Cattle Creek Wind Farm

Landscape & Visual Impact Assessment

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Acknowledgement of Country

Moir Studio acknowledge the traditional custodians of the lands and waters of Australia, most notably the **Awabakal Nation** in which our office resides and the **Bigambul Nation**, the traditional owners of the lands on which this Project resides. We acknowledge their contribution to our community and their deep connection to the land. We pay our respects to Elders both past and present.

Cattle Creek Wind Farm

Landscape and Visual Impact Assessment

Prepared for
ERM c/o RWE Cattle Creek Onshore Wind Pty Ltd

Project Number
2952

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Executive Summary

ERM has engaged Moir Studio on behalf of RWE Cattle Creek Onshore Wind Pty Ltd to prepare a Landscape and Visual Impact Assessment (LVIA) for proposed Cattle Creek Wind Farm, which is located on the traditional lands of the **Bigambul** Nation. The Project is approximately 50 km southwest of Dalby in Queensland. The Project is located across Western Downs Regional Local Government Area (LGA) and the Toowoomba Regional LGA and includes up to 135 wind turbine generators (WTGs) with an anticipated maximum tip height of 260 m. This report uses a worst-case height of 270 m for all assessments and visualisations.

In addition to the WTGs, ancillary infrastructure including access tracks, transmission lines, underground cabling, substations, BESS, meteorological masts, communication towers and central operational and maintenance facilities (O&M) have been assessed in this LVIA.

Moir Studio have utilised a quantitative study methodology with regards to the *State Code 23: Wind Farm Development 2025* and *State Code 27: Battery Storage Facilities Development*. Other relevant literature and guidelines such as the AILA *Guidance Note for Landscape and Visual Impact Assessment June 2018*, *Draft National Wind Farm Development Guidelines July 2010*, the *Toowoomba Regional Planning Scheme 2022*, and the *Western Downs Regional Planning Scheme 2019*. Moir Studio's previous experience on large scale renewable infrastructure projects has also been considered in the Study Method.

Field work was undertaken by Moir Studio in May 2024 to determine the existing landscape character against which the Project has been assessed. The assessment determined the regional landscape character is typical of Brigalow Belt Bio-region. The Projects subregions includes Inglewood Sandstones and Moonie R Commoron Creek Floodout.

Land in the area is predominantly utilised for cattle grazing and cropping, with some areas managed for resource extraction (production forestry, mining and water reservoirs).

The landscape was categorised into three (3) Landscape Character Units (LCUs). A Frame of Reference was applied to establish the Scenic Quality Rating of these LCUs as low and Moderate-Low. For all three LCUs, the overall Landscape Character Impact Rating was determined to be Low.

The visual impact of a wind energy project will depend upon the characteristics of the existing landscape, the extent to which the existing landscape is changed by the Project and how these changes are perceived by individuals and the broader community. The assessment identified the key landscape features and viewpoints within the Study Area.

Key features which form a part of the existing landscape character assist in reducing potential visibility of the Project. These include large areas of vegetation associated with State Forests and grazing paddocks, undulating topography, roadside vegetation and riparian vegetation associated with creek lines. The assessment of the potential impacts to the broader landscape character found that the Project could be undertaken whilst maintaining the key visual features and character of the landscape.

A detailed assessment was undertaken for a total of 14 public viewpoint locations. The assessment identified:

- 5 viewpoints have a NEGLIGIBLE visual impact;
- 5 viewpoints have a LOW visual impact;
- 2 viewpoints have a MODERATE-LOW visual impact; and
- 2 viewpoints have a MODERATE visual impact.

A total of five photomontages were prepared to illustrate the potential visual impacts from representative public viewpoint locations. The photomontages revealed that the potential visual impact is limited to areas in close proximity to the Project.

A visual catchment was defined based on the vertical field of view. Visibility of the Project varied with distance and visual angle, impacting its dominance in the landscape. The Landscape Character Study Area extends up to 15.5 km, and the Visual Impact Assessment Study Area extends to 6.2 km within which the proposed WTGs may be visually dominant.

An assessment was undertaken to evaluate potential shadow flicker at existing and proposed land uses surrounding the Project in accordance with *State Code 23: Wind Farm Development 2025 (SC23)*. No associated or non-associated dwellings were identified within 1,299 m of the proposed WTGs (the maximum extent of shadows from the WTGs). Factors such as existing vegetation, topography and sunshine probability are anticipated to reduce the number of hours per year further.

Practical and feasible mitigation measures have been proposed for areas with a Moderate visual impact rating to reduce the potential visibility of the Project whilst maintaining key views, preserving the landscape character and the scenic quality of the area. Mitigation measures in keeping with the existing character include screen planting and supplementary planting of existing vegetation.

The existing landscape has the ability to accommodate the Project with a relatively low degree of visual impact. With the implementation of the proposed mitigation where advised, the Project could be undertaken to maintain the landscape character of this area. In this regard, the Project satisfies the performance objectives outlined under SC23 (PO15 and PO17) and SC27 (PO22 and PO23).

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Glossary & Terminology

Associated private receptor
A landholder who has reached an agreement with the Applicant in relation to the Project but will not host project related infrastructure on their land

Ancillary infrastructure
All the supporting structures, systems, and facilities that are necessary for the wind farm to operate effectively

Bioregion
An ecologically and geographically defined area characterised by its combination of geological features, climate, flora, and fauna.

Development Application (DA)
A formal application made to seek development consent of the Project - submitted to the relevant approval authority.

Environmental Statement (ES)
An environmental statement prepared by or on behalf of the Proponent to accompany a development application. It involves a comprehensive assessment of the environmental, social and economic impacts of the Project.

Geographical Information Systems (GIS)
A system that captures, stores, analyses, manages and present data link to specific locations. This spatial data is linked to a digital database.

Land Zoning
The classification of land for specific uses or activities - typically regulated by local environment planning documentation and/or relevant SEPP documentation.

Land Use
The way the existing land is utilised, including but not limited to residential, commercial, industrial, agricultural, or conservation purposes.

Landscape and Visual Impact Assessment (LVIA)
A technical assessment to identify and assess the potential visual effects resulting from the Project on the landscape, individual receptors and on the overall visual amenity of the region in which the Project is sited.

Landscape
All the visible features, including landform, vegetation, buildings and infrastructure, contained within a holistic area.

Landscape Character
Landscape character refers to the distinct and recognisable pattern of physical elements that occur consistently in a particular landscape. The landscape character of an area is generally defined by the most dominant landscape element or unique combination of elements that occur within that landscape. It reflects how particular combinations of geology, landforms, soils, vegetation, land use and human settlements create a particular sense of place for different areas within the landscape.

Landscape Character Units
An area of landscape with similar properties or strongly defined spatial qualities that are distinct from areas immediately nearby within the Study Area.

Landscape Values
The qualities and attributes of a landscape that contribute to its overall visual, aesthetic, cultural, and environmental significance.

Local Government Area (LGA)
An administrative division of local governance and planning.

Mitigation Measures
Potential strategies or actions implemented to minimise or offset the adverse visual impacts of the Project.

Non-Associated private receptor
A dwelling owned by a non-associated landholder

Photographic Survey & Fieldwork
A systematic process of collecting visual data in the form of photographs and surveys taken from various viewpoints within the Study Area to document the existing visual conditions.

Planning Scheme
A regulatory document that establishes the framework for land use, development, and infrastructure within a specific Local Government Area (LGA). It provides detailed guidance, rules, and standards designed to manage growth, safeguard the environment, and promote the orderly and sustainable development of communities.

Private Receptor
Individuals and/or defined groups of people who have the potential to be affected by the Project.

Proponent
The party (i.e. RWE) proposing the development

Sensitive Receptor
A point or area likely to experience a greater extent of visibility of the Project.

State Code
A set of statutory guidelines or standards that provide specific requirements, criteria, and assessment benchmarks for development applications. These codes are part of the broader planning framework used to ensure that development aligns with the state's planning policies, environmental objectives, and community expectations.

Strategic Plan Map
A visual representation within a planning scheme that depicts the long-term vision and policy direction for the future development of a Local Government Area (LGA).

Study Area
The geographical region or area under consideration in the preparation of a LVIA or VIA assessment.

Viewpoint
A specific location from which a view or landscape is observed. A viewpoint location is the geographic location or physical position (in GPS format) where the viewpoint was captured.

Visual Amenity
The overall visual quality of a landscape that considers factors including but not limited to views, natural features, and the built environment.

Visual Baseline
A desktop assessment and on-site photographic surveys/fieldwork that describes and captures the existing environmental conditions in which any future changes can be measured against.

Visual Catchment
The geographical area from which a particular view can be observed.

Visual Effects
The effects on specific views and on the general visual amenity experienced by receptors.

Visual Impact
The observable and measurable change in the visual catchment caused by the Project. This is determined by considering the visual sensitivity and magnitude of change.

Visual Magnitude
The degree of visual change resulting from the Project, including but not limited to the size, scale, compatibility and duration of effect.

Visual Sensitivity
The susceptibility of a landscape or visual resource to absorb impacts from a Project, land use change or the introduction of a new element into the landscape.

Visual Impact Assessment (VIA)
The process for determining the day-to-day visual effects of a Project on people's views from the private and public domain.

Visualisation
A computer-generated simulation, photomontage or other technique illustrating the predicted appearance and/or massing of the Project within the existing landscape.

Zone of Visual Influence (ZVI)
The extent of landscape area from which the Project can potentially be theoretically viewed based on topography alone.

Abbreviations

ABS
Australian Bureau of Statistics

AILA
Australian Institute of Landscape Architects

AHL
Aviation Hazard Lighting

BESS
Battery Energy Storage System

BWF
Biala Wind Farm

CASA
Civil Aviation Safety Authority

DSDIP
Department of State Development, Infrastructure and Planning, Queensland

DTM
Digital Terrain Model

EPHC
Environment Protection and Heritage Council

ERM
Environmental Resources Management

FOV
Field of View

GLVIA
Guidelines for Landscape and Visual Impact Assessment

GIS
Geographic Information System

ha
Hectares

LGA
Local Government Area

LCU
Landscape Character Unit

LVIA
Landscape and Visual Impact Assessment

NSW
New South Wales

NWFDG
National Wind Farm Development Guidelines - Draft

OE&H
Office of Environment and Heritage

PM
Photomontage

PO
Performance Outcome

PV
Photovoltaic

QLD
Queensland

RVAA
Residential Visual Amenity Assessment

RWE
RWE Cattle Creek Onshore Wind Pty Ltd

SC
State Code

SNH
Scottish Natural Heritage

SO
Strategic Outcome

TRPS
Toowoomba Regional Planning Scheme

VIC
Victoria

VFMP
Vegetation and Fauna Management Plan

VRWFG
Visual Representation of Wind Farms Guidance

WDRPS
Western Downs Regional Planning Scheme

WTG
Wind Turbine Generator

ZVI
Zone of Visual Influence

01 Introduction

1.0 Introduction

1.1 Background

ERM has commissioned Moir Studio on behalf of RWE Cattle Creek Onshore Wind Pty Ltd to prepare an LVIA for the proposed Cattle Creek Wind Farm (the Project), which is proposed on the traditional lands of the Bigambul Nation, approximately 50 km southwest of Dalby, Queensland (refer to **Figure 01**).

This report provides a comprehensive assessment of visibility and potential visual impacts associated with the Project on landscape character, visual amenity, and any scenic vistas. This information will assist the community and relevant authorities in understanding and assessing the likely potential visual impacts.

Survey work was undertaken during May 2024 using key viewpoints and locations with potential views towards the Project. The report details the results of the fieldwork, documents the assessment of the landscape character and visual setting, and, if required, makes recommendations to assist in mitigating any potential impacts resulting from the proposed development.

1.2 Relevant Experience

Moir Landscape Architecture Pty Ltd, trading as Moir Studio, is a professional design practice and consultancy specialising in Landscape Architecture, Landscape Planning, and Landscape and Visual Impact. Our team has extensive experience undertaking LVIAs for wind energy projects. Based on our experience and the relevant guidelines, we have developed methodologies to ensure a comprehensive and qualitative assessment of the Project.

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

- Lakeland Wind Farm (Lakeland, Queensland);
- Stony Creek Wind Farm (Biggenden, Queensland);
- Wongalee Wind Farm (Wongalee, Queensland);
- Theodore Wind Farm (Theodore, Queensland);
- Bodangora Wind Farm (Bodangora, New South Wales);
- Capital II Wind Farm (Bungendore, New South Wales);
- Uungula Wind Farm (Wellington, New South Wales);
- Hills of Gold Wind Farm (Nundle, New South Wales); and
- Cherry Tree Wind Farm (Seymour, Victoria).

Figure 01 – Regional Context
Basemap Source: Google Earth, 2024

Not to Scale (Locality Only)

02 Study Method

2.0 Study Method

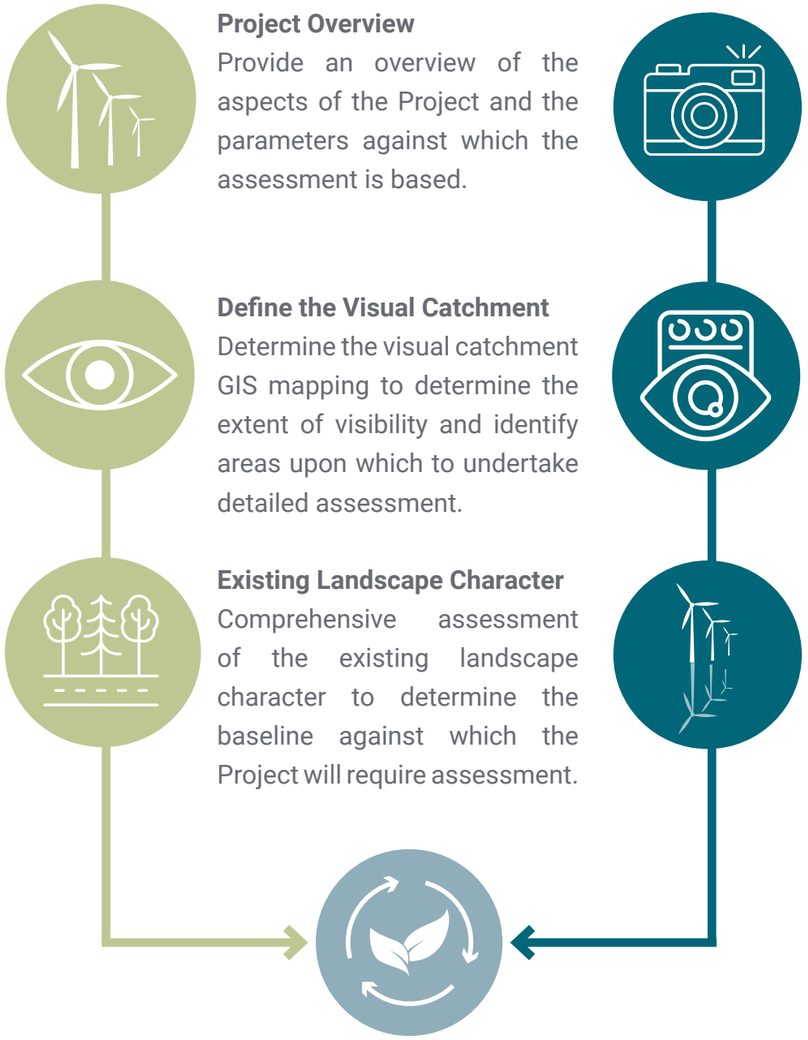


Figure 02 – Landscape and Visual Impact Assessment Process

2.1 Overview of the Study Method

The following provides an overview of the guidelines, relevant frameworks and considerations of authorities utilised to form the methodology for this LVIA. Steps of this methodology are outlined in **Figure 02**.

2.1.1 State Codes & State Development Assessment Provisions (2025)

The assessment has been prepared in accordance with the Queensland State Development Assessment Provisions (SDAP) *State Code 23: Wind Farm Development,* and *State Code 27: Battery storage facility development,* and their associated Planning Guides *(DSDIP, 2025)*. The code and guidelines aim to deliver quality renewable energy outcomes while protecting communities from the adverse impacts of wind farm developments.

To address the performance outcomes identified in SC23 and SC27 (refer **Table 01**) this LVIA identifies and propose measures to avoid or minimise adverse impacts from the development on significant landscape values and scenic amenity, including viewing corridors and viewpoints.

2.1.2 AILA Guidance Note for Landscape and Visual Impact Assessment (2018)

The Australian Institute of Landscape Architects (AILA) developed *Guidelines for landscape and visual impact assessment. (GLVIA) 2018)* The document provides a practical framework for the practice of LVIA among Registered Landscape Architects. The process used in this report reflects the best practice guidelines outlined in the GLVIA, which include terminology, principles, and methodology.

2.1.3 Draft National Wind Farms Development Guidelines (2010)

The Environment Protection and Heritage Council (EPHC) have developed *Draft national wind farm development guidelines* (NWFDG) *(EPHC, 2010)* to provide a consistent framework and methods for assessing issues unique to wind farm developments. References to these guidelines have been made throughout the report.

	Relevant Performance Outcomes	Supporting Action - SC Guideline	Addressed in LVIA	Refer Section
SC23 - Wind Farm Development				
PO15	*Development is designed, constructed and operated so that the modelled blade shadow flicker impacts on existing or approved sensitive land uses do not exceed 30 hours per annum and 30 minutes per day.*	• *A Shadow Flicker Assessment Report should be submitted to demonstrate how PO15 can be complied with.*	• *Shadow Flicker Assessment overview, results and recommendations*	***Section 8.0***
PO17	*Development in an area identified by state or local government planning instruments as having high scenic amenity is sited and designed to protect the scenic amenity and landscape values of the locality and region.*	• *Include visual simulations or photomontages demonstrating the anticipated visual appreciation of the proposed turbines from key public viewpoints and viewing corridors* • *An assessment of how the turbines visible from view points and/or viewing corridors does not adversely impact on the scenic amenity.*	• *Visual Catchment and Zone of Visual Influence* • *Assessment of existing landscape character* • *Viewpoint Analysis* • *Photomontages*	***Section 2.2*** ***Section 4.0*** ***Section 5.0*** ***Section 6.0*** ***Section 7.0*** ***Section 11.0***
SC27 - Battery Storage Facility Development				
PO22	*BESS Development is sited and designed to:* • *minimise visual impacts on sensitive receptors;* • *protect the landscape values and scenic amenity of the surrounding landscape; and* • *provide screening and buffering to sensitive receptors the greatest extent feasible.*	• *The BESS should be supported by a Visual Impact Assessment Report which details impacts on defined areas of high scenic and/or landscape amenity and surrounding sensitive receptors, and proposed mitigation measures to manage these impacts.*	• *Assessment of existing landscape character* • *Viewpoint Analysis* • *Ancillary infrastructure (9.6)* • *Photomontages* • *Mitigation Measures*	***Section 5.0*** ***Section 6.0*** ***Section 9.0*** ***Section 11.0***
PO23	*BESS Lighting associated with the development provides safe and effective illumination for site operations and maintenance, whilst minimising environmental impacts and visual impacts on sensitive receptors.*	• *The BESS should minimise off-site lighting impacts. The Visual Impact Assessment Report should identify and respond to potential lighting visual impacts from the development.*	• *Ancillary infrastructure (9.6)* • *Lighting* • *Mitigation Measures*	***Section 9.6*** ***Section 10.0*** ***Section 11.0***

Table 01 – Relevant Performance Outcomes - State Code 23 and State Code 27

2.2 Guideline and Legislative Framework

2.2.1 Toowoomba Regional Planning Scheme

Approximately one third of the Visual Catchment (15.5 km from nearest WTG) is within the Toowoomba Regional Council area.

Section 3.6.2 of the *Toowoomba Regional Planning Scheme v28 (TRPS)* (2022) outlines strategic outcomes in protecting the scenic amenity of Toowoomba. Relevent Specific Outcomes include:

(1) - Areas identified as high scenic amenity are protected by integrating built elements or significant disruptions into the landscape through design that minimises visual impacts.
(3) - Large intrusions onto this landscape, such as extraction, mining, wind turbines and large solar collectors are designed, located and operated to mitigate negative amenity impacts. (It is acknowledged that State legislation has the primary role in administering the development of resource projects (mining) and that this is not a Council responsibility).

Section 8.3.3 of the *Toowoomba Regional Planning Scheme v28 (TRPS)* (2022) outlines performance outcomes for developments identified on the Scenic Amenity Map. Performance Outcomes are addressed in **Section 6.6**.

A small portion of the Project Area is identified as having a high Scenic Amenity rating of 6 - 8. A small area on the eastern boundary of the Visual Catchment is rated as 9, and no areas are rated as 10, (refer **Figure 03**).

2.2.2 Western Downs Regional Planning Scheme

Approximately two thirds of the Study Area (15.5 km from nearest WTG) is within the Western Downs Regional Council area.

Section 3.4.6 of the *Western Downs Regional Planning Scheme (WDRPS)* (2019) outlines strategic outcomes in protecting the scenic amenity of Western Downs. Specific Outcomes include:

- *(1) - The location and scale of development complement the scenic amenity values represented by the upland and lowland character types identified on Strategic Plan Map 3 – Community Identity and Landscape Character:*
  (a) Forest communities in 'Forest Uplands' landscapes are protected and enhanced;

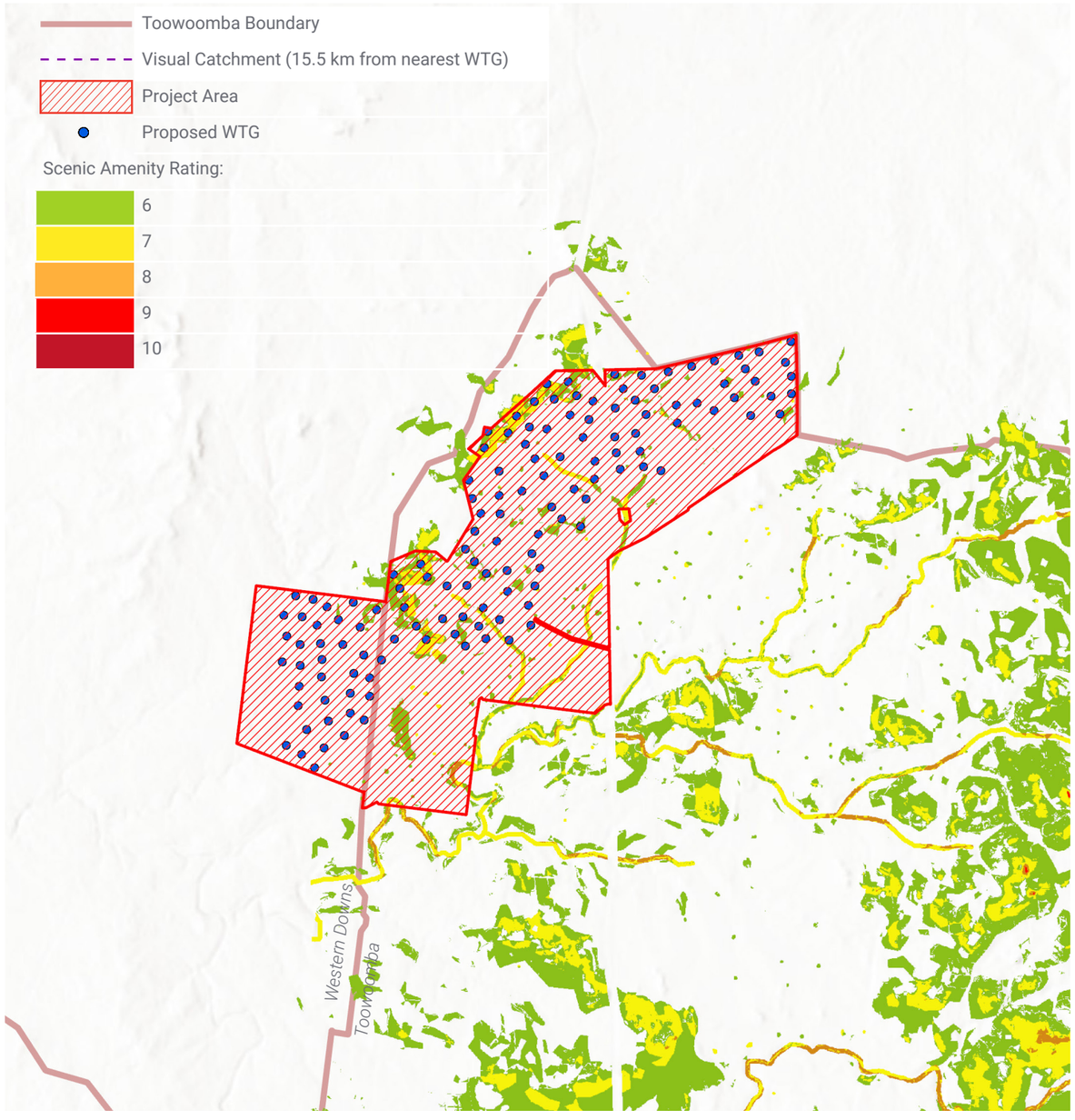


Figure 03 – Scenic Amenity Overlay Map - Toowoomba
Basemap Source: ArcGIS 2026

(b) Visual buffers between development and Scenic routes are maintained in 'Grazed Uplands' landscapes;
(c) Forest and woodland communities in 'Forested and Woodland Downs' landscapes are protected and enhanced;
(d) Visual buffers between development and Scenic Routes are maintained in 'Open Downs' landscapes

- *(2) - Development avoids, where practicable, or otherwise lessens, negative impacts on the visual significance of High Natural Landscape Value Areas identified on Strategic plan map 3 - community identity and landscape character*

A small portion in the south west and north west edges of the Study Area is identified as 'Forested Uplands' landscape types as outlined in the WDRPS (refer **Figure 04**).

Section 8.2.9 of the WDRPS outlines performance outcomes for developments identified on the Scenic Amenity Overlay Map. Performance Outcomes are addressed in **Section 6.6**.

A small portion of the Project Area, and approximately one third of the Study Area is identified as being of High Landscape Value in the Scenic Amenity Overlay Map and as such trigger requirements as per SC6.4 *WDRPS* (refer **Figure 05**).

The purpose of Planning Scheme Policy 3 – Landscape Character Analysis is to:

- *maintain and enhance scenic and landscape values of High Landscape Value areas;*
- *protect and maintain rural character and amenity; and*
- *maintain and enhance the rural town character and landscape setting of towns.*

Table 02 outlines the key landscape assessment requirements from the WDRPS Policy 3 and where they are addressed in this report.

	Requirement	Refer Section
HLV Areas	*Detail 1:* *Viewshed map, identifying significant viewpoints (scenic roads and lookouts, towns and public parks, National Parks and other sensitive receptors).*	Refer **Section 4.0** and **5.0**
	Detail 2: *Photographs, sight line sections including heights of existing screening vegetation, and a map or plan showing the proposed development in relation to ridges, peaks, escarpments, skyline features and watercourses.*	Refer **Section 5.0** and **6.0**
	Detail 3: *Landscape concept and intent plan (minimum scale 1:500, with contours, plant species, spacing and establishment) for screening vegetation or visual integration; plus Vegetation Management Plan for sites where any clearing is proposed*.	Refer **Section 11.0**
Forested Upland Areas	*Details 1 – 3, plus:* *Detail 4:* *Description of existing character of surrounding area, analysis of proposed built form scale and character (including earthworks and landscape) and their contrast or compatibility with existing scale, character and landscape; plus photomontage(s).*	Refer **Section 5.0, 6.0** and **8.0**
	Detail 7 *Analysis of built form massing (existing and proposed), its relationship to topography, vegetation and rural setting, and setbacks / buffers, as seen from roads.*	Refer **Section 6.0**

Table 02 – Key Landscape Assessment Requirements - WDRPS Policy 3

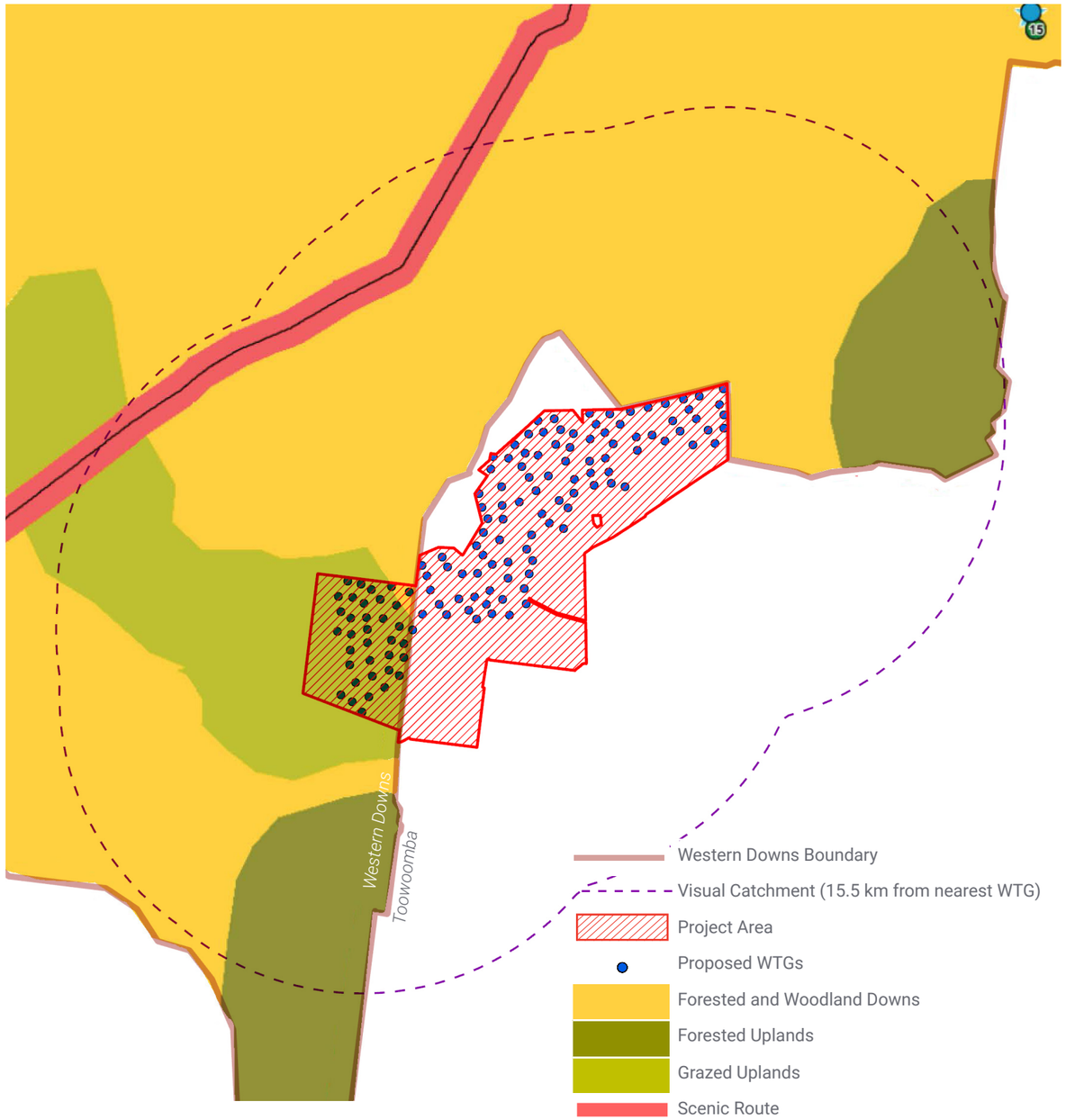


Figure 04 – Landscape Types - Western Downs
Basemap Source: Western Downs Regional Planning Scheme

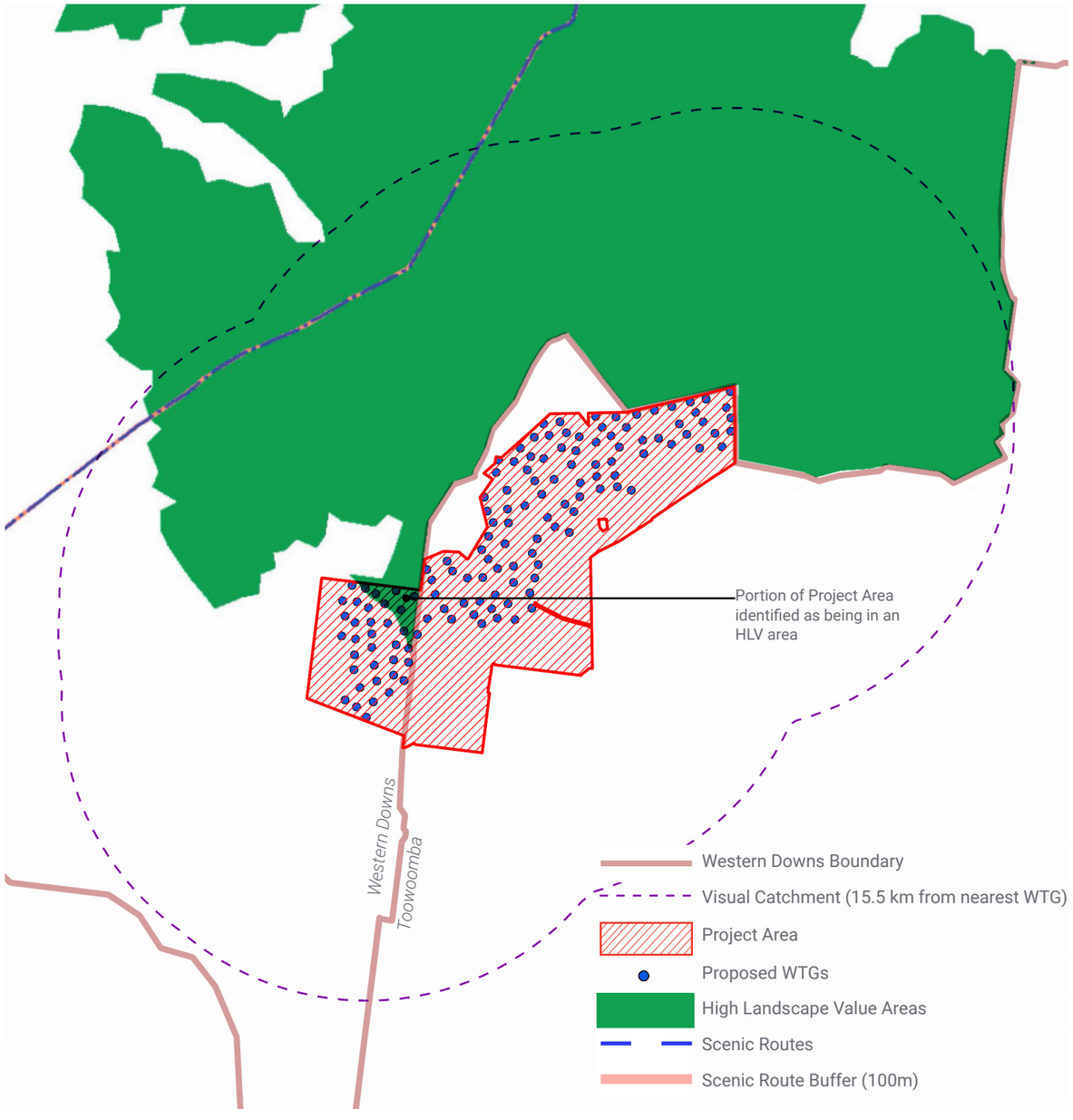


Figure 05 – Scenic Amenity Overlay Map - Western Downs
Basemap Source: Western Downs Regional Planning Scheme

2.3 Report Structure

Table 03 provides an outline of the report structure. Detailed methodologies for each part of the assessment have been included in the relevant chapters of the report.

Report Structure
Project Overview & Defining the Visual Catchment
• **Section 3.0** Project Overview • **Section 4.0** Defining the Visual Catchment
Landscape Character Analysis
• **Section 5.0** Landscape Character Analysis
Visual Impact Assessment
• **Section 6.0** Viewpoint Analysis • **Section 7.0** Photomontages • **Section 8.0** Shadow Flicker Assessment • **Section 9.0** Ancillary Infrastructure • **Section 10.0** Night Lighting
Response to Impacts
• **Section 11.0** Mitigation Measures • **Section 12.0** Summary

Table 03 – Report Structure

03 Project Overview

3.0 Project Overview

3.1 Regional Context

The Project is located on approximately 20,405.5 hectares (ha) of agricultural land, 50 km southwest of Dalby, Queensland and is surrounded to the north and west by the Kumbarilla State Forest and the Western Creek State Forest to the south (Refer to **Figure 01**). The northeast of the Project is situated within the Toowoomba Regional Local Government Area (LGA), and the Western Downs Regional LGA to the southwest of the Project. The Project is located within the Brigalow Belt Bioregion (See **Figure 06**), under the Inglewood Sandstones Subregion classification.

3.2 The Project Area & Project Layout

The Project Area is located southeast of Moonie Highway along Cecil Plains Moonie Road (Refer to Figure 01). The localised terrain consists of gentle undulations of sandstone and alluvial plains. The Project is surrounded by dense vegetation associated with the surrounding State Forests (Refer to **Image 15**).

The Project Layout will consist of up to 135 wind turbine generators (WTGs), with an anticipated maximum tip height of 260 m, as shown in **Figure 07.**

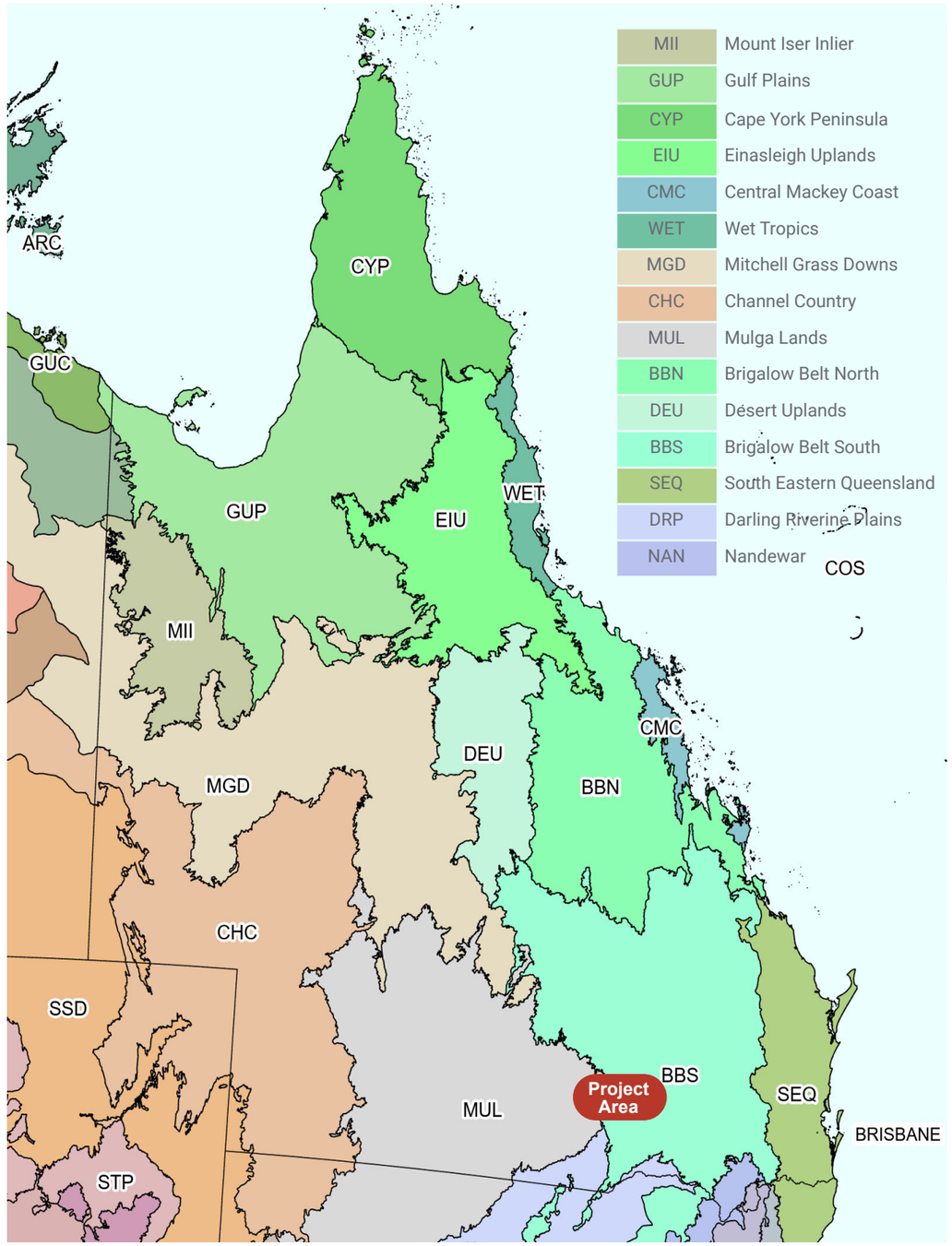
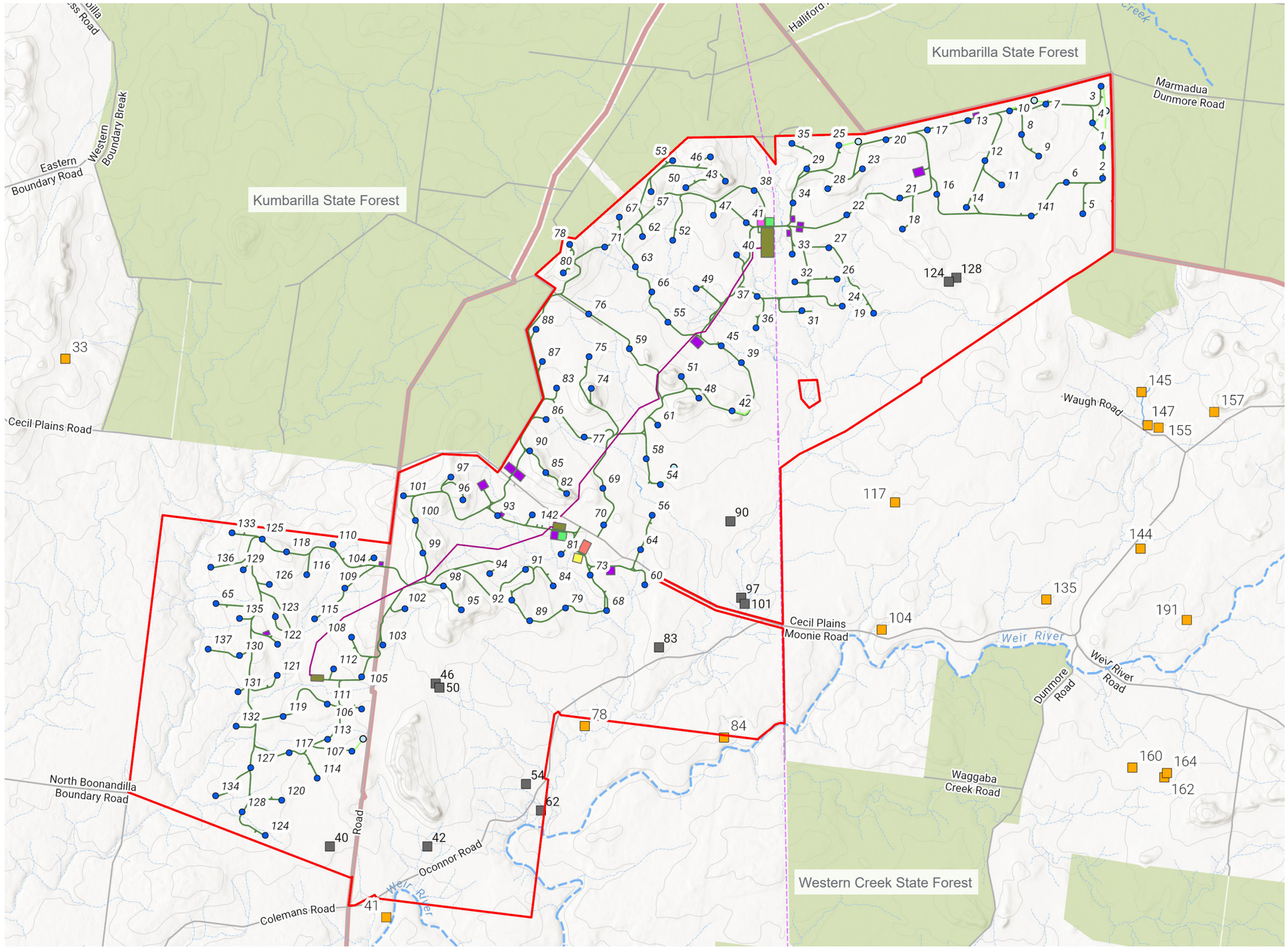


Figure 06 – Bioregion Location
Source: Adapted from IBRA 7.1



Project Layout

Refer to **Section 3.2**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Met Mast
- BESS
- Camp
- Compound
- Laydown
- O&M Compound
- Substation
- Internal roads
- Met Mast Power Supply
- Proposed internal 330 kV Transmission Line
- Contours
- State Forest
- Existing Transmission Line
- Highway
- Local Road

Watercourses

- Major - non perennial
- Minor - perennial
- Minor - non perennial

0 1 2 4 km

Figure 07 – Project Layout
Basemap Source: ESRI, 2026

3.3 The Project

The proposed development, referred to as 'the Project', consists of the construction, operation, maintenance, and decommissioning of up to 135 WTGs, Battery Energy Storage System (BESS) of up to 450 MW and ancillary infrastructure (supporting infrastructure).

The Project and components are presented in **Figure 07**. The following provides an overview of all aspects of the Project to be considered in this LVIA.

3.4 WTG Design

The proposed WTGs have a maximum blade tip height of 260 m. They will typically have:

- A 4-7 part tubular steel tower holding the nacelle;
- Three blades mounted to a rotor hub on a tubular steel tower, with a combined height of blade and tower limited to a maximum tip height of 260 m;
- A gearbox and generator assembly housed in a nacelle; and
- Adjacent hardstands for use as crane pads and assembly and laydown areas;

To best represent the worst-case scenario, this report uses the height of 270 m for modelling and visualisation purposes (refer to **Figure 08** & **Image 01**).

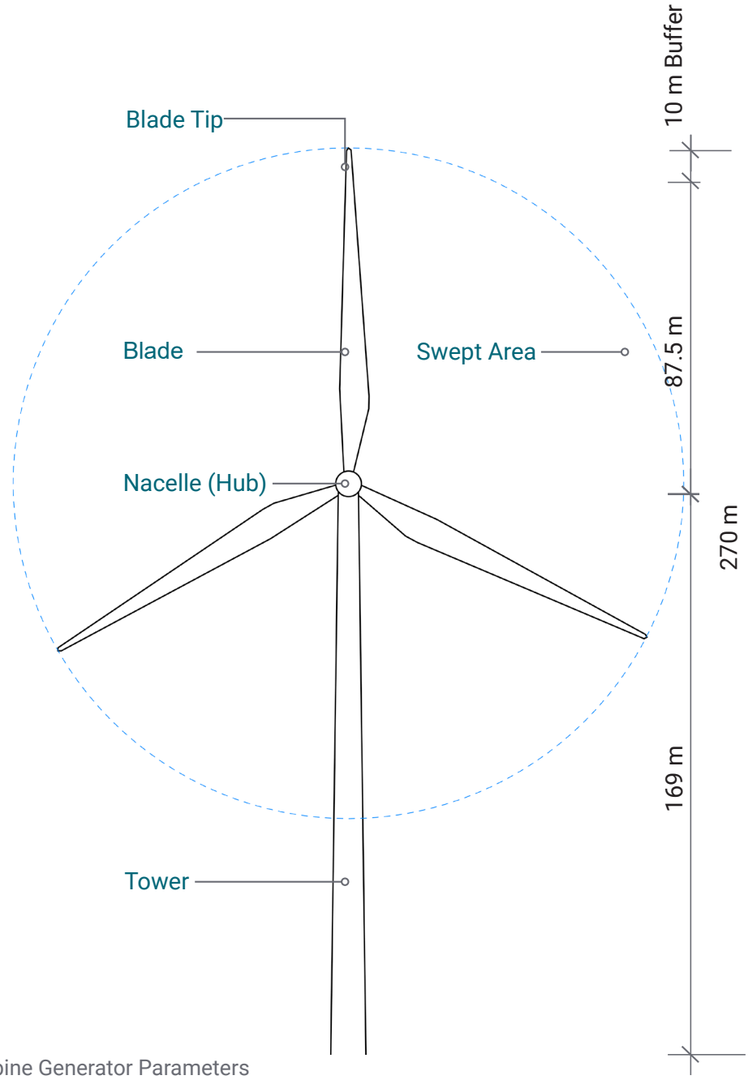


Figure 08 – Wind Turbine Generator Parameters

WTG Components		
Project Component	**Dimensions used in LVIA**	**Quantity**
Make / Model / Power	Nordex N175	135
Uppermost Blade Tip	270m	
Tower (hub) height	169 m	
Blade Length	87.5 m + 10m buffer	

Table 04 – WTG Dimensions for Visual Assessment

3.5 Ancillary Infrastructure

In addition to the WTGs, the following provides an overview of the permanent ancillary infrastructure components proposed for the Project, which may contribute to the Project's visual impact, consist of:

- WTG foundations, crane hardstands, crane boom laydown, blade laydown and rotor assembly area;
- Access tracks, including:
  - New and upgraded tracks within the Project Area, generally comprising of a nominal range of 5.5 m – 10 m wide permanent access track, and a maximum 50 - 95 m wide cleared corridor for Oversize Overmass (OSOM) vehicles;
- Low voltage (LV) and medium voltage (MV) underground cabling, as well as MV and high voltage (HV) overhead transmission lines;
- Internal collector substations;
- A switching station adjacent to the existing 330 kV Powerlink transmission line. This has been accounted for within the Disturbance Footprint, thereby allowing the clearing of the site to be assessed as part of the impacts associated with the Project (noting, however, that the switching station infrastructure will be constructed, owned and operated by Powerlink);
- Permanent meteorological masts;
- Construction compounds and laydown areas;
- Washdown areas;
- Operational and maintenance facilities; and
- A construction workers accommodation facility.

Further, there is the potential for the inclusion of the below infrastructure:

- Concrete batching plant
- Borrow pits; and
- Communications tower.

Section 10.0 of this report provides an overview of the assessment of the potential visual impacts resulting from the ancillary infrastructure.

Image 01 – Typical WTG

Image 03 – Typical Operations & Maintenance Facility

Image 05 – Typical Singular BESS Unit

Image 02 – Typical 33kV Transmission Line

Image 04 – Typical Monopole Transmission Tower

Image 06 – Typical Substation

04 Visual Catchment

4.0 Visual Catchment

4.1 Defining the Visual catchment

The visual catchment of the Project has been defined based on the parameters of the accepted extent of human vision, including the vertical field of view. To facilitate an objective assessment of visibility, the potential visual prominence of the Project is related to the distance from a receptor. Therefore, the extent of the Study Area is determined by the distance within which the proposed 260 m WTGs plus 10 m buffer, (**270 m** total) have the potential to be a significant object within the view (refer to **Table 04**).

4.1.1 Viewshed Calculation

Distance zones have been calculated using the parameters of the human eye and are based on the typical line of sight for a person standing at ground level (*Panero, J. & Zelnik, M., 1979)* Given the spatial arrangement and layout of the Project - the vertical field of view provides a basis for calculating the extent of the viewshed.

Figure 09 shows that generally, the vertical field of view for a person standing at ground level is between 10 - 15º. The theoretical extent of the viewshed is considered to be the distance at which the tallest component of the Project would take up less than 5% or 0.5º of the general 10º field of view.

It should be noted that this methodology for calculation considers the viewer to be in a static position. With an overall height of WTGs of up to 270 m, the distance would comprise 5% (0.5°) of the vertical field of view up to 30.9 km.

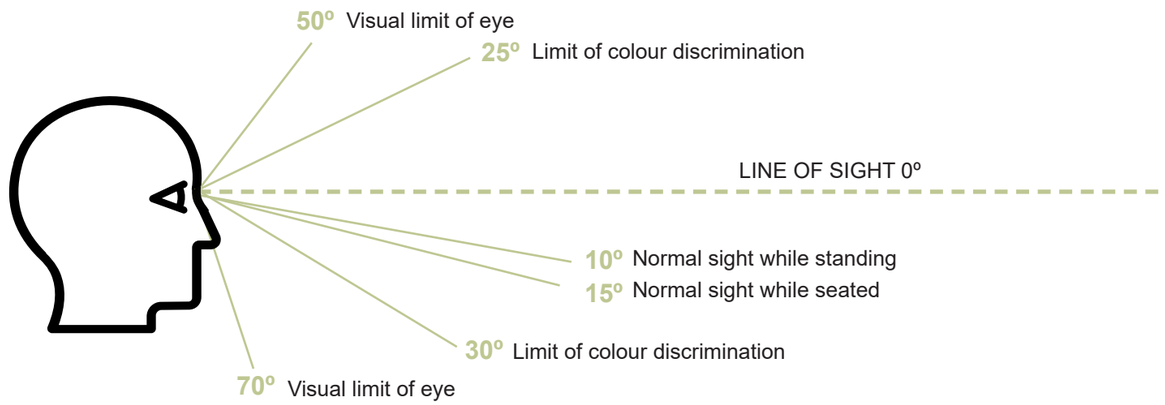


Figure 09 – Human Eye Vertical Line of Sight
Source: Torrejon et al. 2013; Panero & Zelnik 1979

4.1.2 Visual Prominence and Distance from the Wind Farm

The visual prominence of a WTG is not equal across an entire viewshed. The distance of a receptor to the closest WTG is a significant factor in determining the visual prominence of the Project. The NWFDG offer guidance based on previous studies undertaken when reviewing wind farm developments and the potential visual prominence.

Table 05 outlines the potential visual prominence of the Project regarding the distance between receptors and the WTGs for a 200 m WTG. The framework assists in determining the project-specific visual dominance magnitude lines outlined in Table 06**.**

Potential Visual Dominance	
Distance from WTG:	**Potential visual dominance:**
> 12 km	**Visually Insignificant** A very small element in the landscape which is difficult to discern and is likely to be indiscernible under poor weather conditions. Rotor blade movement is likely to be visible on a clear day.
6 - 12 km	**Potentially Noticeable but will not dominate the landscape** The development may be noticeable. The degree that it intrudes on the view will increase as distance decreases.
2.5 - 6 km	**Potentially Noticeable and can dominate the landscape** The development is likely to be highly noticeable, although the degree of visual intrusion will depend on the landscape setting, intervening elements and the extent of visibility.
1 - 2.5 km	**Highly Visible and will usually dominate the landscape** The development will be highly visible.
< 1 km	**Will always be visually dominant in the landscape** The development will be highly visible.

Table 05 – Potential Visual Dominance based on Distance and Viewshed
Source: EPHC, 2010

Assessment of the visual scale and prominence of WTGs over a range of distances establishes whether these objects will likely be dominant, noticeable, discernible or insignificant features within the viewshed. **Image 07** - **Image 10** illustrate the visual prominence of WTGs.

The relative visual prominence of WTGs is also based on the parameters of the human eye and the vertical angle of view. The theoretical dominance of an object in a view can be assumed. For example, if a receptor is closer to a WTG, the WTG will likely take up a greater vertical field of view for the receptor and **Table 05** demonstrate how increasing distance from a Project reduces the potential visual prominence and visibility.

Image 07 – WTGs located at 2 km
Highly visible and are dominant in scale relative to elements such as fence posts and vegetation visible in the foreground.

Image 08 – WTGs located at 4 km
Likely to diminish in scale relative to other elements such as fence posts and intervening vegetation in the foreground.

Image 09 – WTGs located at 6 km
Likely to be appear smaller in scale relative to vegetation and structures in the foreground.

Image 10 – WTGs located beyond 6 km
Likely to be visible and appear smaller in scale relative to vegetation and structures in the foreground and middleground.

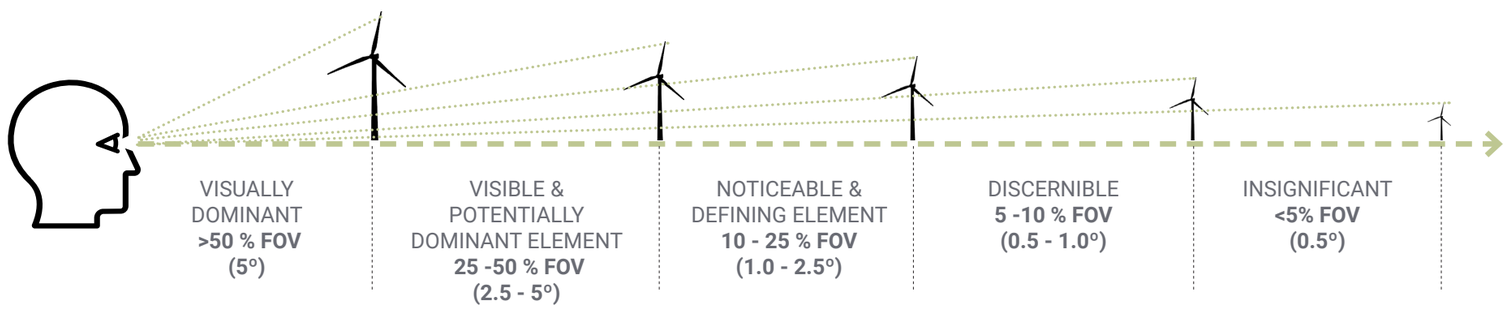


Figure 10 – Vertical Field of View and Potential Visual Dominance

Visual Dominance for the Project		
Visual Catchment (vertical angle of view)	**Distance from Receptor to WTGs**	**Potential Visual Dominance:**
0.5º (< 5% FOV)	**> 30.9 km**	**Insignificant** A small thin line in the landscape.
0.5 - 1.0º (5 - 10% FOV)	**15.5 - 30.9 km**	**Potentially noticeable but will not dominate the landscape** The Project may be noticeable. The degree that it intrudes on the view will be dependent on how well it integrates with the landscape setting.
1.0 - 2.5º (10 - 25% FOV)	**6.2 km - 15.5 km Min. Study Area Determination**	**Noticeable and potentially a visible element in the landscape** The degree that it intrudes on the view will be dependent on sensitivity of the viewer and the landscape.
2.5 - 5º (25 - 50% FOV)	**3.1 km - 6.2 km**	**Visible and potentially dominant** The development will be visible, although the degree of visual intrusion will depend on the landscape setting, intervening elements and the extent of visibility. It is likely that beyond 6.2 km the WTGs will diminish in scale relative to other elements in the fore and middleground such as fences, intervening structures such as sheds, vegetation, etc.
> 5º (> 50% FOV)	**< 3.1 km**	**Will always be visually dominant** The Project will always be a dominant element in the landscape, unless screened by intervening vegetation or structures.

Table 06 – Visual Dominance for the Project

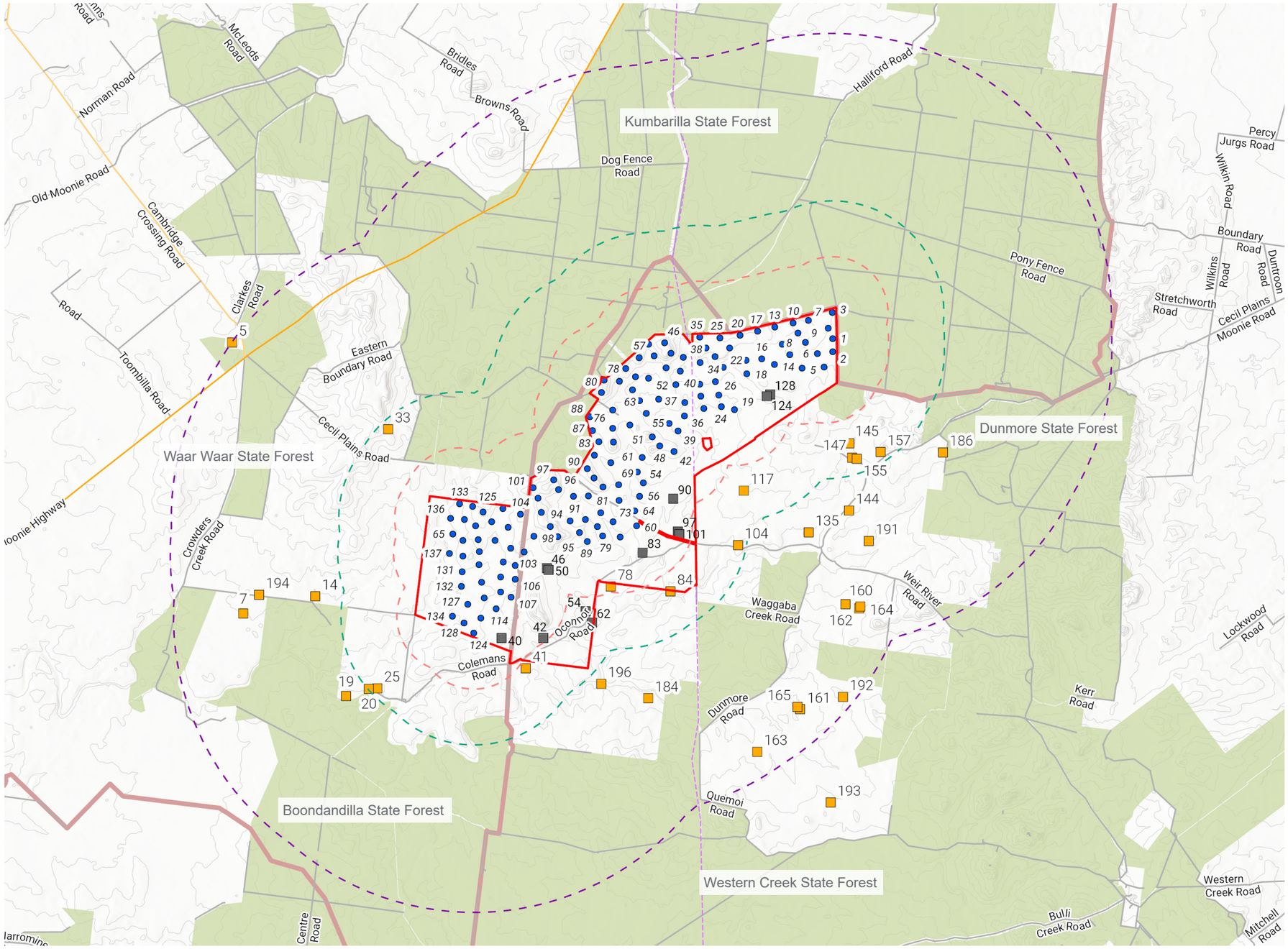
4.2 Visual Catchment & Study Area Thresholds

When measuring the visual dominance of the Project, WTGs within 6.2 km will be viewed as a new element in the landscape and potentially dominant.

It is likely that beyond 6.2 km, WTGs will diminish in scale and, when viewed in the background, will not visually dominate the landscape. Therefore, the Study Areas (refer to **Figure 11**) are determined to be:

- Landscape Character Assessment (**15.5 km** from nearest WTG); and
- Visual Impact Assessment (**6.2 km** from nearest WTG).

Visual impacts on viewpoints from a range of distances to the Project, 800 m to 21.7 km, have been assessed (refer **Section 6.0**) with consideration of their sensitivity; such as whether they are in HVL areas or a low-use road.



Study Area

Refer to **Section 4.2**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road
- State Forest
- Visual Catchment (15.5 km from WTGs)
- Visual Catchment (6.2 km from WTGs)
- Visual Catchment (3.1 km from WTGs)

Figure 11 – Study Area
Basemap Source: ESRI, 2026

4.3 Zone of Visual Influence

An initial visibility assessment was undertaken using Zone of Visual Influence (ZVI) mapping. This tool assists in defining the Project's 'Visual Catchment.'

The ZVI represents the area over which the Project can theoretically be viewed and is based on a Digital Terrain Model (DTM). The ZVI is a desktop tool intended to make fieldwork and assessment more efficient by excluding areas screened by topography. Fieldwork assessments are then undertaken predominantly within the areas with potential visual impacts.

The ZVI presents a bare-ground scenario—i.e., a landscape without screening, structures, or vegetation—and is usually on a base map (*Landscape Institute and Institute of Environmental Management & Assessment, 2013.)*. It is important to note that the ZVI is based solely on topographic information. This form of mapping is acknowledged as providing a worst-case scenario and is used purely as a desktop assessment tool to determine areas for detailed assessment.

Parameters used:

- Offset A: Human eye height - 1.5 m;
- Offset B: Maximum WTG tip height - 270 m;
- DTM: 30 m Shuttle Radar Topography Mission Digital Elevation Model;
- Resolution: 1 arc-second; and
- Source: NASA, distributed by Geoscience Australia.

The assessment of the ZVI considers 15.5 km from the Project.

4.4 Zone of Visual Influence Summary

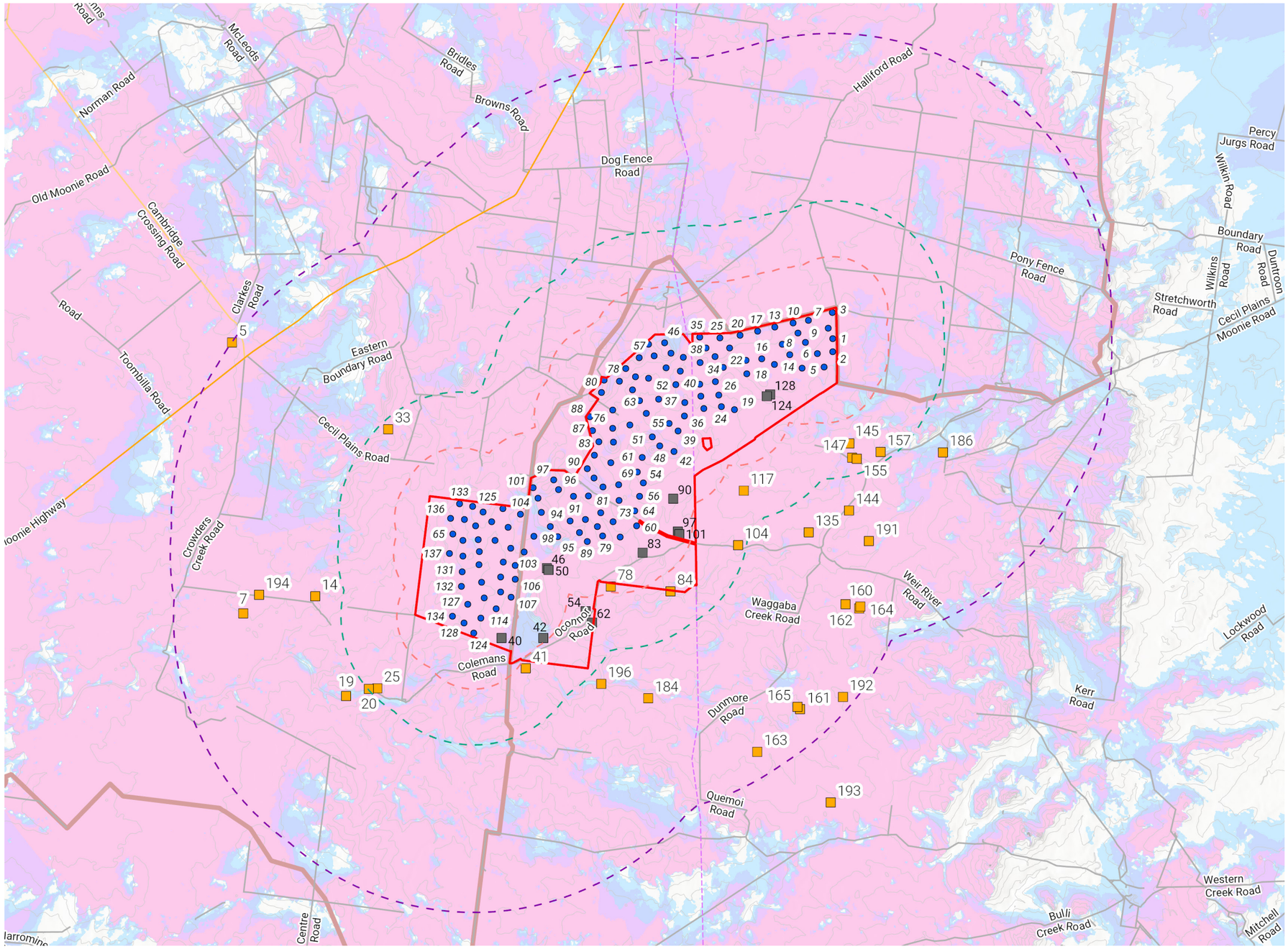
A WTG with a blade tip height of 270 m has been considered to provide a worst case scenario. The ZVI diagrams have been determined using Digital Topographic Modelling (DTM) and 3D modelling software, 'ArcGIS'.

Summary of Findings:

- Based on topography alone, due to the gently undulating terrain within the Study Area, the Project will be visible to the immediate surroundings, with visibility decreasing as you move beyond the Study Area to the east. It is to be noted that large areas within the Study Area are State Forests, consisting of established productive native forests that will likely screen-open views towards the Project and will be assessed further in the report;
- The ZVI indicates that non-associated dwellings have the potential to view the majority of the project due to the generally flat to undulating topography; and
- Reduced visibility is demonstrated along the lower terrain aligning rivers and creek lines—identified as Weir River and Tinkers and Western Creeks to the south, Jib and Waggaba Creeks to the east, Crowder Creek to the west, and Dunmore Creek to the north.

The ZVI has been used to identify areas of potentially high visibility, which informs fieldwork ground truthing to identify locations that require further assessments.

It is noted that existing screening, including structures or vegetation, has not been considered in the preparation of the ZVIs. Further assessment and fieldwork ground-truthing is required to determine the potential visual impacts with consideration to existing screen factors.



Zone of Visual Influence

Refer to **Section 4.3**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road
- Visual Catchment (15.5 km from WTGs)
- Visual Catchment (6.2 km from WTGs)
- Visual Catchment (3.1 km from WTGs)

ZVI LEGEND

- 1 - 25% (Up to 33 WTGs)
- 26 - 50% (34 - 69 WTGs)
- 51 - 75% (70 - 101 WTGs)
- 76 - 100% (102 - 135 WTGs)

NOTE

ZVI is an assessment tool that represents a bare ground scenario - i.e.. a landscape without screening, structures or vegetation. It is important to note the map is based solely on topographic information. Therefore this form of mapping should be acknowledged as representing the worst case scenario.

0 2 4 8 km

Figure 12 – Zone of Visual Influence

Basemap Source: ESRI, 2026

05 Existing Landscape Character

5.0 Existing Landscape Character

5.1 Existing Landscape Character Analysis

The Landscape Character Analysis aims to establish the existing landscape and visual conditions through descriptions, mapping and photographic representations. The Study Method for undertaking the Landscape Character Analysis has been established in accordance with the *State Code 23: Wind Farm Development* (2025) and the *GLVIA* (2018) where relevant and conjunction with previous experience on large scale wind energy projects.

5.2 Regional Landscape Character

5.2.1 Bioregion Context

The Project is located within the 'Brigalow Belt Bioregion', *a large area in Queensland and New South Wales. It consists of predominantly basalt and quartz landscapes where most of the bioregion has been cleared (DCCEW, 2024)*. A range of subregions within the Brigalow Belt are located surrounding the Study Area and include:

- Inglewood Sandstones;
- Moonie. R Commoron Creek Floodout; and
- Eastern Darling Downs.

(See **Figure 13**).

5.2.2 Inglewood Sandstones

The Project is located within this subregion, consisting of '*undulating to low hilly country on deeply weathered and lateritised Jurassic–Cretaceous sandstone with associated colluvial lower slopes and alluvial plains with the dominant vegetation types including narrow–leaved ironbark on hillsides, cypress pine and bulloak on solodic soils in gently undulating parts and poplar box on lower slopes and flats. There are also minor areas of brigalow– belah' (DCCEW, 2024).*

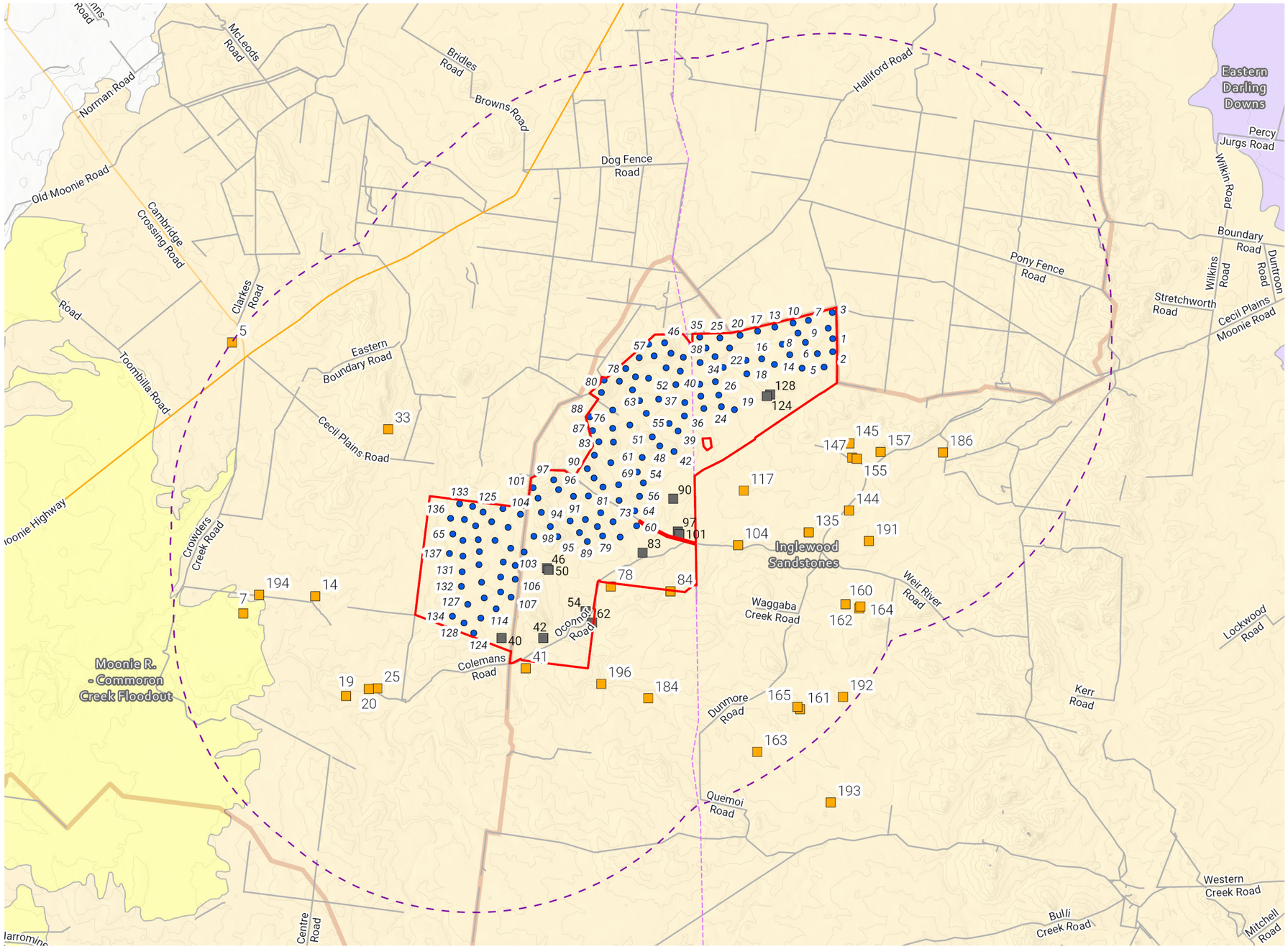
5.2.3 Moonie R. Commoron Creek Floodout

The southwest of the Project is located within the Moonie R. Commoron Creek Floodout Subregion, occuring on *'level to gently undulating country on Quaternary alluvium derived from sandstone to east, and overlying the Griman Creek Formation. These are also areas of partly consolidated Tertiary alluvial deposits. Soils include grey clays, brown clay loams, sandy solodics and solodised solonetz. The major vegetation types include brigalow and/or belah open forest often with molly box and narrow–leaved ironbark cypress pine open forest/woodland' (DCCEW, 2024).*

5.2.4 Eastern Darling Downs

This subregion is located northeast of the Project, it '*comprises spurs and foothills of Main Range along eastern boundary of bioregion, low hills in the south and the Condamine River plain in the central and western parts. Substrates include Tertiary basalt in the extreme east, Jurassic sediments in the south–east, Triassic — Jurassic sediments in the north–east and alluvial soils of varying age along the Condamine River plain. The basalt vegetation communities are predominantly woodlands of narrow–leaved ironbark , yellow box, forest red gum ' (DCCEW, 2024).*

Image 11 – Typical vegetation of the Inglewood Sandstones subregion



Subregions

Refer to **Section 5.2**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road
- Visual Catchment (15.5 km from WTGs)
- Eastern Darling Downs
- Inglewood Sandstones
- Moonie R. - Commoron Creek Floodout

0 2 4 8 km

Figure 13 – Subregionss

Basemap Source: ESRI, 2026

5.3 Land Use

As shown in **Figure 14**, land use within the Study Area is predominately productive State Forests surrounding the Project, consisting of established native vegetation. Other land uses defined by land use mapping produced by the Queensland Government *(QSpatial, 2024)* predominantly comprise:

- Grazing Native Vegetation;
- Production Native Forests;
- Cropping;
- Grazing Irrigated Modified Pastures;
- Mining; and
- Reservoir / Dams.

5.4 Land Zoning

As shown in **Figure 15**, land within the Study Area is predominately zoned as Rural and Open Space.

5.4.1 Rural

Land within this zone is primarily used for rural production activities that occur across both open farmland and larger agricultural buildings. The zone generally protects land parcels of sufficient scale to sustain viable rural operations. Other uses that support primary production such as storage, processing, and packaging facilities, and compatible uses that reinforce the rural character, such as small-scale hospitality venues, may also be present.

5.4.2 Open Space

Land within this zone is designated for public recreation, including parks and reserves. The character and level of development within these areas vary according to their intended function and catchment. Larger district or regional parks generally incorporate a broader range of infrastructure, including car parking, lighting, walking tracks, amenities buildings, and organised recreational spaces.

Land Use

Refer to **Section 5.3**
LEGEND

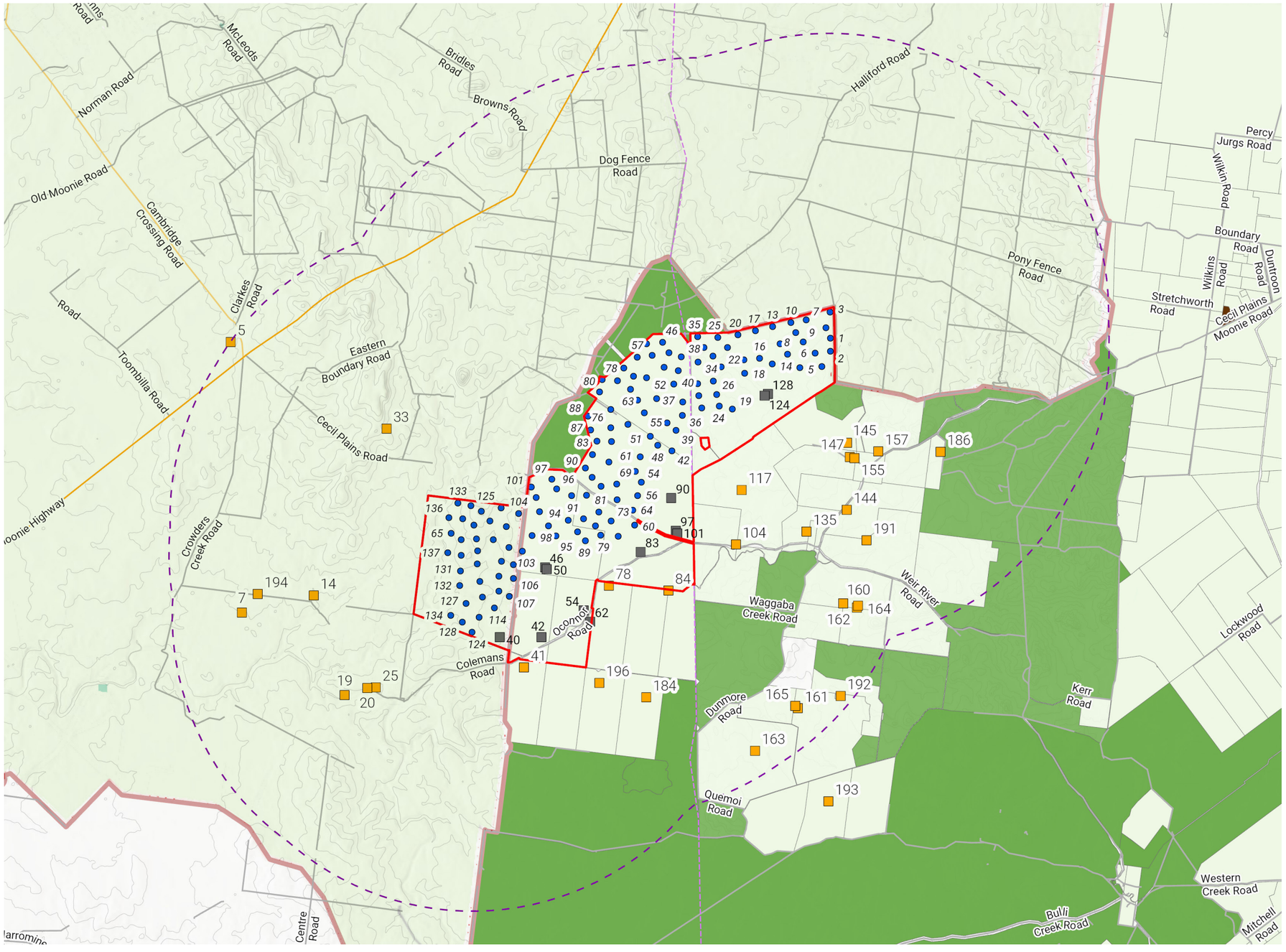
- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road
- Visual Catchment (15.5 km from WTGs)

Land Use

- Cropping
- Grazing irrigated modified pastures
- Grazing modified pastures
- Grazing native vegetation
- Intensive animal production
- Irrigated cropping
- Managed resource protection
- Manufacturing and industrial
- Marsh/wetland
- Mining
- Nature conservation
- Other minimal use
- Perennial horticulture
- Production native forests
- Reservoir/dam

0 2 4 8 km

Figure 14 – Land Use
Basemap Source: ESRI, 2026



Land Zoning

Refer to **Section 5.3**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road
- Visual Catchment (15.5 km from WTGs)

Land Zoning

- Rural
- Open Space
- Extractive Industry

Figure 15 – Land Zoning
Basemap Source: ESRI, 2026

5.5 Key Landscape Features

5.5.1 Topographic & Hydrological Character

The Study Area is generally on relatively flat terrain, surrounded by intermittent ridge lines, with the broader landscape characterised by gently undulating plains. Notable topographic features include Captain's Mountain, located approximately 45 km southeast of the Project, which reaches an altitude of 614 meters (**Image 12**).

Hydrologically, the area is part of the Border Rivers - Moonie Catchment. The primary watercourse, the Weir River, flows south of the Project and is connected to a network of creek lines, including Cattle Creek within the Project Area, as well as Wilkie Creek to the northeast, and several other creeks (Western, Tinkers, Jib, Waggaba, and Andys Downfall) to the south, and Martins Mistake and Finch Creeks to the north. The region experiences intermittent flooding (see **Figure 16**).

5.5.2 Vegetation Character & State Forests

The Study Area is characterised by semi-arid woodlands and wetland environments. Key vegetation types include narrow-leaved ironbark on hillsides, Cypress Pine and Bullock on sodic soils, Poplar Box on lower slopes and flats, and smaller areas of brigalow and belah. The region features various wetlands, including artificial and highly modified Lacustrine, Palustrine, and Riverine types. Lake Broadwater is located approximately 25km northeast of the Project area listed as a nationally important wetland in the Directory of Important Wetlands Australia (**Image 13**).

The predominant vegetation feature within the Study Area is the State Forests including the Kumbarilla, Western Creek, Dunmore, Boondandilla and Waar Waar State Forests (see **Figure 16**). These State Forests surround the Project Area and present a varied mixture of established open woodlands and dense forested regions (**Image 15**). These forests are primarily used for grazing native vegetation and production forestry uses.

The state forests generally host a combination of both intact native vegetation communities but largely younger pockets of degraded forest cleared intermittently for forest harvesting (see **Image 14).**

Image 12 – Captain's Mountain, from Captain's Mountain Lookout, Millmerran

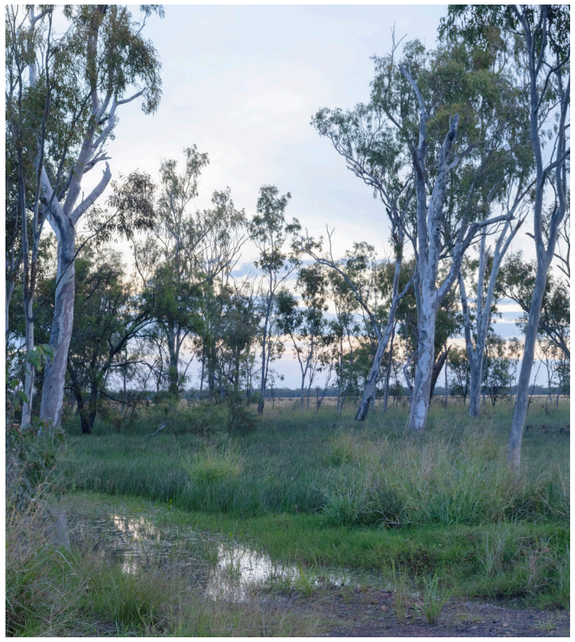


Image 13 – Vegetation Character outside Lake Broadwater DIWA Wetland

Image 14 – Signage for forestry production in Western Creek State Forest

5.5.3 Roads

Moonie Highway is located north and west of the Study Area, connecting the towns of Moonie to the southwest of the Project and Dalby to the northeast (see **Figure 16**).

Cecil Plains, Halliford and Marmadua Dunmore Roads are key roads to the north and west. Cecil Plains Moonie Road traverses through the Study Area toward the west. Boondandilla Road is the closest accessible road to the south of the Project. The majority of roads within the Study Area are low-use unsealed roads, providing access to rural properties within the region.

The state forests host a series of unsealed, 4WD accessible-only trails, with many connecting to private properties.

5.5.4 Towns

There are no townships within the extent of the Study Area. Dalby is the closest major town to the Project Area. It is located approximately 47 km northeast and has a population of 12,758 people (ABS, 2021).

Cecil Plains (See **Image 16**) is the closest town to the Project, located 26km east of the Project Area within the Toowoomba Regional LGA. Its population is 380 (ABS, 2021).

Moonie is located approximately 30km west of the Project and has a population of 182 (ABS, 2021).

Milmerran is approximately 46 km southeast of the Project within the Toowoomba Regional LGA. Its population is 1,545 (ABS, 2021).

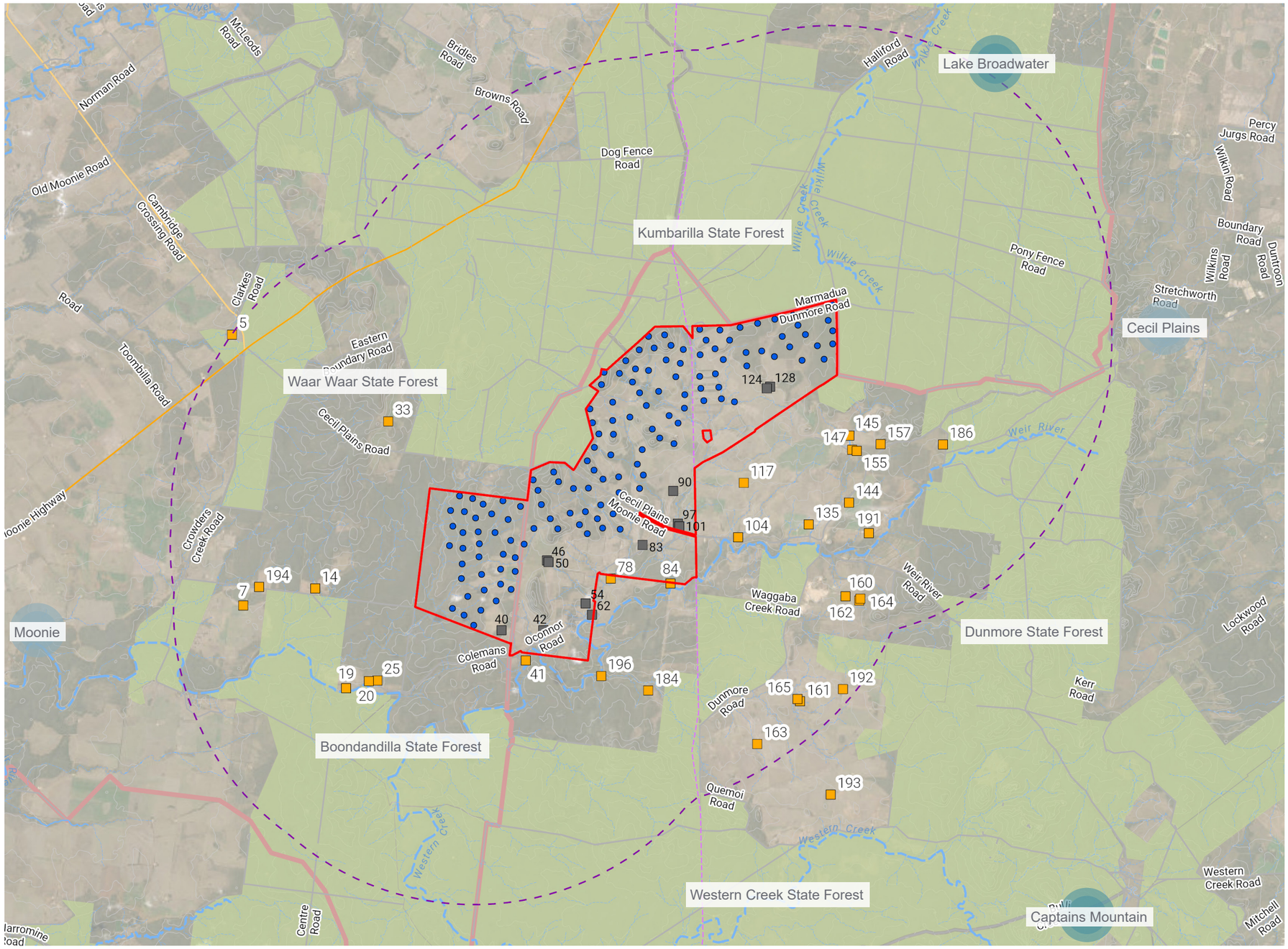
Captain's Mountain is located 42 km south of the Project and has a population of 74 (ABS, 2021).

Image 15 – Boondandilla State Forest Character to the south of the Project Area

Image 16 – Cecil Plains Character

Key Landscape Features

Refer to Section 5.5



LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road

Watercourses

- Major - non perennial
- Minor - perennial
- Minor - non perennial
- State Forest
- Visual Catchment (15.5 km from WTGs)

0 2 4 8 km

Figure 16 – Key Landscape Features

Basemap Source: ESRI, 2026

5.6 Landscape Character Units (LCUs)

Landscape Character Units refer *to areas of homogeneous patterns of visual, physical, environmental and cultural characteristics such as landform, vegetation, water form and land use, as well as individual features (NWFDG, 2010).*

Due to the large scale of the Study Area and varying landscape character, it has been categorised into three (3) Landscape Character Units (LCU) to assist in the assessment. The LCUs are classified by slight variations in the landscape's geology, topography, land use and vegetation, which create distinct character areas within the Study Area. A combination of land use patterns, vegetation coverage, topographical maps, site images and site inspection has informed the extent of LCUs.

The general extent of the LCUs is shown in **Figure 17**, and a detailed description has been provided for each LCU.

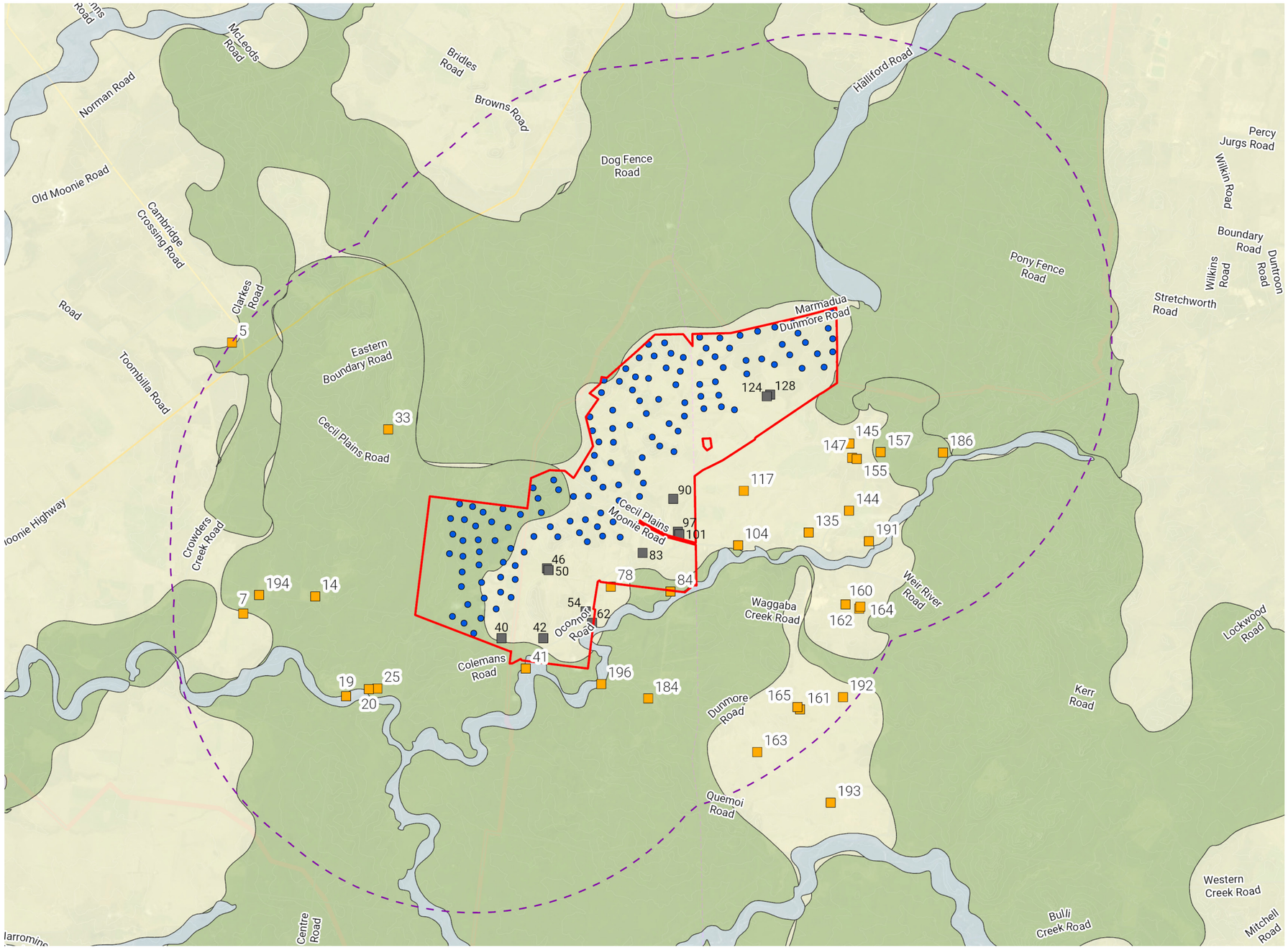
A Frame of Reference (refer to **Table 07**) has been formulated by Moir Studio utilising an approach by Natural England (Tudor & Natural England, 2019). Each category in the Frame of Reference has been quantified to determine Low, Moderate-Low, Moderate or High Scenic Quality Ratings. This approach has been applied to each LCU to determine the level of Scenic Quality.

In contrast to the Frame of Reference, the nomination of HLV and Scenic Amenity Overlay areas have been determined by factors such as ecological value, landscape function, landform sensitivity, and regional planning importance, rather than visual amenity alone. As such, HLV areas have been considered in the Visual Sensitivity ratings of viewpoints in the Viewpoint Analysis in **Section 6.0** but do not inform the Scenic Quality ratings of the LCUs.

The Frame of Reference finds that LCUs within the Study Area exhibit Moderate-Low and Low Scenic Quality due to modified land, lack of prominent landforms, extensive vegetation fragmentation, and limited public access.

SCENIC QUALITY FRAME OF REFERENCE		
CATEGORY	**RATING**	
	LOW	**MODERATE** / **HIGH**
LANDFORMS	• *Flat topography* • *Absence of landscape features* • *Open, broad extents of spaces*	• *Diversity in topographical range* • *Unique landscape features* • *Intimate spaces*
WATERFORM	• *Absence of water*	• *Presence of water* • *Visually prominent lakes, reservoirs, rivers streams and swamps.*
VEGETATION	• *Absence of vegetation* • *Lack of diversity* • *Land cleared of endemic vegetation* • *Low level of connection between vegetation and landscape / topography*	• *Abundant vegetation* • *High diversity* • *High retention of endemic vegetation* • *High level of connectivity between natural landscape and landforms*
HUMAN INFLUENCE	• *High population* • *High density in settlement* • *High presence of infrastructure* • *High levels of landscape modification*	• *Low / dispersed population* • *No settlement* • *Absence of infrastructure* • *Landscape in natural state*
ACTIVITY	• *High levels of traffic movement* • *Presence of freight and passenger transport networks* • *Presence of production or industry*	• *Low traffic movement* • *Absence of freight and passenger transport* • *Absence of production or industry*
RARITY	• *Typical landscape within a local and regional context*	• *Unique combination of landscape features in a local and regional context*
RELATIONSHIP WITH ADJOINING LANDSCAPES	• *Low visible connection with adjoining landscapes* • *Low variability between adjoining landscapes* • *Landscape features do not contribute to amenity from adjoining landscapes*	• *High visibility with adjoining landscapes* • *High variability and contrast with adjoining landscapes* • *Landscape features contribute significantly to amenity of adjoining landscapes*

Table 07 – Scenic Quality Frame of Reference



Landscape Character Units

Refer to **Section 5.6**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Connector Road
- Highway
- Local Road
- Visual Catchment (15.5 km from WTGs)
- LCU01 Watercourses
- LCU02 State Forests
- LCU03 Agricultural Pastures

Figure 17 – Landscape Character Units
Basemap Source: ESRI, 2026

5.6.1 LCU01 Watercourses

This LCU consists of the areas surrounding the major watercourses surrounding the Project. The Weir River is the primary watercourse located to the south of the Project, linked to a series of adjoining intermittent creek lines. These waterways are part of the 'Border Rivers—Moonie Catchment' and the broader Murray Darling Basin and are degraded in places due to agricultural practices.

A significant portion of the LCU is identified as having a Scenic Amenity rating of 6 - 7 in the TRPS; however, due to the flat topography, lack of distinct waterbodies, presence of agriculture and industry, and the ephemeral, seasonal nature of these watercourses, the Scenic Quality of this LCU has been rated as Moderate-Low.

Image 18 – Riparian corridor typical of this LCU

Image 17 – Weir River

LANDSCAPE CHARACTER UNIT	KEY LANDSCAPE FEATURES (dominate features within this zone)	KEY VIEWPOINTS		Application of Scenic Quality Rating Frame of Reference							SCENIC QUALITY RATING
				Landform	Waterforms	Vegetation	Human Influence	Activity	Rarity	Relationship with Adjoining Landscapes	
LCU01 - Waterbodies	Weir River Cattle Creek Wilkie Creek Western Creek	Cattle Creek	H M L								MODERATE - LOW

Table 08 – LCU01 Watercourses

5.6.2 LCU02 State Forests and Vegetated Flats

This LCU consists of the Kumbarilla, Boondandilla, Western Creek and Dunmore State Forests, located within the Visual Catchment. The state forests are predominantly used for grazing native vegetation and production native forests. The land is modified and logged intermittently, with endemic native woodlands interspersed throughout the area. The prime native vegetation communities are associated with the Inglewood Sandstones Subregion.

A significant portion of the LCU is identified as High Landscape Value (HLV) in the WDRPS, and having a high Scenic Amenity rating in the TRPS; however, given the modified land use, presence of production and industry through logging, flat topography and low presence of distinct waterbodies, this LCU has been rated as having Moderate-Low scenic quality.

Image 20 – View of Boondandilla State Forest to the south

Image 19 – Views west of Weir River Road within Dunmore State Forest

LANDSCAPE CHARACTER UNIT	KEY LANDSCAPE FEATURES (dominate features within this zone)	KEY VIEWPOINTS		Application of Scenic Quality Rating Frame of Reference							SCENIC QUALITY RATING
				Landform	Waterforms	Vegetation	Human Influence	Activity	Rarity	Relationship with Adjoining Landscapes	
LCU02 - State Forests and Vegetated Flats	Kumbarilla State Forest Boondandilla State Forest Dunmore State Forest Western Creek State Forest	Cecil Plain Road Weir River Road	H M L								MODERATE - LOW

Table 09 – LCU02 State Forests and Vegetated Flats

5.6.3 LCU03 Agricultural Pastures

The Project is located within this LCU. The land use within this LCU includes farmland cleared for use of grazing and cropping. Land within this LCU has been highly modified. Vegetation within the LCU consists of boundary and fence line vegetation. The LCU is prone to flooding with ephemeral water bodies forming during periods of rain.

Image 22 – Floodplains and Cropping

Image 21 – Viewing agricultural pastures from Cecil Plains Moonie Road

LANDSCAPE CHARACTER UNIT	KEY LANDSCAPE FEATURES (dominate features within this zone)	KEY VIEWPOINTS		Application of Scenic Quality Rating Frame of Reference							SCENIC QUALITY RATING
				Landform	Waterforms	Vegetation	Human Influence	Activity	Rarity	Relationship with Adjoining Landscapes	
LCU03 - Agricultural Pastures	Modified Pastures Farmland Crops Marsh / Wetlands	VP02 VP13	H M L								LOW

Table 10 – LCU03 Agricultural Pastures

06 Viewpoint Analysis

6.0 Viewpoint Analysis

6.1 Viewpoint Analysis Methodology

The viewpoint analysis considers the likely visual impacts of the Proposal on the existing landscape character and visual amenity by selecting prominent sites, otherwise referred to as viewpoints.

Once the viewpoints have been selected, panoramic photographs are taken on a level tripod at a height of 150cm (to represent eye level). Photographs were taken with a Canon EOS R5 Mirrorless Camera through a 50mm fixed-focal lens, which closely represents the central field of vision of the human eye.

To ensure accuracy, the viewpoints' visual impact and topographic and aerial information are assessed on-site. The potential visual impacts are analysed for each viewpoint through a combination of 3D terrain modelling, topographic maps, and on-site analysis. Viewpoint photographs and analysis have been included in the following pages. The findings of the viewpoint analysis have been quantified and are summarised in **Table 12**.

6.2 Viewpoint Selection Process

Figure 19 identifies the locations of the viewpoints. Topographical maps, fieldwork observations, and other relevant influences, such as access, landscape character, and the popularity of vantage points, have informed the selection of the viewpoints.

14 viewpoints were selected from publicly accessible locations to represent a range of views surrounding the Project Area.

Viewpoints are selected to illustrate a combination of the following:

- Areas of high landscape or scenic value;
- Visual composition (e.g. focused or panoramic views, simple or complex landscape patterns);
- Range of distances;
- Varying aspects;
- Various elevations;
- Various extents of development visibility (full and partial visibility); and
- Views from major routes.

6.3 Viewpoint Analysis Methodology

The potential visual impact of the Project is then assessed based on the relationship between the visual sensitivity (refer to **Section 6.3.1**) and visual magnitude (refer to **Section 6.3.2**).

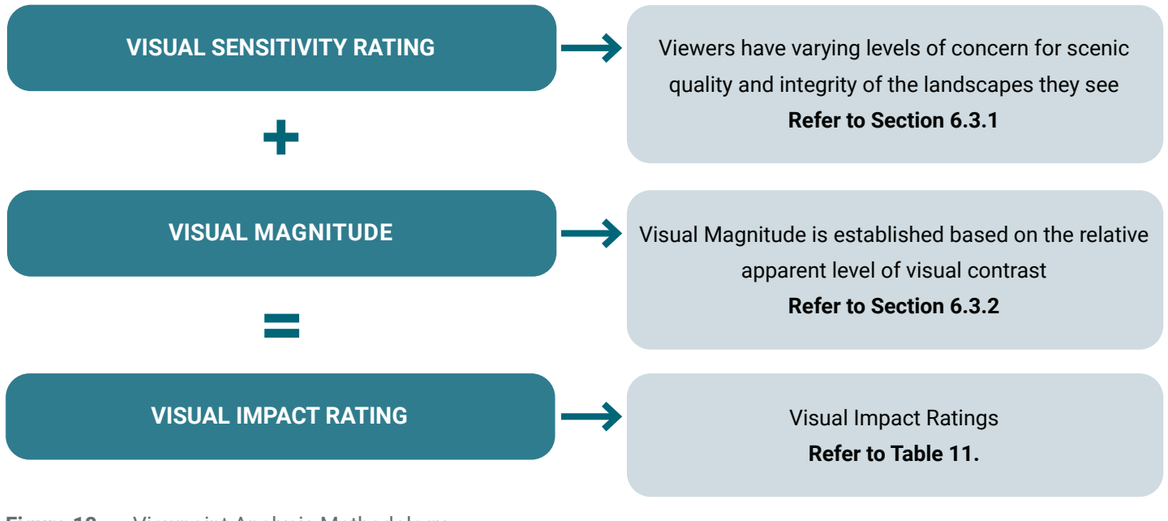


Figure 18 – Viewpoint Analysis Methodology

6.3.1 Visual Sensitivity

Visual sensitivity measures how critically people from different areas view a change to the existing landscape. The assessment is based on the number of people affected, land use, and the viewer's distance from the proposal. As Section 5.6 outlines, the scenic quality of the receptor has also been considered when determining the visual sensitivity.

For example, a significant change not frequently seen may result in low visual sensitivity, although its impact on a landscape may be high. Generally, the following principles apply:

- Visual sensitivity decreases as the viewing time decreases;
- Visual sensitivity decreases as the number of potential viewers decreases; and
- Visual sensitivity can also be related to viewer activity (e.g. a person viewing an affected site whilst engaged in recreational activities will be more strongly affected by change than someone passing a scene in a car travelling to a desired destination).

6.3.2 Visual Magnitude

Visual magnitude refers to the extent of change that receptors will experience. The objective ways of measuring and assessing the magnitude of change are determined by the combination of these factors identified below. These factors include:

- **size and scale** - including the extent of existing landscape elements that may be lost and the contribution of that element to the character of the landscape;
- the **extent** to which the development becomes a minor or major element in the landscape and its **dominance** in the visual catchment;
- the extent to which the development changes the key characteristics of the landscape, which are critical to its distinctive character;
- the geographic area of the landscape over which the effects will be experienced. This could vary from the immediate setting of the development to larger scales where the development may influence several landscape character units;
- the **duration** and **reversibility** of the effects on the landscape; and/or
- the level of **contrast** and **compatibility**

6.3.3 Visual Impact

Visual Impact refers to the change in the landscape appearance due to the Proposal. Visual impact is the combined effect of visual sensitivity and magnitude (refer to **Table 11**).

This process involves a qualitative assessment of the conclusions of visual impact ratings for each viewpoint. The analysis considers other relevant influencing factors that are not easily addressed through the quantitative analysis.

Visual Impact				
		SENSITIVITY		
		LOW	MODERATE	HIGH
MAGNITUDE	HIGH	MODERATE	HIGH-MODERATE	HIGH
	MODERATE	MODERATE-LOW	MODERATE	HIGH-MODERATE
	LOW	LOW	MODERATE-LOW	MODERATE
	NEGLIGIBLE	NEGLIGIBLE		

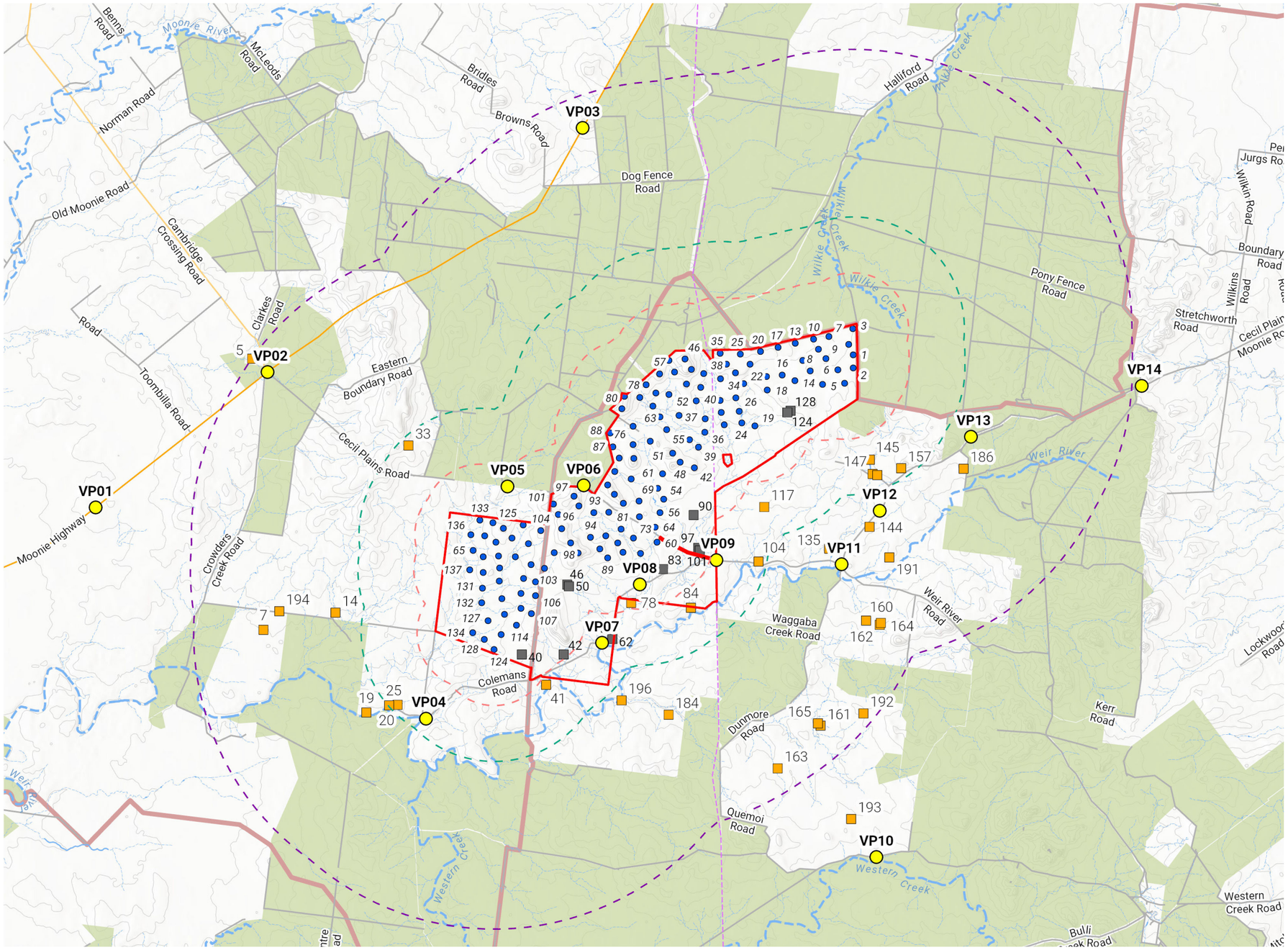
Table 11 – Visual Impact Rating

6.4 Summary of Viewpoint Analysis

The results of the Viewpoint Analysis are summarised in **Table 12**. Further justification and photographic panoramas are included for each viewpoint on following pages.

Results of the Viewpoint Analysis					
Viewpoint	**Location**	**Distance to Nearest WTG**	**Visual Sensitivity**	**Visual Magnitude**	**Visual Impact Rating**
VP01	Moonie Highway, Moonie	20.8 km	MODERATE	NEGLIGIBLE	**NEGLIGIBLE**
VP02	Cecil Plains Road, Weir River	14.3 km	MODERATE	NEGLIGIBLE	**NEGLIGIBLE**
VP03	Moonie Highway, Halliford	13.7 km	MODERATE	NEGLIGIBLE	**NEGLIGIBLE**
VP04	Colemans Road, Weir River	5 km	LOW	LOW	**LOW**
VP05	Cecil Plains Road, Marmadua	2.17 km	MODERATE	LOW	**MODERATE-LOW**
VP06a/b	Cecil Plains Moonie Road, Cattle Creek	0.8 km	LOW	HIGH	**MODERATE**
VP07	O'Connor Road, Cattle Creek	4 km	LOW	MODERATE	**MODERATE-LOW**
VP08	O'Connor Road, Cattle Creek	1.2 km	LOW	HIGH	**MODERATE**
VP09	Cecil Plains Moonie & Stewart Roads, Cattle Creek	3.4 km	LOW	LOW	**LOW**
VP10	Shingle Hut Road, Western Creek	21 km	LOW	LOW	**LOW**
VP11	Cecil Plains Moonie & Weir River Roads, Dunmore	9.2 km	LOW	LOW	**LOW**
VP12	Cecil Plains Moonie Road, Dunmore	5.6 km	LOW	LOW	**LOW**
VP13	Cecil Plains Moonie Road, Dunmore	7.5 km	LOW	NEGLIGIBLE	**NEGLIGIBLE**
VP14	Cecil Plains Moonie Road, Cecil Plains	16 km	MODERATE	NEGLIGIBLE	**NEGLIGIBLE**

Table 12 – Results of the Viewpoint Analysis



Viewpoint Locations

Refer to **Section 6.1**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line

Watercourses

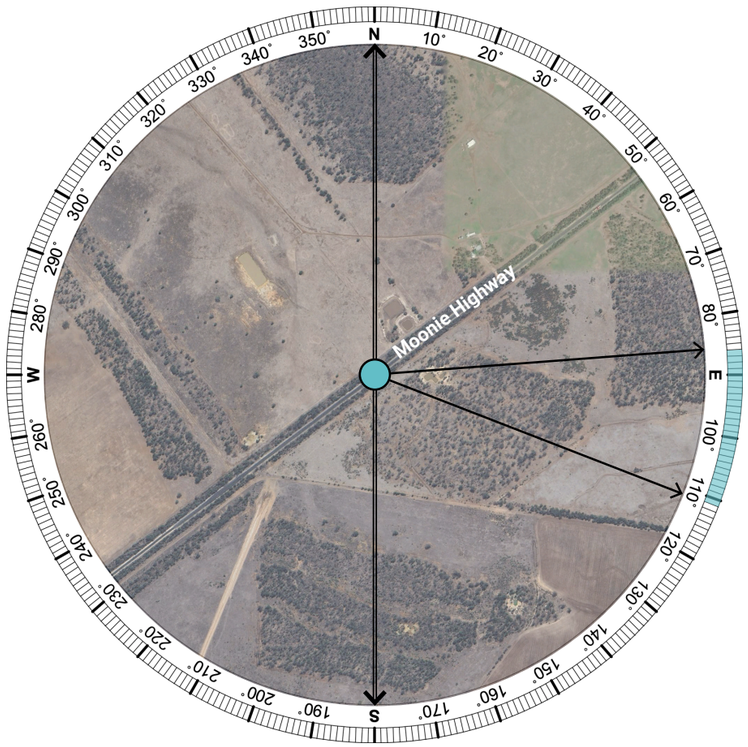
- Major - non perennial
- Minor - perennial
- Minor - non perennial
- State Forest
- Visual Catchment (15.5 km from WTGs)
- Visual Catchment (6.2 km from WTGs)
- Visual Catchment (3.1 km from WTGs)
- Viewpoint Locations

Figure 19 – Viewpoint Locations
Basemap Source: ESRI, 2026

Viewpoint:

VP01 Moonie Highway, Moonie

Extent of Potential Visibility



Viewpoint Summary:	
Location:	Elevation:
Moonie Highway, Moonie	307 m
Coordinates:	Distance to nearest WTG:
27°37'9.12"S 150°29'51.48"E	20.8 km
Viewing Direction:	
East	
Visual Sensitivity:	
MODERATE	
Visual Magnitude:	
NEGLIGIBLE	
Visual Impact:	
NEGLIGIBLE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint is situated along Moonie Highway in Moonie, viewing east. The terrain at this location is predominantly flat. Dense woodland varieties mark the vegetation character in the area. The surrounding land use is a mix of grazing native vegetation and cropping. Road infrastructure and fencing elements are evident in this view.

This viewpoint is situated on a road identified as a Scenic Route within a Forested and Woodland Downs area in the WDRPS.

The visual sensitivity of this viewpoint has been assessed as **MODERATE.**

Potential Visual Impact:

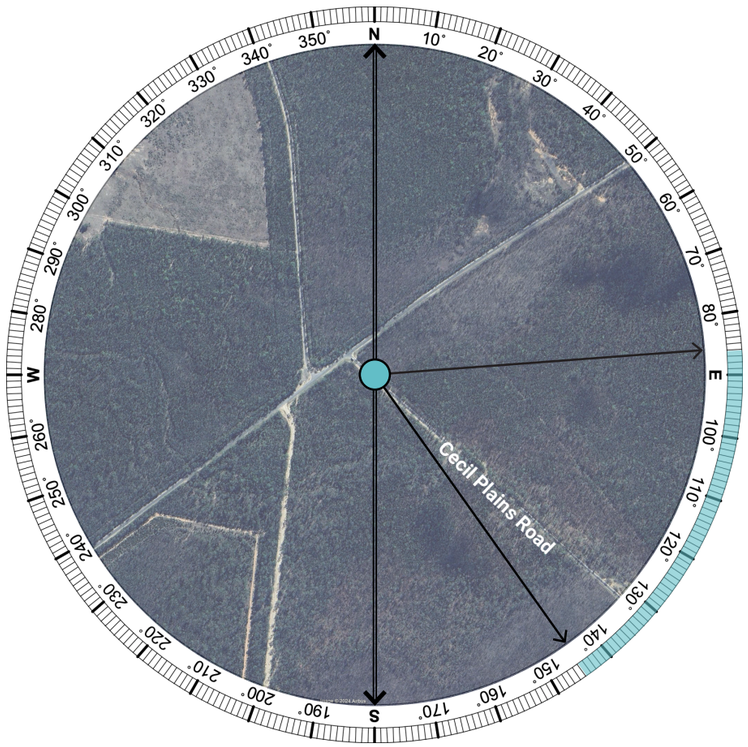
The Project will likely not be visible from this location as a result of distance and existing vegetation screening views towards the Project.

The visual magnitude of change is **NEGLIGIBLE**, resulting in a **NEGLIGIBLE** visual impact.

Viewpoint:

VP02 Cecil Plains Road, Marmadua

Extent of Potential Visibility



Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Road, Marmadua	332 m
Coordinates:	Distance to nearest WTG:
27°33'11.48"S 150°35'44.97"E	14.3 km
Viewing Direction:	
East	
Visual Sensitivity:	
MODERATE	
Visual Magnitude:	
NEGLIGIBLE	
Visual Impact:	
NEGLIGIBLE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint is situated along Cecil Plains Road, viewing east. The terrain at this location is predominantly flat, with evident floodplains within the immediate area. Dense stands of woodland varieties within the Waar Waar State Forest characterised the vegetation character in the area. The surrounding land use is a mix of productive forests, grazing native vegetation and agricultural cropping areas. Road infrastructure and fencing elements are evident in this view.

This viewpoint is situated on a road identified as a Scenic Route within a Grazed Uplands area in the WDRPS.

The visual sensitivity of this viewpoint has been assessed as MODERATE.

Potential Visual Impact:

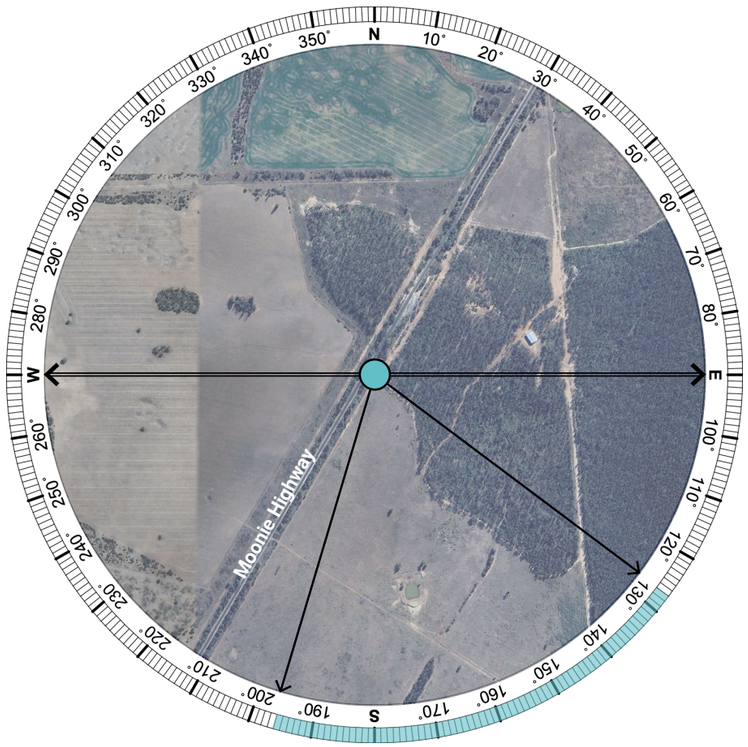
The Project will likely not be visible from this location due to the combination of distance and existing vegetation.

The visual magnitude of change is **NEGLIGIBLE**, resulting in a **NEGLIGIBLE** visual impact.

Viewpoint:

VP03 Moonie Highway, Halliford

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Moonie Highway, Halliford	396 m
Coordinates:	Distance to nearest WTG:
27°26'2.05"S 150°46'31.00"E	13.7 km
Viewing Direction:	
South	
Visual Sensitivity:	
MODERATE	
Visual Magnitude:	
NEGLIGIBLE	
Visual Impact:	
NEGLIGIBLE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint is located along Moonie Highway in Marmadua, facing southeast. Vegetation within Kumbarilla State Forest is dense along the highway corridor, with clearing areas visible in the southeastern midground.

The predominant land use in the region is the productive native forests, which appear to be logged intermittently. The terrain is gently undulating, gradually rising and falling towards the south.

This viewpoint is situated on a road identified as a Scenic Route, within a Forested and Woodland Downs area and a HLV area in the WDRPS.

The visual sensitivity of this viewpoint has been assessed as MODERATE.

Potential Visual Impact:

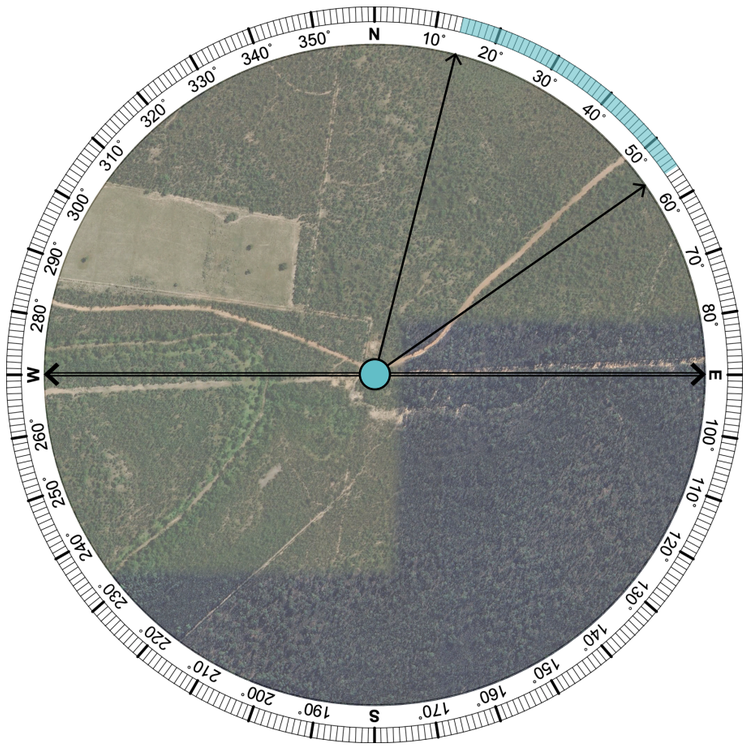
The Project will likely not be visible from this location due to the combination of distance and existing vegetation.

The visual magnitude of change is **NEGLIGIBLE**, resulting in a **NEGLIGIBLE** visual impact.

Viewpoint:

VP04 Colemans Road, Weir River

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Colemans Road, Weir River	298 m
Coordinates:	Distance to nearest WTG:
27°43'40.74"S 150°40'51.64"E	5.3 km
Viewing Direction:	
North	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
NEGLIGIBLE	
Visual Impact:	
NEGLIGIBLE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was captured along Colemans Road in Weir River.

Dense vegetation associated with Boondandilla State Forest, aligns the roadside and characterises views from this location.

The predominant land use is grazing on native vegetation and production native forests, entailing that these areas may be logged intermittently.

This viewpoint is identified as a Forested and Woodland Downs area in the WDRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

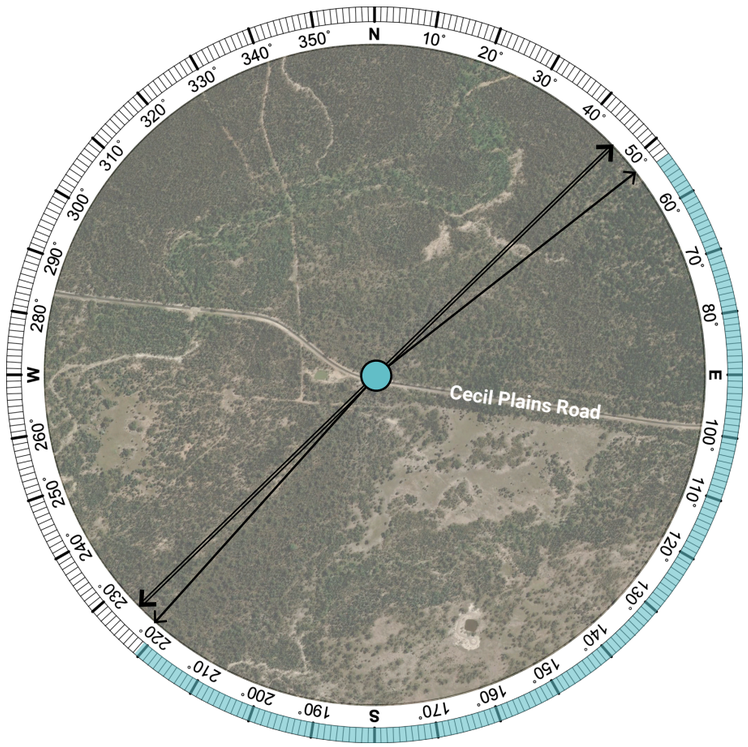
Due to existing vegetation screening the view, it is unlikely the Project will be visible from this location.

The visual magnitude of change is **LOW**, resulting in a **LOW** visual impact.

Viewpoint:

VP05 Cecil Plains Road, Marmadua

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Road, Marmadua	341 m
Coordinates:	Distance to Project:
27°36'45.21"S 150°43'45.78"E	2.17 km
Viewing Direction:	
Southeast	
Visual Sensitivity:	
MODERATE	
Visual Magnitude:	
LOW	
Visual Impact:	
MODERATE-LOW	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was captured along Cecil Plains Road in Marmadua.

The topography is gently undulating, rising to the distant east

Dense native vegetation within Kumbarilla State Forest aligns the roadway.

The predominant land use of the area is grazing on native vegetation and production native forests.

This viewpoint is situated on a low-use road within a Forested and Woodland Downs area and a HLV area in the WDRPS.

The visual sensitivity of this viewpoint has been rated as **MODERATE.**

Potential Visual Impact:

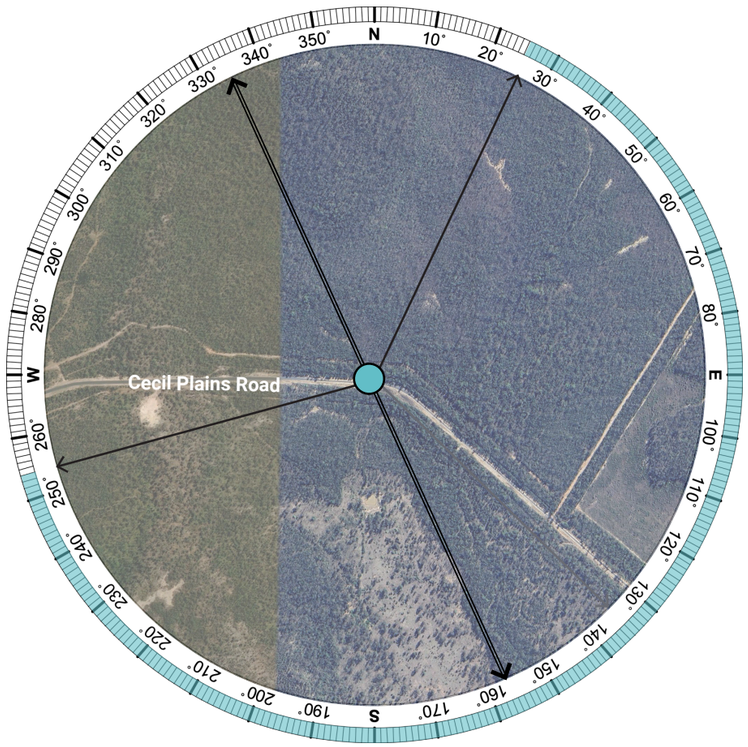
Due to existing vegetation, views of the Project will likely be fragmented from this location.

The visual magnitude of change is **LOW** , resulting in a **MODERATE-LOW** visual impact.

Viewpoint:

VP06a Cecil Plains Moonie Road, Cattle Creek

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Moonie Road, Cattle Creek	358 m
Coordinates:	Distance to nearest WTG:
27°36'46.04"S 150°46'19.80"E	0.8 km
Viewing Direction:	
Southwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
HIGH	
Visual Impact:	
MODERATE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was captured along Cecil Plains Moonie Road in Cattle Creek toward the southwest.

Dense vegetation, both native and exotic, associated with the Kumbarilla State Forest lines through road. Whilst the character of the view is defined by the existing dense vegetation, the state forests appear degraded evidenced through the lack of understory and variety of species, level of clearing and condition of the vegetation.

The local terrain is generally flat.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

From this location, the Project may stand as a visually dominant element within the landscape due to distance and the portion of view impacted. Existing vegetation may assist in screening portions of the Project.

It is noted that the view is of a modified landscape evidenced through the modified state forest, subject to logging. When combined with distance and speed of travel the duration experienced will be short. It is noted that no views towards key features are interrupted.

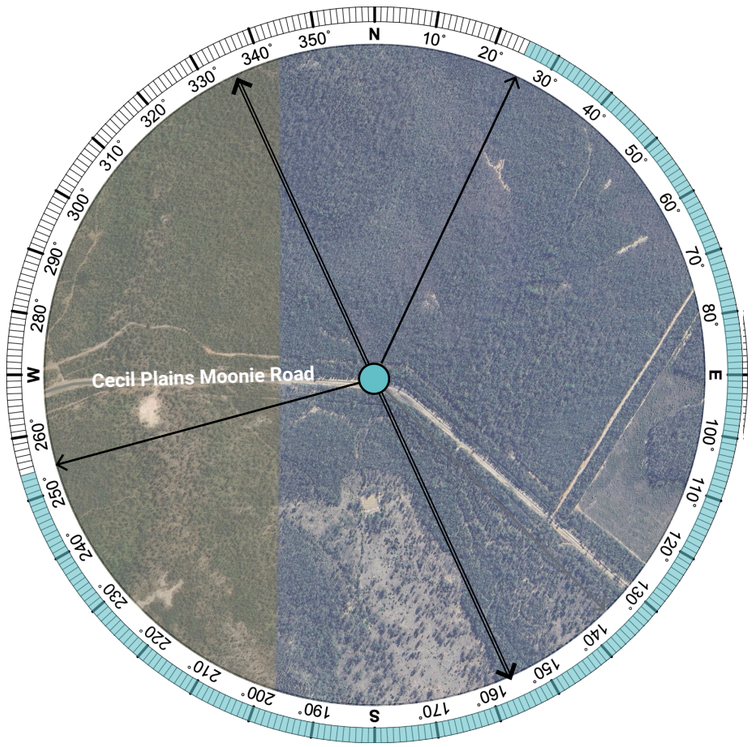
As a result of these factors the visual magnitude of change is **HIGH**, resulting in a **MODERATE** visual impact.

A photomontage has been prepared from this location to demonstrate views from this location, refer to **Section 7.0.**.

Viewpoint:

VP06b Cecil Plains Moonie Road, Cattle Creek

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Moonie Road, Cattle Creek	358 m
Coordinates:	Distance to nearest WTG:
27°36'46.04"S 150°46'19.80"E	0.8 km
Viewing Direction:	
Northeast	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
HIGH	
Visual Impact:	
MODERATE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was captured along Cecil Plains Moonie Road in Cattle Creek toward the southwest.

Dense vegetation, both native and exotic, associated with the Kumbarilla State Forest lines through road. Whilst the character of the view is defined by the existing dense vegetation, the state forests appear degraded evidenced through the lack of understory and variety of species, level of clearing and condition of the vegetation.

The predominant land use is grazing on native vegetation and production native forests, entailing that these areas may be logged intermittently.

The local terrain is generally flat.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW**.

Potential Visual Impact:

From this location, the Project may stand as a visually dominant element within the landscape due to distance and the portion of view impacted. Existing vegetation may assist in screening portions of the Project.

It is noted that the view is of a modified landscape evidenced through the modified state forest, subject to logging. When combined with distance and speed of travel the duration experienced will be short. It is noted that no views towards key features are interrupted.

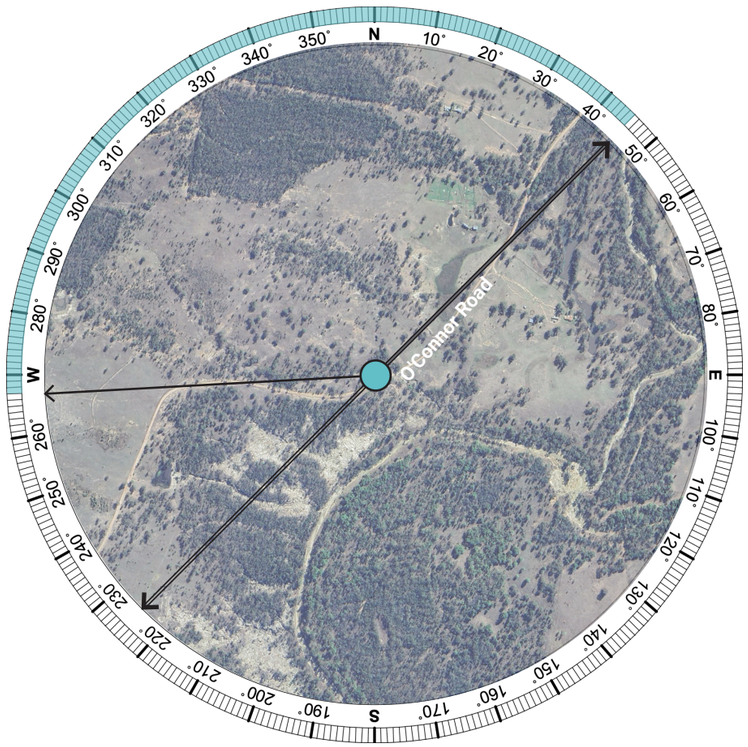
The visual magnitude of change is **HIGH**, resulting in a **MODERATE** visual impact.

A photomontage has been prepared from this location to demonstrate views from this location, refer to **Section 7.0.**.

Viewpoint:

VP07 O'Connor Road, Cattle Creek

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
O'Connor Road, Cattle Creek	315 m
Coordinates:	Distance to nearest WTG:
27°41'30.38"S 150°46'51.25"E	4.2 km
Viewing Direction:	
Northwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
MODERATE	
Visual Impact:	
MODERATE-LOW	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was captured on O'Connor Road in Cattle Creek.

The local terrain is flat, attributing to the floodplain character of the area.

The area has been largely cleared and modified with scattered stretches of native trees such as Belah, Poplar and White Box.

The predominant land use in the area is cropping and grazing native vegetation.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

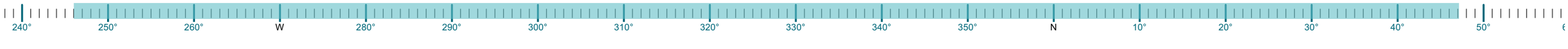
The Project may be partially visible from this location with existing vegetation in the midground screening majority of the view.

It is noted that the view is of a modified landscape evidenced through the modified existing agricultural land. When combined with distance and speed of travel the duration experienced will be short. It is noted that no views towards key features are interrupted.

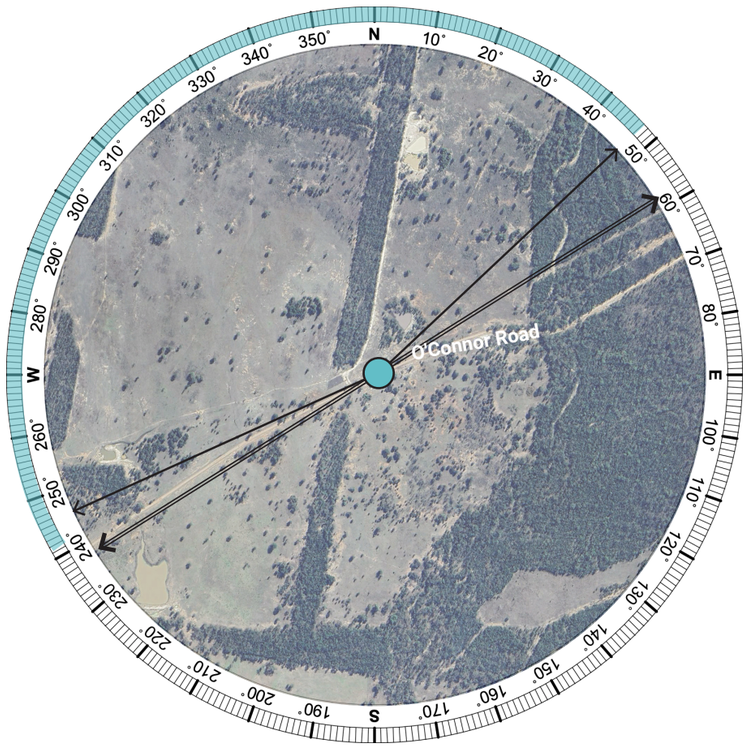
The visual magnitude of change is **MODERATE** , resulting in a **MODERATE-LOW** visual impact.

Viewpoint:

VP08 O'Connor Road, Cattle Creek



Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
O'Connor Road, Cattle Creek	326 m
Coordinates:	Distance to nearest WTG:
27°39'46.06"S 150°48'10.00"E	1.7 km
Viewing Direction:	
Northwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
HIGH	
Visual Impact:	
MODERATE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was taken along O'Connor Road in Cattle Creek toward the northwest.

The local terrain is flat, attributing to the floodplain character of the area.

The area has been largely cleared and modified with scattered stretches of native trees such as Belah, Poplar and White Box.

The predominant land use in the area is grazing native vegetation.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

The Project may become a dominant visual element in the landscape on account of distance. Existing vegetation to the north and northwest of the view may assist in screening part of the development.

It is noted that the view is of a modified landscape evidenced through the modified existing agricultural land. When combined with distance and speed of travel the duration experienced will be short. It is noted that no views towards key features are interrupted.

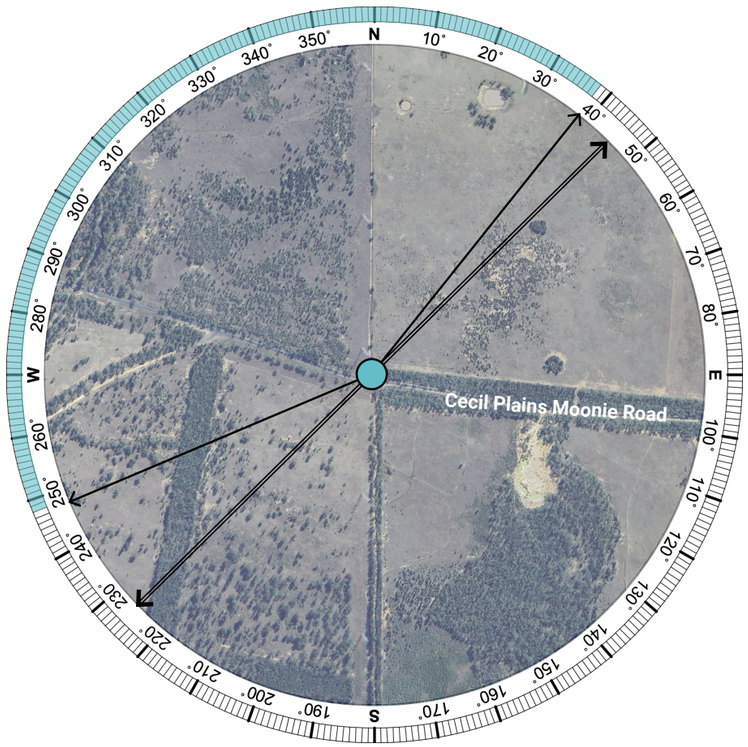
The visual magnitude of change is **HIGH**, resulting in a **MODERATE** visual impact.

A photomontage has been prepared from this location to demonstrate views from this location, refer to **Section 7.0.**.

Viewpoint:

VP09 Cecil Plains Moonie and Stewart Roads, Cattle Creek

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Moonie and Stewart Roads, Cattle Creek	334 m
Coordinates:	Distance to nearest WTG:
27°39'4.62"S 150°50'45.85"E	3.4 km
Viewing Direction:	
Northwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
LOW	
Visual Impact:	
LOW	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was captured at the intersection of Cecil Plains Moonie and Stewart Roads in Cattle Creek.

The local terrain is flat, attributing to the floodplain character of the area.

Grazing native vegetation is the predominant land use in the area.

An existing transmission line is a key feature of views from this location and along with the modified farm land, contributes to the low scenic quality characterising the view.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

The Project will potentially be a visible element in the view. Existing vegetation may assist in screening portions of the Project. The Project will likely be viewed in the context of the existing modified and industrial landscape and as a result the level of contrast is minimal.

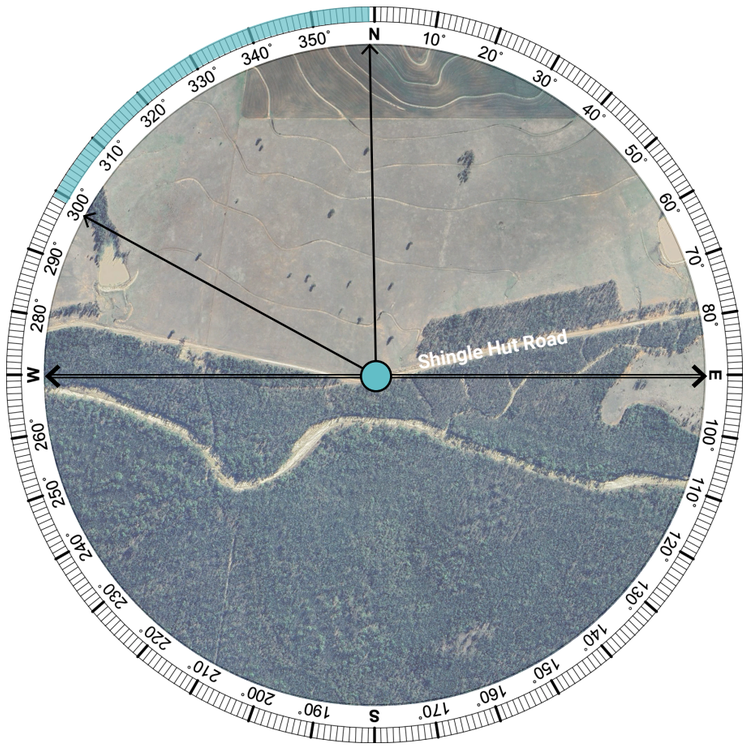
As such the visual magnitude of change is **LOW**, resulting in a **LOW** visual impact.

A photomontage has been prepared from this location to demonstrate views from this location, refer to **Section 7.0.**

Viewpoint:

VP10 Shingle Hut Road, Western Creek

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Shingle Hut Road, Western Creek	347 m
Coordinates:	Distance to nearest WTG:
27°48'5.06"S 150°55'59.76"E	21 km
Viewing Direction:	
Northwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
LOW	
Visual Impact:	
LOW	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint is located along Shingle Hut Road, in the Western Creek State Forest, Western Creek.

The area has been largely cleared and modified on flat terrain, attributing to the floodplain character of the area.

Dense vegetation characteristic of the Inglewood Sandstones subregion is located along the state forest border to the east and west.

The predominant land use is cropping and production native forests, entailing that these areas may be logged intermittently.

This viewpoint is situated on a low-use road, adjacent to an area identified as having a scenic amenity rating of 7 and 8 in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

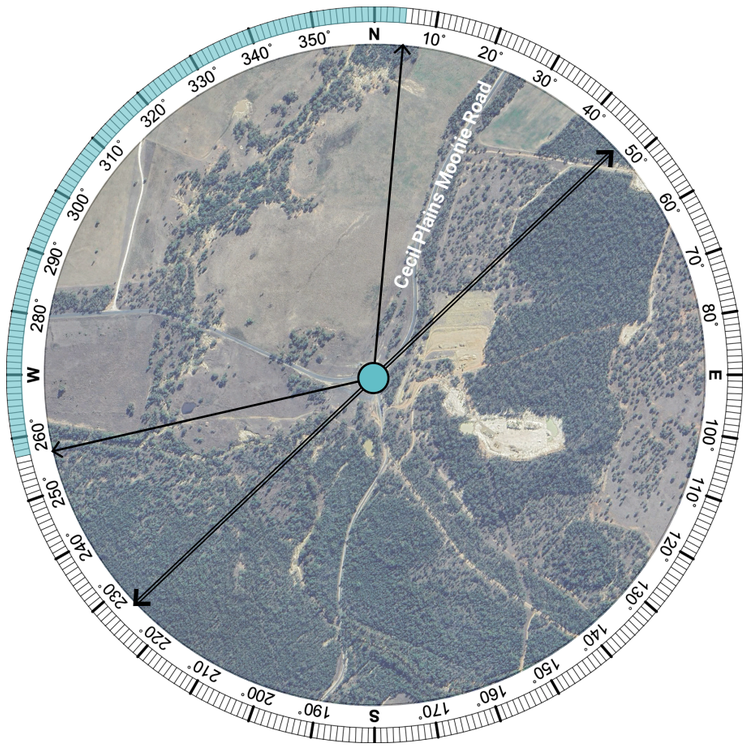
Due to the combination of existing vegetation and distance, the Project will likely be difficult to discern from this location.

The visual magnitude of change is **LOW**, resulting in a **LOW** visual impact.

Viewpoint:

VP11 Cecil Plains Moonie and Weir River Roads, Dunmore

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Moonie and Weir River Roads, Dunmore	342 m
Coordinates:	Distance to nearest WTG:
27°39'16.49"S 150°54'59.18"E	9.2 km
Viewing Direction:	
Northwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
LOW	
Visual Impact:	
LOW	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was taken at the intersection of Cecil Plains Moonie and Weir River Roads in Dunmore.

The predominant land use is grazing native vegetation.

Vegetation is typical of the Inglewood Sandstones subregion, aligning the distant horizon opening to the north. The foreground has been majorly cleared of trees.

The local terrain is flat, attributing to the floodplain character of the area.

An existing transmission line is a key feature of views from this location and along with the modified farm land, contributes to the low scenic quality characterising the view.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

The Project will potentially be a visible element in the view. Existing vegetation may assist in screening portions of the Project. The Project will likely be viewed in the context of the existing modified and industrial landscape and as a result the level of contrast is minimal.

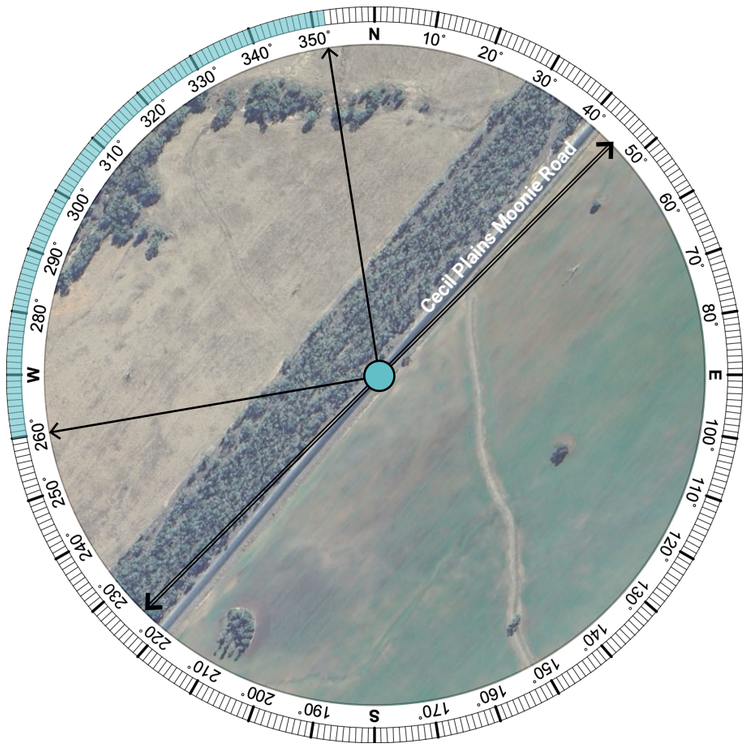
As a result of these factors, the visual magnitude of change is **LOW**, resulting in a **LOW** visual impact.

A photomontage has been prepared from this location to demonstrate views from this location, refer to **Section 7.0.**

Viewpoint:

VP12 Cecil Plains Moonie Road, Dunmore

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Waugh Road, Dunmore	358 m
Coordinates:	Distance to nearest WTG:
27°36'43.03"S 150°56'18.25"E	7.2 km
Viewing Direction:	
Northwest	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
LOW	
Visual Impact:	
LOW	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was taken along Cecil Plains Moonie Road in Dunmore.

The terrain is flat, typical of the local floodplain character.

A buffer 70 m buffer of native tree species typical of the bioregion line the road.

Grazing native vegetation and cropping are the main land uses.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW.**

Potential Visual Impact:

The Project will potentially be visible element from this location, however due to the existing vegetation and distance the Project will likely form a minor element within the context of the view.

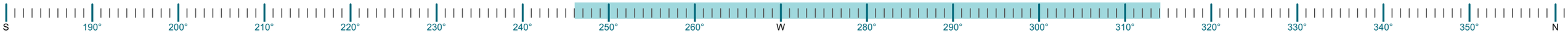
It is noted that the view is of a modified landscape evidenced through the modified existing agricultural land. When combined with distance and speed of travel the duration experienced will be short. It is noted that no views towards key features are interrupted.

The visual magnitude of change is **LOW**, resulting in a **LOW** visual impact.

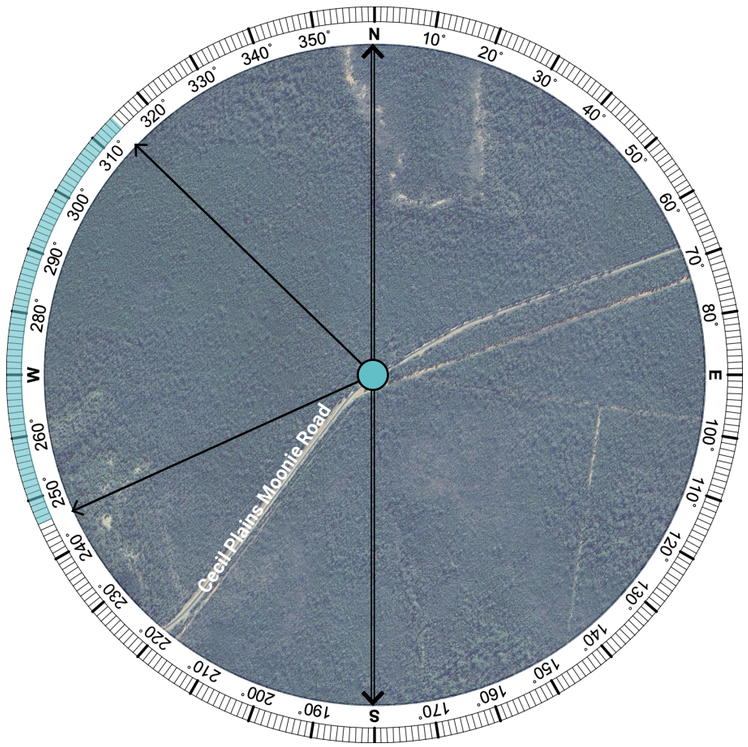
A photomontage has been prepared from this location to demonstrate views from this location, refer to **Section 7.0.**.

Viewpoint:

VP13 Cecil Plains Moonie Road, Dunmore



Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Moonie Road, Dunmore	383 m
Coordinates:	Distance to nearest WTG:
27°35'30.38"S 150°59'25.02"E	7.5 km
Viewing Direction:	
West	
Visual Sensitivity:	
LOW	
Visual Magnitude:	
NEGLIGIBLE	
Visual Impact:	
NEGLIGIBLE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was taken along Cecil Plains Moonie Road in Dunmore.

Dense vegetation, both native and exotic, associated with the Dunmore State Forest lines through road and contains views from this location. Whilst the character of the view is defined by the existing dense vegetation, the state forests appear degraded evidenced through the lack of understory and variety of species, level of clearing and condition of the vegetation.

The predominant land use is grazing on native vegetation and production native forests, and are subject to intermittent logging.

The local terrain is generally flat.

This viewpoint is situated on a low-use road, and is not identified as having a scenic amenity rating in the TRPS.

The visual sensitivity of this viewpoint has been rated as **LOW**.

Potential Visual Impact:

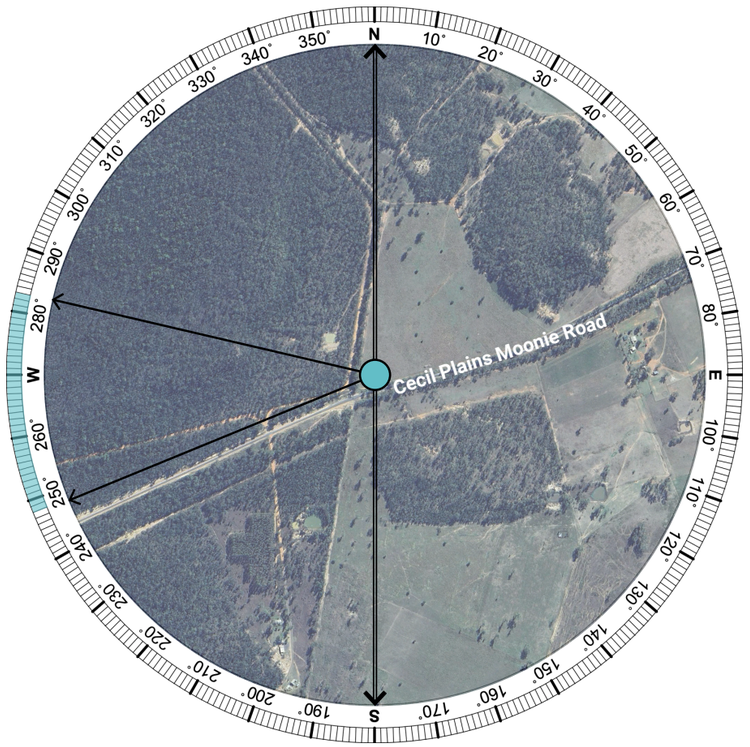
It is unlikely the Project will be visible from this location due to existing screen vegetation.

The visual magnitude of change is **LOW**, resulting in a **LOW** visual impact.

Viewpoint:

VP14 Cecil Plains Moonie Road, Cecil Plains

Extent of Potential Visibility



Aerial Source: *Google Earth, 2024*

Viewpoint Summary:	
Location:	Elevation:
Cecil Plains Moonie Road, Cecil Plains	398 m
Coordinates:	Distance to nearest WTG:
27°34'3.33"S 151° 5'11.96"E	16 km
Viewing Direction:	
West	
Visual Sensitivity:	
MODERATE	
Visual Magnitude:	
NEGLIGIBLE	
Visual Impact:	
NEGLIGIBLE	

Extent of Panorama

Approximate Extent of Project

Existing Landscape Character Description:

This viewpoint was taken along Cecil Plains Moonie Road in Dunmore.

The road is aligned with scattered vegetation, densifying toward the background. The predominant land use is grazing on native vegetation and production native forests, entailing that these areas may be logged intermittently.

The local terrain is generally flat.

This viewpoint is situated on a low-use road, adjacent to an area identified as having a scenic amenity rating of 7, 8 and 9 in the TRPS.

The visual sensitivity of this viewpoint has been rated as **MODERATE**.

Potential Visual Impact:

It is unlikely the Project will be visible from this location due to existing screen vegetation.

The visual magnitude of change is **NEGLIGIBLE**, resulting in a **NEGLIGIBLE**, visual impact.

6.5 Overview of Visual Impacts on LCUs

LCU	Scenic Quality Rating	Overview of Visual Impacts	Landscape Character Impact Rating
LCU01 - Waterbodies	MODERATE - LOW	The Project's visibility from the watercourses within LCU01, including the Weir River, is minimal due to intervening riparian vegetation that screens clear views. While the Project may be intermittently visible, and be seen as a new visual element, its visual impact is reduced because the area is not widely accessible and the vegetation provides adequate screening. Consequently, the Project's effect on the landscape character of LCU01 is considered low.	LOW
LCU02 - State Forests & Vegetated Flats	MODERATE - LOW	The Project is partially sited within LCU02, which is characterised by state forests and modified landscapes. Views from this LCU are heavily fragmented due to the dense vegetation character when travelling through these state forests and vegetated flats. Due to the generally flat topographic character, the Project does not interfere with ridgelines within this area. Although some intermittent views may be possible through vegetation breaks or nearby modified pastures, the Project's visual impact on the overall landscape remains low and does not significantly alter the area's character.	LOW
LCU03 - Agricultural Pastures	LOW	LCU03 comprises agricultural pastures primarily used for grazing and cropping. The majority of the Project is located in this LCU. The Project will be a new visual element in this landscape type; however, it is highly modified within the regional context, with very few areas undisturbed from production and farming practices. Intervening elements such as existing stands of vegetation fragment some views when travelling along key low-use unsealed roads within the region, with most nearby rural properties surrounded by vegetation. The Project is unlikely to take away from the key existing features of this LCU.	LOW

Table 13 – Overview of Visual Impacts on LCUs

6.6 Planning Scheme Performance Outcomes

TRPS - Performance Outcomes	TRPS - Acceptable Outcomes	LVIA Assessment
Scenic Amenity Overlay Code		
PO1 *Development is designed and sited in a way that is compatible with the character of the landscape and minimises any adverse impacts on the scenic amenity of a place.*	*AO1* *The amount of built form on the site that is visible from significant public viewing locations within a distance of 5km does not exceed 10%, calculated using the methodology provided in Note (3) at the end of this code.* *AO2* *Development is sited and designed to minimise any potential adverse impacts on the scenic qualities of the site and the area, having regard to:* a. *retaining important skyline elements, including tree canopies and vegetated ridgelines;* b. *retaining of significant views into and out of the area;* c. *achieving built form which is not obtrusive, particularly from key viewing points and access routes;* d. *retaining views along waterways or water bodies;* e. *retaining and supplementing significant vegetation and other landscaping; and* f. *minimising earthworks, driveways and other elements that might contribute to visual scarring.*	As identified in Section 2.2.1, only a small portion of the Project is located on areas of high scenic amenity. These areas typically relate to watercourses, vegetated areas and areas with elevated topography. A landscape character assessment was undertaken using the Scenic Quality 'Frame of Reference' (as shown in Section 5.6) to determine the level of visual significance and quality of the landscape within the Study Area. The assessment determined that there were three (3) LCUs evident within the Study Area which returned Low and Moderate-Low scenic quality ratings. Key viewing points within the Study Area are along public roads and will be experienced whilst moving at speed. They are mainly low-use roads, with the Moonie Highway, identified as a Scenic Route, more than 13 km north west of the Project. The surrounding landscape has no prominant skylines, ridgelines, waterbodies, lookouts or vistas. The Viewpoint Analysis in Section 6.0 and Photomontages in Section 7.0 demonstrates that existing topography, distance, and intervening vegetation substantially filter views, resulting in a low level of perceived visual dominance from public roads and viewpoints.
PO2 *Development is constructed of materials and with finishes that complement the natural landscape and do not dominate the scenic amenity values of the natural landscape.*	*AO1* *Buildings or other structures are finished with natural subdued colours such as dark blues, dark greens, dark greys, ochres, olives; or of natural or stained timbers and metal cladding (including roofing) is non-reflective and painted in subdued colours.*	Refer to Section 11.0 (Mitigation Measures). This includes considering the material and colour finishes of WTGs and ancillary infrastructure and minimising vegetation loss during the design and construction phases.
Rural Zone		
Development does not unduly impact on the rural amenity and character of the locality, having regard to: *(a) the scale, siting and design of buildings and structures;* *(b) visibility from roads and other public view points, screening vegetation and landscaping; and* *(c) the natural landform and avoidance of visual scarring;* *(d) noise, odour and other emissions.*	*No acceptable outcome is nominated.*	Refer to Section 11.0 (Mitigation Measures). This section considers the scale and siting of the WTGs and ancillary infrastructure, how existing vegetation is working to screen views, and ensuring vegetation loss is minimised during the design and construction phases.

Table 14 – TRPS Performance Objectives

WDRPS - Performance Outcomes	WDRPS - Acceptable Outcomes	LVIA Assessment
Scenic Amenity Overlay Code		
PO1 *Development within High Landscape Value Areas identified on the Scenic amenity overlay maps (OM-011):* *(a) maintains and enhances the landscape character, scenic amenity and tourism values of the locality and the Western Downs region;*	*AO1.1* *Buildings and structures have a maximum building height of 8.5 metres and two storeys within High Landscape Value Areas identified on Scenic amenity overlay maps (OM-011).* *OR* *AO1.2* *Buildings and structures are associated with Rural activities.* *AO1.3* *Buildings, structures and operational work are located a minimum of 50 metres from ridges or peaks within High Landscape Value Areas identified on Scenic amenity overlay maps (OM011).* *AO1.4* *Where within High Landscape Value Areas identified on Scenic amenity overlay maps (OM- 011) no vegetation clearing occurs:* *(a) within 100 metres of ridgelines or peaks;* *(b) on land with a slope greater than 15 percent;* *(c) within 100 metres of waterways;* *(d) within 100 metres of wetlands;* *(e) unless where in accordance with Part 8.2 – Bushfire hazard overlay code.* *AO1.5* *Buildings are screened by an existing natural landform or native vegetation from roads, where within High Landscape Value Areas identified on Scenic amenity overlay maps (OM-011).*	A landscape character assessment was undertaken using the Scenic Quality 'Frame of Reference' (as shown in Section 5.6) to determine the level of visual significance and quality of the landscape within the Study Area. The assessment determined that there were three (3) LCUs evident within the Study Area which returned Low and Moderate-Low scenic quality ratings. The identified HLV Area formed part of the LCU02 State Forests and Vegetated Flats which returned a Moderate-Low scenic quality rating, and is noted as having: • flat topography; • absence of waterforms; • modified plantation forestry of both native and exotic species; and • degraded and cleared sections reflecting the forestry land use. Although the Project will be a new introduced feature in the landscape, it is compatible with the existing industrial land use of the area and does not compete with views towards any significant ridgelines or features. The duration to be experienced is short as a result of speed of travel. A photomontage has been prepared from PM05 to demonstrate this. The Project does not reduce the landscape character values identified in the 8.2.9 Scenic Amenity Overlay Code PO01.
(b) mitigates the scenic amenity impacts of buildings or structures visible at the skyline or positioned on a ridgeline when viewed from a highway, main road or Scenic Route;		The HLV area that intersects with the Project is south of Cecil Plains Moonie Road between this road and Colemans Road. Cecil Plains Moonie Road is a low-use unsealed road servicing nearby rural properties and is not a main road, highway or scenic route. As shown in PM05, the Project is a new visual element in the landscape; however, the photomontage indicates that the proposed WTGs are heavily fragmented by intervening vegetation associated with this state forest. The Project does not interfere with key ridgelines within the immediate region, as no ridgelines are present in this HLV area. Onsite investigations confirm that areas of this state forest are degraded and disturbed and are not in a natural state. It is worth noting that in TRPS - this region is identified not for scenic amenity values but as an area with high ecological value. Considering this during the detailed design phase, to help minimise adverse change relating to the Project, it is recommended that the Proponent minimises the vegetation clearing for these WTGs to the south of Cecil Plains Moonie Road.
(c) is fully screened by an existing natural landform or native vegetation, or will be fully screened by native vegetation within5 years of construction when viewed from a Scenic Route unless development supports tourism;		N/A (not identified as a Scenic Road - Cecil Plains Moonie Road is a low use unsealed road)
(d) retains existing vegetation and incorporates landscaping to visually soften built form elements;		To help minimise adverse change relating to the Project, it is recommended that the Proponent minimises the vegetation clearing for WTGs to the south of Cecil Plains Moonie Road as a mitigation measure to ensure that the Project remains heavily filtered when travelling through the adjoining state forests.
(e) incorporates building materials and external finishes that are compatible with the visual amenity and the landscape character of the locality; and		Refer to Section 11.0 (Mitigation Measures). This includes considering the material and colour finishes of WTGs and ancillary infrastructure and minimising vegetation loss during the design and construction phases.
(f) minimises visual impacts on the High Landscape Values area in terms of: *(i) the scale, height and setback of buildings;* *(ii) the extent of earthworks and impacts on the landform including the location and configuration of access roads and driveways; and* *(i) the scale, extent and visual prominence of advertising devices.*		Refer to Section 11.0 (Mitigation Measures) and Section 12.0 (Summary).
Rural Zone Code		
PO6 *Development must take into account and seek to ameliorate any existing negative environmental impacts, having regard to:* *(a) noise; (b) hours of operation; (c) traffic; (d) lighting; (e) advertising devices; (f) visual amenity; (g) privacy; (h) odour; or (i) emissions.*	*AO6* *No acceptable outcome.*	Section 6.2.1 of the WDRPS identifies both renewable energy facilities and battery storage facilities in their list of consistent development within the Rural Zone. Refer to Section 5.0 (Existing Landscape Character) and Section 11.0 (Mitigation Measures).

Table 15 – WDRPS Performance Outcomes

07 Photomontages

7.0 Photomontages

7.1 Overview of Photomontages

7.1.1 Photomontages

The NWFDG define a photomontage as a composite image made by combining elements of real imagery with 3D digitalisation *(EPHC, 2010)*.

A photomontage combines a photograph of an existing view with a computer-rendered image of a proposed development. It illustrates the likely view of a proposed development as it would be seen in a photograph (not as it would appear to the human eye in the field).

Although photomontages are based on photographs of the existing landscape, it is important to stress that they are not a substitute for visiting a viewpoint in the field. They are only one tool to aid visual assessments. They provide a two-dimensional image that can be compared with an actual view of the landscape to provide information, such as the scale and potential appearance of a proposed development.

7.1.2 Wireframe Diagrams

A wireframe is a computed image generated based on a digital terrain model that indicates the 3D shape of the landscape in combination with additional elements. It is a valuable tool in the wind farm LVIA process as it allows the assessor to compare the WTGs' position and scale to the existing landscape view *(Scottish Natural Heritage, 2017)*. Wireframe images are a worst-case scenario as they do not consider factors such as vegetation or building structures.

Wireframe diagrams are utilised in this LVIA to verify photomontage accuracy.

7.1.3 Photomontage Limitations

Visualisations can never provide the complete picture of potential visual impacts as they only inform the assessment process by which judgements are made. Visualisations of wind farms and the Project have several limitations that should be considered when using them to form a decision on a Project.

As noted in the *Visual Representation of Wind Farms Guidance* published by Scottish Natural Heritage - these include:

- A visualisation can never show precisely what the wind farm will look like in reality due to factors such as different lighting, weather and seasonal conditions, which vary through time and the resolution of the image;
- The images provided give a reasonable impression of the scale of the WTGs and the distance to the WTGs, but can never be 100% accurate; and
- A static image cannot convey WTG movement, flicker, or the sun's reflection on the blades as they move. *(Scottish Natural Heritage, 2017)*

7.2 Photomontage Selection Process

Five (5) viewpoints have been selected to prepare photomontages that best illustrate the potential appearance of the Project from varying distances and locations with differing views (refer to **Figure 21**).

Photomontage locations were selected following findings of the Viewpoint Analysis to represent the views with a potentially Moderate visual impact rating. Localised screening factors such as vegetation were avoided (where possible) to ensure maximum exposure to the Project.

7.3 Photomontage Development Methodology

The process for generating the photomontages involves computer generation of a wire-frame perspective view of the Project and the topography from each viewpoint. **Figure 20** demonstrates the process of photomontage development.

The photomontages are based on Project parameters outlined in **Section 3.0**. Moir Studio has prepared the photomontages using the most current available version of Wind Pro software using the following process:

Step 1
Develop 3D Model

In Wind Pro, a detailed 3D Model of the Site is developed. The WTGs are modelled and sited in the 3D Model to scale.

Step 2
Align Photograph and Model

The digital panorama is imported into Wind Pro, and the EXIF properties of the file are inserted automatically, defining all relevant visualisation information, such as the type of camera lens used, the field of view for panoramas, and the position and direction. Topography, control points, obstacle objects, and existing wind masts can be used as references to calibrate the camera model very precisely.

Step 3
Render Photomontage

The software calculates the sun's position based on the photograph's time and date and renders the WTGs according to the specific weather conditions and the sun's position. Once rendered, detailed removal of intervening elements (such as vegetation) is undertaken to provide an accurate representation of the Project.

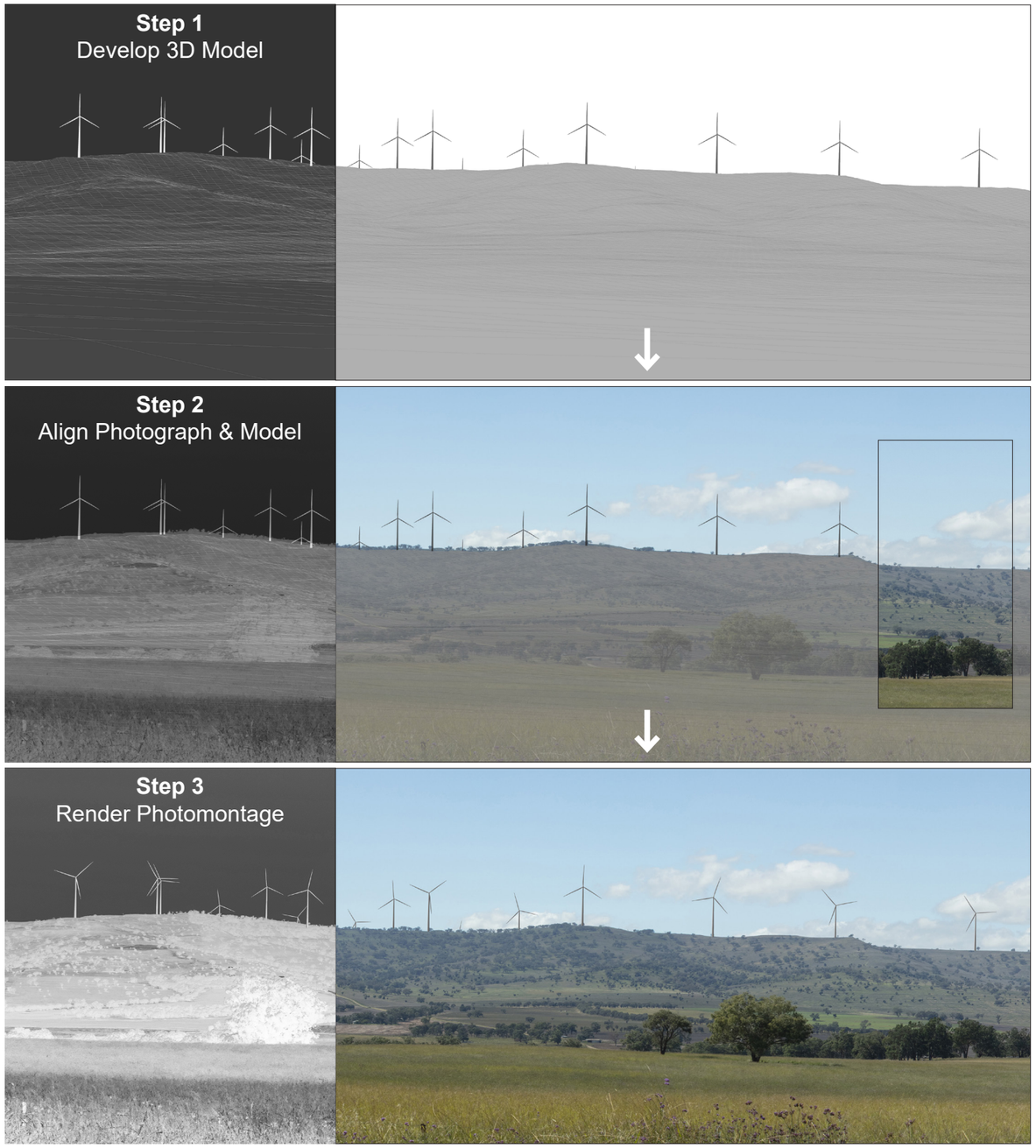


Figure 20 – Photomontage Development

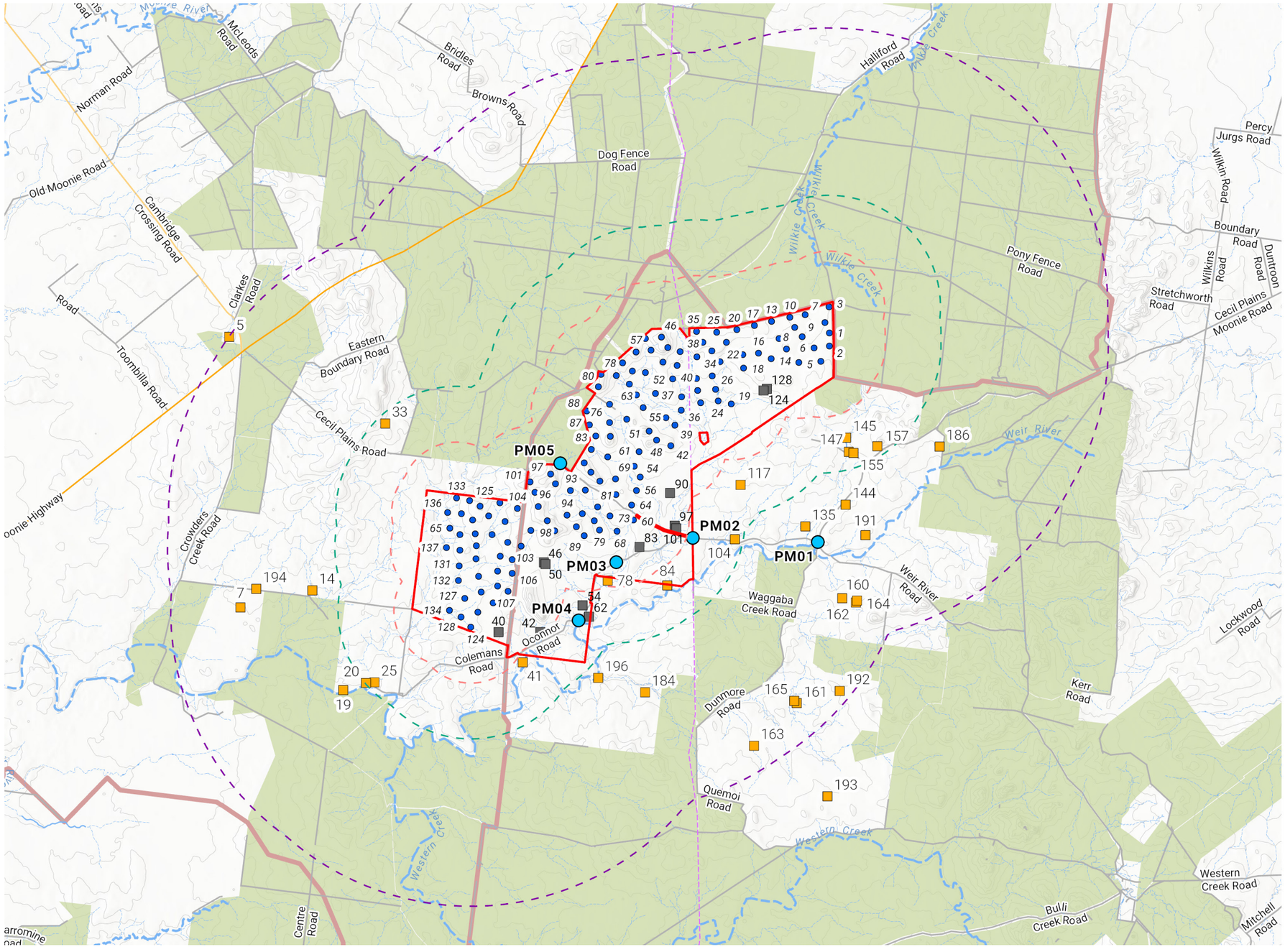


Figure 21 – Photomontage Locations

Basemap Source: ESRI, 2026

Photomontage Locations

Refer to **Section 7.1**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line

Watercourses

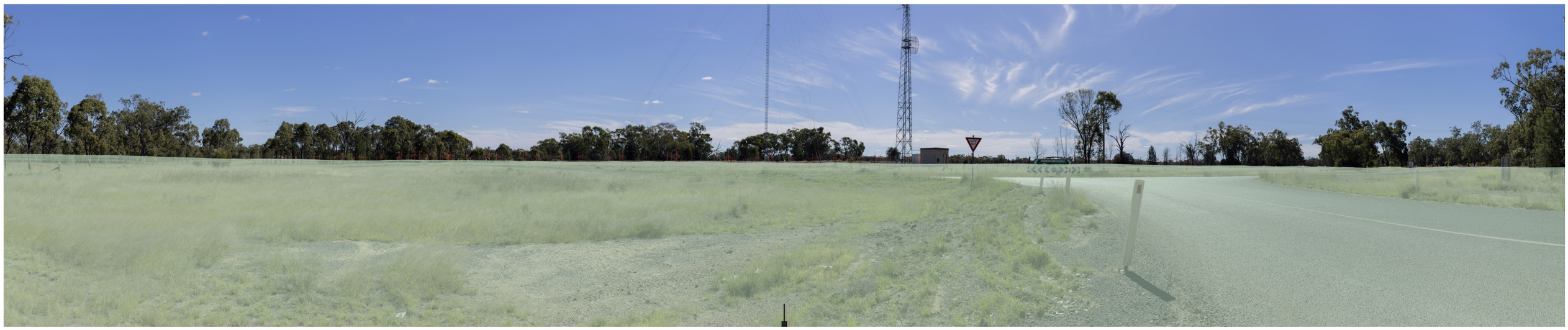
- Major - non perennial
- Minor - perennial
- Minor - non perennial

- State Forest
- Visual Catchment (15.5 km from WTGs)
- Visual Catchment (6.2 km from WTGs)
- Visual Catchment (3.1 km from WTGs)
- Photomontage Locations

Photomontage:

PM01/ VP11 Cecil Plains Moonie & Weir River Roads, Dunmore

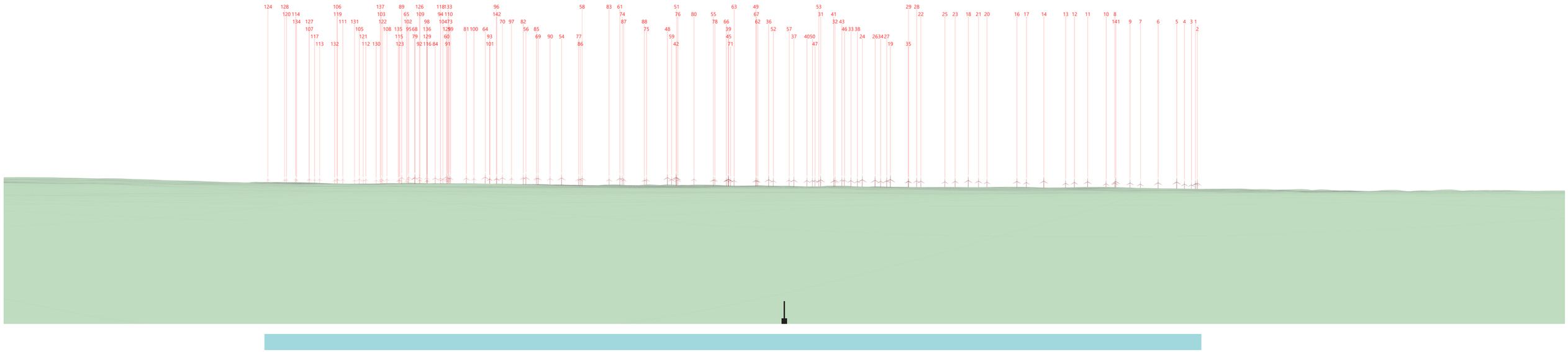
180° Existing View



180° 3D Model Overlay

Photomontage:

PM01/ VP11 Cecil Plains Moonie & Weir River Roads, Dunmore

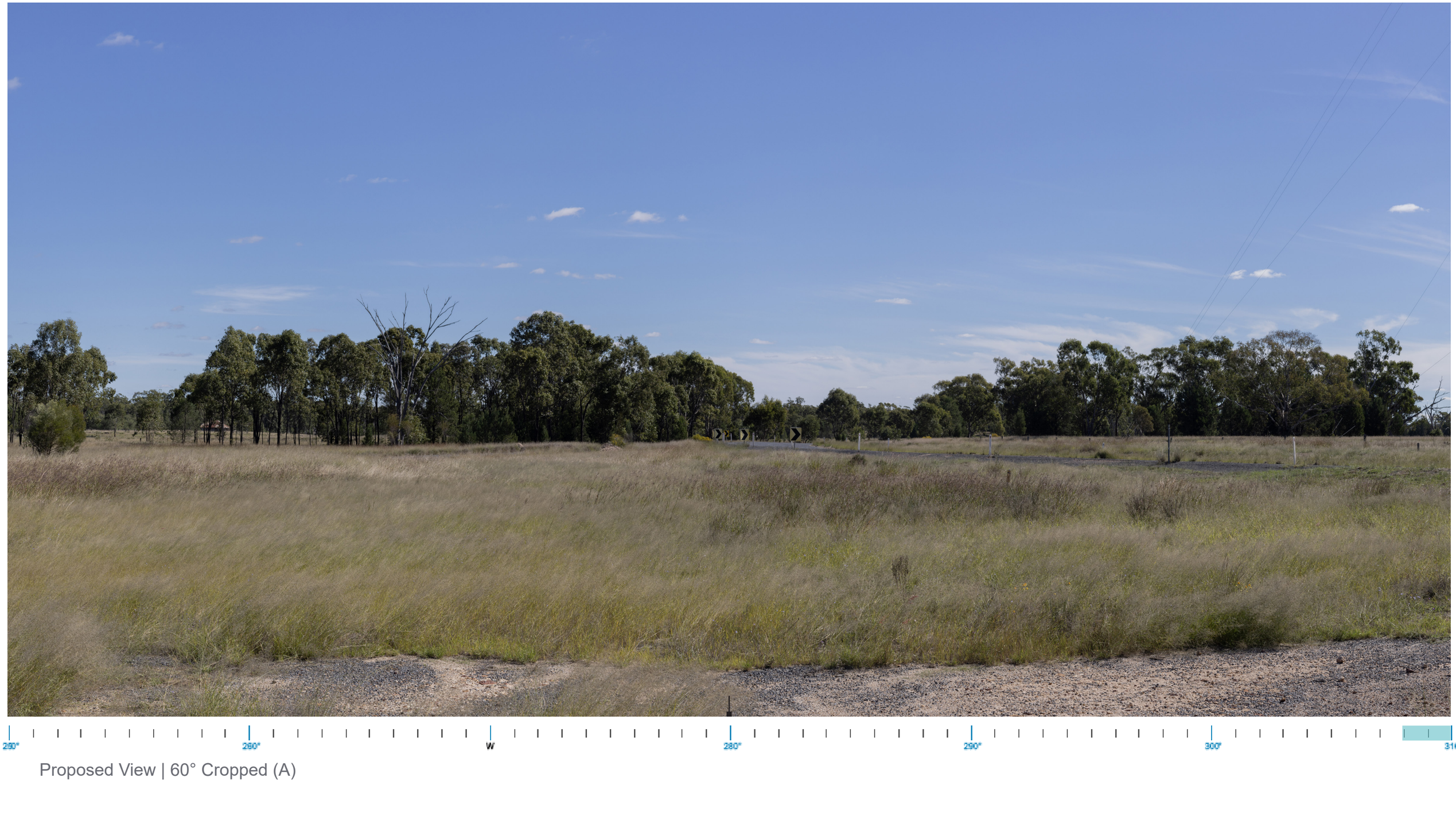


180° Wireframe Diagram

180° Proposed View

Photomontage:

PM01/ VP11 Cecil Plains Moonie & Weir River Roads, Dunmore



Proposed View | 60° Cropped (A)

Photomontage:

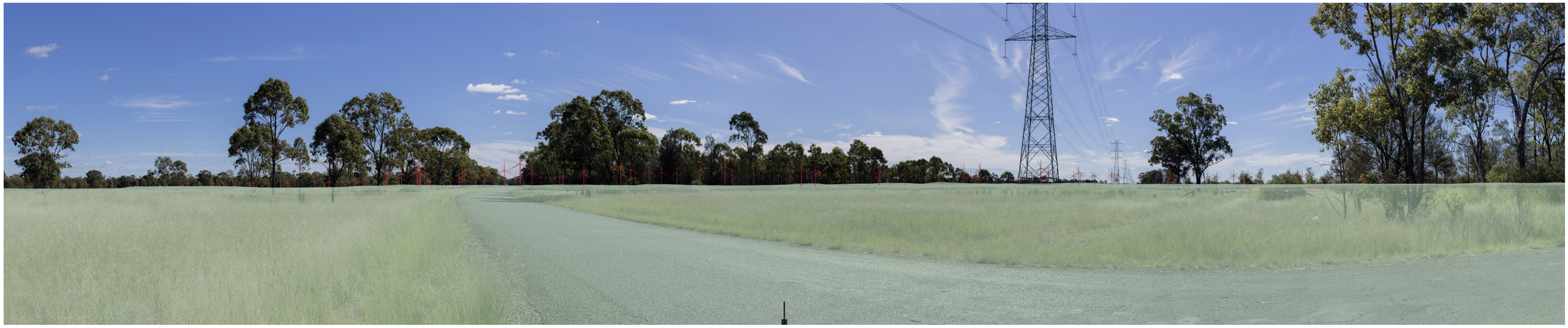
PM01/ VP11 Cecil Plains Moonie & Weir River Roads, Dunmore

Proposed View | 60° Cropped (B)

Photomontage:

PM02/ VP09 Cecil Plains Moonie & Stewart Roads, Cattle Creek

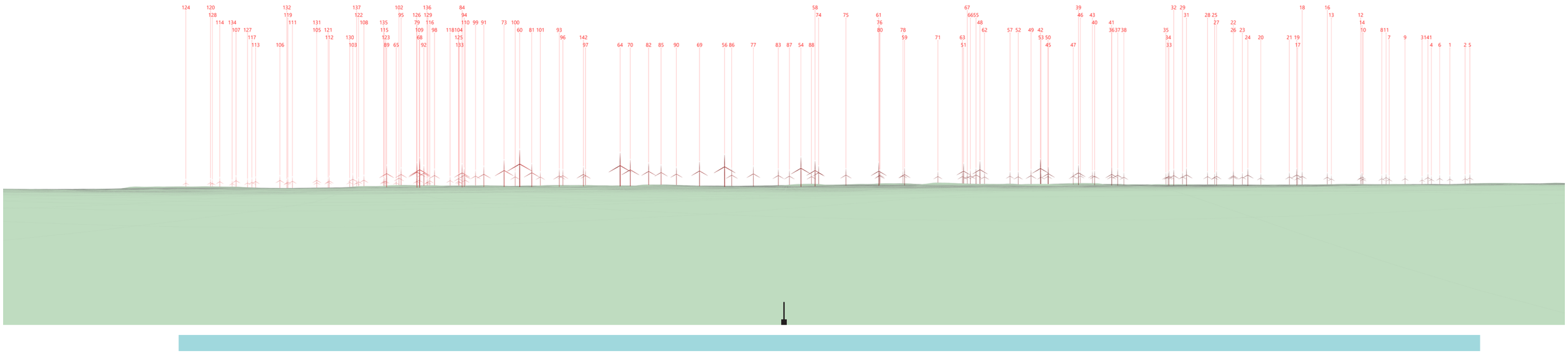
180° Existing View



180° 3D Model Overlay

Photomontage:

PM02/ VP09 Cecil Plains Moonie & Stewart Roads, Cattle Creek



180° Wireframe Diagram

180° Proposed View

Photomontage:

PM02/ VP09 Cecil Plains Moonie & Stewart Roads, Cattle Creek

Proposed View | 60° Cropped (A)

Photomontage:

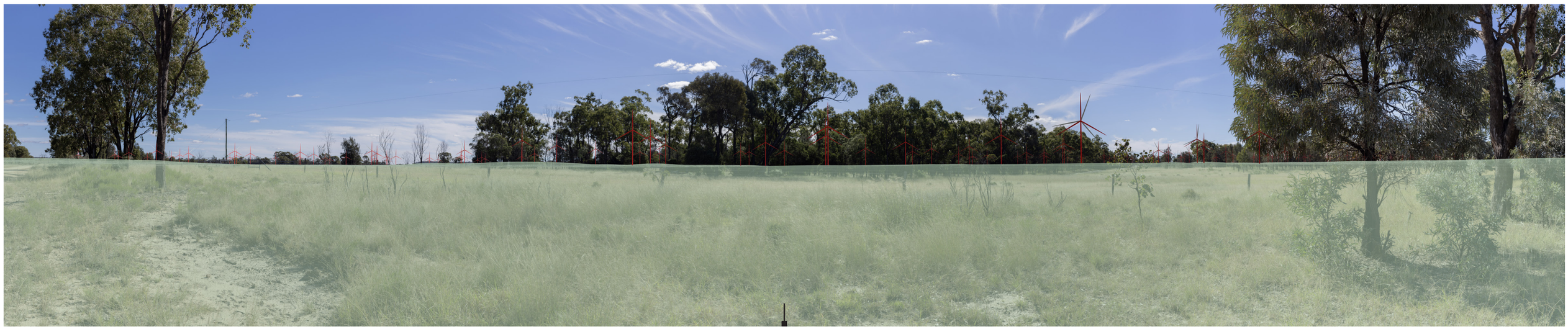
PM02/ VP09 Cecil Plains Moonie & Stewart Roads, Cattle Creek

Proposed View | 60° Cropped (B)

Photomontage:

PM03/ VP08 O'Connor Road, Cattle Creek

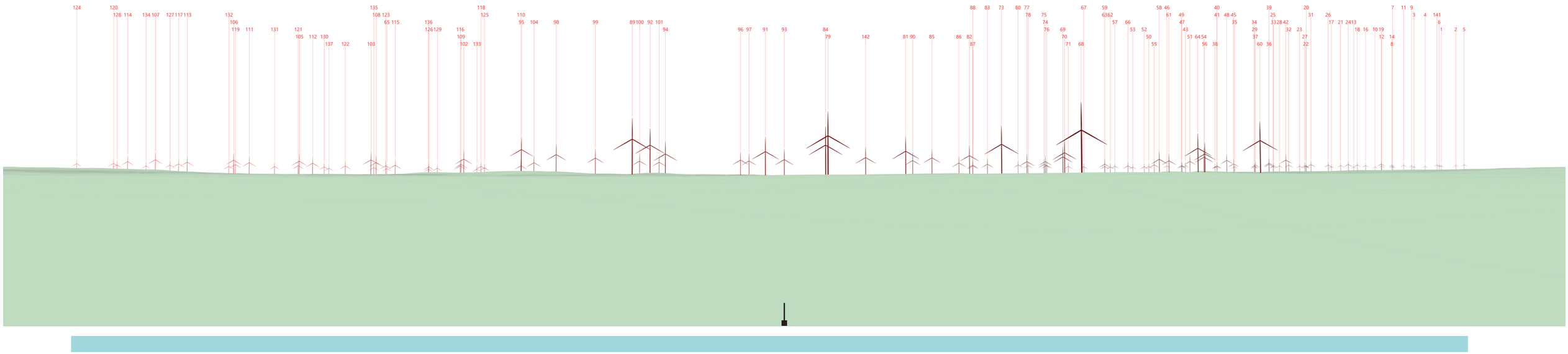
180° Existing View



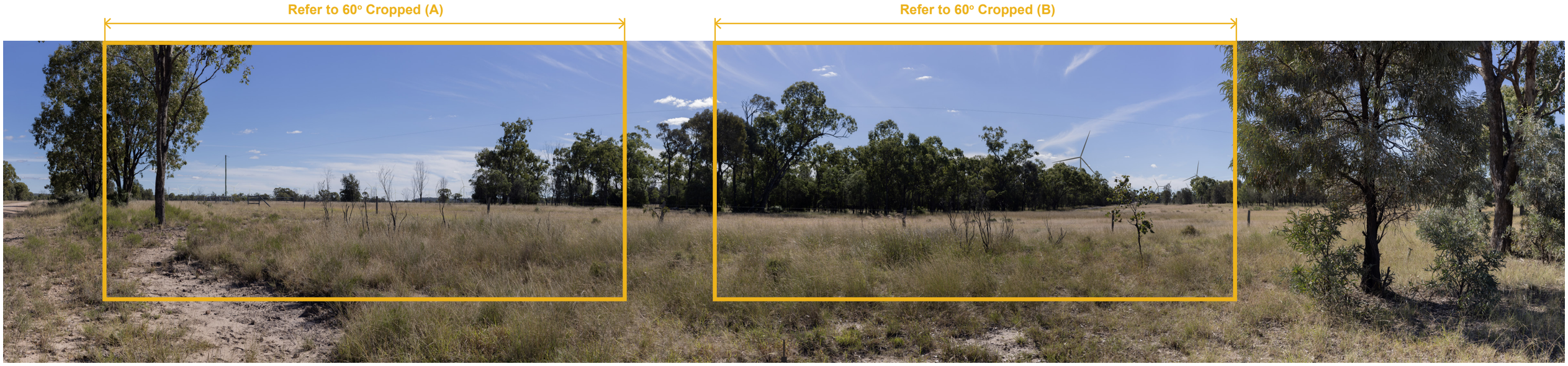
180° 3D Model Overlay

Photomontage:

PM03/ VP08 O'Connor Road, Cattle Creek



180° Wireframe Diagram



180° Proposed View

Photomontage:

PM03/ VP08 O'Connor Road, Cattle Creek

Proposed View | 60° Cropped (A)

Photomontage:

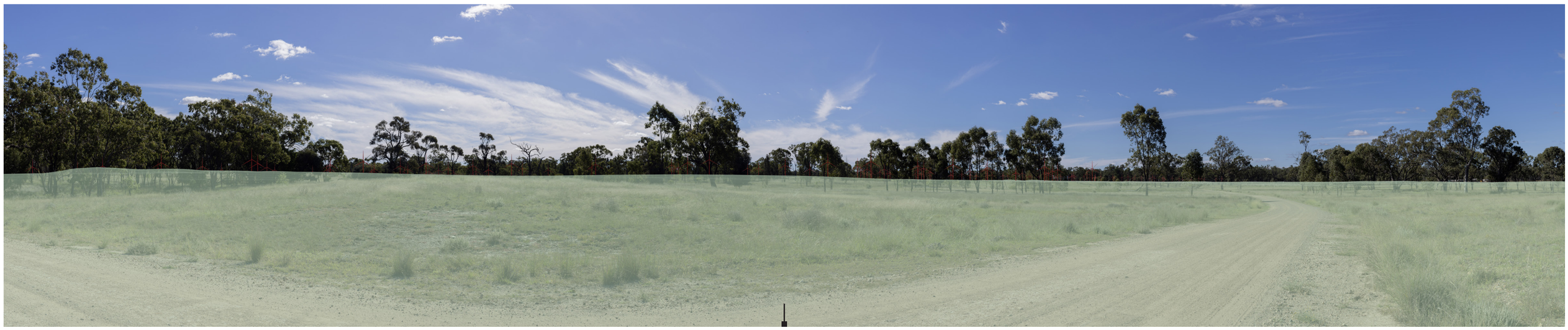
PM03/ VP08 O'Connor Road, Cattle Creek

Proposed View | 60° Cropped (B)

Photomontage:

PM04/VP07 O'Connor Road, Cattle Creek

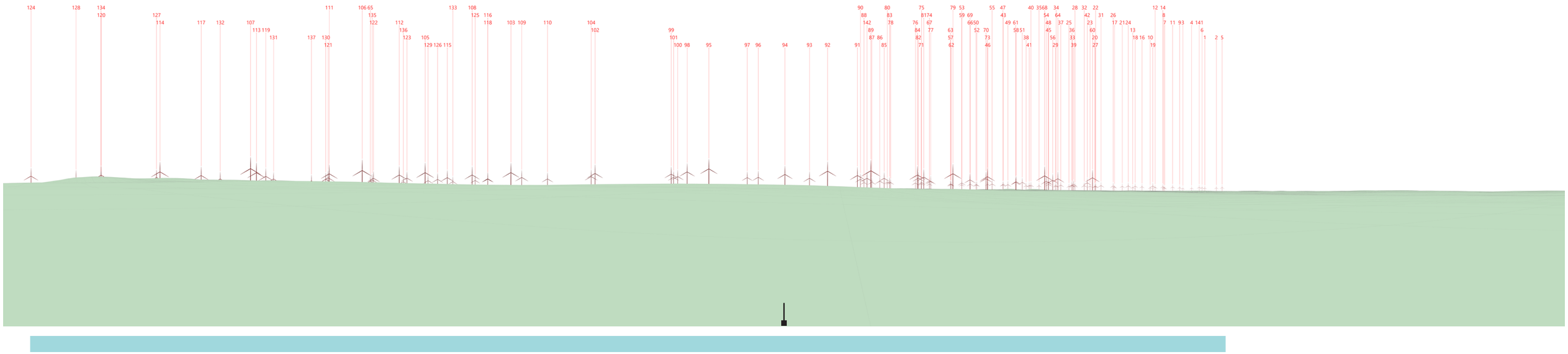
180° Existing View



180° 3D Model Overlay

Photomontage:

PM04/VP07 O'Connor Road. Cattle Creek



180° Wireframe Diagram

180° Proposed View

Photomontage:

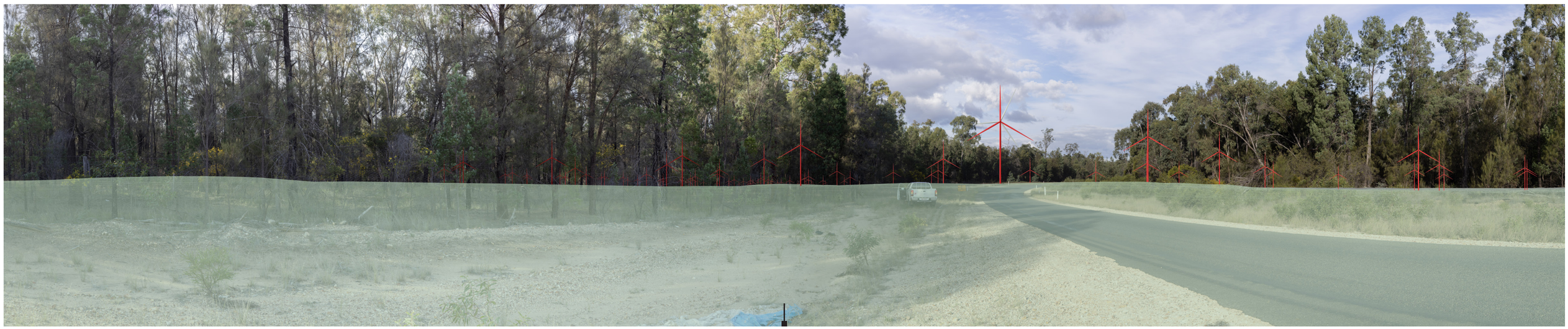
PM04/VP07 O'Connor Road, Cattle Creek

Proposed View | 60° Cropped

Photomontage:

PM05a/VP06a Cecil Plains Moonie Road, Cattle Creek

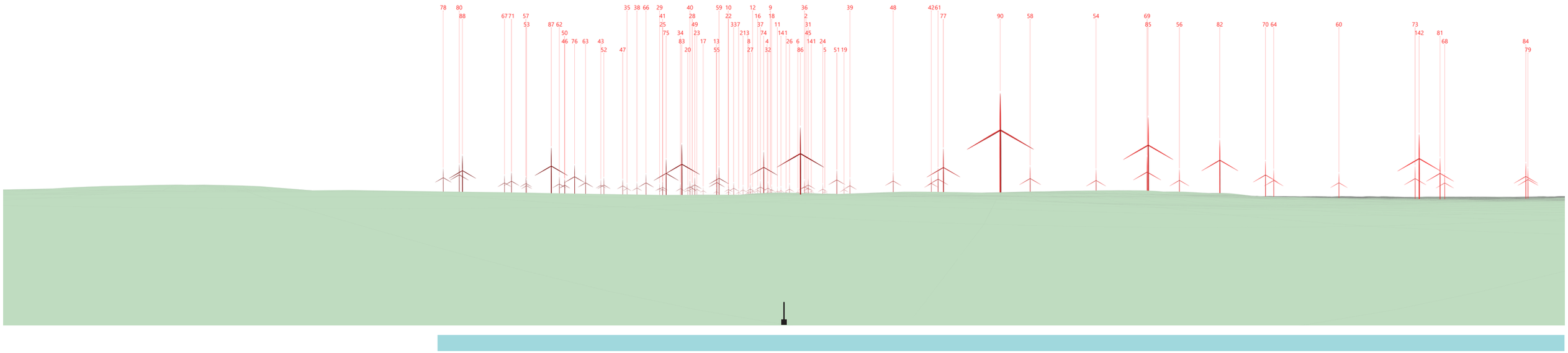
180° Existing View



180° 3D Model Overlay

Photomontage:

PM05a/VP06a Cecil Plains Moonie Road. Cattle Creek



180° Wireframe Diagram

Refer to 60° Cropped

180° Proposed View

Photomontage:

PM05a/VP06a Cecil Plains Moonie Road, Cattle Creek

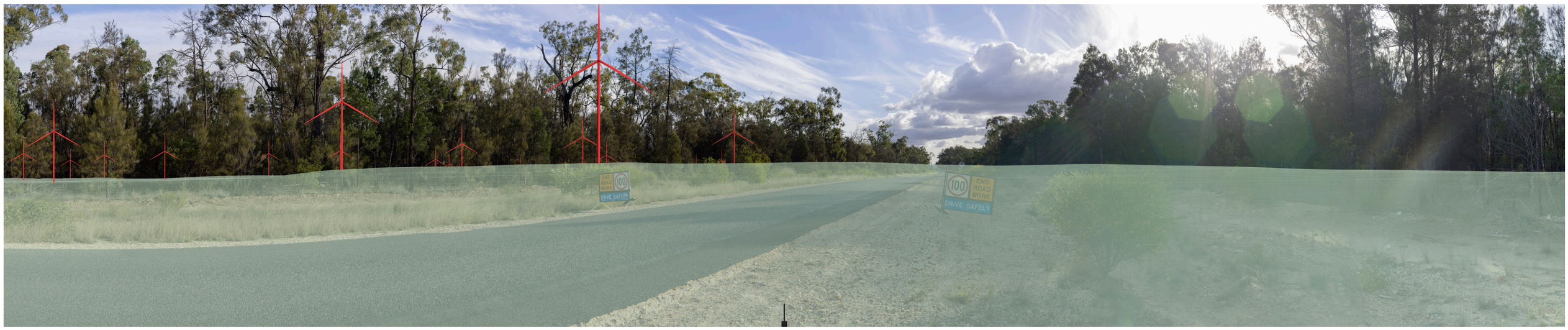
60° 70° 80° E 100° 110° 120°

Proposed View | 60° Cropped

Photomontage:

PM05b/VP06b Cecil Plains Moonie Road, Cattle Creek

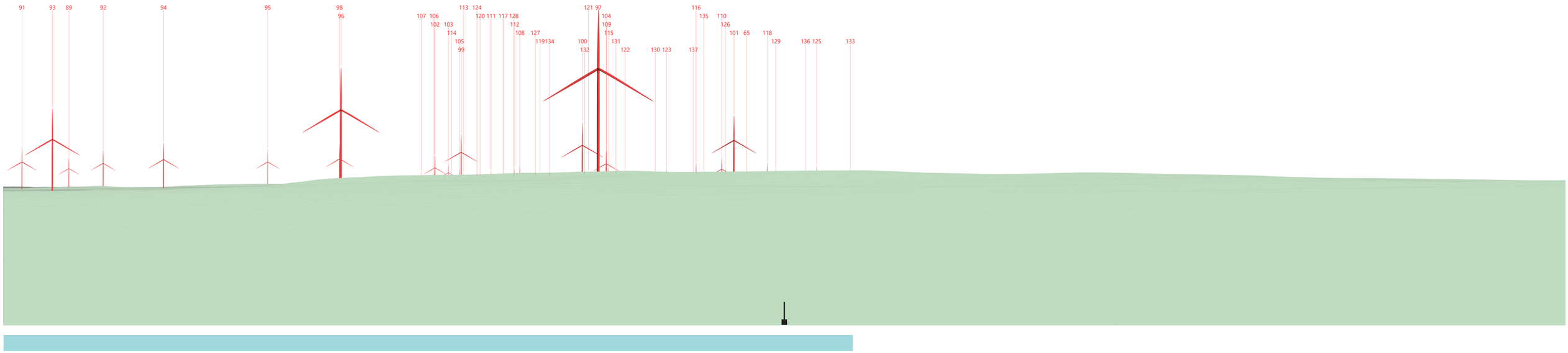
180° Existing View



180° 3D Model Overlay

Photomontage:

PM05b/VP06b Cecil Plains Moonie Road. Cattle Creek



180° Wireframe Diagram

Refer to 60° Cropped

180° Proposed View

Photomontage:

PM05a/VP06b Cecil Plains Moonie Road, Cattle Creek

Proposed View | 60° Cropped

08 Shadow Flicker

8.0 Shadow Flicker Assessment

8.1 Overview of Shadow Flicker

According to SC23, shadow flicker is *when the sun passes behind rotating blades of a wind turbine and casts a moving shadow over neighbouring areas. Shadow flicker from wind turbines can impact on the amenity of urban and rural development by creating a 'strobing' shadow effect* (DSDIP, 2025).

8.2 Shadow Flicker Assessment Methodology

Moir Studio has referred to *State Code 23: Wind Farm Development Planning Guideline* PO15 Shadow Flicker to determine the parameters for the assessment of shadow flicker.

The Shadow Flicker Assessment was conducted using specialist industry software (Wind Pro), assessing all WTGs (based on a 270 m maximum tip height) proposed for the project to represent the worst-case impact scenario.

The parameters used are outlined in the table below:

Model Parameter	Setting Used:
Zone of Visual Influence of Shadows:	265 x Maximum Blade Chord
Minimum Angle of Sun:	3 degrees
Shape of the Sun	Disk
Time and Duration of Modelling	One full year representing a non-leap year 12 to 15 years after the date of DA submission
Orientation of the Rotor	Sphere or disk facing the sun
Time Step	10 minutes or less
Effects of Topography	Included
Receptor Height	1.5 meters
Receptor Location	A map must be provided and highest level of annual shadow flicker within 50 m of centre of dwelling reported.
Grid Size	Not more than 25 metres

Table 16 – Shadow Flicker Assessment Parameters

The shadow flicker modelling undertaken for the Project is based on topography alone, and therefore, the extent of the impact may be decreased by several variables, including:

- The aspect of the residence relative to the WTG(s) (window locations, living area locations etc.);
- The extent of natural or screening vegetation between the WTG(s) and the receptor;
- The existence of other screening elements (buildings, structures, etc.) between the WTG(s) and the receptor;
- The time of year;
- The proportion of daylight hours in which the WTGs operate; and
- The frequency of bright sunshine and cloudless skies (particularly at low elevations above the horizon).

Image 23 – Example of Shadow Flicker at base of WTG

8.3 Shadow Flicker Study Area Definition

Shadow flicker can theoretically extend many kilometres from a WTG. However, the intensity of the shadows decreases with distance. While acknowledging that different individuals have different levels of sensitivity and may be annoyed by different levels of shadow intensity, the State Code limits the assessment to moderate levels of intensity (i.e. well above the minimum theoretically detectable threshold) commensurate with the nature of the impact and the environment in which it is experienced.

For the purpose of this report, shadow flicker beyond the distance of 265 x maximum blade chord length (4.9 m) has not been considered due to the physical limits of shadow formation. This distance of 1,299 m is considered as the Study Area. Beyond this distance shadow flicker is no longer perceivable as per the example provided in **Figure 22**.

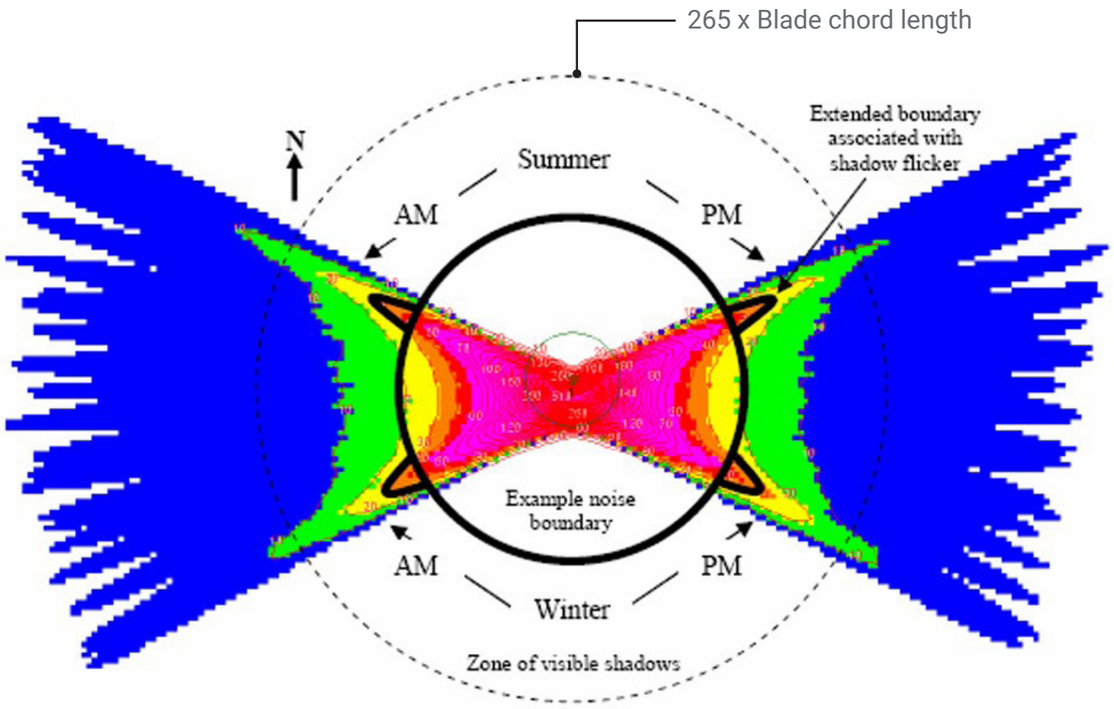
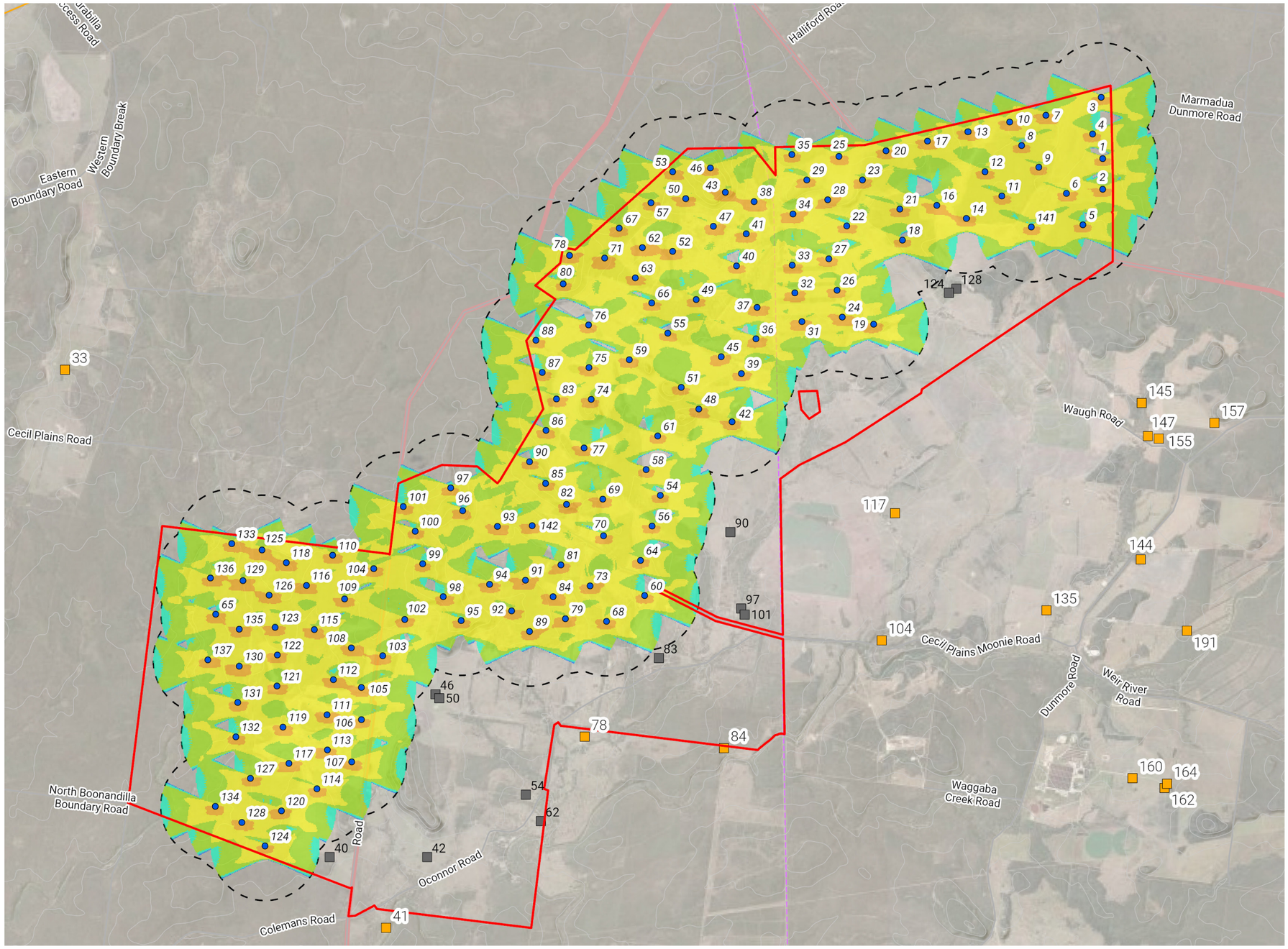


Figure 22 – Typical Area of Shadow Flicker - Hours per year
Basemap Source: EPHC, 2021

8.4 Assumptions and limitations of the Assessment

The following assumptions and limitations have been made:

- Assessment is based on a maximum impact scenario, assuming WTGs operate continuously during daylight hours when the sun is shining;
- The model assumes 100% clear skies throughout the year, which does not account for cloud cover, weather variability, or WTG downtime;
- Vegetation, buildings, and other landscape features that may obstruct shadow paths are not included unless specifically modelled;
- Sun position data is based on astronomical calculations (sun path geometry) specific to the project's geographic coordinates;
- Receptors are typically modelled at a fixed height above ground level (e.g. 1.7 m for standing human eye level);
- The highest level of annual shadow flicker within 50 m of the centre of each dwelling receptor is recorded;
- Shadow flicker is calculated using the final WTG layout and specification provided at the time of assessment;
- The model assumes 100% opacity of WTG blades, although in reality modern blades may allow some light through, reducing flicker intensity;
- Modelling is limited to a fixed distance (1,299 m), based on 265 × blade chord length (4.9 m), beyond which flicker is imperceptible;
- The worst-case approach overestimates actual shadow flicker, as it does not factor in WTG downtime, cloud cover, or variations in sun intensity; and
- Results are accurate for the current WTG layout and specifications. Any changes will require an updated assessment.



Shadow Flicker Hours per Year

Refer to **Section 8.2**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Highway
- Local Road

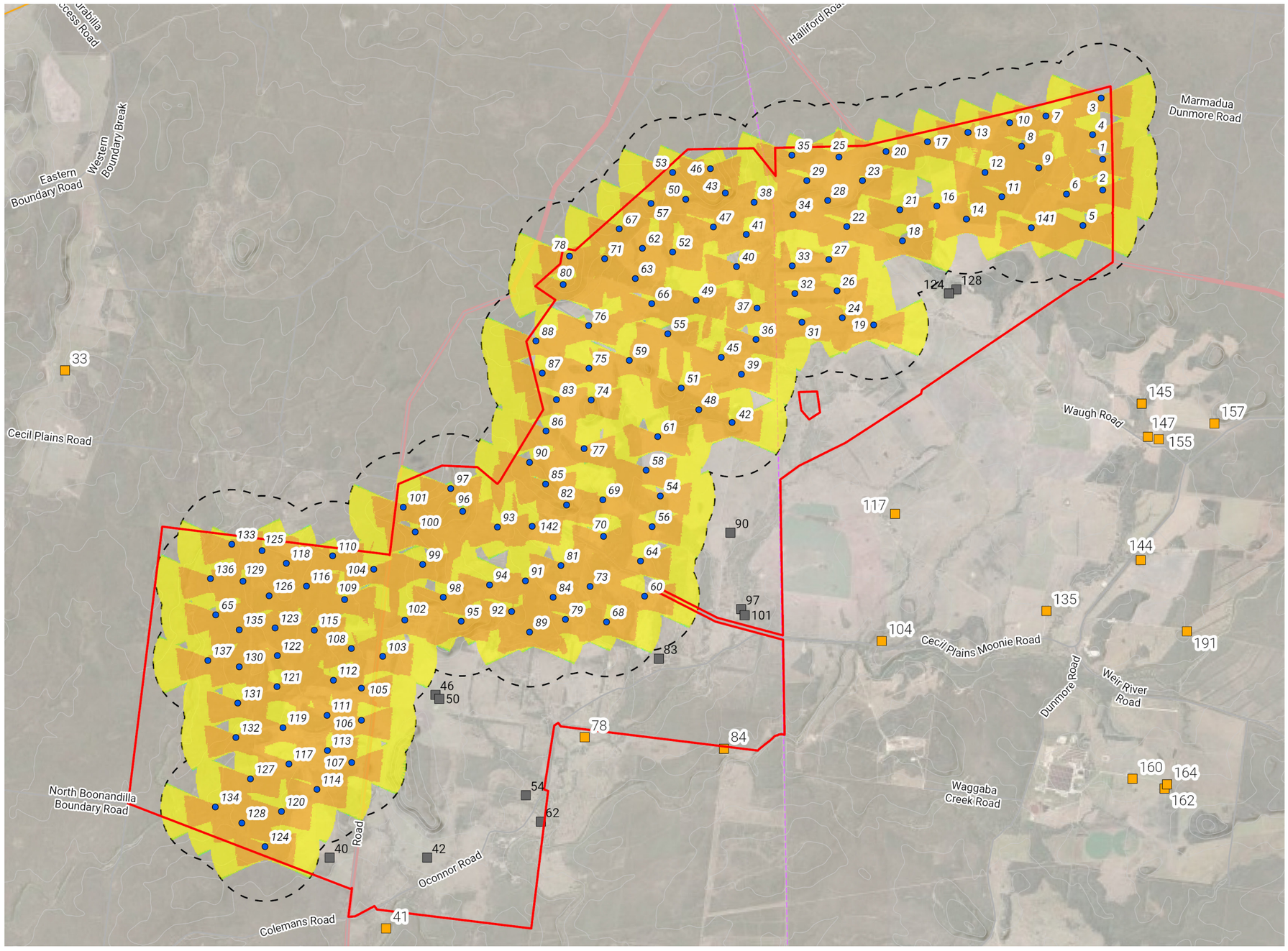
SHADOW FLICKER LEGEND

- Up to 10 hours per year
- 11 - 30 hours per year
- 31 to 100 hours per year
- 101 to 500 hours per year
- 501 to 1,000 hours per year
- More than 1,000 hours per year
- Shadow Flicker Study Area (1,299 m from nearest WTG)

0 1 2 4 km

Figure 23 – Shadow Flicker Assessment - Hours per year

Basemap Source: ESRI, 2026



Shadow Flicker Minutes per Day

Refer to **Section 8.2**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Contours
- Existing Transmission Line
- Highway
- Local Road

SHADOW FLICKER LEGEND

- Up to 10 minutes per day
- 11 - 30 minutes per day
- 31 - 60 minutes per day
- More than minutes per day
- Shadow Flicker Study Area (1,299 m from nearest WTG)

0 1 2 4 km

Figure 24 – Shadow Flicker Assessment - Minutes per day

Basemap Source: ESRI, 2026

8.5 Results of Shadow Flicker on Dwellings

8.5.1 Assessment of Shadow Flicker on Dwellings

SC23 (DSDIP, 2025) states that the Proponent must undertake a Shadow Flicker Assessment that identifies the potential impacts and how these may be mitigated or managed. This assessment should consider the potential impacts on existing or approved sensitive land uses and ensure that any modelled blade shadow flicker impacts affecting sensitive land use do not exceed **30 hours per annum and 30 minutes per day.** The extent of shadows from WTGs based on a distance of 265 m x maximum blade chord (in this case, 4.9 metres) is determined to be 1,299 m. Appendix 2 of the Planning Guideline - SC23 states that no assessment is necessary for dwellings beyond 1,299 m.

No associated or non-associated dwellings, including land within a 50 m buffer from centre of dwelling, were identified within 1,299 m of the proposed WTGs (the maximum extent of shadows from the WTGs). This means no further assessment is required.

As all dwellings are outside 1,299 m, no further assessment or mitigation is required.

8.5.2 9.3.2 Assessment of Shadow Flicker on Road Users

Exposure to shadow flicker while travelling has the potential to be noticeable and intermittently cause annoyance to some road users. However, SC23 Code does not consider roads to be a sensitive land use, and therefore they are not required to be assessed.

The Shadow Flicker Assessment illustrates that shadow flicker might occur along 5.9 km of Cecil Plains Moonie Road within the Project Area for 0 to 150 minutes per day and 0 to 400 hours per year. Existing vegetation along this road offers some screening (see Image 24).

Whilst mitigation is not required for shadow flicker on roads, it is recommended that the Proponent retains roadside vegetation where possible, particularly along roads within 1,299 m of the proposed WTGs, to reduce the impact. Supplementary vegetation may also be planted.

Image 24 – Existing roadside vegetation along Cecil Plains Moonie Road

09 Ancillary Infrastructure

9.0 Assessment of Ancillary Infrastructure

9.1 Overview of Ancillary Infrastructure

The Proposed Development consists of the construction, operation, maintenance, and decommissioning of up to 135 WTGs, Battery Energy Storage System (BESS) of up to 450 MW and ancillary infrastructure (supporting infrastructure) consisting of:

- WTG foundations, crane hardstands, crane boom laydown, blade laydown and rotor assembly area;
- Access tracks, including:
  - New and upgraded tracks within the Project Area, generally comprising of a nominal range of 5.5 m – 10 m wide permanent access track, and a maximum 50 - 95 m wide cleared corridor for Oversize Overmass (OSOM) vehicles;
- Low voltage (LV) and medium voltage (MV) underground cabling, as well as MV and high voltage (HV) overhead transmission lines;
- Internal collector substations;
- A switching station adjacent to the existing 330 kV Powerlink transmission line. This has been accounted for within the Disturbance Footprint, thereby allowing the clearing of the site to be assessed as part of the impacts associated with the Proposed Development (noting, however, that the switching station infrastructure will be constructed, owned and operated by Powerlink);
- Permanent meteorological masts;
- Construction compounds and laydown areas;
- Washdown areas;
- Operational and maintenance facilities; and
- A construction workers accommodation facility.

Further, there is the potential for the inclusion of the below infrastructure:

- Concrete batching plants;
- Borrow pits; and
- Communications tower.

9.2 Access and Infrastructure Corridors

Access tracks between the existing road network and the Proposed Action components will either be established or upgraded to allow for access to the site for traffic resulting from construction or operational works. Considerations for the establishment of these routes include load requirements, turning radius, topography of the land, soils, watercourse crossings, vegetation clearing, and the potential collocation of wind farm infrastructure. The onsite access road layout will be designed to utilise existing tracks where appropriate. The access tracks will typically measure between 5.5 m and 10 m in width (excluding cut and fill requirements) for light vehicles, which may be expanded to 12 m to accommodate heavy vehicles, cranes, and delivery vehicle requirements during construction or where curves necessitate a wider access track. Post-construction, and where possible, these areas will be rehabilitated to a 5.5 m width. Usage of these access tracks does not significantly impact on planned agricultural activities.

The Proposed Access Route into the Project Area is along Cecil Plains Moonie Road, which will require upgrades to allow for OSOM vehicles transporting WTG components. Four locations along Cecil Plains Moonie Road will provide access to the Project Area.

Due to the existing agricultural land use of the Study Area, farm roads traversing the landscape form a significant part of the existing landscape character. The proposed access tracks are likely to be viewed as part of the existing character of the landscape. Mitigation measures for reducing residual visual impact resulting from the construction of access tracks include:

- Where possible utilise or upgrade existing roads, trails or tracks to provide access to the proposed WTGs to reduce the need for new roads;
- Allow for the provision for down sizing roads or restoring roads to existing condition following construction where possible, including revegetation;
- Any new tracks must minimise cut and fill and avoid the loss of vegetation; and
- Utilise local materials where possible and practical.

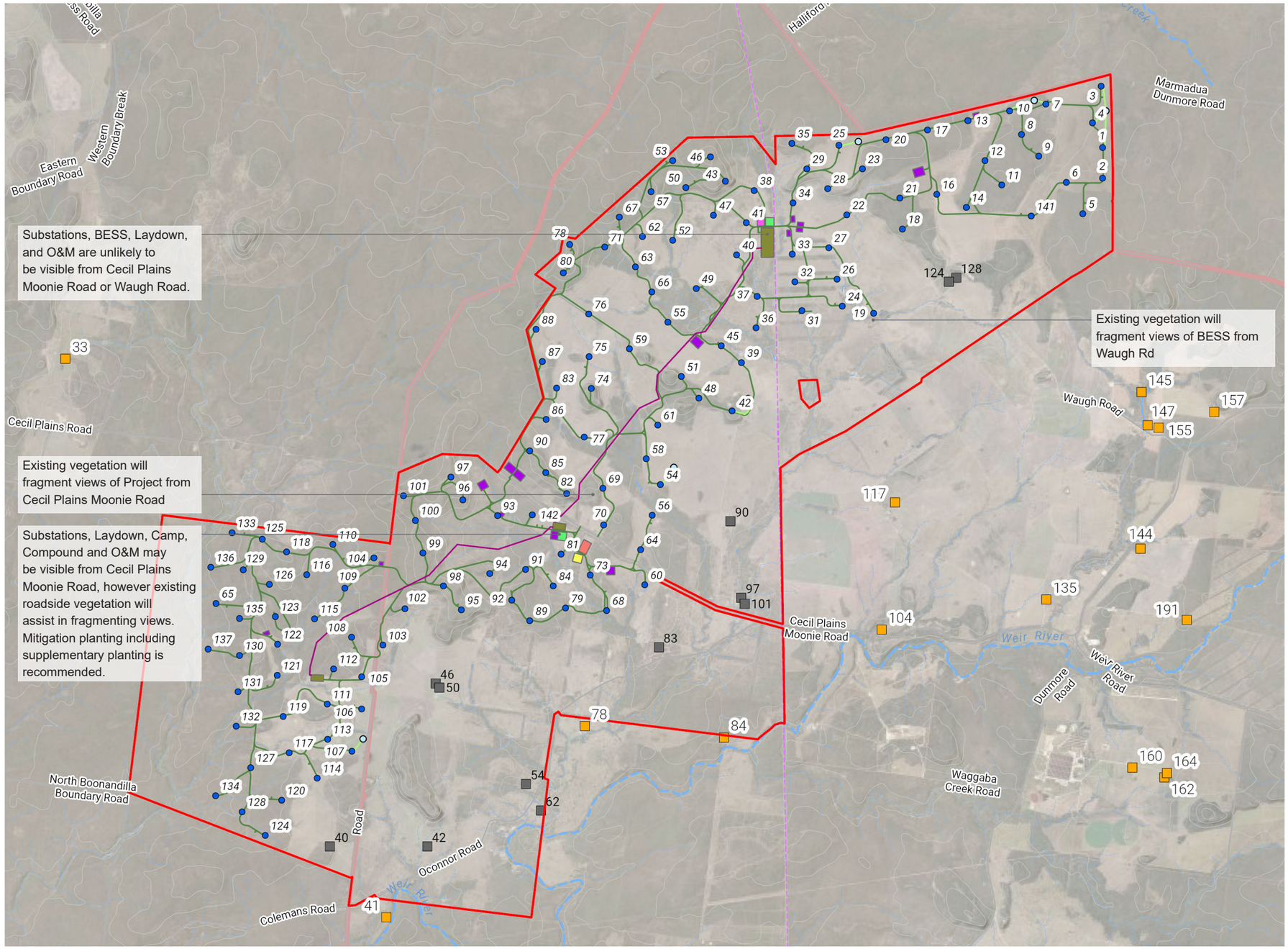
9.3 Electrical connections

Each WTG will be connected via a MV (33 kV) electrical reticulation network to an on-site substation, whereby a transmission line will interconnect the Proposed Development to the grid. The electrical cables will be installed in underground trenches at a typical depth of up to 1 m below the ground surface, however, there is potential for it to be deeper in some locations to suit site conditions and design constraints. The cable trenches are expected to follow site access tracks where practicable, but in areas where it is not possible to install the electrical infrastructure underground, overhead powerlines will be used.

Proposed mitigation methods to be considered during detailed design phase include

- Utilise existing transmission lines where possible; and
- Use of subtle colours and a low reflectivity surface treatment on power poles to ensure that glint is minimised.

The potential visual impact resulting from the transmission lines is anticipated to be low due to the existing character of the Project Area.



Ancillary Infrastructure

Refer to **Section 8.2**

LEGEND

- Project Area
- Local Government Area
- Associated Dwelling
- Non-Associated Dwelling
- Proposed WTG
- Met Mast
- BESS
- Camp
- Compound
- Laydown
- O&M Compound
- Substation
- Internal roads
- Met Mast Power Supply
- Proposed internal 330 kV Transmission Line
- Contours
- Existing Transmission Line
- Highway
- Local Road

Watercourses

- Major - non perennial
- Minor - perennial
- Minor - non perennial

0 1 2 4 km

Figure 25 – Ancillary Infrastructure

Basemap Source: ESRI, 2026

9.4 Meteorological masts

Permanent meteorological masts are proposed to be installed in order to monitor wind conditions during the operational phase of the Proposed Development. The height of the proposed meteorological masts is approximately 160 m.

Although tall, meteorological masts are typically slim with an open-frame design, this reduces their prominence on the skyline and makes them less visually intrusive from a distance. The visual impact resulting from the masts will likely be low.

9.5 Operational and maintenance Facilities, substations, workforce accommodation

The Proposed Development includes operations and maintenance facilities. The operational infrastructure for the Proposed Development will include management offices, workshops, storage, equipment laydown, and warehousing facilities.

Substations are dotted in the north, centre and south of the site. The northern and southern substations are unlikely to be visible from public roads or non-associated dwellings and therefore have a low visual impact. The central substation may be visible from Cecil Plains Moonie Road but will likely be screened by existing vegetation.

A construction workers accommodation facility is located in the centre of the Project Area.

Mitigation in the form of supplementary planting can be implemented adjacent to the ancillary structures to reduce visibility from Cecil Plains Moonie Road. The following is to be considered:

- Siting to ensure minimal vegetation loss;
- Consideration should be given to controlling the type and colour of building materials used. Where possible a recessive colour palette is to be used which blends into the existing landscape;
- Avoidance of unnecessary lighting, signage on fences, logos etc;
- Any proposed buildings to be sympathetic to existing architectural elements in the landscape;
- Minimise cut and fill and loss of existing vegetation throughout the construction process; and
- Boundary screen planting is an effective mitigation method which could be utilised to ameliorate potential visual impacts resulting from the construction of ancillary structures with a small vertical scale such as collector stations and the operations facilities building.

9.6 BESS

The BESS development must adhere to the relevant performance outcomes stated in the *Planning guideline State Code 27: Battery storage facility (SC27)*.

Relevant Performance Outcomes:

- *PO22: Development is sited and designed to:*
  - *minimise visual impacts on sensitive receptors;*
  - *protect the landscape values and scenic amenity of the surrounding landscape; and*
  - *provide screening and buffering to sensitive receptors the greatest extent feasible.*
- *PO23: Lighting associated with the development provides safe and effective illumination for site operations and maintenance, whilst minimising environmental impacts and visual impacts on sensitive receptors.*

The proposed BESS of up to 450 MW is designed to provide short-term storage for system reliability and firming support, as well as energy pricing arbitrage capabilities. It is located in the north of the site, more than 8 km from both Cecil Plains Moonie Road and Waugh Road, and 7.4 km from nearest non-associated dwelling.

The BESS, associated fences, and laydown areas are typically no more than 4 m in height. Other infrastructure such as the switching station, substation and O & M compound may be up to 15 m tall and will likely be visually insignificant past 2 km.

Controlling the type and colour of building materials used, and avoiding use of unnecessary lighting will reduce potential visual impacts. Strategies to minimise and control operational lighting are outlined in **Section 10.0**, and include:

- Limiting lighting to essential safety, security and maintenance functions only;
- Avoiding permanent or continuous lighting where it is not operationally required; and
- Use of motion-sensors, timers or curfews so lighting is only active when staff are present.

The BESS is likely to have a Negligible visual impact due to large distance from sensitive receptors, and presence of intervening vegetation, as demonstrated in **Figure 25**.

10 Night Lighting

10.0 Night Lighting

10.1 Overview of Night Lighting

The following section of the report assesses the visual impacts of the Project's potential night lighting. Night lighting has the potential to alter the night time landscape of the region. Potential light sources include:

- Aviation Hazard Lighting (AHL) on nacelle of WTGs; and
- Night lighting for safety and security on associated structures.

SC27's PO23 specifically states that: "*Lighting associated with the [BESS] development provides safe and effective illumination for site operations and maintenance, whilst minimising environmental impacts and visual impacts on sensitive receptors.*"

Image 25 – View towards BWF - 2.0 km from WTG (30 minutes after sunset)

10.2 Existing Lighting

Due to the Project's isolated location, minimal existing lighting sources are present in the night time landscape of the Study Area, besides the extent of mining activities and rural properties. Some existing lighting is associated with motor vehicles travelling along roads within the Study Area.

The receptors most likely to be impacted by the new lighting are people who experience the outdoor night landscape, particularly night sky enthusiasts, photographers, stargazers, campers, and landowners with potential visibility of the WTG hub.

Image 26 – View towards BWF - 1.75 km from WTG (45 minutes after sunset)

10.3 Proposed Aviation Hazard Lighting

The requirement of AHL on WTGs for the Project is subject to the advice of the Civil Aviation Safety Authority (CASA). CASA generally recommends night lighting if an obstacle exceeds 160 metres above ground level, which the Project does exceed.

If determined to be required, potential CASA specifications for lighting could include the following:

- Two flashing red medium-intensity obstacle lights should be provided per WTG where required;
- The light fixtures should be mounted sufficiently above the surface of the nacelle so that the rotor hub does not obscure the lights and is at a horizontal separation to ensure an unobstructed view of at least one of the lights by a pilot approaching from any direction;
- Sufficient individual WTGs should be lit to indicate the extent of the group of WTGs; and
- The interval between obstacle-lighted WTGs should not exceed 900m, and the most prominent (highest for the terrain) WTG(s) should be lit. *(Civil Aviation Safety Authority, 2023).*

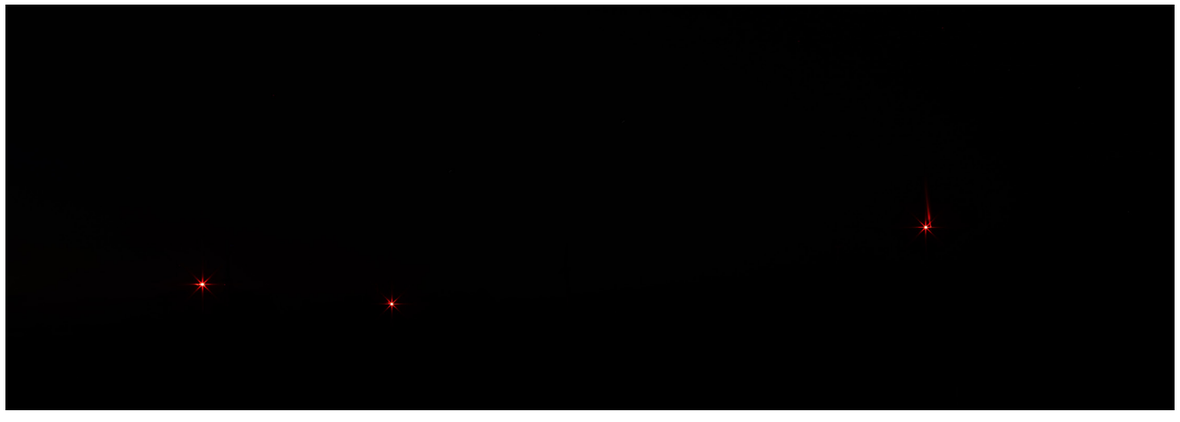


Image 27 – View towards BWF - 1.85 km from WTG (60 minutes after sunset)

Image 28 – View towards BWF - 3.5 km from WTG

Image 29 – View at night towards BWF - 3.5 km from WTG

Image 30 – View towards BWF - 8.5 km from WTG

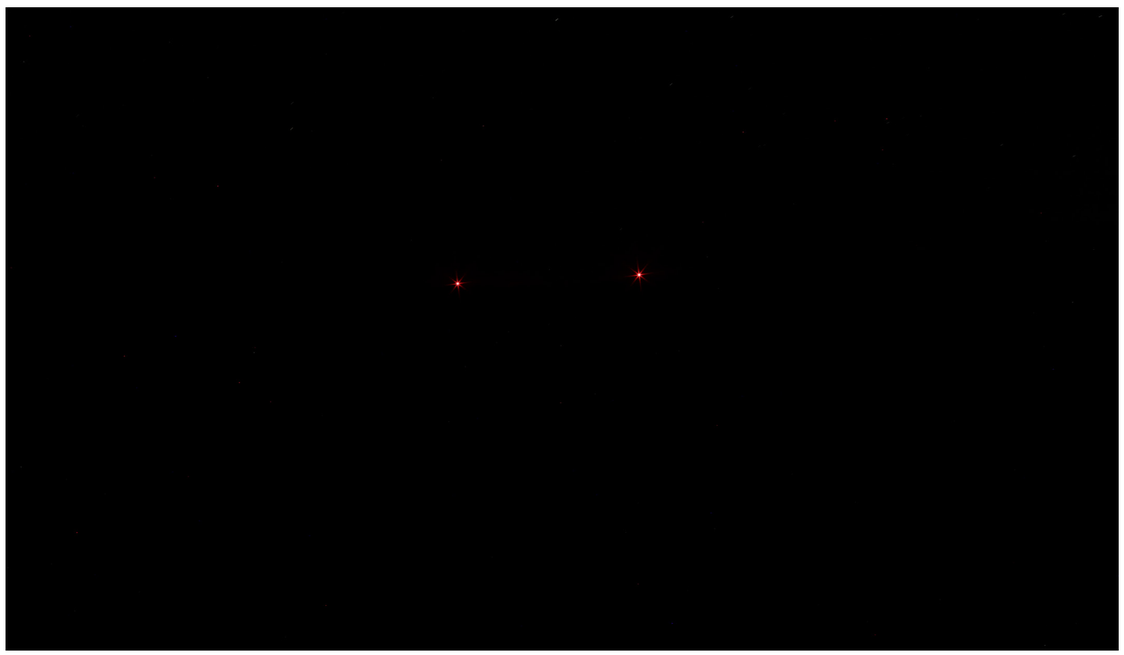


Image 31 – View at night towards BWF - 8.5 km from WTG

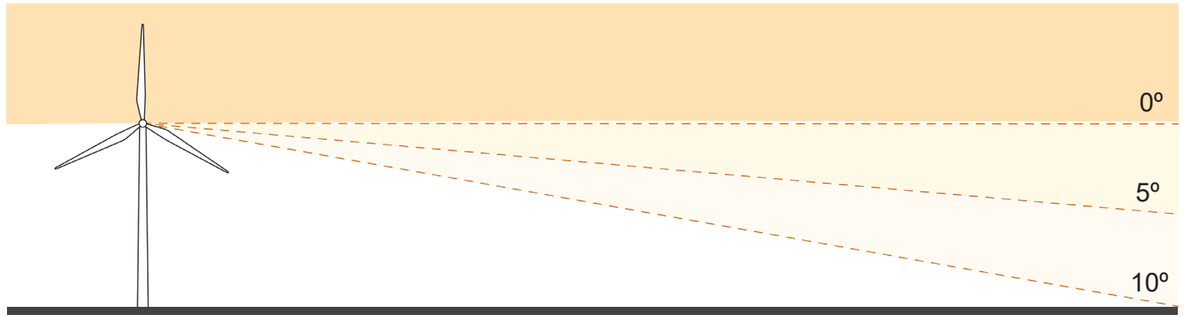


Figure 26 – Recommended Light Shielding to reduce AHL Spread

10.3.1 Potential visual impacts from AHL

AHL on WTGs can be visible from distances in excess of 20 km *(Scottish Natural Heritage 2017)*. However, the distance depends on a number of variables, including light intensity, topography, vegetation coverage, and climatic conditions.

Representative images of aviation lighting (installed in August 2020) on WTGs at Biala Wind Farm (BWF) NSW, have been included to best illustrate the potential visual appearance of aviation lighting. **Images 25-31** illustrate the appearance of night lighting on a dark rural landscape at intervals after sunset.

10.3.2 Recommendations to reduce the potential visual impacts from AHL

To reduce the effect of AHL on WTGs the following should be applied:

- If used, air navigation lighting should be spaced around the outer edges of the wind farm. Lights are not required on every tower. Where possible, careful consideration should be given to the selection of WTGs requiring lighting to avoid unnecessary impact upon residences;
- Treatment of the rear of blades with a non-reflective coating to reduce reflection off the rotating blade at night;
- Use of the lowest candela intensity allowed by CASA;
- According to the CASA requirements, shielding may be provided to restrict the downward spill of light to the ground plane by ensuring that no more than 5% of the nominal light intensity should be emitted at or below 5° below horizontal (Refer to **Figure 26**); and
- No light should be emitted at or below 10° below horizontal. *(Australian Government & Civil Aviation Safety Authority 2019).*

Considering the high elevation of WTGs and the implementation of shields; visible light will likely be reduced to ambient lighting instead of direct lighting when viewed from close proximity.

10.4 Night lighting for Safety and Security on Ancillary Infrastructure

Lighting on ancillary infrastructure has the potential to extend the visual effect into the night. As stated in the SC27 Guideline: *"Development may be conditioned to ensure that external lighting is installed as low intensity lighting (except where for safety or emergency purposes), does not shine above the horizontal, and complies with Australian/New Zealand Standard AS/NZS 4282:2023 – Control of Obtrusive Effects of Outdoor Lighting, or its latest version."*

The visual impact of potential lighting could be reduced by employing mitigation methods outlined in **Section 11.3**. These design considerations have been developed with reference to the principles outlined in relevant best practice guidelines for lighting design such as controlling the level of lighting, it's direction, shielding design, and timing (refer **Figure 27**). The Dark Sky Planning Guidelines (DPE, 2023) and The National Light Pollution Guidelines for Wildlife (DCCEEW, 2023) provides relevant guidance on reducing the potential for light pollution. In contrast to AHL which should be directed upwards, all other lighting should be shielded downwards.

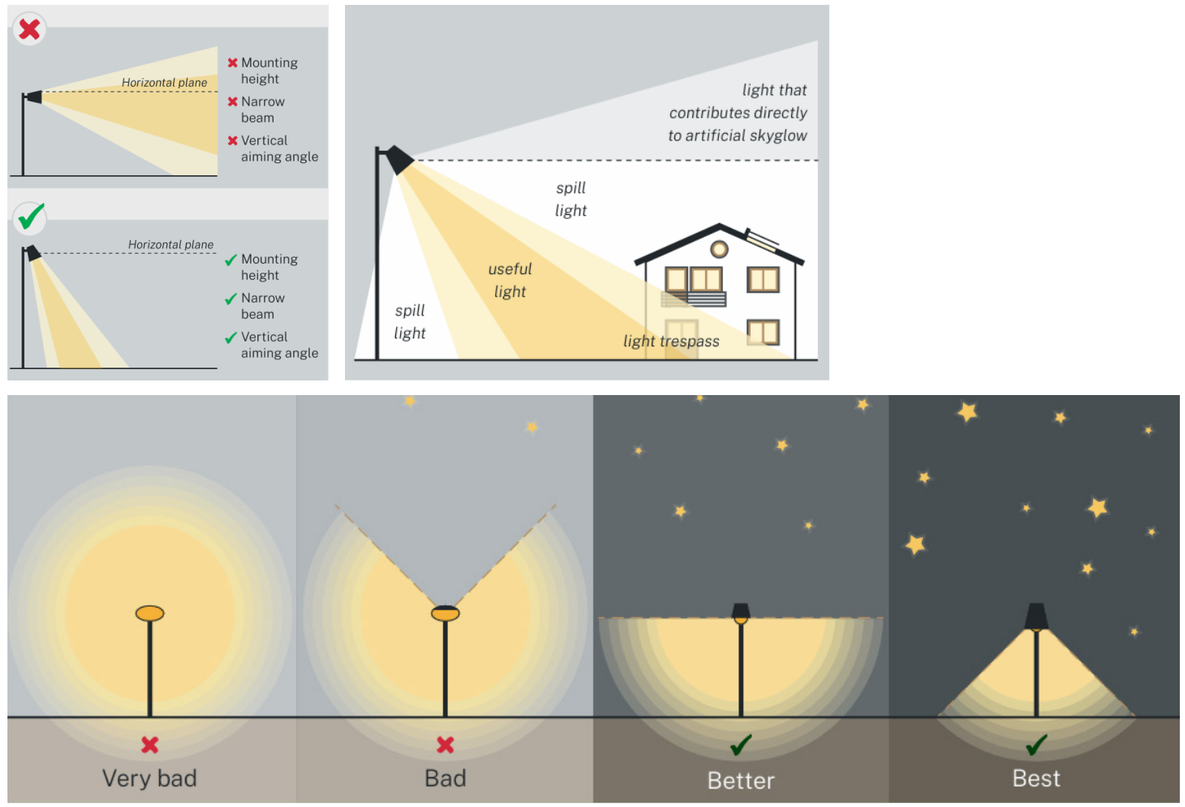


Figure 27 – Lighting design principles on ancillary infrastructure (Dark Sky Planning Guidelines, 2023)

11 Mitigation Measures

11.0 Mitigation Measures

11.1 Overview of Mitigation Methods

This section of the report provides recommendations which seek to achieve a better visual integration of the Project within the existing landscape at both local and regional scales. The mitigation measures attempt to lessen the visual impact of the proposed wind farm whilst enhancing the visual character of the surrounding environment.

Mitigation measures are best considered as two separate phases. These include:

- Primary measures that form part of the development of the wind farm design through an interactive process;
- Secondary measures designed to specifically address the remaining (residual) adverse effects of the final development proposals (*GLVIA, 2013*).

It is important to note that the mitigation methods proposed in this report are made notwithstanding issues raised by other consultants (eg. engineering, ecology, geology etc.). This is by no means an exhaustive list, however the adoption of these recommendations will assist considerably in ensuring the proposal contributes positively to the visual quality and character of the area.

The Viewpoint Analysis in **Section 6.0** indicates that mitigation may be required along Cecil Plains Moonie Road. The photomontages in **Section 7.0** demonstrate that existing roadside vegetation is working to reduce impacts, and therefore should be retained.

11.2 Primary Mitigation Measures:

The design of the Project layout including the ancillary infrastructure is a primary measure of mitigation. Good design principles employed through the Project design phase can significantly reduce the visual impacts of the Project and ancillary infrastructure. These include siting principles, access, layout and other aspects of the design which directly influence the appearance of the proposed development.

Moir Studio has been involved in the Project over multiple design iterations, with layout refinements informed by early visual impact assessment and ongoing consultation with the community. These iterative changes reflect a proactive approach to managing potential impacts As part ongoing engagement to reduce visual impacts, RWE have removed eight (8) WTGs to reduce potential visual impacts on nearby sensitive receivers and the broader landscape. In addition, a number of WTGs have been micro-sited within the approved development envelope to further minimise visual prominence and respond to site-specific constraints. Micro-siting remains a key mitigation strategy available during the final design phase, allowing for the fine tuning of WTG locations to reduce visibility from key viewpoints.

Other important factors to achieving a visual consistency through the landscape include:

- Uniformity in the colour, design, rotational speed, height and rotor diameter of the WTGs;
- Use of muted colours and non-reflective materials to reduce visibility and avoid drawing the eye.
- Blades, nacelle and tower to appear as the same colour; and
- Avoidance of unnecessary lighting, signage and logos.

During the planning and design phase, the following strategies have been considered in the design of the Project Layout to lessen the visual impact of the Project:

- Where possible, underground cabling is being used;
- Careful consideration has been given to the location of ancillary structures to ensure the Project does not contrast significantly with the surrounding landscape;
- Where possible the Project will utilise or upgrade existing roads and tracks to provide access to the proposed WTGs. RWE have engaged with landowners to ensure access tracks benefit the landowners to reduce the need for new roads; and
- Where possible, existing vegetation generally present around the Project Area will be retained and protected to maintain the existing level of screening and to reduce the overall visual impact, particularly south of Cecil Plains Moonie Road where the HLV area intersects with the Project.

11.2.1 Secondary Mitigation Measures

Mitigation measures to assist in reducing the residual visual impacts have been outlined for each aspect of the Project in **Table 17**.

11.2.2 Landscaping Principles

The existing character of the landscape allows for a variety of methods of landscaping and visual screening which will remain in keeping with the landscape character. General guidelines to adhere to when planning for landscaping and visual screening include:

- Planting is recommended post construction in consultation with the landowner (where applicable);
- Planting should remain in keeping with existing landscape character;
- Species selection is to be typical of the area. Locally native plant species are preferred, as they help to preserve the landscape character and are also well-suited to local conditions (ie.soil, climate, etc.) and will build on the existing vegetation assemblages in the area;
- Planting layout should avoid screening views of the broader landscape;

- Where appropriate reinstate any lost vegetation; and
- Allow natural vegetation to regrow over any areas of disturbance of the area as well as building habitat for local fauna.

11.3 Summary of Mitigation Methods

Implementation of the proposed mitigation measures summarised in **Table 17** will reduce the residual visual impact ratings at locations by increasing view fragmentation, reducing contrast, and shortening duration of exposure, without introducing new visual clutter.

SUMMARY OF MITIGATION MEASURES		
	Potential impacts	Mitigation measure to reduce impacts
WTGs	• New vertical elements in the view • Shadow Flicker • Clearing of existing vegetation	• Implement primary design considerations for WTG layout - siting, size, colour, rotation speed • Avoidance of unnecessary lighting, signage, and logos; • Retain existing vegetation where possible; and • Plant screening vegetation in strategic locations with consideration of species and views to broader landscape.
Ancillary Infrastructure	• New vertical elements in the view • Reflection of light off materials • Clearing of existing vegetation	• Where possible a recessive colour palette will be selected for structures such as the O&M to integrate into the existing landscape. The colours of the ancillary infrastructure will be considered in the detailed design phase to ensure minimal contrast and to help blend into the surrounding landscape to the extent practicable; • Avoidance of unnecessary lighting, signage, and logos; • Use of subtle colours and a low reflectivity surface treatment on power poles to ensure that glint is minimised; • Use underground cabling where possible • All ancillary structures not required for the ongoing operations and maintenance of the Project will be removed and the land rehabilitated so that it can return to agricultural use; and • Consideration will be given to controlling the type and colour of building materials used.
Access Tracks	• Clearing of existing vegetation	• Use existing tracks where possible; • Any new roads / access tracks will be constructed to minimise cut and fill and avoid the loss of vegetation; • Allow for the provision for down sizing roads or restoring access tracks to existing condition following construction where possible; and • Utilise local materials where possible and practical.
Aviation Hazard Lighting	• Loss of Dark Sky amenity and star visibility • Distracting for road users and residences at night	• Where possible, careful consideration of WTGs upon which AHL is installed to avoid unnecessary impact upon residences; • Treatment of the rear of blades with a non-reflective coating to reduce reflection off the rotating blade at night; • Use of the lowest candela intensity allowed by CASA; and • Permanent light shielding (light directed upwards) is also an option to reduce impact on residences within two (2) km of the installation.
Lighting	• Loss of Dark Sky amenity and star visibility • Distracting for road users and residences at night	• Control the level of lighting used and only light areas that are required; i.e. paths/roads and building entry points, substation or security lighting; • Reduce the duration of lighting and switch off lighting when it is not required; • Use the lowest intensity required for the job; • Consider lighting direction and use shields to avoid unnecessary light spill (light directed downwards); and • Use non-reflective dark coloured surfaces to reduce reflection of lighting.
Construction	• Increased presence of vehicles, stockpiles and visual clutter • Clearing of existing vegetation	• Where possible minimise visual clutter during the construction phase by limiting the number of construction vehicles, cranes, and equipment visible on-site at any given time; • Store equipment away from visible areas; and • Minimise dust to reduce light pollution.

Table 17 Summary of Mitigation Measures

12 Summary

12.0 Summary

12.1 Summary

The Landscape Character and Visual Impact Assessment for the proposed Cattle Creek Wind Farm has been undertaken to support the State Significant Development application.

The assessment adhered to State Code 23: Wind Farm Development (2025) and State Code 27: Battery Storage Facility (2025), and other relevant guidelines, including the AILA Guidance Note for LVIA (2018), Draft National Wind Farm Development Guidelines (2010), and regional planning schemes. Moir Studio's methodology was informed by quantitative analysis and fieldwork undertaken in May 2024, which established the baseline landscape character of the Project area.

The regional landscape is characteristic of the Brigalow Belt and Southeast Queensland bioregions, specifically the Inglewood sandstones and Moonie R Commoron Creek Floodout subregions. Land use is primarily cattle grazing, cropping and native forestry.

The study found that the project is located within a modified rural landscape of low scenic quality. Three Landscape Character Units were identified:

- LCU01: Waterways (Moderate-Low Scenic Quality);
- LCU02: State Forests and vegetated flats (Moderate-Low Scenic Quality); and
- LCU03: Agricultural pastures (Low Scenic Quality).

Areas in the landscape character Study Area identified as being of High Landscape Value under the Western Downs Regional Planning Scheme, or have a high Scenic Amenity rating under the Toowoomba Regional Planning Scheme, have been considered and ultimately assessed as having a Moderate-Low Scenic Quality Rating.

All three LCUs were determined to have an overall Landscape Character Impact Rating of **Low**.

14 public viewpoints from across the Study Area were selected to be assessed in the Viewpoint Analysis in **Section 6.0**. It was found that:

- five (5) had a Negligible visual impact and do not require further assessment;
- five (5) had a Low visual impact and do not require further assessment;
- two (2) had a Moderate-Low visual impact and do not require further assessment; and
- two (2) had a Moderate visual impact (VP06 and VP08) which have been assessed in **Section 7.0**.

Five viewpoint locations were chosen from varying distances to the Project for further assessment in **Section 7.0.** The photomontages demonstrate that existing vegetation is working to fragment views of the Project, including from VP06 and VP08 which were identified in the Viewpoint Analysis as having potentially Moderate visual impacts.

Shadow flicker assessments were conducted in line with SC23 (DSDIP, 2025). No dwellings were identified within 1,299 m of the nearest WTG and therefore do not require further assessment. Factors such as existing vegetation, topography, sunshine probability, is anticipated to further reduce the number of hours per year.

Practical and feasible mitigation measures have been proposed for areas with a Moderate visual impact rating to reduce the potential visibility of the Project whilst maintaining key views, preserving the landscape character and the scenic quality of the area. Mitigation measures in keeping with the existing character include supplementary screen planting and retention of existing vegetation.

Ultimately, the existing landscape demonstrates the capacity to absorb the Project with a relatively low visual impact. With the implementation of recommended mitigation measures, the Project satisfies the performance objectives outlined in SC23 (PO15 and PO17) and SC27 (PO22 and PO23), and can proceed while maintaining the area's visual character and values.

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