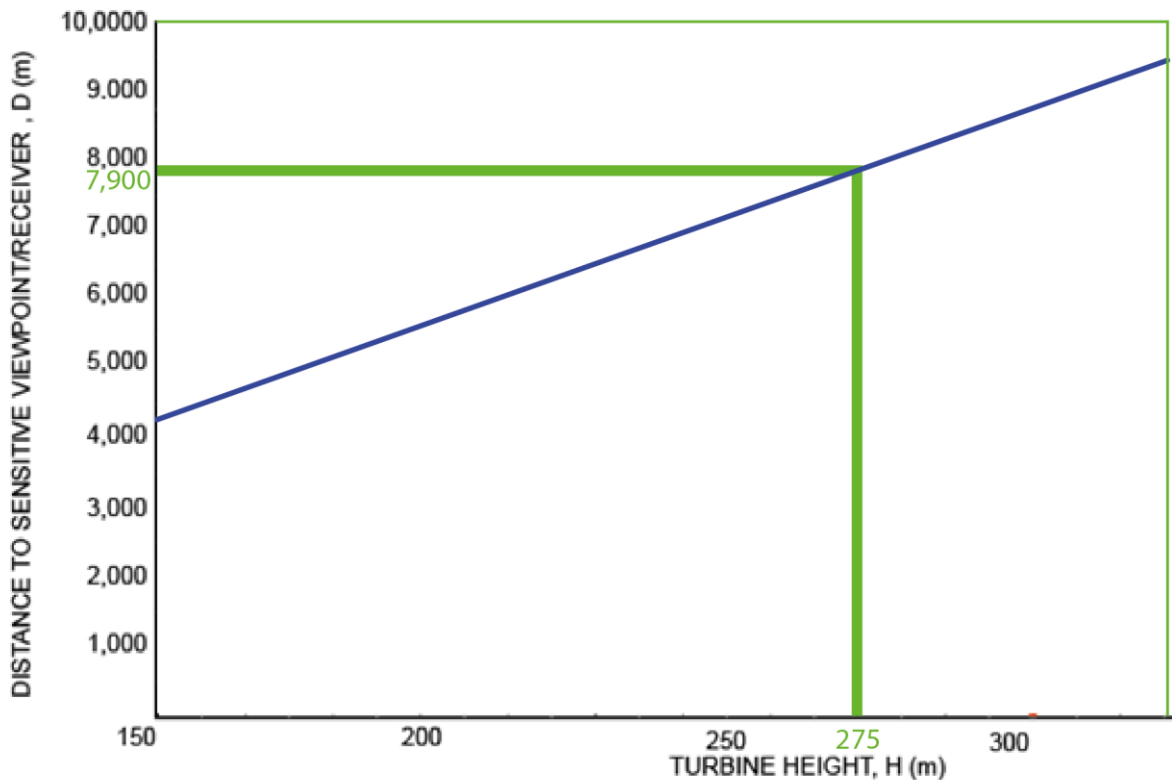


Figure 3-1 Visual Study Area (adapted from the Technical Supplement for LVIA)

3.4.1 Visual prominence zone

Visual magnitude

The visual magnitude rating is determined by the volume of the field of view a project would occupy from a selected viewpoint.

The area where potential effects of the Project are likely to be more acute, is guided by the distance turbines are located from a viewpoint as shown in Figure 3-2 (guided by the VIA Bulletin) The potential for high impacts to these viewpoints increases within the distance from dwelling indicated where the 'black line' intersects at 4,000m (for private receivers) and 'blue line' intersects at 6,000m (for public viewpoints). The turbines proposed in the Project extend to 275m, and therefore the visual magnitude threshold would be 3750m. For the purposes of this assessment 4,000m distance has been used to ensure worst case scenario is tested, and given the landscape character has very broad, and expansive views with long horizons.

This provides an early indication of where placement of turbines will require further assessment and justification, and/or where consultation with potentially affected landowners needs to be focused.

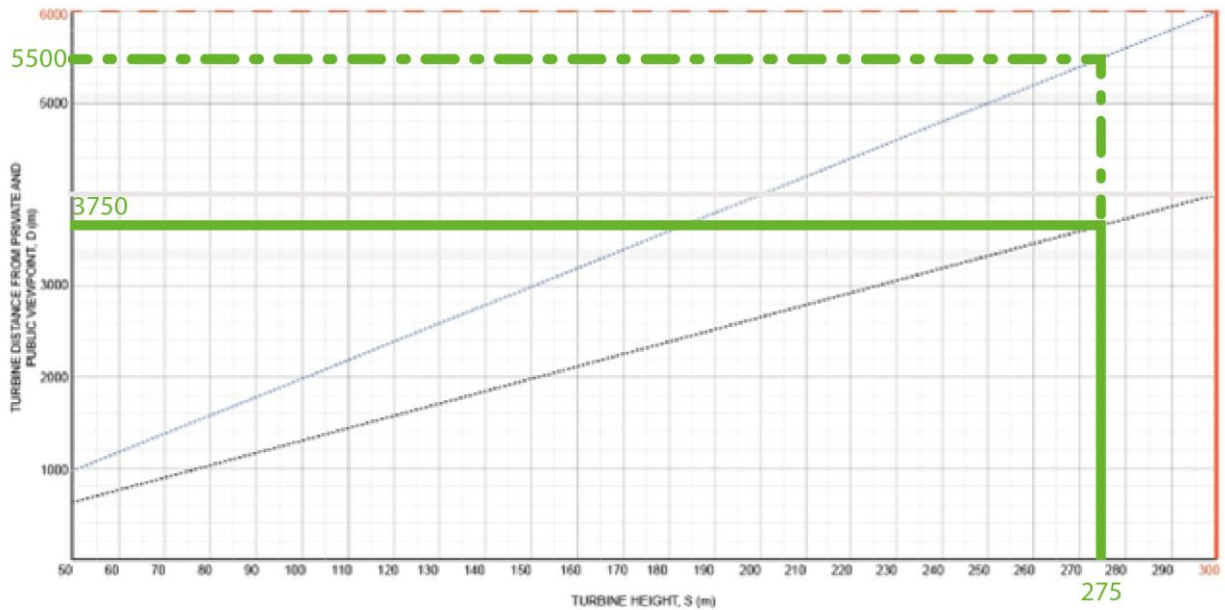


Figure 3-2 Graph indicating visual magnitude thresholds for LVIA (adapted from VIA Bulletin)

Identification of Zone of Theoretical Visibility

Within the Study Area, the production of a Zone of Theoretical Visibility (ZTV) mapping, illustrates the theoretical area from which the mapped components could be visible.

Three Zone of Theoretical Visual Influence (ZTV) analyses (refer Appendix B for ZTV) were undertaken to provide a preliminary representation of the likely 'worst case' visual envelope of the wind turbine layout currently under investigation. These mapping outputs illustrate the number of wind turbines potentially visible from within the Study Area for the following wind turbine elements (refer Figure 3-3):

- Entire height of turbine at 0-275m above ground;
- Swept path of rotor at 66-275m height above ground; and
- Hub and above from 184-275m height above ground.

It should be noted that the outputs of these ZTV maps are limited to the available terrain data, and do not account for the screening effect of intervening vegetation or built form and therefore provide an exaggerated indication of the theoretical extent of visibility of the wind turbines. They are therefore used primarily to guide the desktop studies and inform future site visit work.

The Zone of Theoretical Visibility (ZTV) assumes a clear line of sight based solely on the input surface, typically a Digital Elevation Model (DEM), considering terrain elevation and an observer height of 1.7 m (standard human height). Visibility is assessed for three turbine height scenarios: foundation level (0 m), swept path (80 m), and full blade tip height (190 m). The analysis excludes potential obstructions such as buildings or vegetation unless specifically incorporated and assumes consistent atmospheric conditions and a static terrain surface.

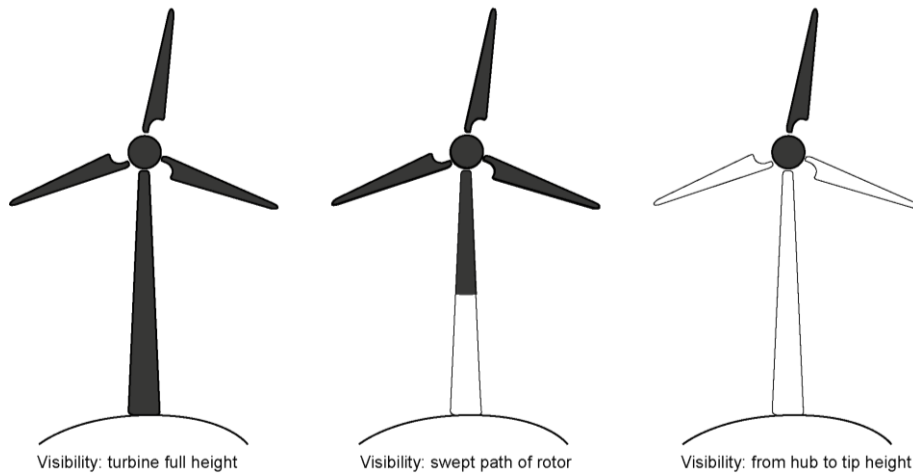


Figure 3-3 Potential visibility of turbines generated within the ZTV mapping

3.4.2 Cumulative impact

The factors in assessing potential cumulative landscape impacts of wind farms on landscapes (Scottish Natural Heritage, 2021) , include:

- Combined visibility (whether two or more wind farms will be visible from one location).
- Sequential visibility (e.g. the effect of seeing two or more wind farms along a single journey, e.g. road or walking trail).
- The visual compatibility of different wind farms in the same vicinity.
- Perceived or actual change in land use across a character type or region.
- Loss of a characteristic element (e.g. viewing type or feature) across a character type caused by developments across that character type.

The VIA Bulletin provides a distance of eight (8) kilometres from a dwelling or public viewpoint for the analysis of cumulative impacts. At eight (8) kilometres, turbines are likely to visibly recede into the background.

To establish whether the degree to which dwellings or key public viewpoints may be impacted by multiple wind turbines, the location in which wind turbines are potentially visible from the representative viewpoint are mapped within 360°. Should wind turbines be visible in three or more 60° sectors (see Figure 3-4), the potential cumulative impacts of multiple turbines should be considered as part of the EIA.

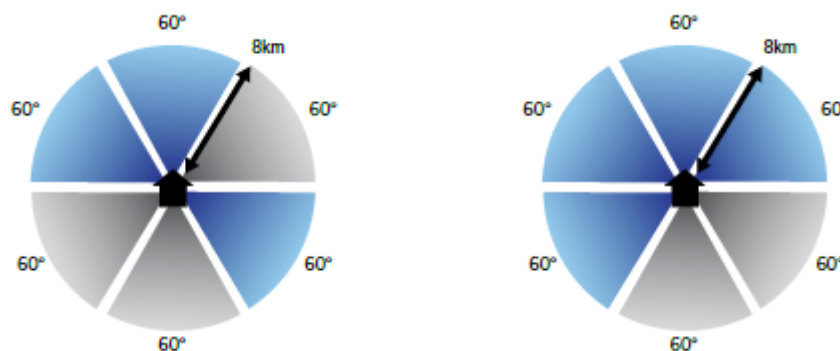


Figure 3-4 Cumulative assessment tool indicating multiple wind turbines within sectors (source: VIA Bulletin)

3.5 The visual assessment method

The level of visual impact resulting from the proposed development has been assessed against the following components:

- Visual sensitivity made up of the following:
 - Viewer sensitivity: the sensitivity of the viewer to the development/change and distance from the viewpoint; and
 - Landscape sensitivity: the ability of the landscape setting to absorb the development/change.
- Scale of modification: how well the development/change contrasts or blends with the surrounding land use based on varying levels of visual prominence.

Determining the level of visual impact involves assigning levels of visual sensitivity and modification (such as high, medium, low or very low). A determination matrix is then used to assign an overall level of visual impact.

3.5.1 Baseline analysis

A visual baseline study establishes the existing landscape and visual conditions. The baseline study considers the following inputs in the 'visual catchment' for the Project:

- Elements of the landscape important to the community, including public and private viewpoints (See Section 7.3 Viewpoint selection)
- The sensitivity of the viewers who use those viewpoints, and the distances at which they may view the landscape and potential wind turbines and other ancillary facilities (See Section 3.6.2 Visual sensitivity)
- The character of the landscape, its key features and the relative scenic quality of the area; and
- The location of any existing operational or approved wind energy projects within both a regional and local context, including any nearby surrounding wind energy projects within eight kilometres which may have the potential to create direct or indirect visual impacts between the proposed and any other operational, approved or proposed wind energy projects.

Landscape character

The Project has the ability to influence the landscape character within the Study Area. Therefore, the Project establishes a base landscape character to assess potential changes. See Section 3.6.1 for assigning landscape sensitivity.

Landscape character zones

Landscape Character Zones (LCZ) describe unifying aspects of the landscape and separate visually distinct landscapes from another.

The character zones are identified through desktop assessment and a site visit, based on consideration of the following attributes:

- Landscape value, i.e., landscape designated for their scenic or landscape importance or valued recreational function
- Landscape elements that contribute to defining character, i.e. residential, commercial and landform
- Landscape character attributes, including scale, grain, perceptual characteristics such as connection to natural landscape, industrial nature of the area
- Observed land uses and current and future land use zones outlined in strategic planning documents and Local Environmental Plans (as described in Section 0), and
- Topography and vegetation.

The landscape character is defined through:

- Review of the regional landscape context, including the broad land use areas;
- Review of the Study Area, including topography, landform and waterways, and;
- Review of ecological and cultural values.

Scenic quality

General principles for scenic quality assessment have been developed in the Guidance Note for Landscape and Visual Assessment (AILA, 2018). Common principles that determine scenic preference and the importance of views include:

- Water and other natural elements are generally preferred over urban or developed scenes;
- Mountains and hills are preferred over flat land;
- Diversity is generally preferred over uniformity;
- Consistence and balance;
- Discordant elements which contrast markedly with their surroundings are often regarded as having a detrimental impact on amenity; and
- Views from public spaces are valued more than views only available from private residences.

These principles are used to assess the degree of impact to potentially affected stakeholders, in determining the reasonable expectations of affected persons.

3.6 Visual impact assessment criteria

The potential level of impacts associated with the proposed development on landscape character and visual amenity have been assessed based on themes of magnitude and sensitivity. These are described below.

3.6.1 Landscape Sensitivity

The sensitivity of a landscape is judged based on the extent to which it is considered able to accept change of a particular type and scale without adverse effects on its character. Sensitivity varies according to the type of development and the nature of the landscape, including:

- Its inherent landscape value (its condition, perceptual qualities, cultural importance, and any specific values that may apply, such as landscape planning designations); and
- The likely congruency of the proposed change (i.e. the extent to which the Project may fit or be 'visually absorbed' into the scale, landform, land use, pattern, texture of the existing landscape).

The attributes which influence the sensitivity of landscape character are outlined in Table 3-2.

Table 3-2 Evaluating level of Landscape sensitivity

Landscape sensitivity rating	Description
High	<p>Landscapes which by nature of their character would be unable to accommodate change of the proposed type. Typically, these would be:</p> <ul style="list-style-type: none"> • Of high value with distinct elements and features making a positive contribution to character and sense of place • Likely to be designated, but the aspects which underpin such value may also be present outside designated areas, especially at the local scale • Areas of special recognised value, through use, perception or historic and cultural associations. <p>The extent of alteration would result in the landscape losing significant natural landscape features, its character and/or sense of place.</p> <ul style="list-style-type: none"> • Open, expansive and bare landscapes. • Elevated, bare and/or groundcover vegetation. • The viewer is highly sensitive to changes in their immediate surroundings such as residents or 'natural' areas such as National Parks.

Medium	<p>Landscapes which by nature of their character would be able to partly accommodate change of the type proposed. Typically, these would be;</p> <ul style="list-style-type: none"> • Comprised of commonplace elements and features creating generally unremarkable character but with some sense of place • Locally designated, or their value may be expressed through non-statutory local publications • Containing some features of value through use, perception of historic and cultural associations. • Likely to contain some features and elements that could not be replaced <p>The extent of alteration would result in the landscape partially losing some natural or designed landscape features, its character and/or sense of place.</p> <ul style="list-style-type: none"> • Open, expansive and moderately vegetated landscapes including canopy trees. • Elevated and vegetation landscape including canopy trees. • The viewer is moderately sensitive to changes in their immediate surroundings such as users of regional and local reserves.
Low	<p>Landscapes which by nature of their characteristics would be able to accommodate change of the type proposed. Typically, these would be;</p> <ul style="list-style-type: none"> • Not designated • Containing few, if any, features of value through use, perception or historic and cultural associations. • Likely to contain few, if any, features and elements that could not be replaced. • Built-up landscapes typically interspersed with canopy trees. • The viewer is aware of the change but not overly sensitive to changes in their immediate surroundings such as users of commercial areas and farming land.
Very Low	<p>Landscapes which by nature of their characteristics would be able to accommodate change of the type proposed. Typically, these would be;</p> <ul style="list-style-type: none"> • Comprised of some features and elements that are discordant, derelict or in decline, resulting in indistinct character with little or no sense of place • Modified landscapes with an abundance of built form and limited natural characteristics. • The viewer is aware of the change but not overly sensitive to changes in their immediate surroundings such as users of industrial areas.

3.6.2 Visual sensitivity

The sensitivity of the viewers at the viewpoints is considered to be dependent upon factors including:

- The importance (scenic quality) of the view;
- Viewer exposure, typically assessed by measuring the number of viewers exposed to the resource change and the type and duration of viewer activity;
- The nature of the visual receptor (type and volume of sensitive receptors or viewers) experiencing the view; and
- Distance of the Project from the identified land use area.

Table 3-3 outlines the sensitive rating.

Table 3-3 Evaluating level of visual sensitivity

Visual sensitivity rating	Description
High	<p>Large numbers of viewers or those with proprietary interest and prolonged viewing opportunities such as residents and users of attractive and/or well-used recreational facilities.</p> <p>Views from a regionally important location such as a scenic lookout whose interest is specifically focussed on the landscape.</p> <ul style="list-style-type: none"> • Residential properties • Users of public footpaths or other recreational trails (e.g National Trails) • Users of recreational facilities where the purpose of that recreation is the enjoyment of the landscape (e.g. National Parks and designated scenic lookouts) • Users of designated tourist routes

Medium	<p>Medium numbers of residents and moderate numbers of visitors with an interest in their environment. Larger numbers travellers with an interest in their surroundings.</p> <ul style="list-style-type: none"> • Outdoor works • Users of scenic roads, railway corridors or waterways • Schools and other institutional buildings, and their outdoor areas
Low	<p>Small numbers of visitors with a passing interest in their surroundings. Viewers whose interest is not specifically focussed on the landscape.</p> <ul style="list-style-type: none"> • Indoor workers • Users of main roads or arterial roads • Users of recreational facilities where the purpose of that recreation is not related to the views • Commuters
Very Low	<p>Small numbers of viewers with little interest in their surrounds</p> <ul style="list-style-type: none"> • Industrial workers • Road users, farm workers with the Project in middleground or background views

3.6.3 Magnitude of change

The magnitude of change affecting a landscape or visual receptor depends on the nature, scale and duration of the particular change that is expected to occur. It describes the extent of change and identifies elements which are removed or added, changed in colour or texture, and the compatibility of new elements with the existing landscape. Visual modification can result in an improvement or reduction in visual amenity.

- Scale - with respect to the loss of addition of features in the view and changes in its composition.
- Degree of contrast or integration - form, scale and mass, line, height, colour, texture.
- Nature of view in relation to the Project – angle, distance and extent.
- Mitigation - the degree to which mitigation would reduce the effect.

outlines the four categories of modification used for determining the degree of visual modification potentially resulting from the Project which include:

- Scale - with respect to the loss of addition of features in the view and changes in its composition.
- Degree of contrast or integration - form, scale and mass, line, height, colour, texture.
- Nature of view in relation to the Project – angle, distance and extent.
- Mitigation - the degree to which mitigation would reduce the effect.

Table 3-4 Criteria for determining the visual modification level

Modification level	Description
High	The Project is highly visible and intrusive in regard to the size, scale and geographical extent, and would disrupt views currently experienced from sensitive land use areas and/or strongly contrasts with the existing landscape setting which has limited capacity for change and/or the extent of area over which the changes would be visible from sensitive land use areas is significant.
Moderate	The Project partially intrudes in regard to the size, scale and geographical extent or somewhat obstructs current views from sensitive land use areas and/or a noticeable compositional change to the existing landscape setting in which there is moderate capacity for change and/or the extent of area over which the changes would be visible from sensitive land use areas is moderate.
Low	The Project is barely perceptible resulting in minor deterioration to the view currently experienced from sensitive land use areas; and/or results in a small change to the existing landscape setting in which change is possible without harm and/or the extent of area over which the changes would be visible from sensitive land use areas is limited.
Very low	There is minimal compositional contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the Project and the environment in which it sits. In this situation, the Project may be noticeable, but does not markedly contrast with the existing landscape setting and/or the extent of area over which the changes would be visible from sensitive land use areas is negligible.
Negligible	There are no views of the Project components and as such, there is no impact.

3.6.4 Assigning a level of impact

The impact significance ratings have been determined through a combination of the sensitivity and magnitude of change assessments, in accordance with the scale defined within Table 3-2 (Landscape Impacts) and Table 3-3 (Visual Impacts).

The consequence of the application of the matrix is that (except where there are no visible works) the Project would have low, moderate or high impacts, depending on the level of visual modification and viewer sensitivity from the location at which the Project can be viewed. If the Project is not visible, the impact is negligible. Table 3-5 outlines the overall level of impact.

Table 3-5 Impact determination matrix

		Viewer sensitivity level			
		HIGH	MODERATE	LOW	VERY LOW
Magnitude of Change	HIGH	HIGH	HIGH	MODERATE	LOW
	MODERATE	HIGH	MODERATE	LOW	VERY LOW
	LOW	MODERATE	LOW	LOW	VERY LOW
	VERY LOW	LOW	VERY LOW	VERY LOW	VERY LOW

3.6.5 Preparation of visualisations

Utilising the viewpoint photography, visualisations or photomontages are prepared that aim to represent the observers view of the Project. The photomontages illustrate the assessment of impact described in the assessment section (see Section 8). The photomontages are prepared using specialised digital software and the assessment is undertaken as described in Appendix A Visual Simulation.

4 Legislation and Policy Review

Wind energy developments must ensure they do not cause unacceptable detriments to significant environmental, cultural, or landscape values. These values are safeguarded under Commonwealth and Western Australian legislation. This chapter provides a comprehensive review of the relevant legislation, policies, and guidelines that apply to this impact assessment.

The State Planning framework includes policies which directly refer to the identification, management and preservation of the natural environment. These policies focus on minimising risks to the natural environment and ensuring that development is sensitively designed to respond to the surrounding landscape.

In addition, state and local policies which relate to the development of renewable energy facilities seek to ensure that these facilities will not negatively impact the surrounding area. These policies generally focus on the ensuring renewable energy facilities minimise potential impact to the environment, natural landscape and urban areas, including the requirement to minimise unwanted, unacceptable or adverse visual impacts. The Project is generally in accordance with the existing planning policy framework as it has been designed to avoid adverse impacts to the landscape values of the surrounding locality, as demonstrated in this LVIA.

4.1 Federal and State Government legislation and policy

4.1.1 Environmental Protection Act 1986

Visual amenity is considered during assessment of Project under Part IV of the EP Act considered under the “Social Surroundings” Environmental Factor. The Environmental Factor Guideline for social surroundings (EPA, 2023) notes the objective of the EPA is “to protect social surroundings from significant harm”. This includes visual amenity, which is generally assessed in areas with rich heritage, cultural or social significance due to their natural features or scenic quality.

4.1.2 Environmental Protection and Biodiversity Conservation Act 1999

The Environment Protection and Biodiversity Protection Act 1999 (EPBC Act) provides a legal framework to manage nationally and internationally important flora, fauna, ecological communities and heritage places, defined as matters of national environmental significance. There is no specific national legislation requiring or directing the assessment of scenic amenity for renewable or major infrastructure projects, and therefore this legislation does not form part of this LVIA.

4.2 State Planning Framework

4.2.1 State Planning Strategy 2050

The State Planning Strategy 2050 (WAPC, 2014) sets a clear vision for the State of WA through development of an overarching plan which divides the state into three sectors. The Project area is located within the “South West” sector, which the Strategy identifies as being a global biodiversity hotspot where mining and downstream processing are key economic drivers. The Strategy requires a balance between maintaining the biodiversity of the region while allowing opportunities for economic growth and development.

An objective of the Strategy is to “conserve biodiversity, achieve resilient ecosystems, protect significant landscapes and manage the State’s natural resources in a sustainable manner”.

4.2.2 Wheatbelt Regional Planning and Infrastructure Framework

The Wheatbelt Regional Planning and Infrastructure Framework (WAPC, 2015) establishes a vision for the Wheatbelt Region: “The Wheatbelt will have a diverse social and economic base, be a leader in innovation and create new opportunities that confirm it as a key contributor to the State’s prosperity”.

The framework notes specific infrastructure upgrades to improve electricity transmission, including Western Power’s planned Mid-West Energy Project that aims to create greater network capacity. For the Wheatbelt this project may facilitate new power generation projects such as wind farms. The Wheatbelt region is noted to already have substantial renewable energy producers, with potential to establish other energy initiatives.

The framework sets out objectives for management and protection of natural amenity. With regard to the proposed Marri Windfarm the following objective needs careful consideration:

- “Environmental and landscape values that support the social, cultural and economic development of the region, and are managed for current and future generations”.

To achieve this objective, the framework details there is a need to manage the Wheatbelt’s visual landscapes, and the ways in which they are experienced, to protect their valued characteristics. This includes preservation, recognition and promotion of regionally important views through the land use planning system.

The framework also includes the following factors in relation to natural amenity, which the WAPC will consider when evaluating proposals in the Wheatbelt:

- Recognise, protect and promote the valued visual characteristics of the Wheatbelt’s urban, rural and natural landscapes.
- Guide the identification, protection and management of local environmental assets, and connections between them

The framework maps very high conservation value landscapes across the Project area as shown in the following Figure 4-1 from the framework.

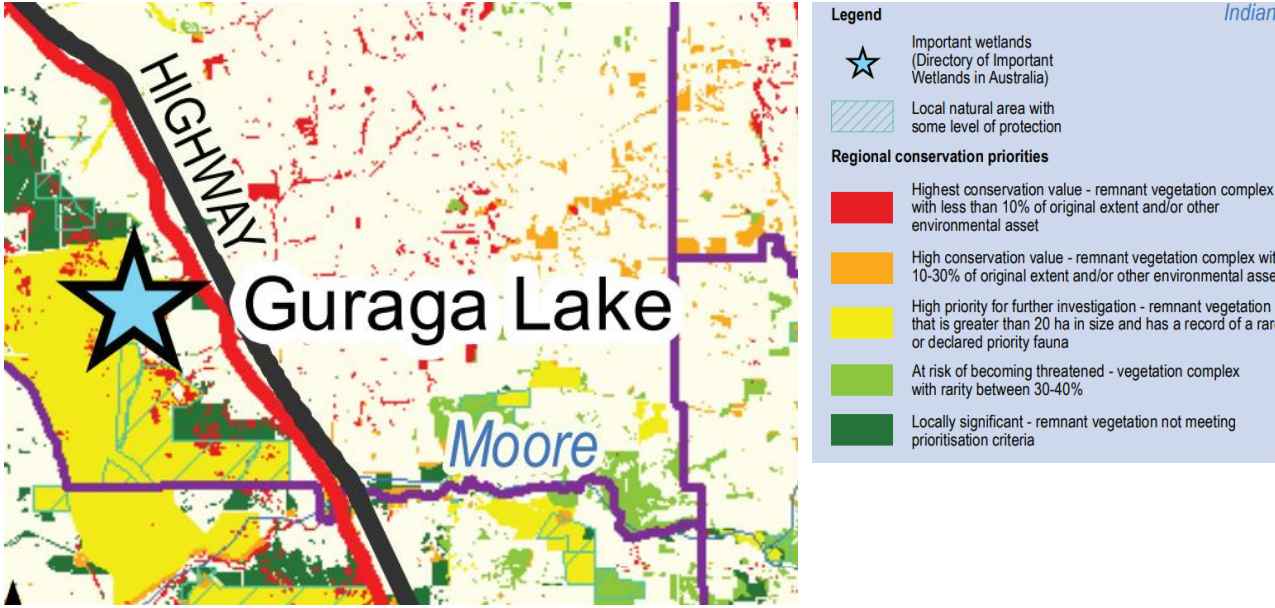


Figure 4-1 Conservation values (WAPC, 2015)

4.2.3 State Planning Policy 2.0 – Environment and Natural Resources Policy

State Planning Policy No 2: Environment and Natural Resource Policy (SPP 2.0) elaborates on the importance of protecting and enhancing landscapes by stating that planning strategies, schemes and decision making should:

- identify and protect landscapes with high natural resource values (such as ecological, aesthetic or geological) and encourage the restoration of degraded landscapes;
- consider the capacity of landscapes to absorb development and the need for careful planning, siting and design of new development in a way which is sensitive to the character of the landscape;

- consider the need for a landscape or visual impact assessment for development proposals that may impact upon sensitive landscapes.

This LVIA has been prepared to ensure the Project will not adversely impact the value of the surrounding landscape, in accordance with the intent of SPP 2.0.

4.2.4 State Planning Policy 2.5 – Rural Planning

The purpose of State Planning Policy 2.5 (SPP 2.5) is to protect and preserve Western Australia’s rural land assets due to the importance of their economic, natural resource, food production, environmental and landscape values. SPP 2.5 supports the protection of valued landscapes and views within planning schemes, strategies and decision making. It refers to the WAPC’s Visual Landscape Planning in Western Australia Manual (2007) to provide guidance on developments that may give rise to potential impacts on different landscapes, and measures to address those impacts, which this LVIA has been prepared in accordance with.

4.2.5 Position Statement: Renewable Energy Facilities

The Position Statement: Renewable Energy Facilities (WAPC, 2020) outlines the WAPC’s requirement to support the consistent consideration and provision of renewable energy facilities within Western Australia.

The Position Statement identifies assessment measures to facilitate appropriate development of renewable energy facilities, seeking to ensure they are in areas that minimise potential impact on the environment, natural landscape and urban areas while maximising energy production returns and operational efficiency.

The objectives of the Position Statement are to:

- guide the establishment of renewable energy facilities to support the State Energy Transformation Strategy (March 2019)
- outline key planning and environmental considerations for the location, siting and design of renewable energy facilities
- promote the consistent consideration and assessment of renewable energy facilities
- facilitate appropriate development of renewable energy facilities while minimising any potential impact upon the environment, natural landscape, and urban areas
- encourage informed public engagement early in the renewable energy facility planning process.

Relevant to this LVIA, the Position Statement notes that the location and siting of a renewable energy facility may require a visual and landscape assessment that addresses specific criteria. This criteria, where available at the time of the report has informed Landscape and Visual Impact Assessment:

- Landscape significance and sensitivity to change, site earthworks, topography, extent of cut and fill, the extent and type of vegetation, clearing and rehabilitation areas, land use patterns, built form character, public amenity and community values
- likely impact on views including the visibility of the facility using view shed analysis and simulations of views from significant viewing locations including residential areas, major scenic drives and lookouts
- layout of the facility including the number, height, scale, spacing, colour, surface reflectivity and design of components, including any ancillary buildings, signage, access roads, and incidental facilities
- measures proposed to minimise unwanted, unacceptable or adverse visual impacts.

As the project matures, further assessment can be undertaken to capture any potential impacts of Project changes.

4.2.6 Visual Landscape Planning in Western Australia – A Manual for Evaluation, Assessment, Siting and Design

Visual Landscape Planning in Western Australia – A Manual for Evaluation, Assessment, Siting and Design (WAPC, 2007) provides advice on techniques for incorporating visual landscape planning into the planning system and is intended to be used as a guide so that the practices of visual landscape evaluation and visual impact assessment can continue to evolve and mature over time. Refer Section 3 Methodology and Section 5 Landscape Context.

The manual also includes detailed guidance which address the visual impact considerations necessary for effective land use planning for wind farm developments, relating to the location, siting and design. This LVIA has been prepared in accordance with the requirements of the manual.

4.2.7 Indian Ocean Drive Planning Guideline

The Indian Ocean Drive Planning Guidelines (WAPC, 2014) sets out broad guidelines for the location, siting and design of various land uses and development in the locality of Indian Ocean Drive, a principal tourist route linking the Perth metropolitan area with the various coastal settlements and attractions.

The Guidelines applies specifically to a 500-metre corridor on either side of the Indian Ocean Drive road reserve. It also applies more generally to land that is outside of that corridor but may be prominently viewed from Indian Ocean Drive.

The Project is located approximately 25km east of Indian Ocean Drive, and given the height of the wind turbines, will be visible from the Indian Ocean Drive.

The Guidelines identify the safeguarding of the road's key function as a scenic, coastal tourist route is the overarching objectives when considering new developments, specifically:

- Scenic: to protect the primarily natural landscape character of the route, while restoring and enhancing character and environmental outcomes where needed
- Tourist: to provide opportunities for visitors and commuters to experience a safe, enjoyable journey along the road
- Coastal: to provide a variety of views of the ocean and coastline from the roadway

The Guidelines also include the following objectives regarding the visibility of development, in order to maintain the scenic character of the tourist route:

- Inevident from the road
- Visible but blend within its setting
- Comprise a prominent feature along the road

Due to the height of the wind turbines, they are not able to be permanently screened by landform or vegetation in order for them to be “inevident” from the road. However, the wind turbines have been sited approximately 25km from the road and are proposed within “background view “ (>6.5km) (the threshold established in the Guidelines), to minimise views from the corridor.

The Project has been designed to achieve the “visible but blending” objective, in that:

- The prominence of the landscape's natural features will remain as is, and will continue to dominate the landscape
- The development will be visible, but not prominent
- The Project has been located to avoid sensitive locations such as dunes and ridges or focal points with important views.
- The forms, lines, colours and textures of the Project are compatible with the landscape.

The Project also complies with the guidance contained on proposals for utility infrastructure, being:

- The Project is located and sited where it does not occupy prominent positions on the landscape, such as hills or ridge tops;

- The Project has been designed so its colour blends with the sky backdrop it will be viewed against;
- The Project has been located on the inland side of Indian Ocean Drive, at the furthest practicable distance.

In summary, the Project does not compromise the function of Indian Ocean Drive as a key coastal, tourist route, and is located in the “background view”, so it blends into the landscape setting without impacting views to the ocean and coastline.

4.3 Local Planning Framework

4.3.1 Shire of Dandaragan Council Plan

The Shire of Dandaragan’s Council Plan (Shire of Dandaragan, 2024) integrates the Shire’s Strategic Community Plan and Corporate Business Plan.

The Council Plan outlines the key aspiration for the Shire to be “a dynamic, diverse and desirable region delivering sustainable growth and socially connected communities”, with specific environmental aspirations to increase renewable energy initiatives throughout the local region, acknowledging their contribution to the local economy.

4.3.2 Shire of Dandaragan Economic, Tourism Planning Strategy Envision 2029

The Shire of Dandaragan’s Economic and Tourism Development Strategy (Shire of Dandaragan, 2020) sets the strategic prosperity objectives of broad economic and population growth with decreasing economic barriers, to help achieve the Shire’s vision of being “a dynamic, diverse, desirable region delivering sustainable growth and socially connected communities”.

The Strategy identifies renewable energy as a target sector to boost the local economy in the short, medium and long term.

4.3.3 Shire of Dandaragan Local Tourism Planning Strategy

The Shire of Dandaragan’s Local Tourism Planning Strategy (Tourism Western Australia, 2012) is the guiding strategic document for tourism planning matters, and specifically focuses on land use planning issues within the Shire, stemming from the broader strategic tourism context of the Central Coast Strategic Tourism Planning Study.

The Strategy reflects the policy position of State Planning Policies, to ensure development is sited and designed to complement and enhance the environment in terms of its visual, amenity, social and ecological values.

4.3.4 Shire of Dandaragan Local Planning Strategy 2020

The Shire of Dandaragan Local Planning Strategy (LPS) sets out the 10-15 year planning direction for the shire in the context of WA’s land use planning framework.

The LPS highlights that renewable energy in the region continues to be an industry with considerable potential based on conducive environmental characteristics such as consistent sunlight and coastal winds. It also recognises that the Shire’s proximity to the Perth Metropolitan Region creates a captive market for additional energy production.

The Strategy Plan contained in the LPS reflects the Project area’s Rural zoning under the Shire of Dandaragan Local Planning Scheme No 7, and identifies wind farms on and surrounding the Project area, highlighting the Shire’s strategic level support for the proposed use in this locality. (See Figure 4-2)

It notes that non-rural land uses that are compatible with, and complement, the primary use of the land, will be supported in Rural zoned areas.

When assessing proposals for wind farms, the LPS requires the Shire to consider visual landscape issues and other relevant matters set out in the WAPC Position Statement on Renewable Energy Facilities. Of relevance to the Project, the Strategy provides the following detail of the visual landscape setting:

- The Shire occupies three different landscape character areas; the coastal plain bounded on its inland side by the Gingin Scarp; the higher central area characterised by low ranges and isolated flat-topped hills, bounded on its inland side by the Dandaragan Scarp; and above this the flatter, elevated terrain of the Dandaragan Plateau.
- The prominent features of the low-lying coastal plain include:
 - the coastline, with its long, gently curved beaches punctuated by sandy promontories or low limestone headlands, and the small, estuarine mouth of the Hill River;
 - elevated dune systems parallel to the coastline;
 - large mobile dunes and sand sheets; scattered wetlands in low-lying areas behind the coastal dunes; and,
 - gently sloping ridges swathed in the extraordinarily diverse sandplain heath (kwongan) vegetation;
 - the landscape is devoid of tall trees or shrubs, meaning views are long.
- The Brand Highway is a tourist route of State level significance. Continuous views experienced from scenic travel routes such as Brand Highway, and their associated roadside rest areas and lookout points are of vital importance.
- Brand Highway' elevated position to the landscape provides extensive views westward across the coastal plain. Open Kwongan heath landscape with profusion of wildflowers is visible from Brand Highway.
- The landscape in the western portion of the Shire is significant at a State level for a combination of reasons, including its open character with its low dunes carpeted in low-growing heath, providing extensive views across pristine-appearing landscapes; the occasional elevated flat-topped hills; the diversity of plant species which provide colourful displays in spring; mobile dunes near the coast; and ocean vistas.
- The general lack of development visible from major tourist routes is unusual given the Shire's proximity to the Perth Metropolitan area.
- The key issue in relation to landscapes is to maintain its valued characteristics the Shire continues to develop.
- Measures to reduce the prominence of new development should focus on careful siting and design, guided by the WAPC's landscape manual.

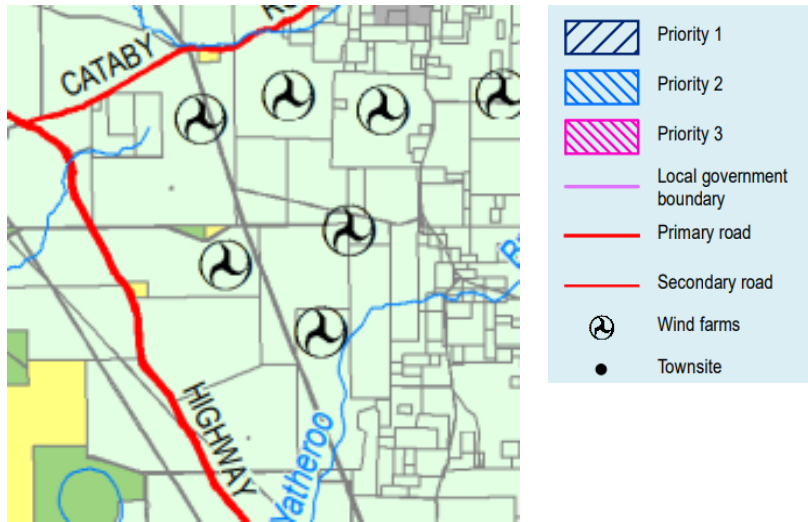


Figure 4-2 Wind Farms north of the Project area (LPS)

4.3.5 Shire of Dandaragan Local Planning Scheme No. 7

The Project area is zoned Rural in the Shire of Dandaragan Local Planning Scheme No. 7 (LPS 7). The objectives of the Rural zone are “to provide for a range of rural activities such as broadacre and diversified farming so as to retain the rural character and amenity of the locality, in such a way as to prevent land degradation and further loss of biodiversity”.

Pursuant to LPS 7, wind farm is not listed as a land use under the Scheme Zoning Table and does not reasonably fall within any of the other land uses listed. Under clause 4.4.2 of LPS 7, if a person proposes development of a land use not specifically mentioned in the zoning table and cannot reasonably determine the use as falling within the type, class or genus of activity, the local government may:

- a) determine that the use is consistent with the objectives of the particular zone and is therefore permitted;
- b) determine that the use may be consistent with the objectives of the particular zone and thereafter follow the advertising procedures of clause 64 of the deemed provisions (PD Act) in considering an application for development approval; or
- c) determine that the use is not consistent with the objectives of the particular zone and is therefore not permitted.

The proposed use is considered compatible with, and complementary to, the Rural zoning of the land.

The surrounding land is also predominantly zoned Rural under LPS 7. Table 4-1 outlines the extent of land use zones surrounding the Project area, with potential significance to landscape and visual within the Study Area.

Table 4-1 Land use zones surrounding the Project area

Zone / Reserve	Land Use Features	Relevance to LVIA
Rural Zone	<ul style="list-style-type: none"> ■ Project area and land to the north, east, south and west. 	<p>Farmland practices comprise of broad acre agricultural production. These areas have a sense of openness allowing for background views. Dwellings are widely dispersed and typically screened with perimeter planting.</p> <p>Objectives:</p> <ul style="list-style-type: none"> ■ to provide for a range of rural activities such as broadacre and diversified farming so as to retain the rural character and amenity of the locality, in such a way as to prevent land degradation and further loss of biodiversity”.

Zone / Reserve	Land Use Features	Relevance to LVIA
Public Purposes Reserve	<ul style="list-style-type: none"> Unvested Crown Land – west of Brand Highway Gravel – pockets on northern and western boundary adjacent Brand Highway and Yandin Road Utility – pockets along Woodbine Road Camping – within the Dandaragan Town Centre, north of the Project area 	<p>Pockets of Public Purpose reserves are scattered outside of the Project area, ranging in their purpose from provision of utilities to camping sites.</p> <p>Objectives:</p> <ul style="list-style-type: none"> To provide for a range of essential physical and community infrastructure.
Conservation Reserve	<ul style="list-style-type: none"> Namming Nature Reserve Pocket adjacent to Yandin Road 	<p>The Conservation Reserves are located outside of Project area, however these have some influence on the landscape value.</p> <p>Objectives:</p> <ul style="list-style-type: none"> To identify areas with biodiversity and conservation value, and to protect those areas from development and subdivision. To identify and protect areas of biodiversity conservation significance within National Parks and State and other conservation reserves.
Parks and Recreation Reserve	<ul style="list-style-type: none"> Guraga Lake, west of Brand Highway Dandaragan Golf Club Dandaragan Community Recreation Centre 	<p>Parks and recreation areas provide local visitors with outdoor amenities for play, sports or for passive recreation. The Dandaragan Golf Club and Community Recreation Centre are typically used by local sports groups and individuals.</p> <p>Objectives:</p> <ul style="list-style-type: none"> Public Purposes which specifically provide for a range of public recreational facilities.
Residential	<ul style="list-style-type: none"> Pockets within Dandaragan Town Centre, north of the Project area 	<p>Limited residential development, generally R12.5 density within the Dandaragan Town Centre</p> <p>Objectives:</p> <ul style="list-style-type: none"> To provide for residential development at a range of densities with a variety of housing to meet the needs of different household types through the application of the Residential Design Codes. (Local government's intent is to provide a high standard of housing in the area within Jurien, bounded by Hastings Street, Bashford Street, Seaward Drive and Casuarina Crescent).
Commercial	<ul style="list-style-type: none"> Pockets within Dandaragan Town Centre, north of the Project area 	<p>The Dandaragan Town Centre provides diverse services to the broader community and towns.</p> <p>Objectives:</p> <ul style="list-style-type: none"> To provide for retail shopping, office and commercial development, and social, recreational and community activities servicing the town as a whole. (It is local government's intent to foster the development of Service Industry in the area bounded by Doust Street, Sandpiper, Murray and Bashford Streets).
Special Development	<ul style="list-style-type: none"> Pockets within Dandaragan Town Centre, north of the Project area 	<p>Objectives:</p> <ul style="list-style-type: none"> To provide for future residential, industrial or commercial development in accordance with a

Zone / Reserve	Land Use Features	Relevance to LVIA
		comprehensive Local Structure Plan prepared under this scheme.
Rural Residential	<ul style="list-style-type: none"> ■ Rural residential landholdings north of Dandaragan Town Centre 	<p>Larger format residential dwellings north of the town centre, generally screened with perimeter planting</p> <p>Objectives:</p> <ul style="list-style-type: none"> ■ To provide for lot sizes in the range of 1 ha to 4 ha. ■ To provide opportunities for a range of limited rural and related ancillary pursuits on rural residential lots where those activities will be consistent with the amenity of the locality and the conservation and landscape attributes of the land. ■ To set aside areas for the retention of vegetation and landform or other features which distinguish the land.

4.3.6 Local Planning Policy 9.14 Renewable Energy Facilities

The Shire of Dandaragan's Local Planning Policy (LPP 9.14), provides guidance on the development of renewable energy facilities. It contains objectives, including "to protect areas of visual, natural and heritage significance and ensure renewable energy facilities are sensitively sited to mitigate any potential adverse impacts".

The policy also contains specific development requirements, the following which are applicable to the LVIA:

- Wind turbines should be located in flatter landscapes, where feasible, to reduce visibility due to shortening the visual perspective of the structure.
- Where practical, landscaping should be implemented within the development to mitigate the visual impact of the development from sensitive land uses and public roads.

It also requires Development Applications to be supported by a LVIA, informed by the WAPC's Visual Landscape Planning in WA: A manual for evaluation, assessment, siting and design and the Australian Council of National Trust's Wind Farms and Landscape Values (2005)

This LVIA has been prepared in accordance with these documents and satisfactorily addresses the draft Policy's development requirements.

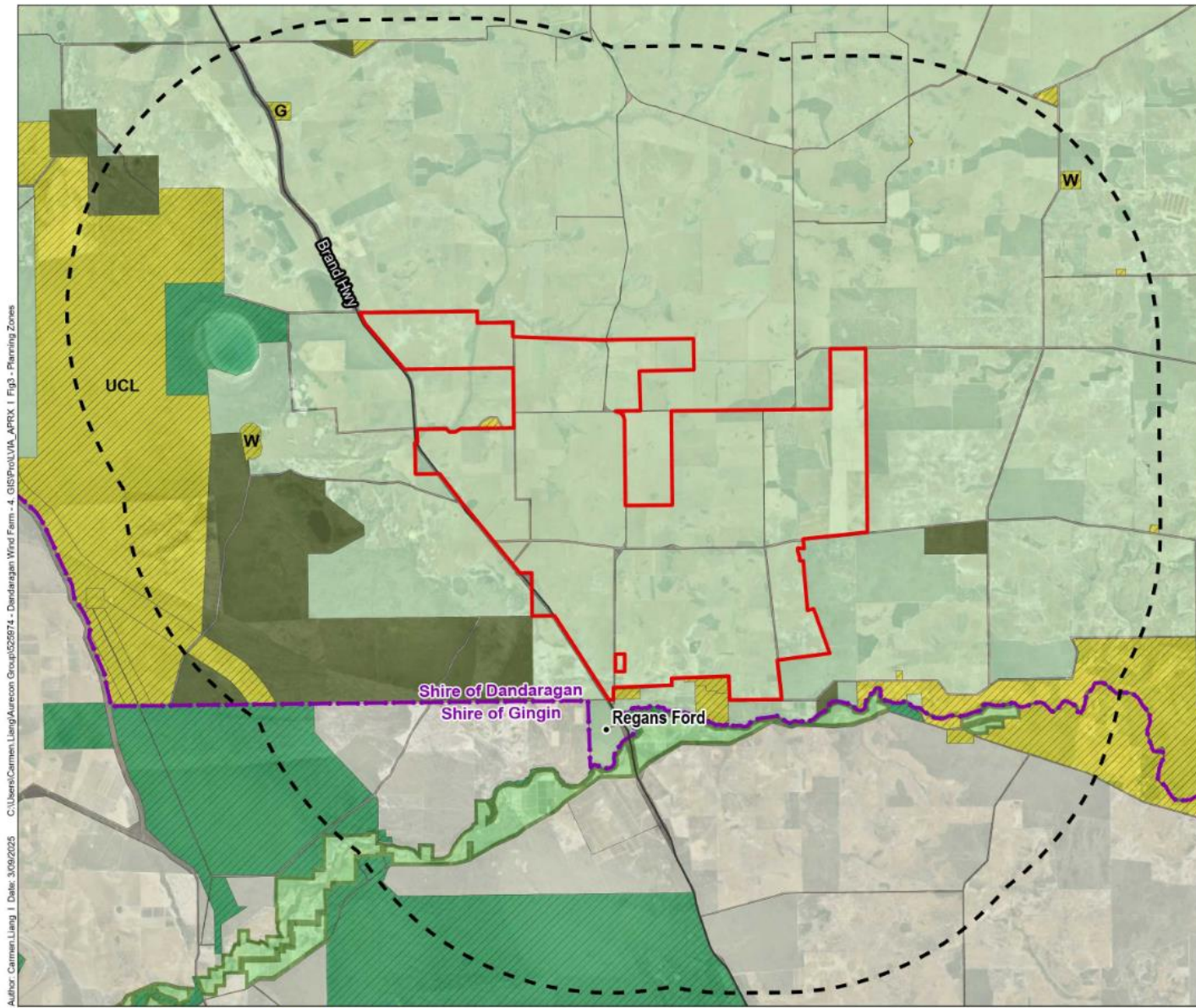
4.3.7 Summary of Planning Framework

The Project is compliant with the State and Local Planning Framework, which recognise renewable energy as being a key industry required to support and grow the local economy.

The LVIA acknowledges that the Project is situated in a region which supports diverse and unique landscapes, which are considered to be one of the areas primary assets that support tourism. Key aspects of the planning framework which have been considered in this LVIA include:

- Consideration of the Project's location on Brand Highway, being a significant tourist route which provides extensive views across the coastal plain, including open kwongan heath landscape, which is to the west of the Project area.
- Careful siting and design of the Project to ensure the maintenance of the rural character and landscape amenity values of the locality.

- Siting and design to respect the significance of the characteristics of the landscape of the Shire, including:
 - Maintain open views across gently undulating agricultural landscapes and patches of native bushland;
 - the occasional elevated flat-topped hills;
 - the diversity of plant species which provide colourful displays in spring; mobile dunes near the coast; and ocean vistas.
- Siting and design to enable the prominence of the landscape's natural features to remain as is.
- Siting of the project to avoid sensitive dunes and ridges or focal points with important views.
- Forms, lines and colours and textures of the Project designed to be compatible with the landscape.
- The Project has been located on the eastern side of Brand Highway and the Indian Ocean Drive, at the furthest practicable distance, avoiding visual impacts from these major tourist routes.



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- Project Boundary
 - Study Area (10km)
 - LGA Boundary (LGATE-233)
- Local Planning Scheme - Zones and Reserves (DPLH-071)**
- Conservation
 - General rural
 - General rural - coded
 - Parks and recreation
 - Public purposes / use
 - Rural

Author: Carmen Liang | Date: 3/09/2025 | C:\Users\Carmen.Liang\Aurecon\Group\525974 - Dandারণ Wind Farm - 4. GIS\PLU\LVA_APRX_1.Fig3 - Planning Zones

Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DPLH



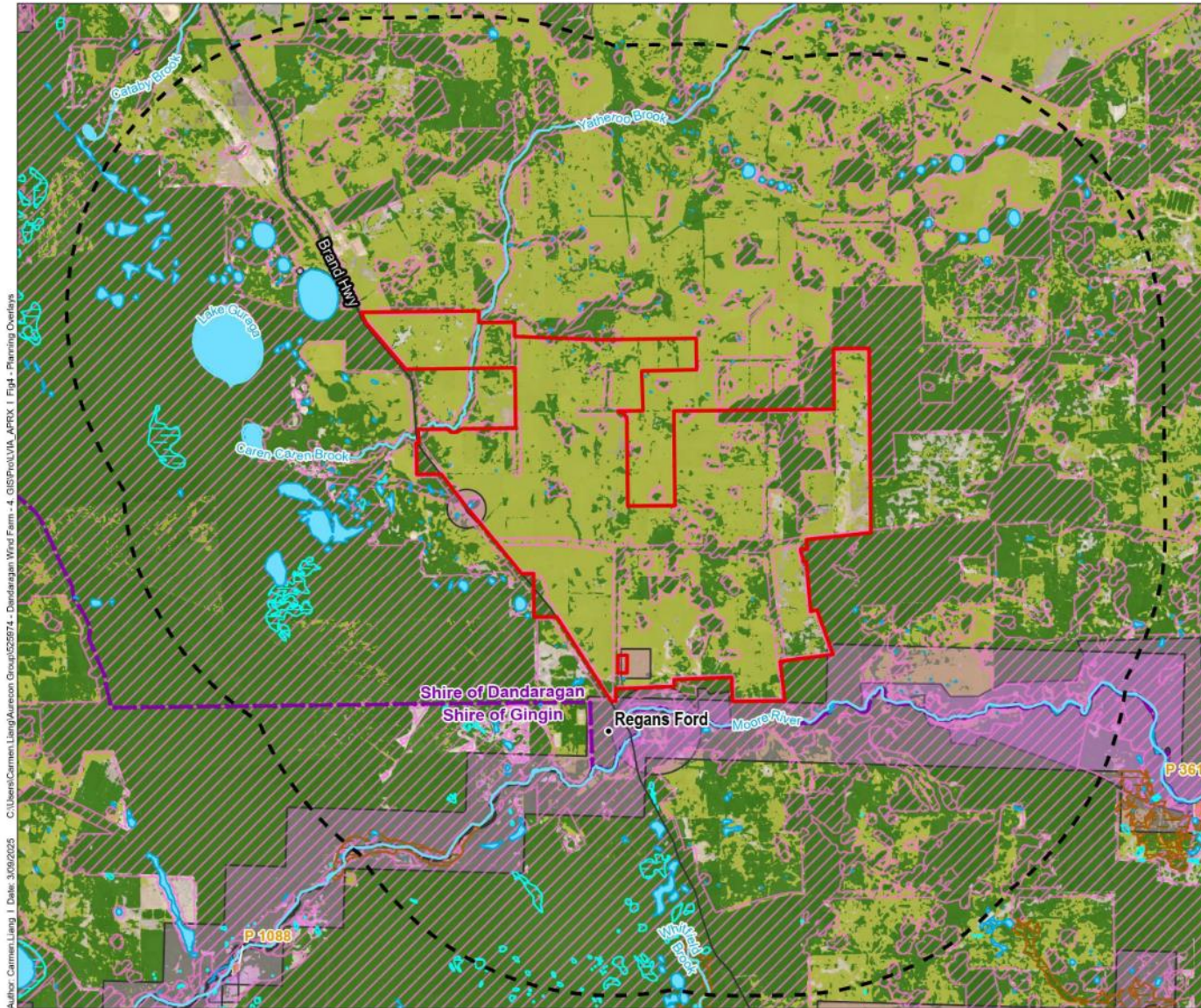
Marri Wind Farm Landscape and Visual Impact Assessment
Planning Zones

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 | A4 Scale: 1:180,000



Figure 4-3 Planning Zones

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- Watercourses (DWER-031)
- Waterbodies (LGATE-016)
- Bush Fire Prone Areas (OBRM-001)
- Aboriginal Cultural Heritage (Register / Lodged / Historic)
- Heritage Council WA - State Register (DPLH-006)**
- Individual Place
- Inland Flats (LGATE-099)**
- Subject to Inundation
- Subject to Flooding
- Vegetation Hybrid (Digital Earth Australia, DPIRD-005)**
- Cultivated Terrestrial Vegetation
- Natural Terrestrial Vegetation
- Project Boundary
- Study Area (10km)
- LGA Boundary (LGATE-233)

Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DPLH, OBRM, DPIRD, Geoscience Australia



Figure 4-4 Planning Overlays

5 Landscape Context

5.1 Regional landscape context

The Project is located approximately 125km north of Perth in the Wheatbelt Plateau. The nearest major town is Moora, approximately 25km to the east. The Wheatbelt Plateau is dominated by agricultural land use, with extensive clearing leaving scattered remnant vegetation. The topography is gently undulating creating wide open and long views across the landscape. Surviving vegetation is not only a refuge for wildlife, but in areas become dominate landscape features. (Refer Figure 5-1 for regional context)

The agricultural cycle of cereal crops provides strong seasonal colour to the landscapes from the rich terracotta ploughed soils, to vivid green shoots and bright blue skies, then the golden harvest and finally greying spikey stubble following harvest.

The area of the Project is located in the Dryandra Uplands landscape character subtype, according to Stuart-Street, Angela (1994) Reading the Remote: Landscape Characters of Western Australia, which is described below.

Dryandra Uplands landscape character subtype

The Dryandra Uplands is dominated by cereal crops and pasture, which have pushed the native remnants to the periphery of their extent. Patches are common along fence lines, enclosing and shading roads as well as marking the meandering water courses dissecting the gently undulating landscape.

York Gums (*Eucalyptus loxophleba*) often highlight drainage lines and roads. They also often grow in combination with the low bushy jam tree (*Acacia acuminata*) which dominate in shrubby remnant vegetation patches where taller trees are not prevalent.

Larger areas of remnant vegetation often hide outcroppings of granite. They appear as tumbled piles of lichen encrusting boulders, as horizon sheets of rock peppered with low tenacious plants such as pincushions, and as large domes which dominate the surrounding landscape.

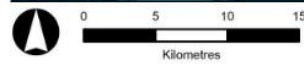
Low pale Terra cotta coloured hills are scattered over this terrain appearing as isolated islands surrounded by crops and pastoral land these are known as breakaways. These breakaways sometimes have patchy remnant vegetation on the slopes.

Visual Landscape Planning in Western Australia – A Manual for Evaluation, Assessment, Siting and Design (WAPC, 2007) includes the following descriptions relevant to the landscape character of the Project area:

- The modified landscapes of Western Australia consist of rural agricultural lands that stretch from far north to the wheat and wool areas to the Mid West, which are sparsely populated but heavily modified.
- The Wheatbelt region has a distinct character of broad-acre farming lots with strands of remnant vegetation, as well as shelter-belts of trees to protect the soils from wind and water erosion. The colours of the agricultural areas in the wheat-belt include orange dolerite, with occasional York gums. Many different crops are grown in the State, from distinct low-lying pastures in the north, to brighter canola in the southern areas.
- Cultural features in this landscape range from windmills to rural housing, old homesteads, water tanks, grape vines, rural style fencing and livestock scattered in the large expanse of the pasture fields in the north.
- Rural areas have been somewhat undervalued for their inherent visual, aesthetic character, and landscape quality.

- Watercourses (DWER-031)
- Waterbodies (LGATE-016)
- DBCA - Legislated Lands and Waters (DBCA-011)**
- Conservation Park
- National Park
- Nature Reserve
- LGA Boundaries (LGATE-233)
- Study Area (10km)
- Project Boundary

Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DBCA



Marri Wind Farm Landscape and Visual Impact Assessment
Regional Context

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
Job No.: 525974 | A4 Scale: 1:405,000

Figure 5-1 Regional Context

5.2 Study Area Landscape Context

The following section provides a description of the existing conditions, associated land uses and key landscape features within the Study Area (or within a 10km buffer of proposed turbines).

5.2.1 Land Use

The dominant land use of the Dandaragan Plateau and Perth subregions is overwhelmingly agriculture, followed by conservation (May & McKenzie 2003). Land use within the Study Area whereby the vast majority consists of crop fields with pockets of remnant vegetation. (See Figure 5-2 and Figure 5-3)

There are no conservation reserves that intersect the Project area. However, there are many Nature Reserves within 10km of the Project site. (See below Conversation Reserves)

To the south of the Project boundary is the Moore River Valley. It has smaller landholdings that back onto the river with dwellings that are generally surrounded by bushland, or cleared land area. On the south side of the river, there are some small farms associated with dwellings.

There are many rural dwellings in and around the Project site, that are generally associated with agricultural land use. In addition, dwellings further north also immediately north of the Project.

There is an open road network that moves around and through the Project area. The roads are generally lined with trees and vegetation, with open pockets. Farm infrastructure, buildings, dams and dwellings are dotted throughout the area.

Lookouts and pause points

- Yandin Lookout – located to the north of the Project area provides extensive views towards the ocean. Yandin Wind Farm is also viewed from this point with interpretive information for visitors.
- Nilgen Lookout – located between the coast and Indian Ocean Drive has a primary lookout towards the ocean. Windy Hill Wind farm can be seen in the background when looking north. The area is valued for its wildflower walk.
- Moore River informal camping spot located to the west of the Brand Highway, provides direct access to the River in a treed environment.



Figure 5-2 Pastoral land with tree plantations on the horizon (image: Aurecon, July 2025)



Figure 5-3 Farm with livestock (image: Aurecon, July 2025)

Renewable Energy

The Shire of Moora and the neighbouring Local Government Areas are the site of potential renewable energy developments (wind, solar and battery storage). Several renewable energy developers are refining project plans and lodging development applications. The proximity of these works to the Moora-Regans Ford high voltage transmission line will augment the State Government's objective to meet its renewable energy

targets. Several wind farm projects located within the Shire of Moora have reached critical stages, with more projects potentially being developed into the future.

Other significant renewable energy projects are existing and proposed within the region (see further in Section 6 Cumulative Analysis). These include Yandin Wind Farm (Alinta Energy), located approximately 10km north of the Project, and the proposed Yathroo Wind Farm (Umwelt) currently in Development Application phase.

Conservation Reserves

There are no conservation reserves within the Project, however there are several reserves in the surrounding area. The reserves in and around the area were originally created to represent some of the landforms, soils and vegetation of the Dandaragan Plateau. They generally consist of dense vegetation and a range of soil and landscape forms. Figure 5-4 to Figure 5-7 show some of the local bushland.

- To the west of the Project is the Namming Nature Reserve which is approximately 5,411 hectares in size and borders the Brand Highway. This reserve has significant vegetation and various vegetation and soil classifications. The reserve is protected for the purposes of flora and fauna conservation and is managed by DBCA.
- Guraga Lake which is part of a nationally important wetland, located close to the Brand Highway and together with Eneminga Nature Reserve is located approximately 10km north of the Project, and forms part of the continuous vegetation stretching from Namming Nature Reserve area.
- Bordering the central-eastern Project boundary is the Bundarra Nature Reserve which is approximately 290 ha, consisting of central low-lying wooded valley, supporting mainly heathland vegetation (See Figure 5-5).
- Mochamulla Nature Reserve is located along the banks of the Moore River and covers approximately 57 ha.
- Quanns Hill Nature Reserve is located on the south side of Mogumber Road, south of the Project. It is set aside for flora and fauna conservation.
- Moore River National Park is located approximately 8km south of the Project boundary and covers 23,578 ha. The adjacent Moore River Nature Reserve and Sand Spring Well Nature Reserve cover approximately 6,500 ha and 27 ha respectively in addition. All three reserves are located along the path of the Moore River and consist largely of Banksia heathland.



Figure 5-4 Yandin lookout, looking west towards the coast (image: Aurecon, August 2025)



Figure 5-5 Bushland at Bundarra Nature Reserve, east of the Project (image: Aurecon, August 2025)



Figure 5-6 Bushland, with trees in the background at Yandin lookout (image: Aurecon, August 2025)



Figure 5-7 Bushland at Yandin lookout with prominent grasstrees (image: Aurecon, August 2025)

Transport

Several roads surrounding and intersect with the Study Area (see Figure 2-2). The key roads include:

- Brand Highway, running in a north-south direction, to the west of the Project area
- Dandaragan Road, running north-south, along the southwest boundary of the Project area, and traversing through the Project. Although primarily a local road it is promoted as a tourist drive by the Turquoise Coast Visitor Centre, providing an alternative route to Brand Highway through the undulating wheatbelt region and noted as "Stunning scenery including rolling hills and running creeks as you traverse through the wonder of enormous wind turbines"
- Gillingarra Road, running east-west through the south area of the Project, and
- Rowes Road, that changes direction in the central and northeastern part of the Project.

Indian Ocean Drive is located to the west of the Project, running parallel with Brand Highway and the coast. Both Indian Ocean Drive and Brand Highway are State significant routes, with the former passing through native bushland areas. Both roads have significant roadside vegetation limiting views, however there are opportunities to view the coast from Indian Ocean Drive, and in particular from Brand Highway views to the Project, Yandin Wind Farm and the proposed Yathroo Wind Farm will be visible.

Additionally, there are several smaller roads and rural access tracks that run through the area. Figure 5-8 and Figure 5-9 show some of the local road conditions.



Figure 5-8 Dandaragan Road to the southwest of the Project (image: Aurecon, July 2025)



Figure 5-9 Woodbine Road forming the southern Project boundary (image: Aurecon, July 2025)

Towns and settlements

The Project is set within an agriculture area with landholdings and dwellings scattered across the area. To the southwest of the Project site, Windmill Roadhouse and Caravan Park (See Figure 5-10) are located on the Brand highway and Moore River crossing (See Figure 5-11).

Moora township is located approximately 30km to the northwest and Lancelin township is located approximately 33km west on the coast. There are no built up areas within 10km of the Project.



Figure 5-10 Windmill Roadhouse (image: Aurecon, August 2025)



Figure 5-11 Moore River Camping Area, at Brand Highway Crossing (image: Aurecon, August 2025)

5.2.2 Topography, landform and waterways

Landform

The Fatal flaws desktop assessment and reconnaissance survey (FFDARS), March 2025 by Phoenix Environmental Services identified the following Interim Biogeographic regions for the Project site:

The Interim Biogeographic Regionalisation of Australia (IBRA) classifies Australia's landscapes into large 'bioregions' and 'subregions' based on climate, geology, landform, native vegetation and species information (DoEE 2016). The Study Area lies on the border of the Dandaragan Plateau (SWA1) and Perth (SWA2) subregions, which both occur in the Swan Coastal Plain bioregion.

The Dandaragan Plateau subregion is characterised as (Desmond 2001):

- "Cretaceous marine sediments are mantled by sands and laterites. Characterised by Banksia low woodland, Jarrah - Marri woodland, Marri woodland, and by scrub-heaths on laterite pavement and on gravelly sandplains. The climate is warm Mediterranean and annual rainfall is 700 mm and the subregional area is 447,862 ha."

The Perth subregion is characterised as (Mitchell et al. 2002):

- "Colluvial and aeolian sands, alluvial river flats, coastal limestone. Heath and/or Tuart woodlands on limestone, Banksia and Jarrah/Banksia woodlands on Quaternary marine dunes of various ages, Marri on colluvial and alluvials. Includes a complex series of seasonal wetlands and also includes Rottnest, Carnac and Garden Islands etc. Rainfall ranges between 600 and 1000 mm annually and the climate is Mediterranean. The subregional area is 1,333,901 ha"

The FFDARS report also tabled land systems and surface geology:

- DPIRD undertakes land system mapping for WA using a nesting soil-landscape mapping hierarchy (DPIRD 2022). Whilst the primary purpose of the mapping is to inform pastoral and agricultural land capability, it is also useful for informing biological assessments. Under this hierarchy, land systems are defined as areas with recurring patterns of landforms, soils, vegetation and drainage (Tille 2006). The Study Area intersects 5 land systems (Table 5-1).

Table 5-1 Land system classification

Land system	Description	Area (ha)	% Study Area
Dandaragan System	Subdued dissected lateritic plateau, undulating low hills and rises with narrow alluvial plains. Variable deep sands and sandy gravels plus minor earths, duplexes and clays. Marri woodlands and shrublands	5,910.9	47.1
Rowes System	Subdued partly dissected lateritic plateau, gently undulating plains and gently undulating to undulating rises; yellow and pale sand, sandy earth and sandy gravel; weathered sandstone	4,583.8	36.5
Capitella System	Subdued stripped lateritic plateau, undulating to gently undulating low rises with gently undulating plain including dunes; pale and yellow deep sands, sandy gravels, some duplex; from sandstones plus alluvial and aeolian deposits	1,717.4	13.7
Bassendean System	Swan Coastal Plain from Busselton to Jurien. Sand dunes and sandplains with pale deep sand, semi-wet and wet soil. Banksia paperbark woodlands and mixed heath	322.4	2.6
Moore River System	Alluvial flats; Swan Coastal Plain west of Gingin; wet soil, semi-wet soil, pale and yellow deep sands; Woodlands and heaths	20.9	0.2
	Total	12,555.5	100

Waterways

The Project area is gently undulating with long views. Waterways generally move from east to west, tracking towards the coast. The Moore River Valley to the south dissects the landscape with a steep valley, lined with woodland and heath, and rich understory biodiversity. Caren Caren Brook near to the northwest boundary of the site, with water entering the wetland system in Namming Nature Conservation area.

Three major wetland areas, Namming Lake and its associated swamplands in the Nature Reserve, Lake Guraga, which lies within Reserve No. 31223, and Eneminga Nature Reserve (seep. 35), are part of a single system of wetlands. They are all in the Bassendean system of dunes and are fed from small streams (Caren Caren Brook, Cataby Brook and Mimyto Brook) which rise on the edge of the Dandaragan Plateau to the east.¹

Lakes and wetlands within the Study Area form are important places for waterbird breeding and habitat, in particular the Eneminga Nature Reserve is recognised as a key site in the Western Australian Nature Reserve system both as a freshwater wetland and as a breeding ground for water birds. The Guraga Lake and Karakin Lakes are listed in the Directory of Important Wetlands in Australia (DIWA, 2024). Figure 5-12 and Figure 5-13 show some of the water ways and drainage lines in the Study Area. Refer to Figure 5-18 for topography and hydrology mapping.

¹ Crook, I, et. Al, 'Nature Reserves of the Shire of Dandaragan Volume 1', Department of Fisheries and Wildlife Perth, 1983, 40.



Figure 5-12 Moore River at Brand Highway (image: Aurecon, August 2025)



Figure 5-13 Depressions and intermittent creeks near Dandaragan Road (image: Aurecon, August 2025)

5.2.3 Ecological Values

The FFDARS report undertaken in the previous phase of the Project identifies a number of significant and remnant flora through desktop studies. The filed assessment yielded the following ecological values for the Project:

Flora

An assemblage of 72 flora taxa, including 64 native species and 8 introduced species (none of which are WoNS or Declared Pests). The most prominent families recorded were Myrtaceae (16 spp.), Proteaceae (13 spp.), Fabaceae (11 spp.) and Cyperaceae (5 spp.) No Threatened flora were recorded during the survey. One Priority flora was recorded during the survey, *Stylidium aceratum*. This is a new population recording, noted as “growing on a gentle hillslope on light brown sandy loam soil. Growing in a mid open woodland of *Corymbia calophylla*, over mid to tall open shrubland of *Xanthorrhoea preissii*, with scattered *Banksia sessilis* var. *sessilis*.”.

Significant vegetation was found to cover approximately 3.10% of the area, totalling 389.34ha. Of this Regionally significant vegetation – the Banksia Woodlands of the Swan Coastal Plain was found to cover 164.18ha, and Locally significant vegetation covers 225.16ha, consisting of 2 types - vegetation of high value or analogous to Banksia Woodlands of the Swan Coastal Plain TEC. Vegetation of high value encompasses 223.08 ha and was classified as locally significant vegetation for its capacity for high flora species diversity. Vegetation analogous to Banksia Woodlands of the Swan Coastal Plain TEC encompasses 2.08 ha within the Study Area and is also considered locally significant.

The type and presence of vegetation, informs part of the landscape character. (See Figure 5-19).

The vegetation types in the FFDARS Study Area are tabled below:

Table 5-2 Vegetation types found in FFDARS Study Area

Vegetation	Value	Level of significance	Significance	Area and % within Study Area	Are % of mapped area
Banksia Woodlands of the Swan Coastal Plain ecological community	TEC	Regionally significant	Represents confirmed existing TEC records.	116.36 ha 0.93%	29.89%
	TEC	Regionally significant	Represents newly recorded instances of TEC.	30.79 ha 0.25%	7.91%
	TEC	Regionally significant	Represents pre-existing TEC record assumed correct with high confidence (not visited by Reconnaissance Survey).	11.36 ha 0.09%	2.92%

	TEC	Regionally significant	Represents possible error in TEC database. Preexisting TEC record suspected to not be TEC (not visited by Reconnaissance Survey).	5.68 ha 0.05%	1.46%
Other significant vegetation (Not TEC)	High value habitat	Locally significant	Represents vegetation of high value as significant flora habitat and/or areas of higher species richness/diversity.	223.08 ha 1.78%	57.30%
	Analogous to TC	Locally significant	Represents vegetation analogous to Banksia Woodlands of the Swan Coastal Plain TEC but not meeting condition and patch size thresholds.	2.08 ha 0.02%	0.53%

The below images (Figure 5-14 - Figure 5-17) are within the Study Area and depict typical landform and vegetation.



Figure 5-14 Roadside vegetation southwest of the Project area (image: Aurecon, July 2025)



Figure 5-15 Banksia's (*dryandra*) within roadside vegetation (image: Aurecon, August 2024)



Figure 5-16 Open woodland on the edge of cleared land (image: Aurecon, July 2025)



Figure 5-17 Undulating terrain with paddocks and woodland area (image: Aurecon, July 2025)

5.2.4 Aboriginal and European Cultural Heritage

For further information refer to the *Report of an aboriginal and historical cultural heritage due diligence assessment for the Marri Park Wind Farm, near Dandaragan, Western Australia, May 2025* by Archae-aus.

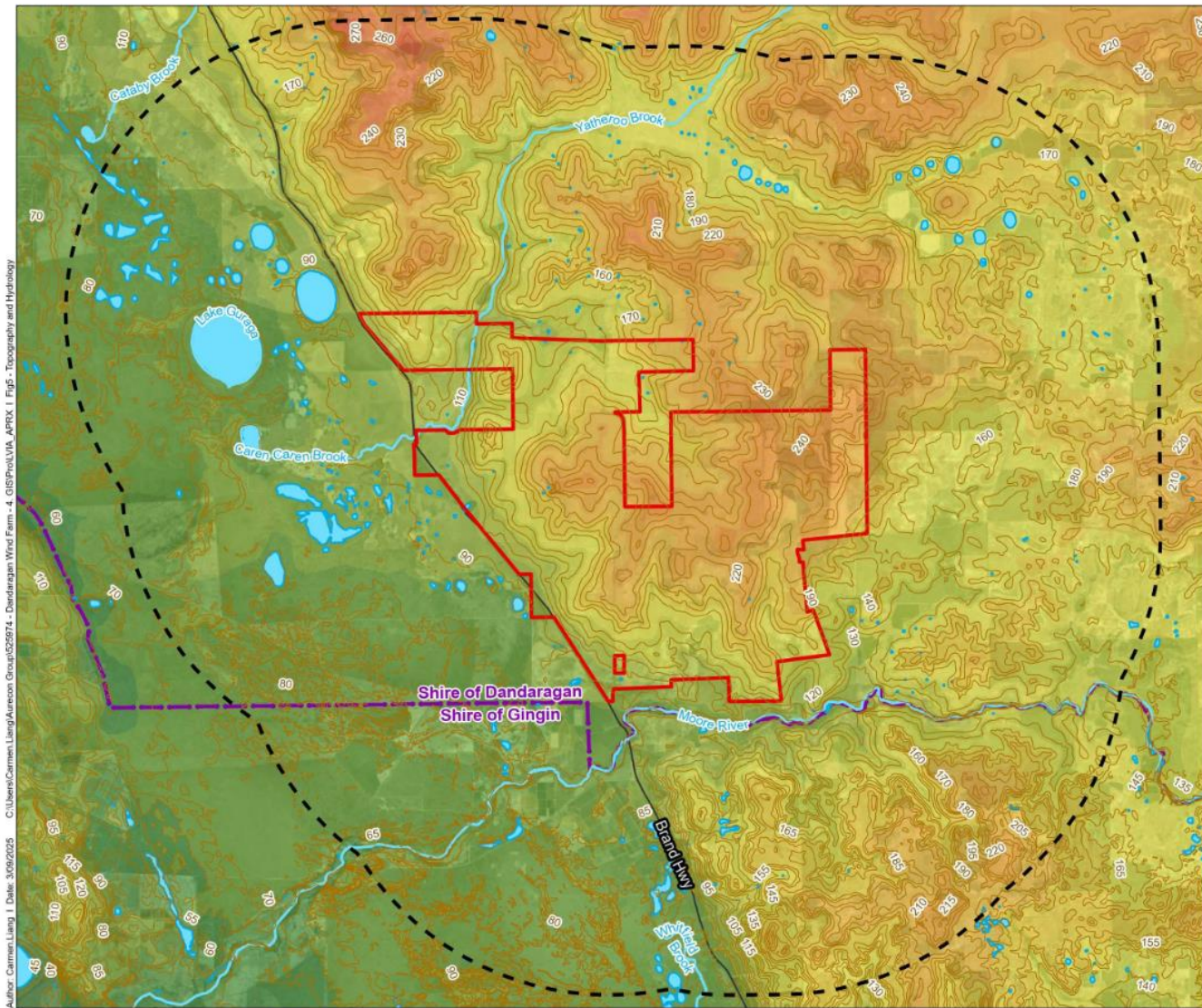
The proposed Project area lies within the Yued Indigenous Land Use Area (WI2015/009), under the broader South West Native Title Settlement (Determination Reference: WCD2021/010).

Archae-aus was engaged to undertake a desktop cultural heritage assessment for the Project area. As the development is a major project involving moderate to major ground disturbance, Archae-aus strongly

recommends archaeological and ethnographic surveys and engagement with the Yued Aboriginal Corporation. Due to the Project area size, it is recommended that the archaeological surveys adopt a sample approach targeting areas of higher ACH potential within the disturbance footprint.. However, the ethnographic consultation will assess the Project area as a whole, utilising a group discussion methodology using maps and driving to key locations where necessary. (See Figure 5-20)

Key sites identified through the desktop assessment included:

- One (1) known Registered Site intersects the Project area: Gingin Brook Waggyi Site (DPLH ID 20008).
- Two (2) Lodged Cultural Heritage Places, and one Historic Cultural Heritage Place intersect the Project area: NATGAS 133 (DPLH ID 5214), GAS PIPELINE 81 (DPLH ID 5484), and Moore River Pools (PCE-06) (DPLH ID 18083).
- A further 12 Aboriginal Cultural Heritage places, including two Registered Sites, seven Lodged, and three Historic places were found in a broader 5 km search area around the Project area.
- There are no known listed Historical Heritage places within the Project area.
- There is one (1) place of local historic heritage significance within 5 kms of the Project area: Regan's Ford – River Crossing and Tennis Court Site (P03823).
- There is one (1) place of State Heritage Significance within 12 kms of the Project area: Mogumber Mission (fmr) and Cemetery (P03618).



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- Contours (LGATE-015)
- Watercourses (DWER-031)
- Waterbodies (LGATE-016)
- Project Boundary
- Study Area (10km)
- LGA Boundary (LGATE-233)

DEM

Height (mAHD)

- 25 - 45
- 45 - 65
- 65 - 85
- 85 - 105
- 105 - 125
- 125 - 145
- 145 - 165
- 165 - 185
- 185 - 205
- 205 - 225
- 225 - 245
- 245 - 265
- 265 - 285

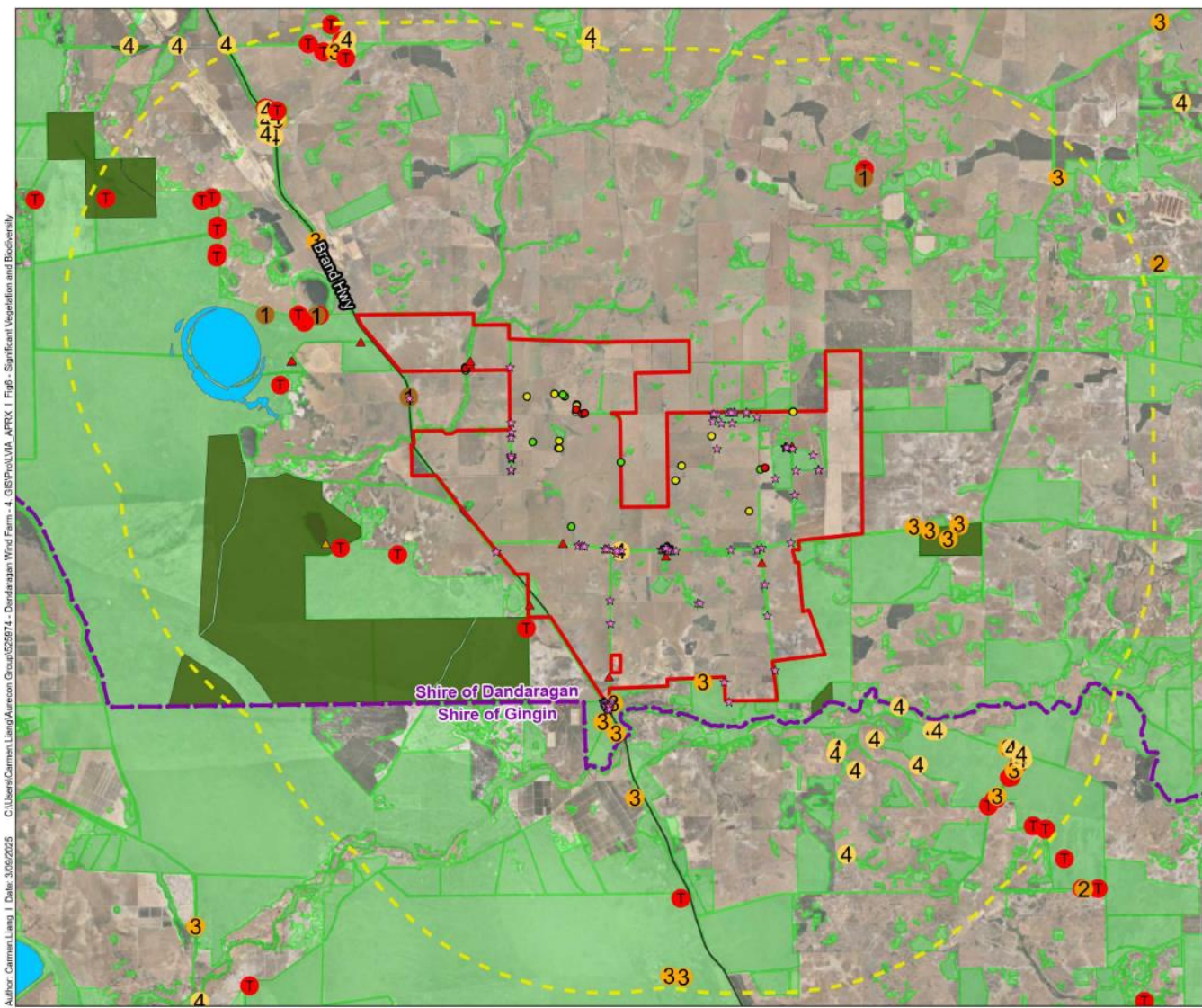
Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DWER



Marri Wind Farm Landscape and Visual Impact Assessment
 Topography and Hydrology

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 | A4 Scale: 1:180,000

Figure 5-18 Topography and Hydrology



- Project Boundary
- Study Area (10km)
- ★ Significant Flora Records
- Significant Fauna Records**
- ▲ EN (EPBC & BC Acts)
- ▲ P4 (DBCA list)
- Black Cockatoo Tree Hollows**
- No suitable hollows
- Possibly suitable hollows
- Suitable hollows
- Threatened and Priority Flora (DBCA-036)**
- 1 Priority 1
- 2 Priority 2
- 3 Priority 3
- 4 Priority 4
- Threatened
- LGA Boundary (LGATE-233)
- Directory of Important Wetlands in Australia - Western Australia (DBCA-045)
- Local Planning Scheme - Zones and Reserves (DPLH-071)**
- Conservation
- Native Vegetation Extent (DPIRD-005)

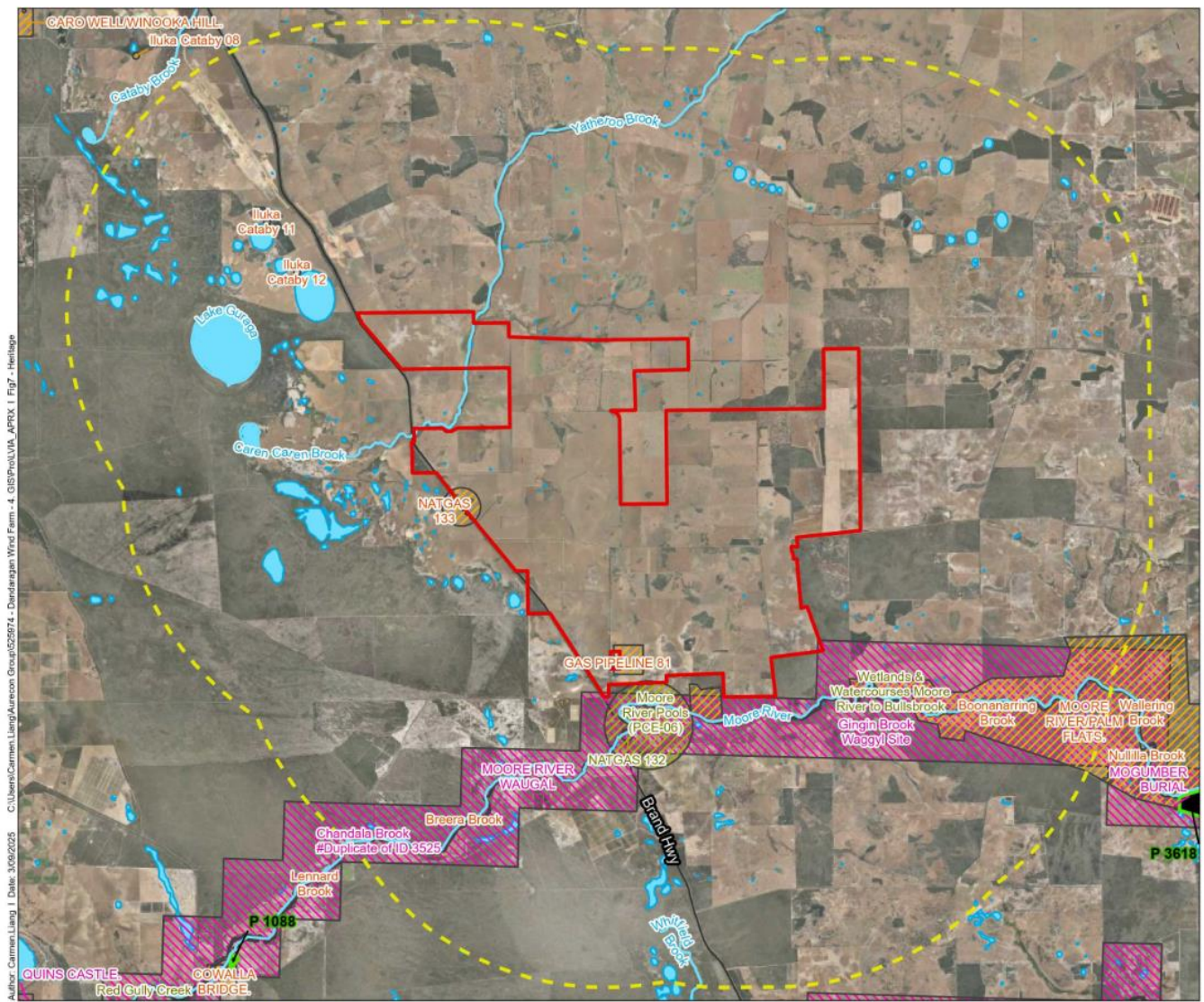
Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DWER



Figure 5-19 Significant vegetation

- Watercourses (DWER-031)
- Waterbodies (LGATE-016)
- Aboriginal Cultural Heritage - Register (DPLH-099)
- Aboriginal Cultural Heritage - Lodged (DPLH-100)
- Aboriginal Cultural Heritage - Historic (DPLH-098)
- Heritage Council WA - State Register (DPLH-006)**
- Individual Place
- Study Area (10km)
- Project Boundary

Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DPLH, DWER



Marri Wind Farm Landscape and Visual Impact Assessment
 Heritage

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 | A4 Scale: 1:180,000

Figure 5-20 Heritage
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6 Cumulative Analysis

6.1 Overview of Cumulative Visual Impacts

Cumulative landscape and visual effects result from additional changes to the landscape or visual amenity caused by the proposed development [the Project] in conjunction with other developments (associated with or separate to it) or actions that occurred in the past, present or are likely to occur in the foreseeable future (Landscape Institute et al, 2002).

The potential cumulative visual impact is considered in relation to the potential visual impact when viewed sequentially. If a number of wind farms are viewed in succession as a traveller moves through the landscape (i.e. roads or walking tracks) this may result in a change in the overall perception of the landscape character.

The cumulative impact of several wind farm developments in the region with a new wind farm development, will increase the combined visual impact in many locations.

6.2 Renewable energy projects

Proposed and existing renewable energy projects within the region include the following wind farms:

- Yandin Wind Farm, approximately 7km north of the Project area.
- West Hills Wind Farm, approximately 20km west of the Project
- Yathroo Windfarm, located along the northern boundary of the Project (Development Application lodged)

Yandin Wind Farm, Yathroo Wind Farm and the Project together create one continuous area of wind farm production, extending approximately 30 km as you travel north along the Brand Highway from Regans Ford / Dandaragan Road intersection. This significant area extends from Regans Ford in the southwest, to Cataby in the northwest, across to Dandaragan in the northeast and down to near the Moore River in the south, creating a large change in the landscape for the workers and residents of this area.

6.3 Potential for Cumulative Impacts

Cumulative analysis has been completed to identify dwellings and significant viewpoints within a distance of eight (8) kilometres from the Project and other surrounding wind farms, in accordance with VIA Bulletin guidance. At eight kilometres, turbines and objects recede into the background in terms of visibility and thus, cumulative impacts are unlikely.

The receptors identified are predominantly residential rural properties. Most of the residential dwellings located around the Project are likely to be affected by cumulative impacts of the proposed Yathroo Wind Farm and the existing Yandin Wind Farm. The likely impacts shown in Figure 6-1 are:

- Sensitive receptors located in zone 'C' are likely to have three wind farms visible within 8km.
- Sensitive receptors located in zone 'B' are likely to have two or more wind farms visible within 8km.
- Other Zones (A, D, and E), are located beyond the 8km visual zone from the Project area and are unlikely to be impacted by turbines associated with the Project.
- Motorists on the Brand Highway are unlikely to differentiate turbines between the three wind farms.

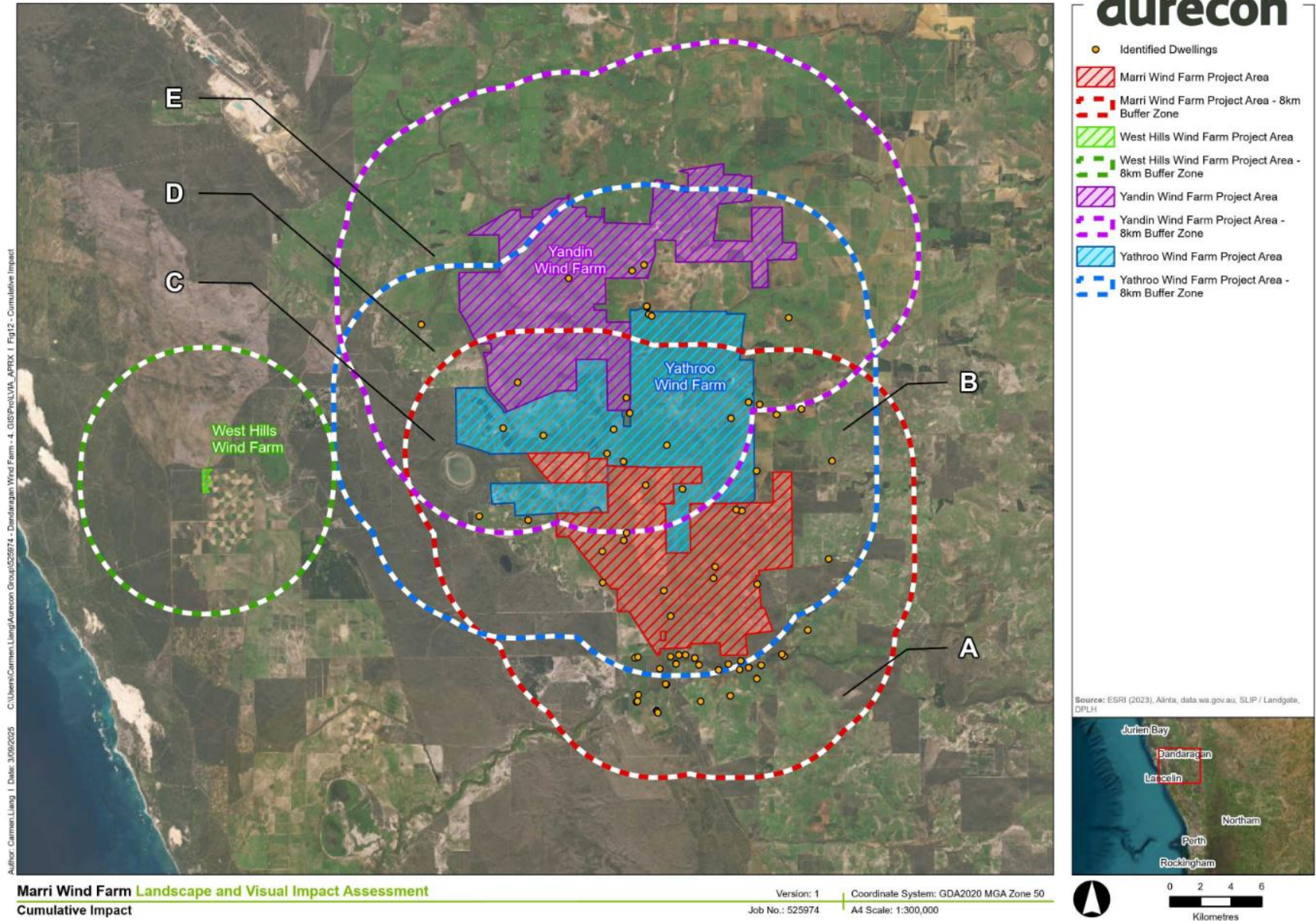
There is the potential for sensitive receptors in this area to feel surrounded by wind turbines, with increased local scale cumulative impacts to occur as a result of the Project. It is noted however, that most dwellings are associated with one of the wind farm projects.

There are 6 identified sensitive receivers that are not part of any wind farm projects located in area C would be affected by all three projects. There are a further 5 sensitive receivers located in zone B, in a more elevated position, that are likely to be impacted by Yathroo Wind Farm and the Project. Numerous other residential dwellings are also located in zone B, but are at a lower position closer to the Moore River, and are

therefore less likely to be directly impacted due to intervening vegetation and landform, as discussed in Section 7.3. Representative viewpoint assessments.

Ground-truthing needs to be undertaken to confirm the extent of intervening vegetation or structures which would have bearing on views from rural dwellings.

Additional impact from transmission lines could also be considered in future detailed analysis.



Marri Wind Farm Landscape and Visual Impact Assessment
Cumulative Impact

Figure 6-1 Overlapping area for potential visual cumulative impacts from wind turbine

7 Baseline Analysis

7.1 Landscape Character

Table 7-1 highlights the visual quality classifications identified in *Reading the Remove Landscape Characters of Western Australia*, the Western Australia, DEP, 1994 (Stuart-Street, Angela (1994)). These qualities have been considered together with field visits, review of the regional landscape context and land uses, topography, landform and waterway and ecological and cultural values, in order to describe the Landscape character zones within the Study Area, described below.

The visual quality classifications identified for the Study Area are:

- **Moderate visual quality** - landform, with gently undulating country.
- **High visual quality** - vegetation with vegetation strongly defined through patches of native and farmed forestry against seasonal pasture areas.
- **High visual quality** - water from with Moore River being permanent and Caren Caren Brook semi-permanent, dependent on rainfall.

Table 7-1 Landscape visual quality classifications – Dryandra Uplands Sub Type

Dryandra Uplands Sub Type Visual Quality Classification – Frame of Reference			
Scenic quality	Landform	Vegetation	Waterform
High	Isolated peaks or hills with distinctive form that become focal points example Logan hills. Rock outcrops or jumbles of large boulders. Distinctive U shaped valleys example Hotham River Valley	Strongly defined patterns of vegetation of some diversity of species colour height and density. Vegetation which shows distinct form line colour and texture contrast with the surrounding landscape	Rivers and streams of a permanent nature.
Moderate	Undulating country which is not visually dominant but is surrounded by similar landforms. Broad shallow valleys.	Vegetative patterns evident but with little diversity. Moderate contrasts with surrounding landscape.	Intermittent streams.
Low	large expanses of indistinctly dissected landform that provide few landmarks with which to orient.	Extensive areas of similar vegetation such as grassland with very limited variation in texture and colour.	Water forms absent.

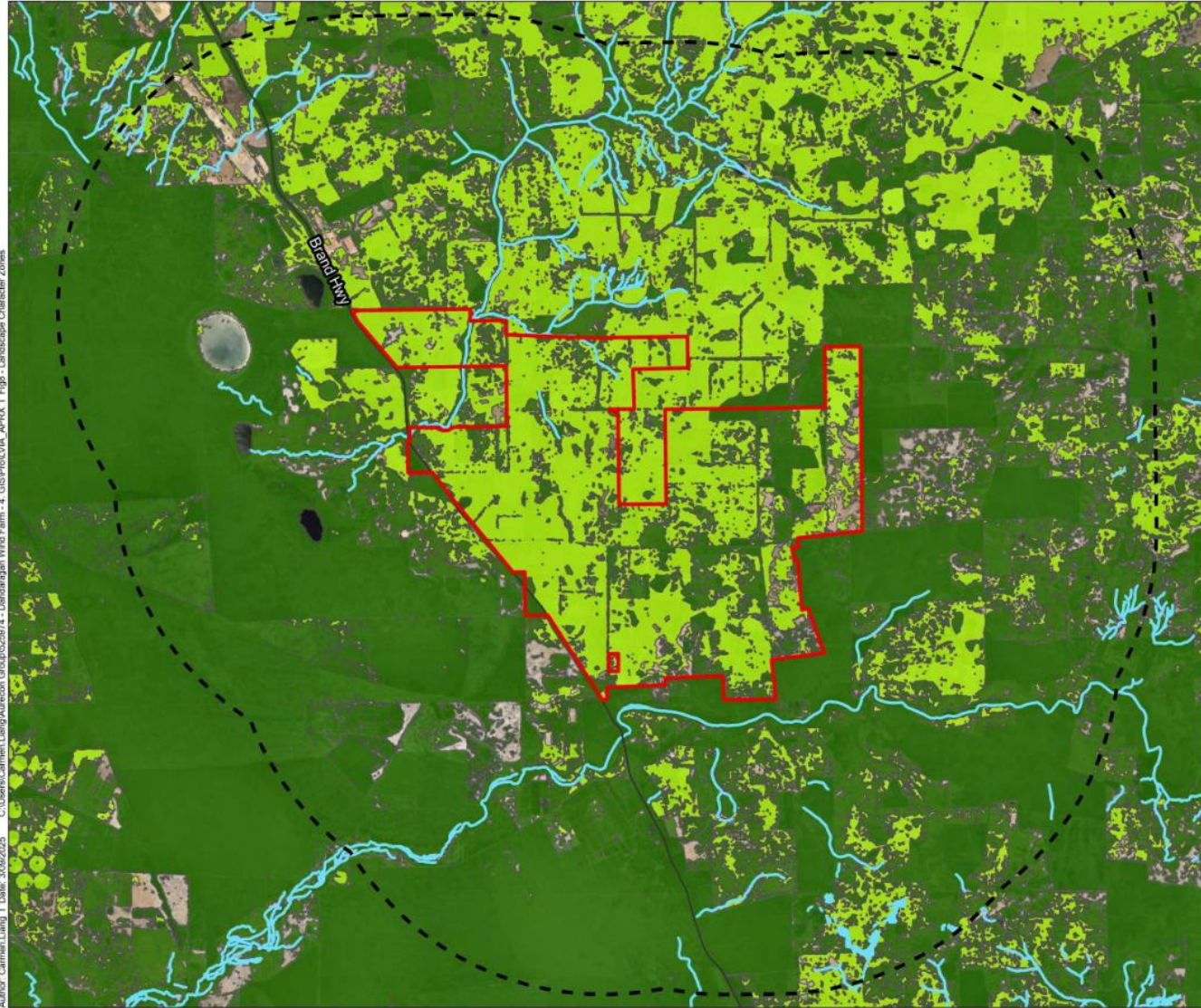
The LCZs identified within the Study Area are shown in Figure 7-1 and include:

- LCZ 1 – Agricultural pasture
- LCZ 2 – Valley Systems
- LCZ 3 – Bushland reserves and native vegetation patches

Roads and rail are assumed to take on the character of adjacent LCZs.

- Project Boundary
- Study Area (10km)
- LCZ1 - Agriculture Pasture
- LCZ2 - Valley Systems
- LCZ3 - Bushland reserves and native vegetation patches

Source: ESRI (2023), Aintia, data.wa.gov.au, SLIP / Landgate, DPLH, DWER



Author: Carmen Liang | Date: 3/06/2025 | C:\Users\Carmen.Liang\Aurecon\Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\LVIA_APRX | Fig8 - Landscape Character Zones

Figure 7-1 Landscape Character Zones within Study Area

7.1.1 LCZ 1: Agricultural pasture

Cereal crops and pasture

The Project area and much of the Study Area is made up of agricultural pastures, used for traditional industries of beef cattle, sheep and broadacre farming, there are also several major operations of citrus, mangos, olives and stone fruit. The landscape is gently undulating with wide areas cleared for pastures. These are mostly cleared of all trees with native vegetation lining fences and roadsides (windrows), and/or have scattered mature trees in varying densities across the pasture.

Views across the paddocks are generally very long, especially when on tops of rises, however views from roads are often limited due to mature vegetation along edge of roads.

The paddocks are interspersed with patches of woodland, native vegetation and occasionally planted native forests, creating an overall mosaic of pasture and woodlands. The Study Area falls within the Wheatbelt regional of Western Australia. The farming cycles and seasons are clearly evident in the landscape with bright colours of spring and textures in summer turning to harvest and subdued patterns in autumn and winter. They are also highly dependent on rainfall events, with periods of rain leading to greener fields (in comparison to yellows and light browns).

The area is widely dispersed with rural dwellings which are set well into properties accessed via long driveways, and also located within close proximity to roads. Auxiliary buildings and infrastructure are scattered across the area and are generally screened with gardens and trees. The main roads are sealed, with tracks generally unsealed and ochre/sandy colours.

Yandin Wind Farm operates across agriculture pasture, approximately 10 km to the north of the Study Area, with near similar landscape characteristics to the proposed Project. These turbines are creating a new type of productive landscape that is compatible with existing land uses and landform.

Key characteristics:

- Long views over gently undulating pasture with a very-far horizon line
- Includes scattered rural dwellings and ancillary farm buildings at very low densities
- Remnant native vegetation occurs throughout the area, mostly along road reserves, in large patches across the landscape, to the perimeter of fields, surrounding dwellings and drainage lines (described in LCZ-2 and LCZ 3).
- The landscape often appears as a patchwork of different colours and textures, dependent upon the nature of the farming occurring within any given area and the time of year.
- The overriding impression is that of a highly modified landscape, with human intervention on the landscape clearly visible.

Stuart-Street, Angela (1994) notes the key landform aesthetic character for the Dryandra Uplands sub type as:

- Gentle undulating lines
- Shallow valleys
- With long open view to midground and often beyond, uninterrupted by gently undulating landform.
- (Granite domes; tumbled piles of boulders; isolated islands or breakaways were cited, but not noted in the landscape)

The below images (Figure 7-3 to Figure 7-16) are within typical scenes within LCZ 1.



Figure 7-3 Farm buildings close to roadside vegetation with cleared pasture in the background (image: Aurecon, July 2025)



Figure 7-4 Post and wire fence with open paddocks, scattered trees and a dam in the midground. Power poles can be seen on the horizon (image: Aurecon, July 2025)



Figure 7-5 Large area of native low-lying vegetation in the foreground with a clear division to cleared pasture land in the background with scattered trees, some linear trees and farming infrastructure (image: Aurecon, July 2025)



Figure 7-6 Undulating pastured hills and scattered trees (image: Aurecon, July 2025)



Figure 7-7 Local road intersection with farm gates and post and wire fencing. Telegraph pole and trees lining paddock boundaries in the background. (image: Aurecon, July 2025)



Figure 7-8 Native roadside vegetation edging paddocks. (image: Aurecon, July 2025)



Figure 7-9 Native roadside vegetation edging paddocks. (image: Aurecon, July 2025)



Figure 7-10 Paddocks with farm buildings and mature trees. (image: Aurecon, July 2025)



Figure 7-11 Cropping pasture is visible in the foreground with tree lined fences in the mid ground. Undulating hills with Yandin Wind Farm turbines are seen in the background on the horizon (image: Aurecon, July 2025)



Figure 7-12 Cropping area with woodland in the background (image: Aurecon, July 2025)



Figure 7-13 Gently undulating landscape with scattered native vegetation in the foreground and cleared landscape in the background to the right. Patches of woodland in the background on the left with the Yandin Wind Farm turbines visible. (image: Aurecon, August 2024)



Figure 7-14 Paddocks with cattle driveway entry and gate and mature scattered trees (image: Aurecon, July 2025)



Figure 7-15 View east along the edge of Yandin Wind Farm and Yandin Lookout. The lookout's bushland vegetation can be seen on the right with turbines and transmission lines in the background (image: Aurecon, August 2024)



Figure 7-16 Paddocks with transmission line towers and Yandin Wind Farm turbines (image: Aurecon, August 2025)

7.1.2 LCZ 2: Valley Systems

There are two distinct valley systems within the Study Area, with the Moore River valley dominant, running east-west south of the Project area. To the north and northwest of the Project area the Caren Caren Brook traverses the Project area. It is a much smaller, narrower and shallower drainage line, creating a gentler change in the landscape.

The Moore River valley is heavily vegetated with trees and other native vegetation occupying the floor and walls of the valley. From within the Project area, the valley would appear as a line of green vegetation within a long view, with views further south of the river possible due to its depression.

The Moore River Valley has smaller landholdings on each side, with dwellings generally in more bush settings, with occasional cleared paddocks near to houses. The river itself is permanent, wide and relatively deep. There are recreational sites throughout the landscape for access to the river, including south of the Windmill Roadhouse, where amenities for people having lunch or caravanning can settle (with bins provided).

The Caren Caren Brook is a smaller creek, narrowly lined with mature trees. The drainage line marks crevasses in the hillsides. It too is noticeable as a green line within the broader landscape.

Key characteristics:

- The valley systems have dissected the terrain creating steep, relatively narrow valleys.
- The valleys are densely wooded, with a greater presence of understorey native vegetation.
- The drainage lines are more obvious when viewing aerial photography and subtle on the ground. Water levels vary seasonally, so often they appear as a treed line in the landscape.

The below images (Figure 7-17 to Figure 7-20) are within typical scenes within LCZ 2. The below images (Figure 7-17 to Figure 7-20) are within typical scenes within LCZ 2.



Figure 7-17 View Cleared area meeting tree-lined valley that dissects the undulating landscape. Long views to the horizon in the background. (image: Aurecon, July 2025)



Figure 7-18 Depressions in the landscape with seasonal inundation and trees. (image: Aurecon, July 2025)



Figure 7-19 Moore River valley. (image: Aurecon, July 2025)



Figure 7-20 Moore River valley . (image: Aurecon, July 2025)

7.1.3 LCZ 3: Bushland reserves and native vegetation patches

LCZ 3 is made up of nature and conservation reserves, national parks and patches of remnant and native vegetation found across the Study Area. These areas also tend to be connected to native farm forestry areas. Whilst these areas are made up of planted rows of trees, the overall scenic quality is comparable to a native woodland, and difficult to distinguish from in the landscape.

Namming Nature Reserve, Eneming Nature Reserve and the area of dense bushland between creates a significant track of native bushland on the western side of Brand Highway which is extended with the Moore River National Park and Nature Reserve further south. This bushland is interrupted by agricultural development along the Moore River. Lakes and wetlands are created by the Caren Caren Book on the boundary of cleared land which are significant to waterbirds (See Section 5.2.2 Topography, landform and waterways). Located approximately 6km north of the Moore River and west of the Brand Highway, Regans Ford Holiday Park and Windmill Roadhouse are surrounded by native bushland.

Approximately 30km west of the Project further nature reserves extend to the coastline, including Wanagarren Nature Reserve and Nilgen Nature Reserve, which have significant wildflowers that are highlighted along the tourist route. Nilgen Lookout is located within the later reserve close to the Indian Ocean Drive. From this public lookout views to the West Hills Wind Farm can be seen on clear days in the background. West Hills is approximately 6.5km to the north-northeast of the Project.

The southern and eastern areas of the Project boundary contain large areas of native bushland that connect to the Moore River Valley (described in LCZ 2). Quins Hill Nature Reserve and Moomchamulla Nature Reserve are located on the south side of the Moore River along the Mogumber Road West. To the east large areas of native bushland connect to Bundarra Nature Reserve.

Throughout the Study Area irregular patches of native vegetation are scattered in amongst LCZ1. These patches either have tall canopy coverage that block views to the middleground or extend along the horizon (Bundarra Nature Reserve from Gillingarra Road for example).

The bushland reserves are scattered throughout the Study Area and are of an informal nature, some with naming signage and some with information about significant vegetation. These reserves areas cumulatively contribute to the bushland character of the area, in contrast to the broad acres of cleared areas as LCZ 1 – Agricultural pasture. (See Figure 7-21 to Figure 7-25).

Key characteristics and landscape features:

- Areas of significant indigenous and native vegetation
- Bushland reserves containing native vegetation and fauna

Stuart-Street, Angela (1994) note the key vegetation aesthetic character summary for the Dryandra Uplands sub type as:

- Clustered groups of trees; straggly trees; bushy Jams; low woodlands; Dryandra thickets; slim whippy trees.
- Destine lines in the landscape drawn from vertical and diagonal lines of trunks; remnant in lines mirroring fences; strong vertical line of Wandoo trunks
- Scattered patches of uncleared vegetation occasionally encloses views by generally remnants only interrupts long views which are enclosed by landform.



Figure 7-21 Native vegetation with access track (image: Aurecon, July 2025)



Figure 7-22 Native vegetation area (image: Aurecon, July 2025)



Figure 7-23 Patches of native bushland between paddocks. (image: Aurecon, July 2025)



Figure 7-24 Roadside vegetation (image: Aurecon, July 2025)



Figure 7-25 Native roadside vegetation. (image: Aurecon, July 2025)

7.2 Visual Catchment - Zone of Theoretical Visibility

The Zone of Theoretical Visibility (ZTV) has been established through mapping, as outlined in the methodology. The ZTV show areas that can see the whole, part and tip of the turbines. These maps, together with desktop analysis and field trips have been used to identify a representation of the likely 'worst case' visual envelope of the wind turbine layout, within a 4km radius of the Project boundary. (See Figure 7-26 -Figure 7-28)

The following is relevant when interpreting the findings of the ZTV:

- Topographic constraints are accounted for in the view.
- The presence of buildings and vegetation are excluded.
- As the ZTV only uses landform, it is considered a worst-case scenario of the potential zone of theoretical visibility.
- The ZTV does not take into account the effect of distance. Generally, the greater the distance from the wind farm, the less prominent it will be within the view due to its perceived scale and fading due to atmospheric conditions; and
- The ZTV identifies increased visibility due to altitude and ridgelines, as well as decreased visibility caused by intervening topography.

The ZTV is used to guide the selection of representative viewpoints – see Section 19.

- Figure 7-26 ZTV – Turbine entire height– Entire turbine shows that a low number of turbines within the Project are theoretically visible within large parts of the Study Area. The visibility of the Project is strongly influence by the biophysical conditions of the environment. Within the site and surrounding the site areas with higher elevation, or little intervening topography have greater zones of theoretical visibility of entire turbines.
- Figure 7-27 ZTV – Turbine rotor swept path- Rotor swept path shows that a greater area and number turbines, limited to the swept path are likely visible.
- Figure 7-28 – blade top shows that a very high number of turbines are theoretically visible beyond the Study Area.
- Figure 7-29 – showing Turbine rotor swept path visibility (Figure 7-27) together with tall vegetation, highlights sensitive receivers likely to have intervening vegetation and therefore screened views towards turbines.

Small pockets of low lying areas, particularly along the Moore Valley and to the north of the site have a low number of visibility due to low elevation and intervening topography.

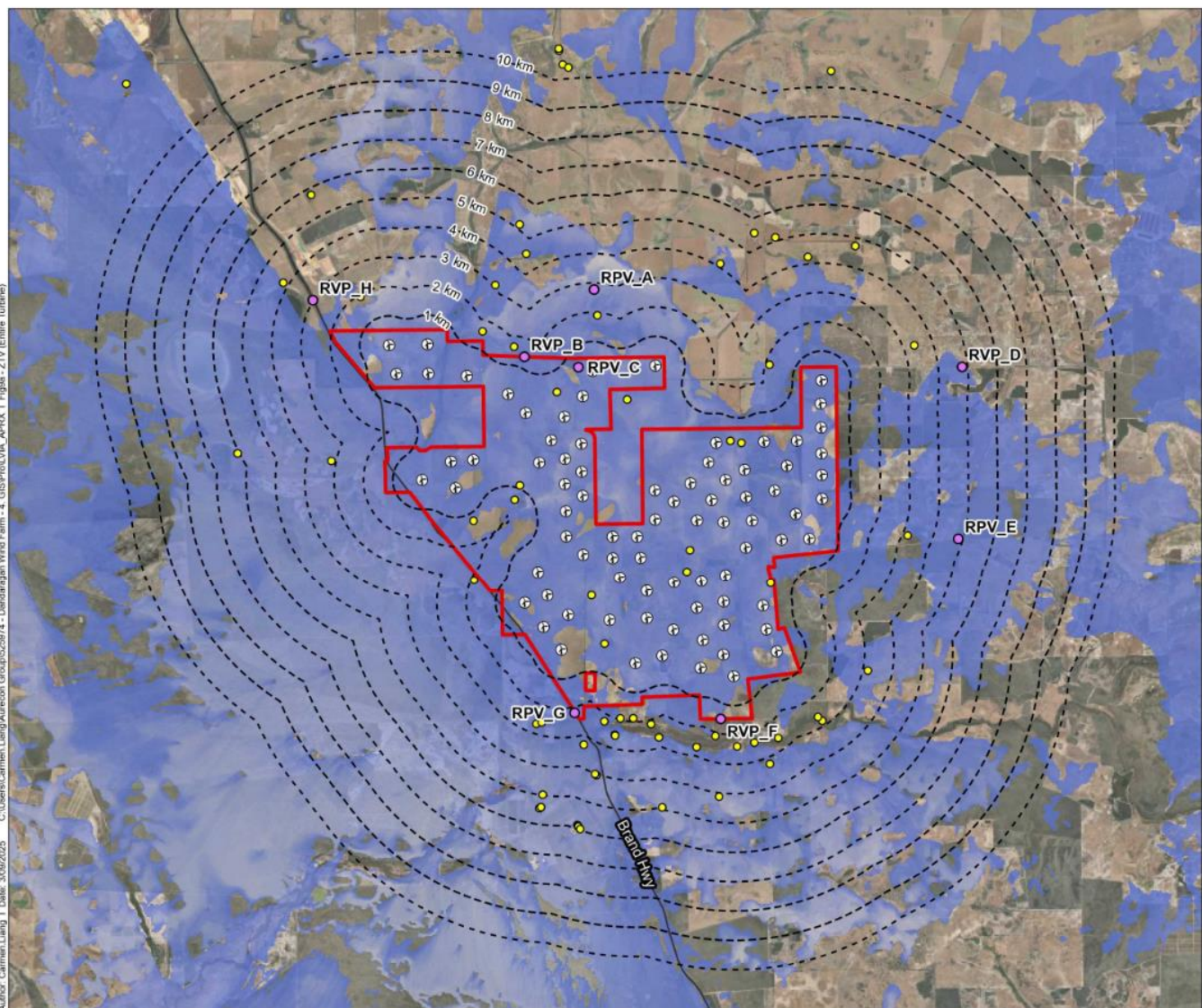
However, many of these potential view (apart from elevated view with clear visibility of the Project) have the potential to be restricted by vegetation and other screening elements. In particular extensive vegetation in

the nature reserves is likely to restrict views of the turbines and therefore have a low impact in these areas. Many of the residential dwellings also have gardens and trees surrounding, creating screening to the Project.

As distance from the Project area increased, especially beyond 8km, wind turbines reduce in scale and visibility, comprising a relatively small part of the overall landscape view, and recede into the background. Locations closer to the Project, especially within 4km are likely to incur higher impacts, with turbines taking up greater scale and prominence in the landscape view.

- ⊕ Turbine Layout
 - Representational Viewpoints
 - Sensitive Receivers
 - Turbine Buffer
 - ▭ Project Boundary
- Turbine Visibility**
-

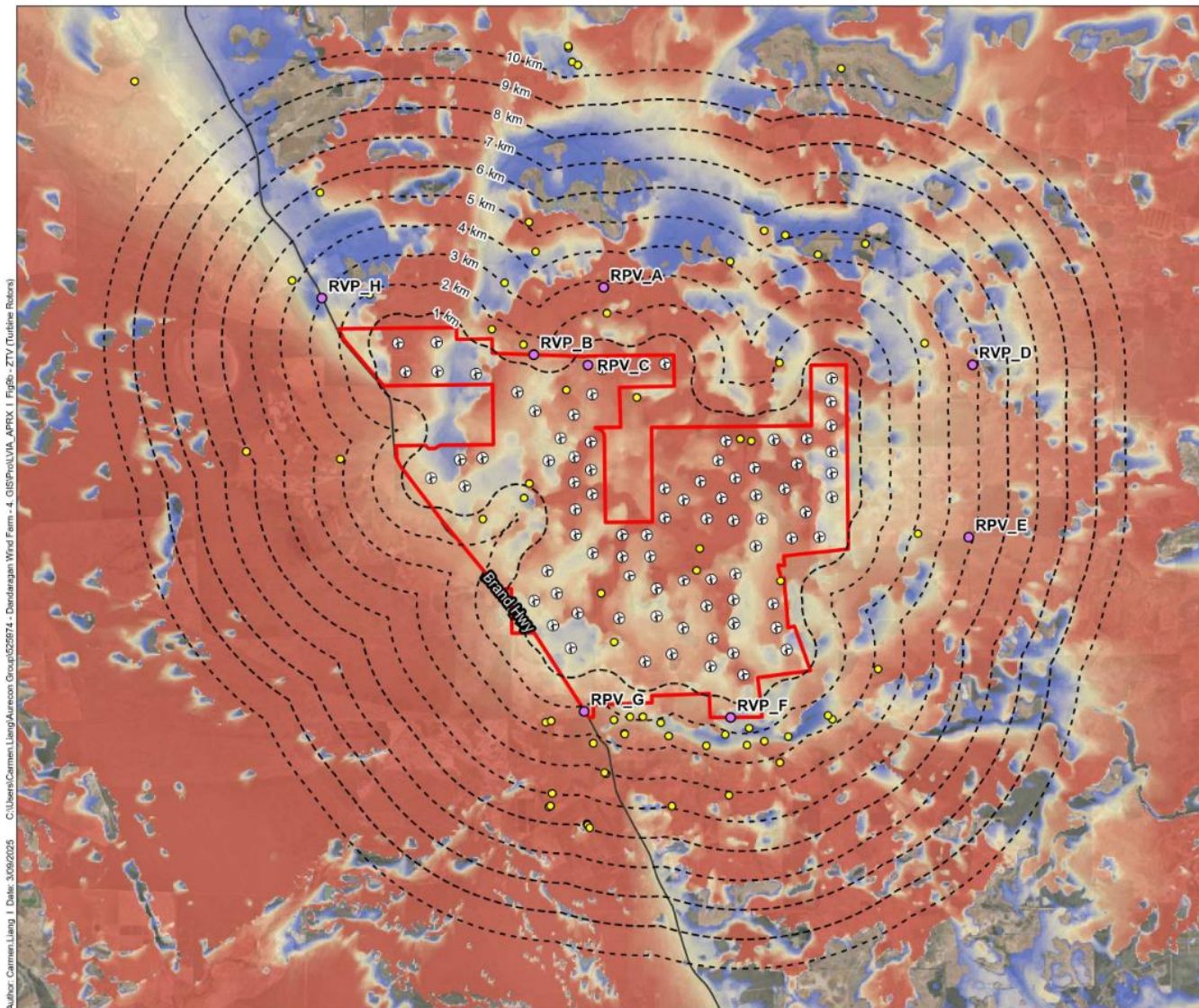
Source: Aurecon, ESRI (2023), AIntra, data.wa.gov.au, SLIP / Landgate



Marri Wind Farm Landscape and Visual Impact Assessment
Zone of Theoretical Visibility - Entire Turbine

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 | A4 Scale: 1:180,000

Figure 7-26 ZTV – Turbine entire height
aurecon

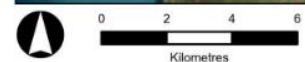


- ⊕ Turbine Layout
- Representational Viewpoints
- Sensitive Receivers
- - - Turbine Buffer
- ▭ Project Boundary

Turbine Visibility

82
60
40
20
1

Source: Aurecon, ESRI (2023), Aintu, data wa govaau, SLIP / Landgate



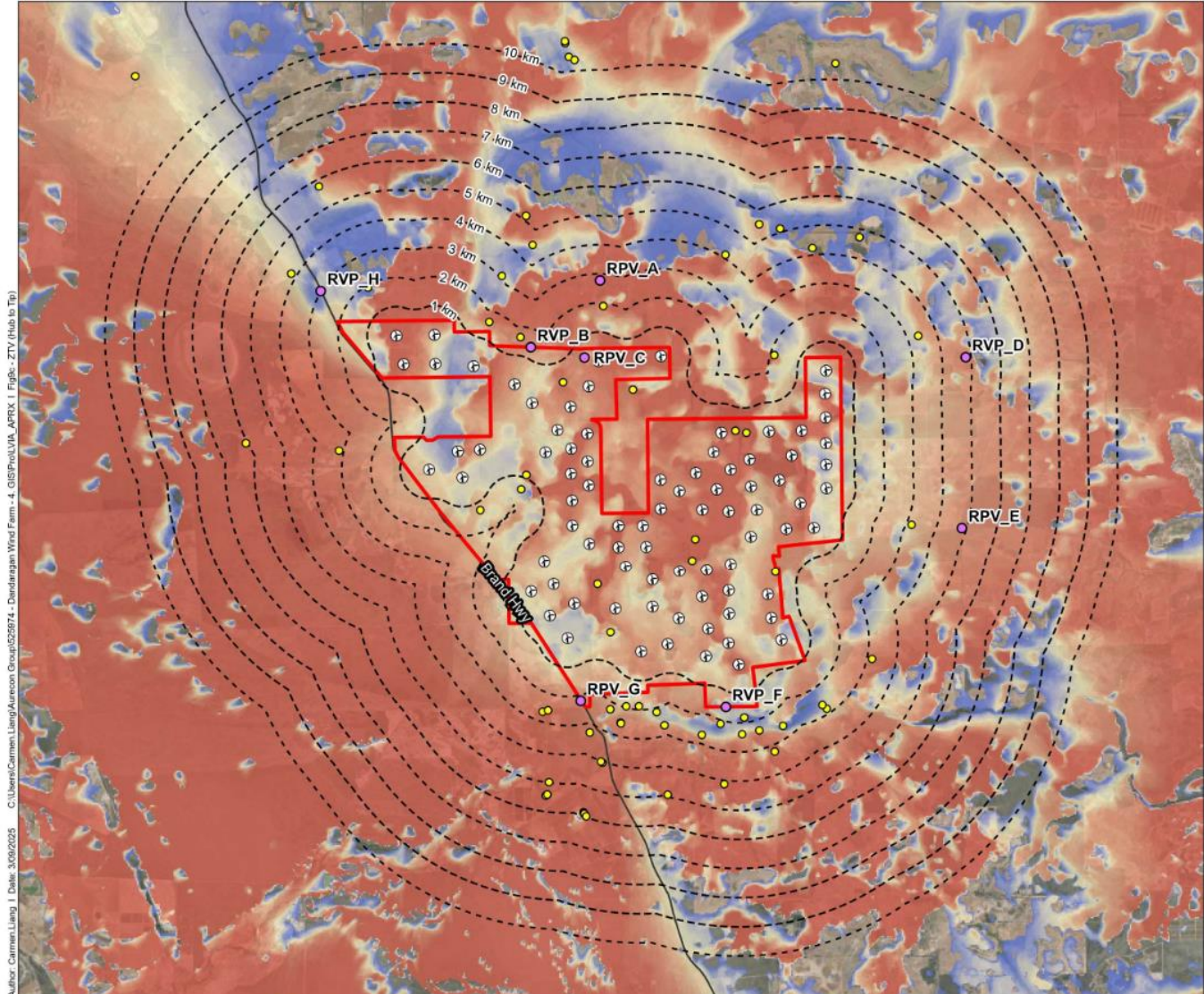
Marri Wind Farm Landscape and Visual Impact Assessment
Zone of Theoretical Visibility - Turbine Rotor Swept Path

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 | A4 Scale: 1:180,000

Figure 7-27 ZTV – Turbine rotor swept path
aurecon

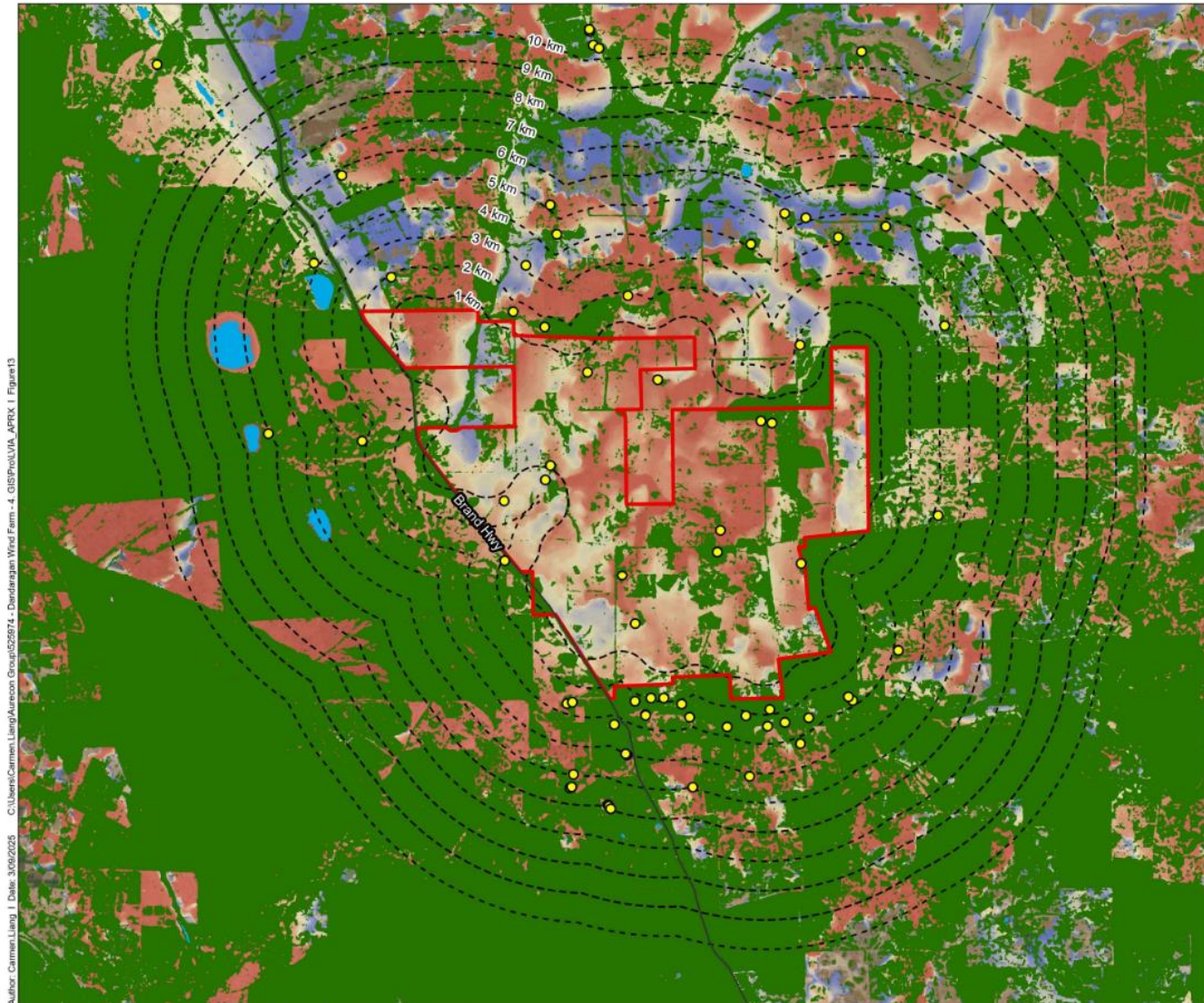
- ⊕ Turbine Layout
 - Representational Viewpoints
 - Sensitive Receivers
 - Turbine Buffer
 - ▭ Project Boundary
- Turbine Visibility**
- | |
|----|
| 82 |
| 60 |
| 40 |
| 20 |
| 1 |

Source: Aurecon, ESRI (2023), AIntra, data.wa.gov.au, SLIP / Landgate



Author: Carmen Liang | Date: 3/09/2025 | C:\Users\Carmen.Liang\Aurecon Group\525974 - Dandaragan Wind Farm - 4. GIS\Pre-LVIA_APPX (Fig 7-27) (Hub to Tip)

Figure 7-28 ZTV to blade tip
aurecon



aurecon

- Sensitive Receivers
- ▭ Project Area
- - - Turbine Buffer
- Land Cover**
- Natural Terrestrial Vegetation
- Water
- Turbine Visibility**
- 82
- 60
- 40
- 20
- 1

Source: ESRI (2023), Airsta, data.wa.gov.au, SLIP / Landgate, DPLH



Marri Wind Farm Landscape and Visual Impact Assessment
 Diagram showing Turbine hub and up visibility with tall vegetation overlay

Version: 1 Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 A4 Scale: 1:180,000

Figure 7-29 Diagram showing Turbine hub and up visibility with tall vegetation overlay

7.3 Representative viewpoint selection

Representative viewpoints are publicly accessible viewpoints that have similar distance, aspect and elevation to identified sensitive receivers. The assessment of these representative viewpoints gain an understanding of likely impacts to these sensitive receivers.

A total of 8 representative viewpoints have been identified as a high priority for assessment within the Study Area based on discussions with Alinta Energy, the Project design, viewing distance, aspect and significant views.

The locations of the assessed representative viewpoints (RVP) and sensitive receivers are shown in Figure 7-30, and outlined in Table 7-3. These representative viewpoints were selected based upon a four-stage process:

- Identification within the ZTVs;
- Desktop studies identifying places of significance or within close vicinity of potential sensitive receptors, noting, proximity to the turbines. Dwellings located within 4km are likely to have a moderate to high impact and were therefore prioritised for assessment.
- Significant viewpoints, noting:
 - residences with low intervening vegetation, such as mature trees and shrubs arounds residences
 - Elevation of residence and elevation of Project within likely viewpoint.
- Viewpoints that are publicly accessible.

Public photographic viewpoint locations have been chosen, that are *similar* to the sensitive receivers (residences or public viewpoints). These representative viewpoints were used to undertake the LVIA.

Representative viewpoint locations were selected to best compare similar elevation and distance from turbines, as accessible by the public road network.

In the southern area of the Project there are numerous dwellings located in close proximity to the Moore River Valley. Given most residences are located at a lower elevation, with a high level of intervening vegetation, a representative viewpoint was chosen (RVP_F) that captures the closest location to the turbines, little intervening vegetation and at a higher elevation, to assess a position with the highest likely similar impact.

Yandin Lookout is noted as 10.3km from the nearest turbine. A field trip determined that the primary lookout was facing west towards the coast (away from the Project). Views towards the Project (south) were obscured by vegetation. Therefore this lookout was not included within the 8 viewpoints assessed.

7.3.1 Residential receptors

The majority of sensitive receivers are identified as rural properties. Many of these are located within the Project area, and have been excluded from the viewpoint selection as 'participating properties' in agreement with Alinta Energy.

Table 7-2 outlines the number of sensitive receivers identified within the Study Area (10km), those within the high visibility threshold (within 4km), and those associated within the project.

It also shows sensitive receivers likely to have intervening vegetation and therefore screened views of the turbines (See Figure 7-29), as well as sensitive receivers located in cumulative impact areas of the Project - areas B and C as described in Figure 6-1.

This comparison has allowed selection of sensitive receivers likely to have the highest impacts from the Project.

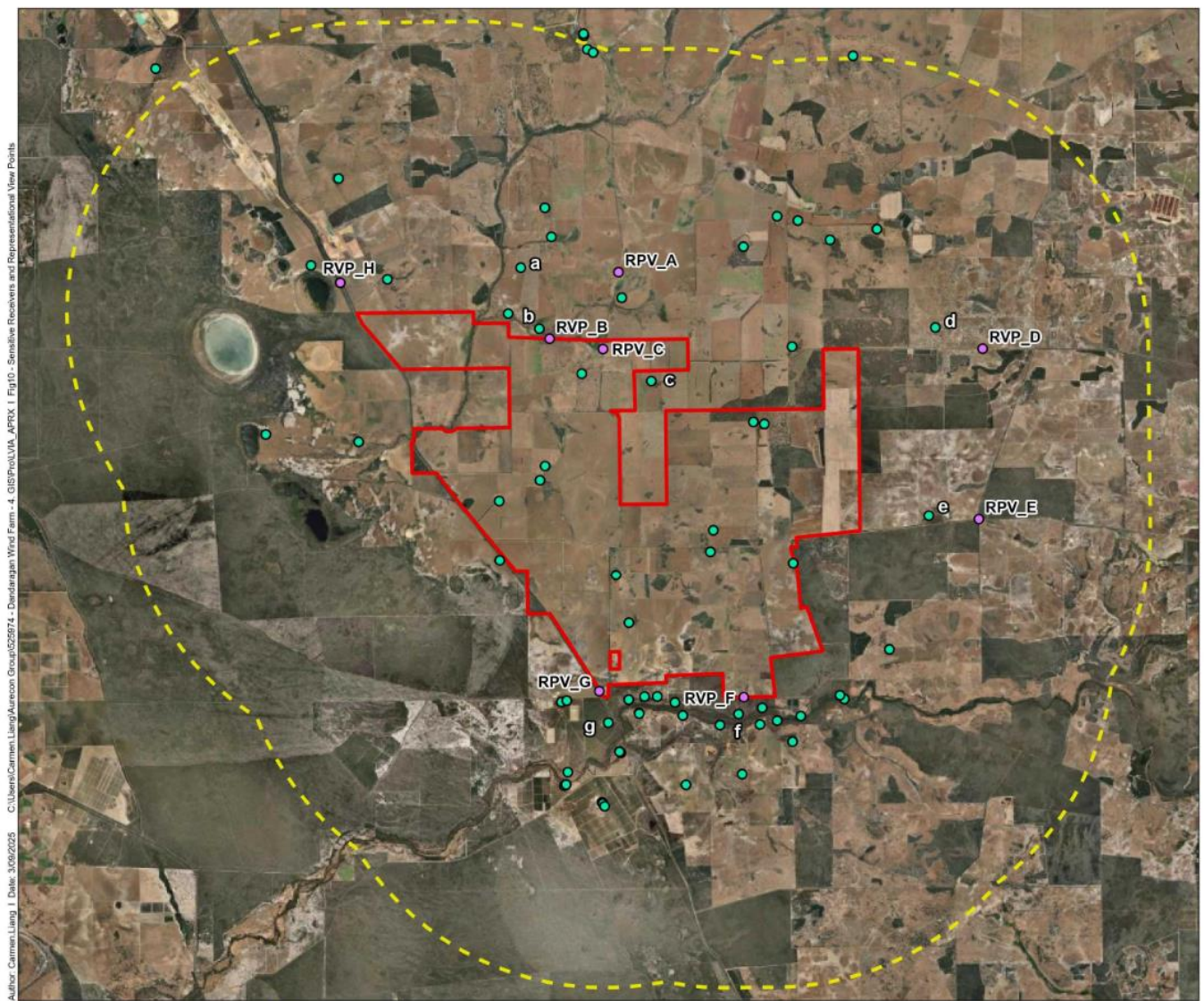
Table 7-2 Number of sensitive receivers identified in high visibility thresholds

Number of Sensitive Receivers (excluding those in project boundary) who are located within	Full turbine visibility	Hub + blade visibility	Tip of blade only	Clear vegetation zone	Vegetated zones (likely intervening vegetation)	Cumulative impact Zone B	Cumulative impact Zone C	<ul style="list-style-type: none"> CLEAR vegetation zone, Who can See Hub + blade visibility 	<ul style="list-style-type: none"> Zone B & C, CLEAR vegetation zone, Who can See Hub + blade visibility
Study Area 10km – excluding in project boundary	32	54	54	9	45	19	15	9	4
4km excluding in project boundary	30	46	46	8	38	18	10	8	4

Rural properties to the immediate north of the Project (who are in cumulative zone B) have been included in the assessment, however, it is noted that these properties are within the proposed Yathroo Wind Farm Development and are likely 'participating properties'. Residential dwellings to the northeast, and east of the Project are not currently within any wind farm project boundary and are likely to have high cumulative impacts from the Project and other developments. Refer RPV assessments D and E. Properties to the south are similarly not within the Project boundary, however these properties are generally located at a lower elevation and have a high degree of surrounding vegetation, and due to proximity from the wind farms proposed further north, are likely to have less cumulative impacts.

- Representational Viewpoints
- Sensitive Receivers
- Study Area (10km)
- Project Boundary

Source: ESRI (2023), Airta, data.wa.gov.au, SLIP / Landgate, DPLH



Author: Carmen Liang | Date: 3/06/2025 | C:\Users\Carmen.Liang\Aurecon\Group\525974 - Dandaragan Wind Farm - 4. GIS\Pro\LVIA_APRX | Fig10 - Sensitive Receivers and Representational View Points

Marri Wind Farm Landscape and Visual Impact Assessment
Sensitive Receivers and Representational Viewpoints

Version: 1 | Coordinate System: GDA2020 MGA Zone 50
 Job No.: 525974 | A4 Scale: 1:180,000

Figure 7-30 Receivers and Representative viewpoint locations

Table 7-3 Receiver location and representative viewpoint location

Receiver type	Location relative to project	Sensitive receiver location	Distance from nearest turbine	Address	Description of location	Description of view	Representative viewpoint location
3-4 Residential dwellings located north of turbines 79 and 80.	north	a -30.841654, 115.671271	3.32km	Located between Stockyard Road and Walyer Walyer Road	No apparent intervening vegetation to house. House located on elevated position.	Clear views across the Project, and vey far horizon views.	RPV_A Scattered vegetation amongst agricultural planes, with windrows extending across areas. Undulating topography throughout the location, with long clear view to the south of the Project area. -30.843325 115.706512 Dandaragan Road
1-2 Residential dwellings located north of turbines 79 and 80.	north	b -30.860681, 115.677687	1.2km	(2390?) Walyer Walyer Road	Site for house located close to the Project boundary.	Project rises up in view lines from house. Some mature vegetation likely between house a view.	RPV_B Photo taken where there is a break in vegetation across a cleared paddock. -30.863755, 115.681397 Walyer Walyer Road
Residential dwelling located east of turbine 75	Central/east	c -30.877328, 115.717842	1.2km	Driveway north from Rowes Road	House located with Project boundary on three sides	Some intervening vegetation	RPV_C There are farm buildings in a similar location to the east of the viewpoint. Open paddock area with mature trees along the road edge. -30.86714, 115.70058 Dandaragan Road
Residential dwelling located northeast of turbine 2	North-east	d -30.861581, 115.820605	3.72km	House located north of Koodjee Road	House has mature vegetation on most sides, except on western boundary with view towards Project	Long views to horizon	RPV_D Views from the north to the south extend from this location. Vegetation extent changes depending on view. -30.868341, 115.837405 Koodjee Road

Receiver type	Location relative to project	Sensitive receiver location	Distance from nearest turbine	Address	Description of location	Description of view	Representative viewpoint location
Residential dwelling (and Bundarra Nature Reserve) located east of turbine 39	east	e -30.920045, 115.817435	2.76km		House has mature vegetation on reserve side	Long views to horizon and Project site	RVP_E Undulating rises. Scattered trees. Bushland reserve to south, with native scattered veg. Gillingarra Rd is unpaved, with soft edges. -30.921274, 115.835391 Corner of Capitela Rd and Gillingarra Rd
Several residential dwellings located between Moore River and the Project's southern boundary	south	f -30.981371, 115.747962	1.8km	House located off Woodbine Road and around Moore River	House is located within scrubby vegetation. Potential views across scrub and low vegetation to Project	Project located in elevated position, potentially seen in the background of the Project	RVP_F Scrubby bush along road reserve to south, scattered mature trees throughout paddocks to north. -30.976154, 115.749925 Woodbine Road
Tourist / car journey	west	g -30.965305, 115.692310 -	north of Dandaragan Road,	Cropping pastures, looking northeast.	Brand Highway – views that tourists may see as they travel along the road.	Gentle rises, cropping, vegetated boarders, farm buildings, hills on the horizon	RVP_G The foreground from the Brand Highway is dominated by a soft edge that has water pooling (due to recent rain), with low vegetation extending along the Hwy. The view from the Hwy is undulating hills that have scattered mature trees, with mature trees lining various boundaries / driveways. This is a 'pocket view' that is not impacted by high/dense vegetation that is present at other points of the Hwy. -30.973769, 115.697811 Brand Highway
Tourist / car journey	Northwest	h -30.839619, 115.603422	Brand highway – northeast of Project		Brand Highway – views that tourists may see as they travel along the road.		RVP_H View taken in a parking bay along Brand Highway. Medium height scrubby vegetation is visible along road corridor, with a large piling site of material dominating the middleground. -30.845572, 115.606240 Brand Highway

The details of viewpoint assessments including images of their existing conditions can be found in the following section.

8 Potential Impacts

This section outlines the impact assessment on the visual components, at operation phase of the Project. The assessment of potential visual impacts is based on the (1.) sensitivity of the view and (2) the degree of modification or changes to the view as part of the Project at the operational phase, as described in the methodology. The landscape sensitivity is derived from the ability for the character to absorb changes together with the level of modification to provide an impact rating as described in the methodology.

8.1 Transmission lines

There are several sensitive receptors within close proximity to the transmission lines proposed as part of the Project. It is noted that impacts in these locations are likely to be minimal given the existing conditions. See photos (Figure 8-1 and Figure 8-2) of transmission lines and tower below, located in Regans Ford and Orange Springs near residential dwellings and farms.

Transmission lines and towers will also be included as part of the west-central Project area. They will cross Brand Highway approximately 10km north of Dandaragan Road intersection.

Transmission towers are assumed to be similar to the existing towers which are a double circuit steel lattice tower at 70m high. The visual prominence zone is therefore limited to approximately 900m for private dwellings and 1400m for public viewpoints, as per the VIA Bulletin described in Section 3.4.1.

The transmission towers are located in the background of RPV_H and RPV_G at approximately 8km away. Given their height, open structure and reflective materials they are not expected to be visible in the viewpoints.

As they cross Brand Highway they will be noticeable, as the towers will be located between 50 – 250m from the highway. The towers will be viewed at speed and will recede into the background quickly as the driver continues their journey. Transmission towers are a regular feature across any landscape and are expected to have a negligible impact on the landscape character and Brand Highway experience.

There are no identified non-associated Project sensitive receivers within 900m (the visual prominence zone) of the towers. Therefore, these are expected to have a negligible impact on rural dwellings.



Figure 8-1 Transmission line traversing rural property at Hunter Road, Regans Ford. Towers are at approximate 550m intervals, with the first one approximately 400m in the distance and the second approximately 950m in the distance (image: Aurecon, August 2025)



Figure 8-2 Transmissions lines in the middle ground, traversing orchard areas, Orange Springs Road, Orange Springs. (image: Aurecon, August 2025)

8.2 Meteorological monitoring masts

As part of the development of this Project Alinta Energy has been granted planning permission to install meteorological monitoring masts, referred to as met masts, in Regans Ford. It was noted that the 120m steel primary met mast structure with an associated guy-fixing system and wind measuring system consisting of six anemometers, two wind vanes and boom arms would occupy 0.02 ha per system.

Permanent meteorological monitoring masts (met masts) are expected to be included as part of the Project. Met masts are expected to include marker balls or high visibility flags of sleeves, placed outside guy wires to help identification from aircraft. Met masts are slender objects and wire that are very difficult to see, especially when in the middle and background of a view.

6 met masts are expected to be included in the Project, however locations are likely to change, therefore have not been included in the viewpoint assessments.

However, due to their materiality, they are not considered likely to have a bearing on the outcome of the viewpoint assessments.

The met masts are primarily located in the southern portion of the project and are expected to be approximately 170m tall. Given their slender structure and reflective materials they are likely to be viewed only when in the foreground. There are no non-associated Project sensitive receivers that are located within the visual prominence zone of a met mast and therefore these have been excluded from the visual assessments.

8.3 Potential Landscape Character impacts

A summary of potential impacts to landscape character is shown in Table 8-1 Summary of potential impacts to landscape character including matters for the referral which may require further investigation, assessment, management and mitigation.

The Project area is predominantly located in LCZ 1 - Agricultural pasture, with smaller areas including LCZ 3 – Bushland reserves.

Due to the height of the turbines, there is a potential for landscape character impacts to adjacent LCZs. The potential for impacts arising on these LCZs have been considered during construction and operational phases.

Table 8-1 Summary of potential impacts to landscape character

		Construction impacts	Operational impacts
Landscape Character Zone	Sensitivity to absorb change	Magnitude of change	
LCZ 1 Agricultural pasture	Low Whilst farmland is not considered to be of any specific scenic value, some receptors likely place value upon its openness and low built form density (Stuart-Street, Angela (1994) notes that the open and undulating landform is of moderate scenic value, and the presence of defined and contrasting vegetation is of high scenic value. The viewer is aware of the change but not overly sensitive to changes in their immediate surroundings, such as users of commercial areas and farming land.	Low impact The magnitude of change is considered to be Low due to the following: There is the potential for vegetation removal resulting as a direct impact to the LCZ. Vegetation removal has the potential to increase with the provision of access roads and additional infrastructure, however, is expected to be limited in the extent of vegetation removal to the LCZ. Met masts are slender objects that are difficult to perceive in viewsheds, owing to their thin and light coloured materials.	Low impact The magnitude of change is considered to be Low due to the following: The scale and geographical extent of proposed wind turbines will result in them being noticeable from a large area and whilst existing agricultural practices will remain, 'wind farming' will be a new prominent element to the character. This LCZ is a relatively small portion of what is a widely distributed and expansive LCZ, and note that there are already windfarms further north that are creating this change to the LCZ. The landform and vegetation patterns will not be altered.
LCZ 2 Valley systems	Moderate - high This LCZ offers a high degree of perceived naturalness within riverine areas, however some of the valleys and access to the drainage line is modified through clearing. The sensitivity of the LCZ is considered to be Moderate due to the following: A moderately valued landscape of regional importance. (Stuart-Street, Angela (1994) notes that shallow valleys are of moderate scenic value, and the presence of permanent water of high scenic value.	Negligible The magnitude of change is considered to be Low due to the following: Changes are indirect to the LCZ, with no effects to the key characteristics.	Low impact The magnitude of change is considered to be Low due to the following: Changes are indirect to the LCZ, with no effects to the key characteristics. Due to the depth and high density of vegetation in the valleys this would limit views to outside of the valley walls including turbines.
LCZ 3 Bushland reserves and native vegetation patches	Moderate The sensitivity of the LCZ is considered to be Moderate due to the following: Valued ecological conservation areas.	Negligible impact The magnitude of change is considered to be Negligible due to the following: There is no wind farm infrastructure proposed within this LCZ and potential effects are likely to be visual.	Low impact The magnitude of change is considered to be Low due to the following: The presence of turbines adjacent bushland, introduces built structures of high contrast, potentially noticeable to the perimeter of bushland areas.

8.4 Representative viewpoint assessment

8.4.1 Representative Viewpoint A: Dandaragan Road



Representative viewpoint B: View south Dandaragan Road (image: Aurecon, August, 2025)

Coordinates -30.843325, 115.706512

Viewpoint selection

Representative of views near residential dwellings to the north of the Project area

Visual receivers	<p>REPRESENTATIVE OF A RURAL DWELLING</p> <p>This is a rural-local road, mostly used by locals and workers. The rural-residential properties nearest this viewpoint have trees surrounding them that screen views outside of the property.</p> <p>This viewpoint is representative of Sensitive receiver a (See Section 8.4), located between Stockyard Road and Walyer Walyer Road at an elevated position, within 4km of the Project boundary. Desktop assessment identifies that the dwelling will have clear views across the Project, and long views to the horizon. There is no apparent screening vegetation. There are several other sensitive receivers further north, and to the north west, which this viewpoint is also representative of, however, these dwellings are wither beyond 4km from the Project boundary, or have intervening vegetation of landform.</p> <p>This representative viewpoint has been taken at a similar elevation and is likely to have similar conditions to Sensitive receiver A.</p>		
Viewing distance (m)	Background – 2735m from closest turbine (directly south)		
Visual baseline	The view is directed south towards the Project from Dandaragan Road. In the foreground pasture gently rolls down a hill with some farm infrastructure seen to the east (left) side of the road. The middle ground has scattered mature trees that extend to the bottom of the hill and become quite thick. In the background the landscape can be seen to rise back up with extensive yellow cropping fields running to the horizon line.		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km	Entire height of turbine: 3	Swept path of rotor: 3	From hub: 3
Viewpoint discussion	<ul style="list-style-type: none"> At residential dwellings, except Sensitive receiver (a), desk top review shows that there is very good vegetative screening to dwellings. Sensitive receiver (a) has no vegetative screening surrounding the dwelling and is likely to therefore have clear views towards the Project. The closest proposed visible turbine is 2.76km away and potentially visible from the ground up. 22 turbines are anticipated to be viewed across the Project when looking south. Of these three are within 4km of the viewpoint, and are likely to be viewed from the ground up. 4 turbines are located close to 4km of the viewpoint and visual simulation shows that these are prominent and likely to be seen from the ground up. The remaining 15 turbines are located between 4km and 8km, and are likely to diminish in the background. Of these, 14 are likely to be seen from the ground up, with 6 anticipated to have view of the blades. The blades are likely to be prominent, with the views of background features visible below turbines and above existing vegetation. Turbines have the potential to be visible across 145° of the existing view. 		
Visual sensitivity	Moderate	Rural residential receivers. Rural local roads with a low number of vehicle movements (i.e. likely to be local residents and agricultural workers)	
Magnitude of change	High	Visibility of three turbines within zone of visual prominence, and an additional 4 in a similar position with a high number of turbines covering 145° of viewpoint in the middle and background of the image. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	
Potential visual impact	High	Moderate sensitivity and High magnitude of change	

8.4.2 Representative Viewpoint B: Walyer Walyer Road



Representative viewpoint B: View south Walyer Wayler Road (image: Aurecon, July, 2025)

Coordinates: -30.863755, 115.681397

Viewpoint selection	Representative of views near residential dwellings to the north of the Project area		
Visual receivers	<p>REPRESENTATIVE OF A RURAL DWELLING</p> <p>This is a rural-local road, mostly used by locals and workers. This viewpoint is representative of Sensitive receiver b (See Section 8.4), The rural-residential property nearest this viewpoint (sensitive receiver b) has trees surrounding it that screen views outside of the property. The dwelling located along Walyer Walyer Road is sited close to the Project boundary. The Project rises up over a long distance to the horizon.</p> <p>This representative viewpoint has been taken close to the sensitive receiver and is likely to have similar conditions to Sensitive receiver B, however the dwelling may have longer views across the Project owing to its slightly elevated position.</p>		
Viewing distance (m)	Middleground – 1335m from closest turbine		
Visual baseline	The view is directed south towards the Project from Wayler Wayler Road. In the foreground the flat and extensive paddock extends towards a horizon line. Mature native trees are scattered through the paddock and form the horizon line in the background. The trees diminish in the view. To the far right and in the centre gentle undulation of the land can be seen. The scene comprises a modified agricultural landscape with little visible built structures.		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km	Entire height of turbine: 8	Swept path of rotor: 8	From hub: 8
Viewpoint discussion	<ul style="list-style-type: none"> • There is likely to be a considerable amount of screening vegetation with mature scattered trees located throughout the viewpoint, and also likely at the dwelling location. • There are no turbines in the foreground of the viewpoint. Two turbines are located in the middleground, at approximately 1.3 km and 2km from the viewpoint and are anticipated to be seen from the ground up. • In the background of the view there are approximately 6 turbines which are likely to be seen from the ground up. • The blades are likely to be prominent, with the views of background features visible below turbines and above existing vegetation. • 15 turbines are located between 4km and 8km from the viewpoint and should diminish in prominence. They will vary in the amount of the full turbine and blades seen dependent on intervening topography. There is likely to be intervening vegetation which may partially mitigate the number and extent of turbines visible. • Turbines have the potential to be visible across 180° of the existing view. • The turbines are likely to be viewed in 3 or more 60° sectors, and should be further considered in with cumulative impacts. 		
Visual sensitivity	Moderate	Rural residents	
Magnitude of change	High	Visibility of two turbines within zone of visual prominence, with of a high number of turbines covering 180° of viewpoint within a moderate distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	
Potential visual impact	High	Moderate sensitivity and High magnitude of change	

8.4.3 Representative Viewpoint C: Dandaragan Road



Representative viewpoint C: View west from Dandaragan Road, near the corner of Walyer Wayler Road (image: Aurecon, August, 2025)

Coordinates -30.86714, 115.70058

Viewpoint selection	Representative of views near residential dwellings to the east/central of the Project area
Visual receivers	This is a rural-local road, mostly used by locals and workers. Desktop assessment shows that the rural-residential property close to this viewpoint has trees surrounding it that would likely mitigate views to the Project area. REPRESENTATIVE OF A RURAL DWELLING

This is a rural-local road, mostly used by locals and workers. This viewpoint is representative of Sensitive receiver c (See Section 8.4), The rural-residential property nearest this viewpoint (sensitive receiver c) has trees surrounding it that screen views outside of the property. The dwelling is located between Dandaragan Road and Rowes Road, and is surrounded on three sides by the Project.

This representative viewpoint has been taken close to the sensitive receiver, however given the dwelling has views in multiple directions towards the Project, with turbines located close to the dwelling, it is likely that views from the dwelling will have higher impacts than those shown in this representative viewpoint.

Viewing distance (m)	Background – 2180m from closest turbine		
Visual baseline	<p>The view is directed west towards the Project from Dandaragan Road. In the foreground the flat and extensive paddock extends towards a horizon line. Mature native trees are scattered through the paddock and form the horizon line in the background. The trees diminish in the view. To the far right and in the centre gentle undulation of the land can be seen. The scene comprises a modified agricultural landscape with little visible built structures.</p> <p>It is noted that the associated dwelling sits centrally within the Project and is likely to have views to turbines in 5 of the 6 60 degree view lines, as discussed in cumulative impacts. See Section 8 cumulative impact analysis.</p>		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km	Entire height of turbine: 3	Swept path of rotor: 4	From hub: 4
Viewpoint discussion	<ul style="list-style-type: none"> • The desktop assessment indicates a high degree of screening vegetation around the associated dwelling. • There are no turbines in the foreground or middle ground of the viewpoint. Three turbines are located in the background, two likely to be seen from the ground up and the other at 3.79km from the viewpoint which is anticipated to have its blades visible. • Between 4km and 8km there are a further 7 turbines. Of these 1 is likely to be seen from the ground up, with the remaining 6 likely to have full blades visible. The blades are likely to be prominent, with the views of background features visible below turbines and above existing vegetation. At this range the turbines diminish into the background. • It is noted that there is a turbine located at approximately 1.74km south-southwest of this viewpoint, that is not within the 120° field of view. This turbine would be seen from the ground up. • Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away • In the very far background to the north-northwest of this viewpoints, Yandin Wind Farm Turbines may be visible on the horizon. Given the distance, these are likely to be barely perceptible in the view. Refer Section 6 for cumulative analysis. 		
Visual sensitivity	Moderate	Rural residential receivers	
Magnitude of change	Moderate	<ul style="list-style-type: none"> • Turbines are likely to be screened by intervening vegetation surrounding the dwelling. • Potential visibility of three turbines within zone of visual prominence. • A high number of turbines in the background of the view, covering up to 180°. • A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint. 	
Potential visual impact	Moderate	Moderate sensitivity and Moderate magnitude of change	

8.4.4 Representative Viewpoint D: Koodjee Road



Representative viewpoint D: View west from Koodjee Road (image: Aurecon, July, 2025)

Coordinates: -30.868341, 115.837405

Viewpoint selection	Representative of views near residential dwellings to the east of the Project area		
Visual receivers	<p>REPRESENTATIVE OF A RURAL DWELLING</p> <p>This is a rural-local road, mostly used by locals and workers. This viewpoint is representative of Sensitive receiver d (See Section 8.4), The rural-residential property nearest this viewpoint (sensitive receiver d) has some vegetation, except on the western side that may allow view through towards the Project. The dwelling is located along Koodjee Road.</p> <p>This representative viewpoint has been taken close to the sensitive receiver, with an elevated point and location with low vegetation. The dwelling is located closer to the Project boundary and may have closer views of the turbines, with a slightly higher impact.</p>		
Viewing distance (m)	Background – 5975m from closest turbine (Noting that from the identified receptor the distances would be 3325m)		
Visual baseline	The view is directed west towards the Project from Koodjee Road. In the foreground there is some low native vegetation, following a depression in the landscape on the north side of the fence. To the south side of the fence some land excavation is seen with bare earth and a low mound. The middle ground of the view shows cleared pasture land. The undulating pasture with scattered trees extends northwards to the background of the photo (right) and towards the southwest (left) of the photo native vegetation covers undulating land. Trees are seen along the horizon line. The scene comprises a modified agricultural landscape with little visible built structures and some patches of native vegetation.		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km at representative viewpoint	Entire height of turbine: 0	Swept path of rotor: 0	From hub: 0
Viewpoint discussion	<ul style="list-style-type: none"> At the associated dwelling there is some mature vegetation, however, there are breaks to the west, allowing some views through. (It is recommended that a field observation is made from the dwelling to ascertain the views available towards the Project.) There are no turbines located within 4km of the viewpoint. Nine turbines are located between 4km and 8km, diminishing in the background. The blades are likely to be prominent, with the views of background features visible below turbines and above existing vegetation. Turbines are located beyond 8km of the viewpoint and are likely to diminish in the view due to the distance. 		
Visual sensitivity	Moderate	Local roads with a low number of vehicle movements (i.e. likely to be local residents and agricultural workers)	
Magnitude of change	Moderate	A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint, noting that the sensitive receiver is likely to see two – three turbines.	
Potential visual impact	High	Moderate sensitivity and High magnitude of change	

8.4.5 Representative Viewpoint E: Corner of Capitela Rd and Gillingarra Rd



Representative viewpoint E: View west Corner of Capitela Rd and Gillingarra Rd (image: Aurecon, August, 2025)

Coordinates: -30.921274, 115.835391

Viewpoint selection	Representative of views near residential dwellings to the east/central of the Project area		
Visual receivers	<p>REPRESENTATIVE OF A RURAL DWELLING and BUNDARRA NATURE RESERVE</p> <p>This is a rural-local road, mostly used by locals and workers. This viewpoint is representative of Sensitive receiver e (See Section 8.4). The rural-residential property nearest this viewpoint (sensitive receiver e) has mature vegetation to the south, and possible open views west towards the Project.</p> <p>This representative viewpoint has been taken close to the sensitive receiver and nature reserve. The dwelling is located closer to the Project boundary and may have closer views of the turbines, with a slightly higher impact.</p>		
Viewing distance (m)	Background – 4950m from closest turbine		
Visual baseline	<p>The view is directed west towards the Project from Gillingarra Road. In the foreground of the image, the road stretches centrally towards the horizon line, disappearing over a rise. Low native vegetation lines the road and stretches to the horizon to the south of the image (left) as part of Bundarra Nature Reserve.</p> <p>To the right pasture can be seen in the middle ground in extensively cleared paddocks. The pasture undulates extending to a wooded rise in the background on the horizon line. The undulations are made clear by a line of trees, seen by their tops, indicating a shallow valley in the middleground.</p> <p>The scene comprises a modified agricultural landscape and bushland landscape.</p>		
Land use	Farm zone/ Nature Reserve	Landscape Type	LCZ 1 Agricultural pasture and LCT Bushland reserves and native vegetation patches
No. of turbines potentially visible within 4km at representative viewpoint	Entire height of turbine: 0	Swept path of rotor: 0	From hub: 0
Viewpoint discussion	<ul style="list-style-type: none"> • The desktop assessment has identified some vegetation on the southern side of the dwelling, potentially mitigating views towards the southwest area of the Project. There appears to be clear views west towards the Project. • There are approximately 18 turbines located between 4km to 8km from the viewpoint. • Most of the Project area expands beyond the 8km in the view, further west. The remaining turbines are anticipated to diminish in the view. 		
Visual sensitivity	Moderate	Rural residential	
Magnitude of change	High	Visibility of a high number of turbines extending into the horizon of viewpoint. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	
Potential visual impact	High	Moderate sensitivity and High magnitude of change	

8.4.6 Representative Viewpoint F: Woodbine Road



Representative viewpoint F: View north from Woodbine Road (image: Aurecon, August, 2025)

Coordinates: -30.976192, 115.749582

Viewpoint selection	Representative of views near residential dwellings to the south of the Project area. There are several located along the Moore River. This location was chosen as its is closest to the turbines
Visual receivers	This is a rural-local road, mostly used by locals and workers. The rural-residential properties nearest this viewpoint have trees surrounding them that screen views outside of the property and are located at a lower elevation. There are numerous dwellings located along Woodbine Road. These are generally set at a lower elevation as topography drops towards the Moore River. Generally, the dwellings have good gardens surrounding the houses, limiting or screening views towards the Project. South of the Moore River, most dwellings are located at a lower elevation with mature vegetation close to dwellings. The properties in the vicinity of Moore River generally have smaller properties, than those located throughout the Project and Study Area.
Viewing distance (m)	Middle ground – 1500m from closest turbine

Visual baseline	The view is directed north towards the Project from Woodbine Road. The foreground comprises a rise of pasture with scattered trees. Tree tops are evident from trees located behind the landform. The middle ground and background are obscured by the landform. The scene comprises a modified agricultural landscape.		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km	Entire height of turbine: 5	Swept path of rotor: 12	From hub: 13
Viewpoint discussion	<ul style="list-style-type: none"> • The screening vegetation from dwellings has been identified as high for the majority of dwellings, with the low elevation further creating landform that is likely to mitigate the impact of the turbines. • 13 turbines are anticipated to be visible looking north and are potentially seen from the ground up, however the perspective of the viewpoint from a low elevation is likely to reduce the amount of turbine seen. The visual simulation shows approximately 5 turbines seen from the ground up and a total of 12 having the blades visible. • The blades are likely to be prominent, with the views of background features visible below turbines and above existing vegetation, and with angles towards the sky. • The closest proposed visible turbine is 1.58km away and potentially visible from the ground up. • Most of the Project area expands beyond the 8km in the view, further north. The remaining turbines are anticipated to diminish in the view. • The turbines are likely to be viewed in 3 or more 60° sectors, and should be further considered in with cumulative impacts. 		
Visual sensitivity	Moderate	Rural residential	
Magnitude of change	High	Potential visibility of a high number of turbines covering 90° of viewpoint within a short distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	
Potential visual impact	High	Moderate sensitivity and High magnitude of change	

8.4.7 Representative Viewpoint G: Brand Highway south



Representative viewpoint G: View north east from Brand Highway (image: Aurecon, July, 2025)

Coordinates: -30.973769, 115.697811

Viewpoint selection	Representative of views of tourists / motorists along the Brand Highway, travelling along the western side of the Project.
Visual receivers	This is national highway route 1. Possibly less scenic than the Indian-Pacific Highway located west, closer to the coast. used by locals and workers. The highway has significant roadside vegetation along much of the route, limiting views into the Project area.
Viewing distance (m)	Background – 2610m from closest turbine

Visual baseline	<p>The view is directed northeast from the Brand Highway towards the Project. In the foreground roadside vegetation is seen meeting a stock fence. A line of trees is seen centrally, extending south (right) making the start of pasture that extends into the background.</p> <p>The middle ground and background show a gently rise in the cleared landscape with some scattered trees visible on the horizon. The scene comprises an agricultural landscape.</p>		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km	Entire height of turbine: 6	Swept path of rotor: 6	From hub: 6
Viewpoint discussion	<ul style="list-style-type: none"> • There are no turbines located in the foreground or middle ground. • There are anticipated to be 6 turbines located in the background which are likely to be visible from the ground up, 2 additional turbines are located close to the 4km distances and are shown clearly in the left of the visualisation • The intervening vegetation is limited to the foreground. As the Project site is elevated, the foreground vegetation is likely to have little effect on screening the turbines that are closest to the highway. • As the turbines recede into the background, they become hidden by vegetation in the middle ground. The visualisation shows turbines coloured red that would be hidden by vegetation in this view. The Brand Highway has little breaks in road side vegetation, so this viewpoint would portray similar views along the Project. • Vegetation in the middle ground also diminishes the prominence of turbines in the background, breaking the visibility of the rotor swept path and reducing visibility of the overall turbine. • There are anticipated to be 26 turbines located between 4 and 8km, with the Project stretching further beyond the 8km mark where the turbines lose their visual prominence. • New transmission lines are expected to traverse the landscape in the left of this viewpoint. Transmission lines are likely to be approximately 30% the height of the turbines, with an open metal lattice structure. These will be considerably smaller in the viewpoint. • Further analysis of the cumulative impact of transmission lines could be explored in future stages. 		
Visual sensitivity	Moderate	National highway with tourist traffic.	
Magnitude of change	High	Whilst there is a high number of turbines visible from the highway, there is anticipated to be a lot of roadside vegetation that screens the turbines. In addition there are two existing wind farms in the vicinity (Wind Hill <30km, and Yandin Wind Farm, less than 10km away, and the proposed Yathroo Wind Farm immediate north of the Project area. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.)	
Potential visual impact	Moderate	Moderate sensitivity and High magnitude of change	

8.4.8 Representative Viewpoint H: Brand Highway north



Representative viewpoint H: View southeast Brand Highway (image: Aurecon, August, 2025)

Coordinates -30.845572, 115.606240

Viewpoint selection	Representative of views of tourists / motorists along the Brand Highway, travelling along the western side of the Project.		
Visual receivers	This is national highway route 1. Possibly less scenic than the Indian-Pacific Highway located west, closer to the coast. used by locals and workers. The highway has significant roadside vegetation along much of the route, limiting views into the Project area.		
Viewing distance (m)	Background – 2945m from closest turbine		
Visual baseline	The view is directed southeast towards the Project area from Brand Highway. In the foreground low roadside vegetation lines the road and obscures the stock fencing. The middle ground is seen as pasture rising up a gentle slope with trees lining the horizon in the background. Some earthworks are visible in the background towards the top of the landform in the left of the image. To the right of the image the Brand Highway extends in a southeast direction and is obscured by roadside vegetation.		
Land use	Farm zone	Landscape Type	LCZ 1 Agricultural pasture
No. of turbines potentially visible within 4km	Entire height of turbine: 0	Swept path of rotor: 1	From hub: 3
Viewpoint discussion	<p>Refer to Appendix A – Viewpoint 1 visual simulation.</p> <ul style="list-style-type: none"> • There are no turbines located in the foreground or middle ground. • There are 3 turbines located in the background. The visual simulation indicates that intervening vegetation will screen most of the turbines (shown in red), with one visible from its hub above the vegetation. • In the background there are anticipated to be 8 turbines. Of these intervening vegetation and landform are likely to screen these, however blades may be visible through breaks in vegetation as motorists move along the highway. 		
Visual sensitivity	Moderate	National highway with tourist traffic.	
Magnitude of change	Low	Whilst there is potentially a high number of turbines visible from the highway, there is anticipated to be a lot of roadside vegetation that screens the turbines. In addition there are two existing wind farms in the vicinity (Wind Hill <30km, and Yandin Wind Farm, less than 10km away, and the proposed Yathroo Wind Farm immediate north of the Project area. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.	
Potential visual impact	Low	Moderate sensitivity and Low magnitude of change	

8.4.9 Summary of potential visual impacts

Turbine impacts

A summary of the potential visual impacts of the turbines at identified Representative Viewpoints is provided Table 8-2. Below. The table summarises the number of turbines visible, amount of existing intervening screening and the level of sensitivity and visual modification potentially experienced. The table also includes mitigation measures and residual effects. The location of the receptors is indicated in Figure 7-30 and ZTV maps of all the below representative viewpoints are within Section 7.2.

Construction impacts

The project is located within the LCZ 1 and LCZ 2, with the broader area already supporting wind farm infrastructure. Based on the project description (See 2.3) the construction impacts are likely to be short term (approximately 32 months) Changes and effects to the landscape character and visual amenity during this time may include more workers in the area and in transit to the Project area, and the presence of large-scale machinery.

Due to the undulating nature of the landform, construction activities, lay down areas and other associated infrastructure are likely to be experience by public road users through breaks in roadside vegetation, when at higher elevations. Due to the local nature of the area, associated Project residents are most likely to be effected from these activities. A relatively small number of tourists may experience these impacts as they traverse the area (Dandaragan tourist drive).

Due to the temporary nature of the construction phase works, and the dispersed scale of activities, the impacts are considered to be lower than those identified within Section 8.4.

Table 8-2 Summary of potential visual impacts and mitigation measures

Representative Viewpoint	Dist. to nearest turbine	No. turbines visible within 4km of viewpoint				Impact Assessment				Mitigation measures	
		Full height of turbine	Swept path of rotor	From hub	No. 60° sectors for this Project within 4km	Visual Sensitivity	Existing screening	Visual modification	Potential visual impact	Next steps – potential mitigation measures	Potential residual impact, assuming 10 years of growth on screening vegetation
RVP_A	2735m	3	3	3	2	Moderate – rural dwellings	<ul style="list-style-type: none"> At residential dwellings, except Sensitive receiver (a), desk top review shows that there is very good vegetative screening to dwellings. Sensitive receiver (a) has no vegetative screening surrounding the dwelling and is likely to therefore have clear views towards the Project. 	<p>High degree of visual modification including:</p> <ul style="list-style-type: none"> Visibility of a high number of turbines covering 145° of viewpoint in the middle and background of the image. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint. 	High - Moderate sensitivity and High magnitude of change	Potential for consultation with property owner to determine screening value of intervening vegetation.	Low - Screening vegetation can reduce visibility to turbines
RVP_B	1335m	8	8	8	3	Moderate – rural dwellings	<ul style="list-style-type: none"> There is likely to be a considerable amount of screening vegetation with mature scattered trees located throughout the viewpoint, and also likely at the dwelling location. 	<p>High degree of visual modification including:</p> <ul style="list-style-type: none"> Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint. 	High - Moderate sensitivity and High magnitude of change	<ul style="list-style-type: none"> The turbines are likely to be viewed in 3 or more 60° sectors, and should be further considered in assessment of cumulative impacts. Potential for consultation with property owner to determine screening value of intervening vegetation. 	Low - Screening vegetation can reduce visibility to turbines
RVP_C	2180m	3	4	4	3	Moderate – rural dwellings	<ul style="list-style-type: none"> The desktop assessment indicates a high degree of screening vegetation around the associated dwelling. 	<p>High degree of visual modification including:</p> <ul style="list-style-type: none"> A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint. Visibility of a high number of turbines covering 180° of viewpoint within a moderate distance away, with likely intervening vegetation providing screening. 	Moderate - Moderate sensitivity and Moderate magnitude of change	<ul style="list-style-type: none"> Potential for consultation with property owner to determine screening value of intervening vegetation. 	Low - Screening vegetation can reduce visibility to turbines

Representative Viewpoint	Dist. to nearest turbine	No. turbines visible within 4km of viewpoint				Impact Assessment				Mitigation measures	
		Full height of turbine	Swept path of rotor	From hub	No. 60° sectors for this Project within 4km	Visual Sensitivity	Existing screening	Visual modification	Potential visual impact	Next steps – potential mitigation measures	Potential residual impact, assuming 10 years of growth on screening vegetation
RVP_D	5975m (3325 to receiver)	0 (2 to receiver)	0 (2 to receiver)	0 (2 to receiver)	0	Moderate – rural dwellings	<ul style="list-style-type: none"> At the associated dwelling there is some mature vegetation, however, there are breaks to the west, allowing some views through. (It is recommended that a field observations are made from the dwelling to ascertain the views available towards the Project.) 	High degree of visual modification including: Potential visibility of three turbines within zone of visual prominence with a high number of turbines in the background of the view, covering up to 180°.	High - Moderate sensitivity and High magnitude of change	Potential for consultation with property owner to determine screening value of intervening vegetation.	Low - Screening vegetation can reduce visibility to turbines
RVP_E	4950m	0(5 to receiver)	0 (5 to receiver)	0 (5 to receiver)	0	Moderate – rural dwellings	<ul style="list-style-type: none"> The desktop assessment has identified some vegetation on the southern side of the dwelling, potentially mitigating views towards the southwest area of the Project. There appears to be clear views west towards the Project. 	High degree of visual modification including: Visibility of a high number of turbines extending into the horizon of viewpoint. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	High - Moderate sensitivity and High magnitude of change	Potential for consultation with property owner to determine screening value of intervening vegetation.	Low - Screening vegetation can reduce visibility to turbines
RVP_F	1500m	5	12	13	3	Moderate – rural dwellings	The rural-residential properties nearest this viewpoint have trees surrounding them that screen views outside of the property and are located at a lower elevation. There are numerous dwellings located along Woodbine Road. These are generally set at a lower elevation as topography drops towards the Moore River. Generally, the dwellings have good gardens surrounding the houses, limiting or screening views towards the Project.	High degree of visual modification including: Visibility of a high number of turbines covering 90° of viewpoint within a short distance away. A large proportion of the turbines are potentially visible with minimal intervening screening from this viewpoint.	High - Moderate sensitivity and High magnitude of change	<ul style="list-style-type: none"> The turbines are likely to be viewed in 3 or more 60° sectors, and should be further considered in with cumulative impacts. Potential for consultation with property owner to determine screening value of intervening vegetation.	Low - Screening vegetation can reduce visibility to turbines
RVP_G	2610m	6	6	6	2	Moderate – National highway with tourist traffic (noting Indican Ocean Drive is the primary scenic tourist drive).	The highway has significant roadside vegetation along much of the route, limiting views into the Project area.	Moderate degree of visual modification: Whilst there is a high number of turbines visible from the highway, there is anticipated to be a lot of roadside vegetation that screens the turbines. In addition, there are two existing wind farms in the vicinity (Wind Hill <30km, and Yandin Wind Farm, less than 10km away, and the proposed Yathroo Wind Farm immediate north of the Project area. These wind farms have already altered the landscape to include another layer of production in the agricultural setting.	High - Moderate sensitivity and High magnitude of change	No mitigation measures from public viewpoint	High - Moderate sensitivity and High magnitude of change
RVP_H	2945m	0	1	3	1	Moderate – National highway with tourist traffic (noting Indican Ocean Drive is the primary scenic tourist drive)..	The highway has significant roadside vegetation along much of the route, limiting views into the Project area.	High degree of visual modification: <ul style="list-style-type: none"> Whilst there is a high number of turbines visible from the highway, desktop analysis identified a lot of roadside vegetation that screens the turbines. In addition there are two existing wind farms in the vicinity (Wind Hill <30km, and Yandin Wind Farm, less than 10km away, and the proposed Yathroo Wind Farm immediate north of the Project area. These wind farms have already altered the landscape to include another layer of production in the agricultural setting. 	Low - Moderate sensitivity and Low magnitude of change	<ul style="list-style-type: none"> No mitigation measures from public viewpoint 	Low - Moderate sensitivity and Low magnitude of change

9 Conclusions

This report has been prepared to provide an assessment of potential landscape and visual amenity likely to be impacted by the Project.

The level of impacts resulting from the Project has been assessed as recommended through **Visual Landscape Planning in Western Australia: A Manual for Evaluation Assessment, Siting and Design (WAPC, 2007) guideline** together with additional supporting industry guidance.

The assessment of landscape and visual impacts are the combination of the magnitude of change experienced from the baseline conditions, and the sensitivity of a landscape or view.

9.1 Construction impacts

The Project infrastructure will be located within LCZ1: Agriculture pasture. This LCZ already supports wind farm infrastructure found further north in Yandin Wind Farm. Based on the potential construction phase elements identified in Section 2.4, there are likely to be short term impacts of up to 32 months with changes to the views and visual amenity during this time. This could include transportation of the workers to and from the Project area, movement and presence of large-scale machinery and potentially some road-side vegetation removal and/or trimming (which will be rehabilitated on completed of construction, unless required for operational purposes). Construction of trenches, foundations and use of specialist cranes to lift turbines will also likely be evident.

As these works are temporary, they are considered to have lower potential significance than operational impacts.

9.2 Operational impacts

9.2.1 Landscape Character impacts

The impact assessment to the Landscape Character indicate that the Project will have up to low impacts including:

- Potential **low** landscape character impacts during **construction** for:
 - LCZ1: Agricultural pasture
- Potential **Negligible** landscape character impacts during **construction** for:
 - LCZ 2: Valley systems
 - LCZ 3: Bushland reserves and native vegetation patches
- Potential **Low** landscape character impacts in **operation** phase for:
 - LCZ1: Agricultural pasture
 - LCZ 2: Valley systems
 - LCZ 3: Bushland reserves and native vegetation patches.

9.2.2 Visual impacts

There are no significant viewpoints or significant view corridors (regional importance) identified in the Study Area.

The assessment identified 8 viewpoints within the Study Area representative of potential sensitive receptors including from rural dwellings and tourist routes. Six of these viewpoints were identified to have the potential

for high impacts in the operational phase of the Project, one with moderate impacts and one with low impacts.

- Potential for high visual impacts, representative of rural residential dwellings:
 - RPV_A
 - RPV_B
 - RPV_D
 - RPV_E
 - RPV_F
 - RPV_G
- Potential for Moderate visual impacts, representative of tourist highways
 - RPV_C
- Potential for Low visual impacts, representative of tourist highways and rural residential dwellings:
 - RPV_H

9.2.3 Cumulative impacts

There is the potential for sensitive receptors in this area to feel surrounded by wind turbines, with increased local scale cumulative impacts to occur as a result of the Project. There are numerous residential dwellings located within 8km of both the Project and Yandin and Yathroo wind farms, and numerous located within 8km of the Project and Yathroo Wind farms. Most of these are associated with a wind farm project. However, there are several sensitive receivers that are independent of the wind farms that are likely to experience cumulative impacts of two or three wind farm projects.

In addition to the cumulative impacts summarised above, representative viewpoints B and F are likely to have Project turbines visible in 3 or more 60° sectors, within 4km.

Ground-truthing needs to be undertaken to confirm the extent of intervening vegetation, landform or structures which would have bearing on views of the proposed Marri Wind Farm including dwellings located in zones B and C as shown in Section 9 Cumulative analysis.

9.3 Next steps

The LVIA has identified viewpoints in which there is potential for moderate to high visual impacts.

The assessment is limited to representative viewpoints from public locations. Consultation with residents to undertake further visual assessment from selected sensitive viewpoints on private property, would determine the viewing conditions, with further assessment of landscape character and/or visual impacts.

There may be further assessment required of sensitive viewpoints and characteristics highlighted in community consultation sessions.

The assessment of cumulative impacts could be further determined by ground-truthing existing visual conditions from private properties.

9.4 Mitigation measures

As outlined in Section 8 Potential Impacts, further investigation around sensitive receivers (residential dwellings on private property) and consultation to determine whether vegetative or other screening elements could help reduce impacts is recommended.

Mitigation seeks to minimise adverse impacts through siting of infrastructure (turbines and transmission lines) as a first priority, and then provide tailored mitigation measures to specific locations.

The identified sensitive receivers are generally located in LCZ 1 – Agricultural pastures, with cleared paddocks and long views across gently undulating landform. Due to the size of the proposed wind turbines, it may not be possible to fully screen all wind turbines in a viewpoint.

Roadside vegetation will provide good screening along public roads, and careful siting of trees and shrubs around living spaces of dwellings can also reduce the impacts of turbines. Given the heights of turbines, screening will only be effective when located close to a viewpoint.

It is recommended that the Project undertakes detailed consultation with affected residents and consider preparation of landscape plans to assist mitigating potential visual impacts of the Project.

Consideration of consultation and rehabilitation of effects could include:

- Minimise land-take of productive landscapes and utilise existing roads and access tracks where possible.
 - Co-locate with fence lines and consult with landowners
- Minimise vegetation removal in transportation of equipment to site and in siting of infrastructure. In particular consider protection of significant species and mature trees.
- Consider laydown areas and other ancillary equipment away from public viewpoints and views from public roads and sensitive receivers.
- Consider vegetation planting to screen new buildings and ancillary infrastructure to help maintain the existing landscape character.
- Plant with species appropriate to the area that increase the remnant vegetation and biodiversity, as recommended by ecologists and through local guidance.

9.5 Summary

The wind turbines associated with the Project are likely to be clearly visible within the LCZ1, with long views and gently undulating landform creating an open backdrop. This infrastructure will extend the new energy generation infrastructure emerging in the area including the existing Yandin Wind Farm and the proposed Yathroo Wind Farm.

This assessment has found that all areas of Landscape Character will have low impact of change, and sensitive receivers will have high-moderate change, with the highest impacts felt close to Project boundaries and where views to Yathroo Wind Farm are seen in multiple sectors of a view.

Further investigation of residential dwelling, particularly those with cumulative impacts that are outside of any Wind Farm Project Boundaries are identified as a high priority, along with dwellings with little vegetative screening that could mitigate visibility of proposed wind turbines.

Implementation of detailed consultation with regard to vegetative screening at residential dwellings is recommended to help mitigate visual impacts of wind turbines and associated infrastructure, and this is likely to create a residual low Project impact, after vegetation has grown to adequate heights.

Brand Highway and Dandaragan Road will experience close views to wind turbines and transmission line towers, however as noted above this experience is existing at Yandin Wind Farm further north, and may also be partially screened through roadside vegetation.

While identified impacts are significant due to the degree of change in these locations, it may be considered that the introduction of additional highly visible wind turbines may not negatively impact the character and amenity of the locality as wind turbines are already an emerging feature of this area.

References

Bishop, Ian D. 2002. Determination of Thresholds of Visual Impact: The Case of Wind Turbines. Environment and Planning B: Planning and Design Vol. 29: pp. 707-718.

Department of Environment, Land, Water and Planning;

https://www.planning.vic.gov.au/data/assets/pdf_file/0021/570630/Development-of-wind-energy-facilities.pdf

<https://www.gannawarra.vic.gov.au/files/assets/public/v/1/document-resources/strategic-documents/gannawarra-2025-final-140411.pdf>

Directory of Important Wetlands in Australia (DIWA, 2024)

Environment Protection and Heritage Council (EPHC), Australia – National Wind Farm Development Guidelines Draft, 2010

Gannawarra Shire Heritage Study Stage One Volume One Thematic Environmental History, R. Ballinger, 2008

Gannawarra Shire Heritage Study, Volume One Key Findings and recommendations, R. Ballinger and S Westbrooke, 2013

Grimm, B (2009). Quantifying the Visual Effects of Wind Farms; A Theoretical Process in an Evolving Australian Visual Landscape. PhD Thesis Adelaide University

Institution of Lighting Professionals, Guidance Notes for the Reduction of Obtrusive Light GN01:2011

Landscape Institute and Institute of Environmental Management & Assessment, UK - *The Guidance for Landscape and Visual Impact Assessment, Third Edition, 2013*

The Landscape Institute and the Institute of Environmental Management and assessment, New York - Guidelines for Landscape and Visual Impact Assessment, Second Edition, 2002.

Landscape Institute, Technical Guidance Note 06/19 Visual Representation of Development Proposals
NSW Wind Energy Visual Impact Assessment Bulletin, 2016 (VIA Bulletin)

NSW Roads and Maritime Services Practice Note – Guideline for Landscape Character and Visual Impact assessment EIA-N04.

People and Place principles outlined in the Australian Urban Design Protocol (AUDP) or other ISCA approved equivalent.

Scottish Natural Heritage, March 2021. Guidance: Assessing the Cumulative Impact of Onshore Wind Energy Developments.

Scottish Natural Heritage, December 2014, Visual Representation of Wind Farms, Version 2.1

Shang, Haidong, and Ian D. Bishop. 2000. Visual Thresholds for Detection, Recognition, and Visual Impact in Landscape Settings. Journal of Environmental Psychology Vol. 20: pp. 125.

Sullivan, R.G., et. al., 2012. Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes. Argonne National Laboratory and the U.S. Department of the Interior, Bureau of Land Management. USA

Wind Energy Guideline, Technical Supplement for Landscape Character and Visual Impact Assessment, Department of Planning, Housing and Infrastructure, November 2024,

<https://www.planning.nsw.gov.au/sites/default/files/2024-11/wind-energy-guideline-visual-technical-supplement.pdf>

Appendix A: Visual Simulations

Site photography

A field visit was undertaken in July and August 2025. Photographs used for viewpoint are taken at a height of 150cm (representing eye level), through a 50mm fixed focal lens which closely represents the central field of vision of the human eye. Parameters utilised for photography are outlined in Table A 1. Several overlapping photographs were taken covering a horizontal field of view of 124 degrees (equivalent width of 3.45 photographs) to replicate the field of view of the human eye. The camera has the ability to geo-tag each photo with its location coordinates and elevation.

Table A 1

Photography Specifications	
Camera make and model	Canon EOS 5D Mark IV Full Frame digital SLR
Focal length	50mm f/0
Aperture setting	f/6.3 - 10
Tripod height	150cm

Simulation methodology

The simulations are produced in specialist software EMD WindPRO, which contains the latest wind turbine models, and terrain data. The WindPRO software allows for accuracy testing through aligning topographical features or horizon lines from terrain data with features in the photos. This is used to verify the position and height of turbines.

The process and parameters adopted in the development of the visual simulations are as follows:

- A 3D base model is prepared in Windpro by loading an online digital map of the Project location, using Interpolate contour data to Local Digital Elevation Model (DEM).
- Selection of turbine model (as per Figure 2-1 Indicative turbine dimensions) and input of turbine locations. The turbines are positioned in the model, as per the proposed Project layout, using the georeferenced locations. The turbine type and dimensions are selected from the online Windpro-EMD database. The proposed turbines for the Marri Wind Farm are represented at a height of 275m, with 184m hub height and 91m blade length. The elevation at which these are placed is set by the TIN data calculated by the elevation survey data in the base model.
- GPS photographs taken from representative viewpoints are imported into the Windpro model, which automatically place them in the viewpoint location within the model, based on camera information matching view aspect and focal length.
- Panoramic photographs are then imported into the Windpro model, placed to match the coordinates, and elevation of the GPS photograph. Camera settings are manually entered and the Projection option 'Cylindrical (stitched panorama image)' is checked which automatically recognises the 'Tilted turning axis' of the image, for rendering. The 'Field of View' is set at 124 degrees, equal to that of the panoramic image. This ensures that the scale of the rendered turbines match that of the image. The scale and location of the turbines within the image is checked against the 'control' points or landscape features within the photo. The focus is upon ensuring the size, scale and horizontal expanse of the wind turbines are accurately represented within the view, with potential for some minor horizontal deviation in the actual wind turbine locations remaining.
- The turbines are masked where they fall behind solid objects in the image (landform), to give a realistic impression of the turbines sitting in the landscape. In the simulations, the turbines have been shown in red in front of vegetation to review worst-case scenarios, noting that vegetation may not be present at rural dwellings.
- The render settings are inputted to match the date and time that the photograph was taken. Options on 'weather type' are chosen depending on the output of the render, either clear or cloudy conditions.

Appendix B: Visual Prominence Rationale

The visual prominence of a development can be determined by understanding the extent to which an object is part of a viewer’s static field of view.

The measurement of the field of view is based upon the parameters of human vision outlined below. These provide a basis for assessing and interpreting the visual prominence of a development by comparing the extent to which the development will intrude into the central field of vision (both horizontally and vertically).

These horizontal and vertical fields of view are also interlinked to the viewing distance from the development. The methodology is based on the reduction of the visibility of a development in the distance as the field of view reduces (i.e. the increase in distance between a given viewpoint and the development).

Horizontal line of sight

It is generally accepted that the central field of vision for the human eye covers a horizontal angle of approximately 50 degrees to 60 degrees. Within this angle, both eyes observe an object simultaneously creating a degree of overlap, which is the central field of view (refer to Figure A.1). Within the central field of vision, the viewed image is sharp, colours are separately defined and depth perception occurs.

The visual prominence of a development will vary according to the proportion a development occupies the central field of vision.

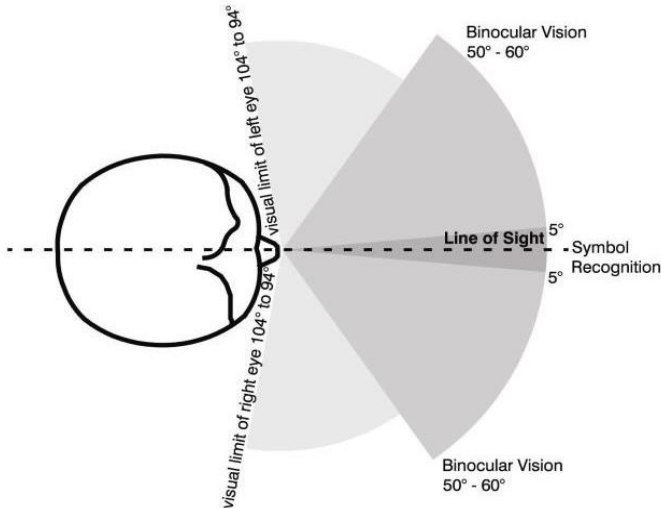


Figure A.1 Horizontal line of sight

Table A 2 outlines the potential visual prominence of a development, dependent upon on how much of the horizontal central field of vision that it occupies.

Table A 2 visual prominence in horizontal field of view

Degrees of Field of View occupied	Potential visual prominence – horizontal field of view
Less than 5°	Insignificant - Low visual prominence The development would not be highly visible in the view, unless it contrasts strongly with the background.
5° – 30°	Potentially Noticeable – Moderate visual prominence The development may be noticeable. The degree that it intrudes on the view would be dependent on how well it integrates with the landscape setting.
Greater than 30°	Potentially Dominant - High visual prominence The development would be highly noticeable.

Vertical line of sight

As for the horizontal line of sight, there is also a vertical central field of view. If we assume that the horizon is 0° then the eye clearly defines colour, field of view and has image sharpness for an angle of approximately 25° upwards and 30° downwards. However, in reality, the typical line of sight for a standing person at ground level is approximately 10° below the horizon line (Refer to Figure A.2).

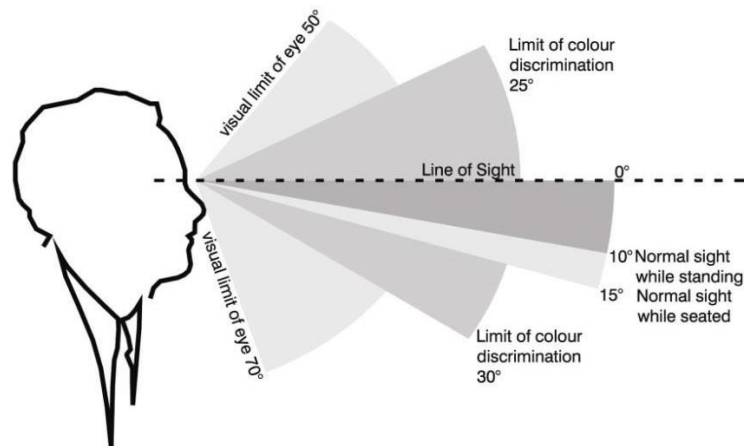


Figure A.2 Vertical line of sight

Objects that occupy a small proportion of the vertical field of view (less than 5°) are visible but not dominant, particularly when they occur within landscapes that have been modified by human activity.

Table A 3 demonstrates the potential visual prominence of a development, dependent upon on how much of the vertical central field of vision that it occupies.

Table A 3 Development field of prominence

Degrees of Field of View occupied	Potential visual prominence – vertical field of view
Less than 0.5°	Insignificant - Low visual prominence A small thin line in the landscape and is no longer an easily recognisable element.
0.5° – 2.5°	Potentially Noticeable - Moderate visual prominence The development may be noticeable. The degree that it intrudes on the view would increase as distance reduces and be dependent on how well it integrates with the landscape setting.
Greater than 2.5°	Potentially Dominant - High visual prominence The development would be highly noticeable, although the degree of visual intrusion would depend on the landscape setting and the width / thickness of the object.

Visual prominence in relation to distance and field of view

These horizontal and vertical fields of view are also interlinked to the viewing distance from the development. The viewing distances, foreground, middleground and background, (refer to Table A 4) have been established based on previous field studies undertaken by Aurecon. The distances also relate to the distances for the land use types in the viewer sensitivity assessment methodology.

Table A 4 Field of view distance

Distance from a viewer	Potential visual prominence
> 2.0km (background)	Insignificant The visibility of the development would progressively diminish over greater distances of 2km with no visibility beyond 5km due to atmospheric conditions.

Distance from a viewer	Potential visual prominence
Between 0.5km & 2.0km (middleground)	<p>Potentially Noticeable</p> <p>The development would be noticeable, reducing with distance. The degree that it intrudes on the view would be dependent on topography and the vegetation within the landscape setting and how well it integrates with the surrounding land-uses.</p>
< 0.5km (foreground)	<p>Potentially Dominant</p> <p>The development would be highly noticeable, although the degree of visual intrusion would depend on the landscape setting (where not screened by vegetation or buildings) and the width / thickness of the object.</p>

Figure A.3 illustratively demonstrates how the viewshed of a horizontal object is determined by its height and not so much by its width based on the viewing distance from a development. As a viewer moves further away from a horizontal object the width may still be apparent, however the vertical dimension reduces to insignificance.

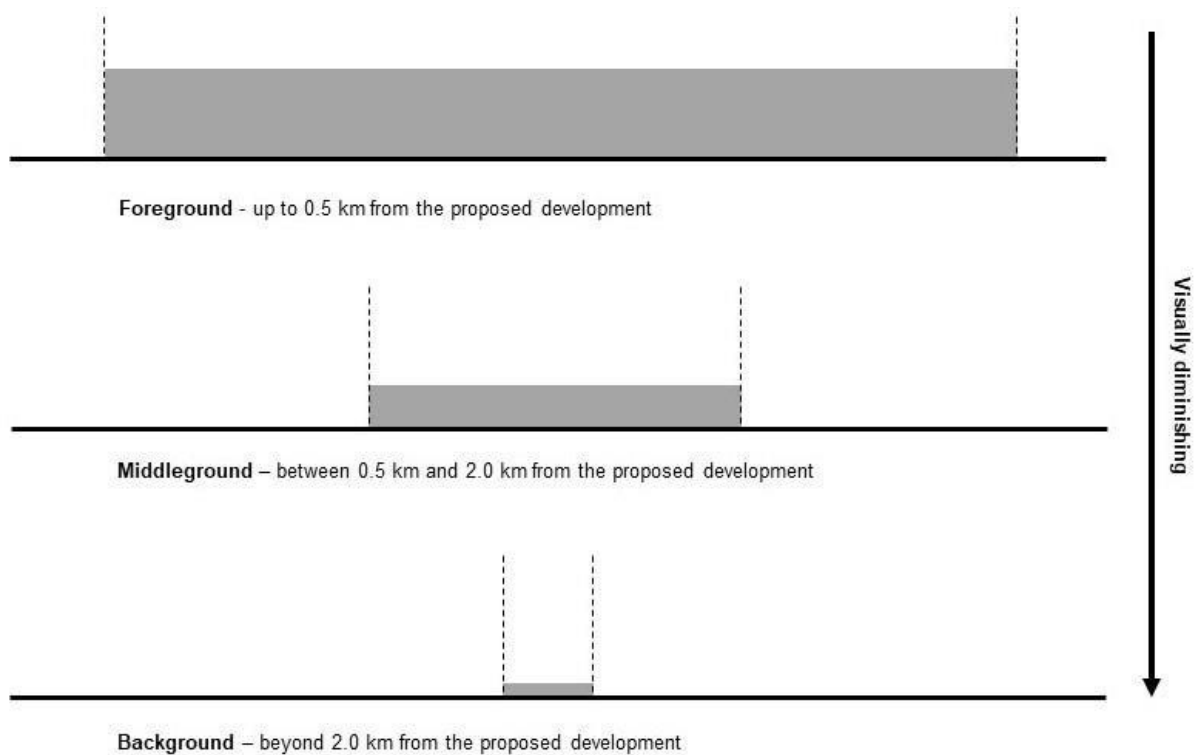


Figure A.3 The reduction in visibility of the horizontal line of sight based on increase in distance from a viewpoint

The same approach can be applied to the vertical field of view. As a viewer moves further away from a vertical object the height may still be apparent, however the vertical dimension reduces to insignificance (refer to Figure A.4).

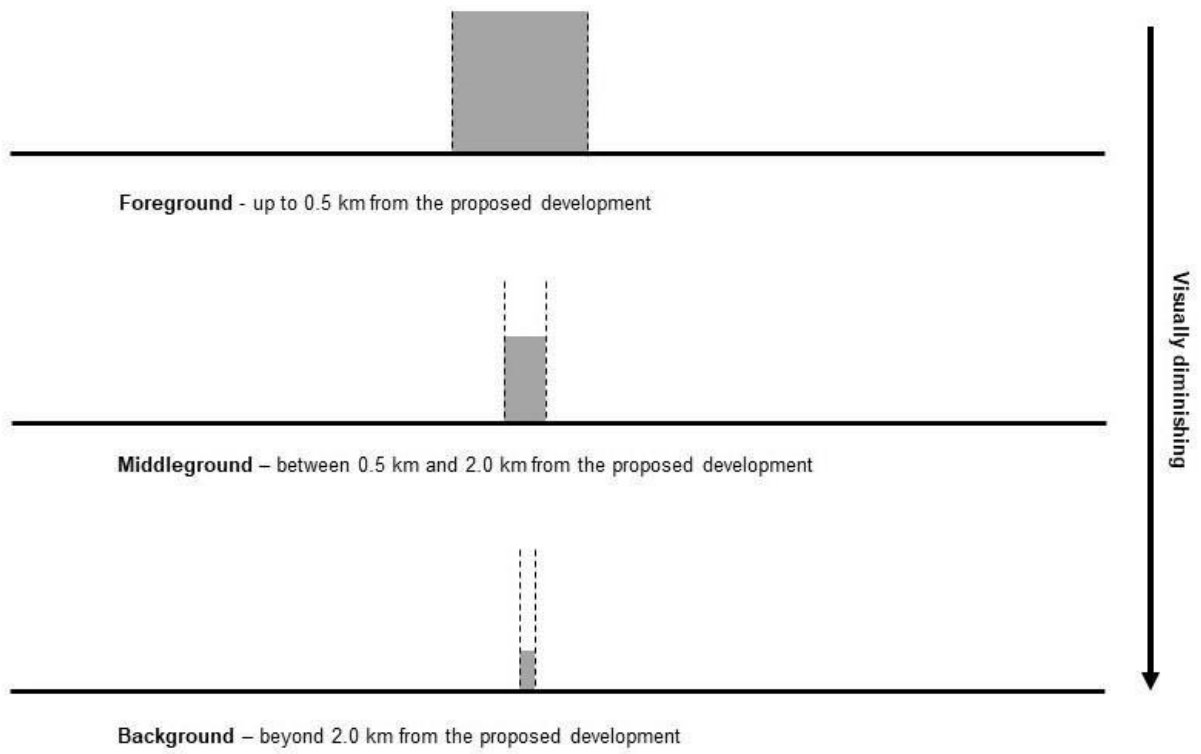


Figure A.4 The reduction in visibility of the vertical line of sight based on increase in distance from a viewpoint

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