



APPENDIX K

LANDSCAPE CHARACTER AND VISUAL
IMPACT ASSESSMENT



Garoo Solar Farm

Landscape Character and Visual Impact Assessment



We at 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 Kamilaroi Nation (also known as Gamilaroi/Gomeroi), on whose traditional land this Project resides. As a practice, we recognise First Nations' ongoing contribution to Country and deep spiritual connection to Place. We pay our respects to Elders both past and present.

Garoo Solar Farm

Landscape Character and Visual Impact Assessment

Prepared for
ERM

Project Number
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Executive Summary

ERM has commissioned Moir Studio (Moir Landscape Architecture Pty Ltd) on behalf of the Trustee for GreenPulse Solar Farm and BESS Unit Trust (the Applicant) to prepare and Landscape Character and Visual Impact Assessment (LCVIA) for the proposed Garoo Solar Farm (the Project). The Project is proposed on the traditional lands of the Kamilaroi Nation, approximately 40 kilometres (km) south of Tamworth, within the Tamworth Regional Local Government Area (LGA).

The Applicant is proposing the construction, operation and decommissioning of a large-scale solar farm, and associated infrastructure within New South Wales (NSW).

This LCVIA has been prepared in accordance with the Department of Planning, Housing and Infrastructure (DPHI) Large-Scale Solar Energy Guideline, November 2024 (referred to hereafter as 'the Guideline') and the Technical Supplement - Landscape and Visual Impact Assessment (referred to hereafter as the 'Technical Supplement').

Fieldwork was undertaken by Moir Studio in March 2025 to determine the existing landscape character against which the Project has been assessed. The assessment determined the regional landscape character is typical of the Peel Subregion of the NSW Nandewar Biogeographic Regionalisation of Australia (IBRA) Bioregion.

The land in the area is typically used for grazing, consisting of farmland with areas of cropping and modified pastures.

The landscape was categorised into two (2) Landscape Character Zones (LCZs). The Technical Supplement's Scenic Quality Frame of Reference was applied to each LCZ to establish the Scenic Quality Rating of these LCZs which ranged from Very Low to Low.

The visual impact of a solar farm project will depend on the characteristics and values 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 public and private viewpoints within the relevant Study Areas. The Technical Supplement states that the visual study areas should be:

- 2.5 km from the Project for all road and rail receptors
- 4.0 km from the Project for all private receptors and public viewpoints

Fifteen (15) non-associated Dwellings were identified within 4km of the Project. Six (6) public viewpoints along roads within 2.5 km of the Project were assessed.

The location of the Project, combined with the surrounding undulating topography, limits visibility of the development from areas beyond its immediate vicinity. This includes potential views from the New England Highway and Garoo Road. However, due to the undulating topography, any high points of land within the immediate vicinity of the Project have a high theoretical visibility of the Project. This includes land to the immediate south and north of the Project.

A Simple Assessment was undertaken for a total of 15 non-associated dwellings and six (6) public viewpoints from public roads. The assessment identified:

- Five (5) non-associated dwellings required further Intermediate Assessment. The remaining ten (10) non-associated dwellings did not require further assessment according to the Simple Assessment Tools.
- Two (2) public viewpoints required further Intermediate Assessment.

An Intermediate Assessment was conducted for five (5) non-associated dwellings and two (2) public viewpoints as required. The assessment identified:

- Two (2) non-associated dwellings returned a 'moderate' visual impact rating and required further Detailed Assessment. The remaining three (3) non-associated dwellings returned a 'low' or 'very low' impact and therefore did not require further assessment.
- The two (2) public viewpoints returned a 'low' or 'very low' impact rating and therefore did not require further assessment.

A Detailed Assessment was conducted for the two (2) non-associated dwellings and zero (0) public viewpoints as required. The assessment identified:

- Two (2) non-associated dwellings (R2a & R2b) returned a 'moderate' visual impact rating and require mitigation.

In accordance with the Technical Supplement's Performance Objectives, mitigation is required for receptors determined to have a 'moderate' or greater impact at the detailed assessment stage. Therefore mitigation has been proposed for non-associated dwellings R2a and R2b in the form of screen planting.

Overall, the existing landscape within the Study Area has the ability to absorb the Project with a low degree of visual impact. The Project could be undertaken and maintain the landscape character of the area. In this regard, the Project satisfies the objectives as outlined in the Guideline.

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Glossary of Terms

Associated Dwelling

A dwelling on privately owned land on which the owner has reached an agreement with the Applicant about the Project and management of impacts

Bioregion

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

Community Consultation

The process of engaging with the local community and stakeholders to gather feedback, address concerns and involve the public in the decision-making process of the Project.

Cumulative Visual Impact

The combined effects of multiple projects on the visual catchment in which the Project is proposed over time.

Dwelling Entitlement

Refers to lots where dwellings may be built in relation the Local Environment Plan (LEP) requirements.

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 State Environmental Planning Policy (SEPP) documentation.

Land Use

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

Landscape

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

Landscape Character and Visual Impact Assessment (LCVIA)

A technical assessment to identify and assess the potential visual effects resulting from the Project on the landscape, individual receivers and on the overall visual amenity of the region in which the

Project is sited.

Landscape Character Zones

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

Large-Scale Solar Energy Development

Works, infrastructure and buildings to generate electricity using ground-mounted photovoltaic panels that are State-Significant Development (SSD).

Mitigation Measures

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

Non-Associated Dwelling

Any neighbouring party in proximity to a proposal that has not agreed to a neighbour agreement for the Project.

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.

The Project

The proposal and associated infrastructure that would allow energy generation and storage.

Project Area

The area that encompasses all properties hosting the Project.

Renewable Energy Zone

A designated area to support renewable energy development as declared in the Electricity Infrastructure Investment Act 2020.

Secretary's Environmental Assessment Requirements (SEARs)

Secretary's Environmental Assessment Requirements (SEARs) outlines the environmental assessment requirements for State Significant Projects. The SEARs will normally include specific requirements for landscape character and visual impact assessments.

State Environmental Planning Policies (SEPPs)

Legislation and policies at both the state and local levels that determine the regulations governing the development of activities on a property. State Environmental Planning Policies (SEPPs) are applicable statewide, while Local Environmental Plans (LEPs) establish the specific planning regulations for individual local government areas

Study Area

The geographical region or area under consideration in the preparation of an LCVIA.

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 Baseline

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

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 Receptors

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

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.

Zone of Visual Influence (ZVI) | Viewshed Mapping

The extent of landscape area from which the Project can potentially be theoretically viewed based on topography alone.

Abbreviations

AGL

Above Ground Level

BESS

Battery Energy Storage System

DPHI

Department of Housing and Infrastructure

EIS

Environmental Impact Statement

IBRA

Interim Biogeographic Regionalisation of Australia

kV

Kilovolt

Km

Kilometres

LALC

Local Aboriginal Land Council

LCZ

Landscape Character Zone

LEP

Local Environmental Plan

LGA

Local Government Area

LCVIA

Landscape Character and Visual Impact Assessment

M

Metres

NPWS

National Park and Wildlife Service

NSW

New South Wales

PV

Photovoltaic/Solar Panels

REZ

Renewable Energy Zone

SEARs

Secretary's Environmental Assessment Requirements

SEPP

State Environmental Planning Policy

SSD

State Significant Development

ZVI

Zone of Visual Influence / Viewshed Mapping



01 Introduction



1.0 Introduction

1.1 Introduction

ERM has commissioned Moir Landscape Architecture Pty Ltd (trading as Moir Studio) to prepare a Landscape Character and Visual Impact Assessment (LCVIA) of the Garoo Solar Farm (the Project) for the Trustee for the GreenPulse Solar Farm and BESS Unit Trust (the Applicant).

This report supports a State Significant Development (SSD) Development Consent application under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (**SSD-67105475**) which will form part of the Environmental Impact Statement (EIS) for the Project.

The Applicant is proposing the construction, operation and decommissioning of a large-scale solar farm, Battery Energy Storage System (BESS) and associated infrastructure, within the Tamworth Regional Local Government Area (LGA) of New South Wales (NSW). The Project is located approximately 40 kilometres (km) (by road) south of Tamworth and 370 km northwest of Sydney.

This LCVIA has been prepared in accordance with the Department of Planning, Housing and Infrastructure (DPHI) *Large-Scale Solar Energy Guideline, November 2024* (referred to hereafter as 'the Guideline') and the *Technical Supplement - Landscape and Visual Impact Assessment* (referred to hereafter as the 'Technical Supplement').

1.2 Professional Experience

The Technical Supplement states: '*professional assessment skills are critical to an effective visual impact assessment. The applicant is expected to engage relevant professionals (for example, landscape architects, architects, environmental planners, geographers, or other visual assessment specialists) with demonstrated experience and capabilities*' (DPHI, 2024b).

Moir Studio is a professional design practice and consultancy specialising in Landscape Architecture, Urban Design and Landscape and Visual Impact Assessment. Our team has extensive experience undertaking Landscape and Visual Impact Assessments for large-scale infrastructure and renewable energy projects. In the context of our knowledge and with guidance from the Guideline and the Technical Supplement, we have developed methodologies to ensure a comprehensive and qualitative assessment of the Project.

Recent experience includes the preparation of LCVIAs for the following solar farm projects of similar scale:

- Bendemeer Solar Farm LCVIA (Bendemeer, NSW)
- Richmond Valley Solar Farm LCVIA (Casino, NSW)
- Blind Creek Solar Farm Project LCVIA (Bungendore, NSW)
- Glenellen Solar Farm LCVIA (Glenellen, NSW)
- Oxley Solar Farm LCVIA (Castledoyle, NSW)
- Stubbo Solar Farm LCVIA (Stubbo, NSW)

1.3 SEARs

Secretary's Environmental Assessment Requirements (SEARs) issued on 04 March 2025 for the Project state that the EIS must address specific issues for the solar farm and associated infrastructure relating to potential visual impacts. **Table 01** provides an overview of the SEARs requirements and where these have been addressed in the LCVIA:

| SEARs Requirement Reference | |
|---|---|
| | Relevant Section of LCVIA |
| A landscape and visual impact assessment, prepared in accordance with the <i>Solar Guideline and the Technical Supplement – Landscape and Visual Impact Assessment</i> | Refer to Section 2.1 Overview of the Study Method to see relevant sections of the LCVIA that address requirements of the Guideline & Technical Supplement. |
| A detailed assessment of the likely visual impacts of all components of the project on surrounding residences (including approved developments, lodged development applications and dwelling entitlements), and key locations, scenic or significant vistas and road corridors in the public domain | <p>Section 5.0 Visual Impact Assessment</p> <p>Section 6.0 Simple Assessment</p> <p>Section 7.0 Intermediate Assessment</p> <p>Section 8.0 Detailed Assessment</p> <p>Section 9.0 Associated Infrastructure</p> <p>Section 4.12 Large Scale Energy Developments</p> |
| Details of measures to mitigate and/or manage potential impacts (including a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners) | Section 11.0 Performance Objectives & Mitigation |

Table 01 Overview of SEARs

1.4 Agency Advice

Agency advice from Tamworth Regional Council was issued with the SEARs on March 04 2025. **Table 02** provides an overview of the Council requirements and where these have been addressed in the LCVIA:

| Agency Advice Requirement Reference | |
|---|---|
| | Relevant Section of LCVIA |
| <p>The proposed LVIA should include the following details regarding the proposed landscape screening:</p> <ul style="list-style-type: none"> the types of species to be planted; the timing of when planting will occur; ongoing maintenance responsibilities; and, a contingency plan in the event of drought conditions and / or plant losses. <p>As mentioned in the draft SEARs, Council supports the submission of a draft landscaping plan and evidence that it has been developed in consultation with affected landowners as a part of the EIS.</p> | Section 12.0 Mitigation |
| <p>Photomontages and section profiles should also be included in the LVIA to demonstrate the extent of existing views and vistas, potential visual impacts arising from the proposal, and illustrate the effectiveness of any existing and proposed landscape screening.</p> | "Appendix B" Detailed Assessment |

Table 02 Overview of Council Requirements

02 Study Method



2.0 Study Method

2.1 Overview of Study Method

The LCVIA report, as per the Guideline and Technical Supplement, differentiates between the landscape character assessment and the visual impact assessment. **Figure 05** illustrates the Study Method undertaken to assess large-scale solar farms.

2.1.1 Landscape Character Assessment

The Technical Supplement states: "This is the process for determining the overall impact of a project on an area's character and sense of place, including what people think and feel about it and how society values it" (DPHI, 2024b).

2.1.2 Visual Impact Assessment

The Technical Supplement states: "This is the process for determining the day-to-day visual effects of a project on people's views (what people see at a place when they are there) from the private and public domain".

"In both cases, the likely impacts of a large-scale solar energy development can only be determined by understanding an area's sensitivity to change and the magnitude of a Project in that area or view" (DPHI, 2024b).

2.1.3 Performance Objectives & Mitigation

Once the level of impact has been established according to the visual performance objectives of high, moderate and low and very low, mitigation and avoidance strategies must be considered. If the level of visual impact is deemed moderate or higher, options include the re-siting, removal or re-sizing of project elements to minimise visual impact, vegetative screening as well as impact agreements.

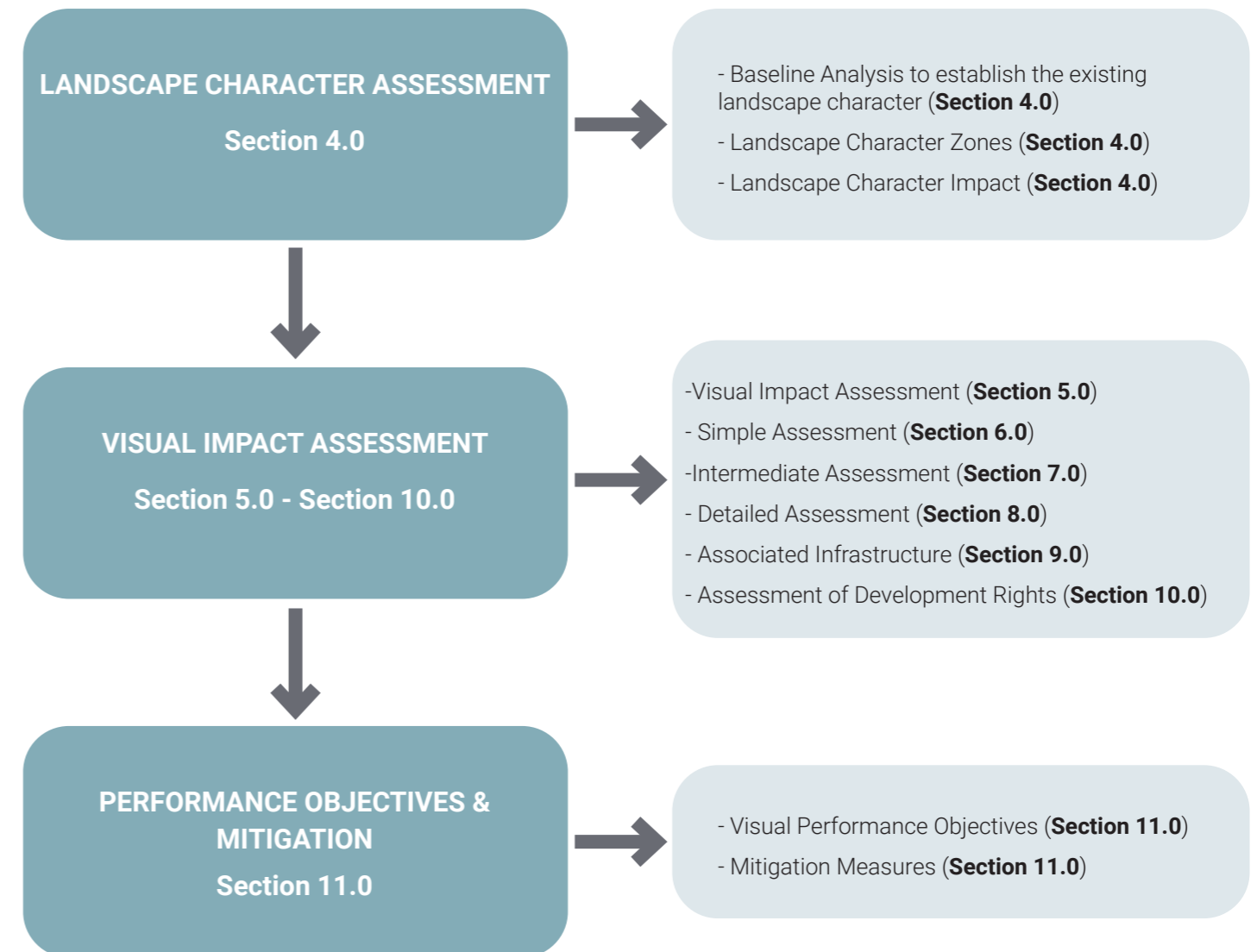


Figure 01 Study Method Overview

03 Project Overview



3.0 Project Overview

3.1 Regional Context

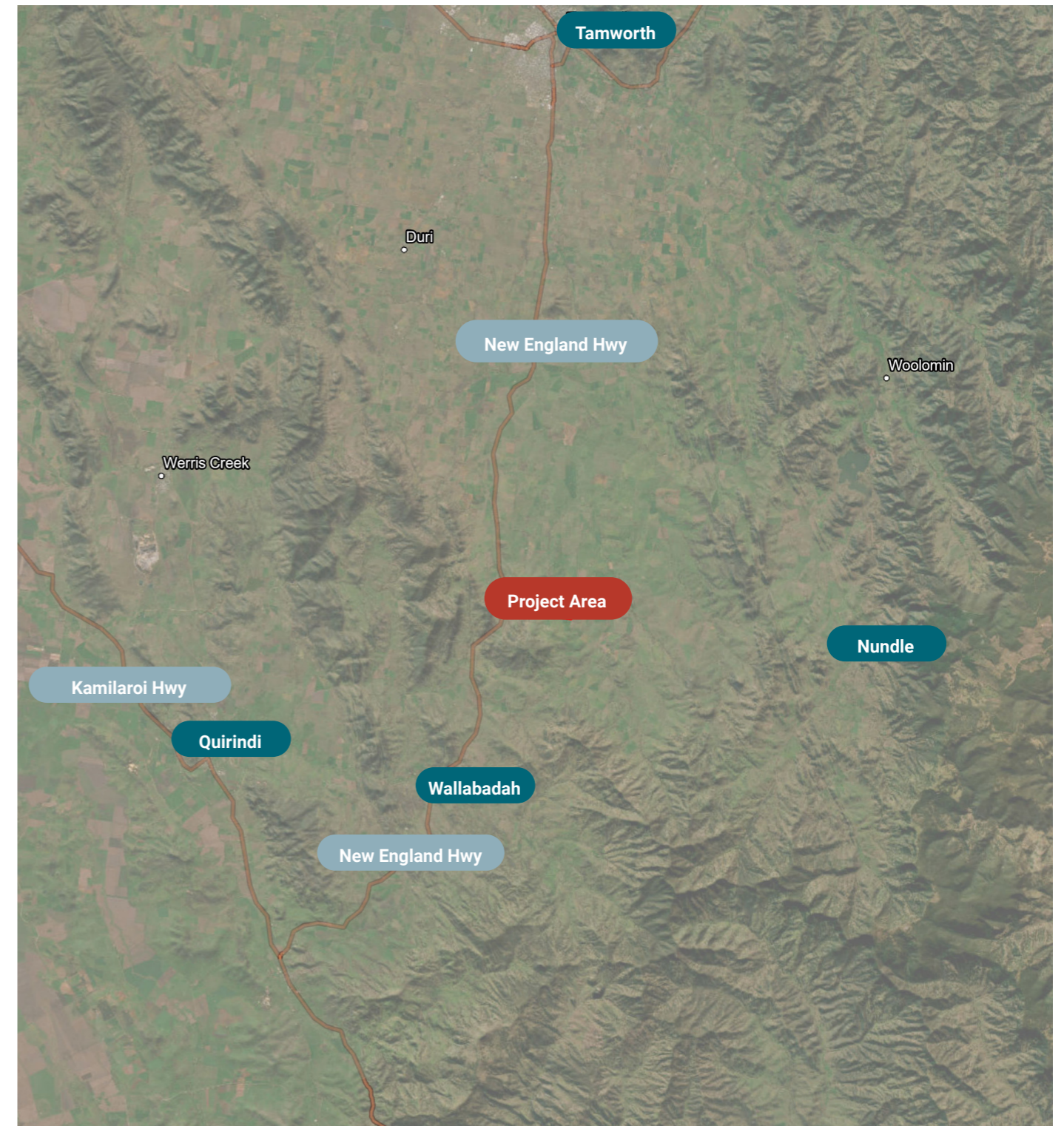
The Project is located to the northeast of Wallabadah, approximately 40 km south of Tamworth within the Tamworth Regional LGA.

The land use within the Project Area is historically and currently used for agricultural activities. The topography is undulating, with the Project situated northwest of a prominent vegetated ridgeline and located in a low-lying area.

3.2 The Project

The Project will involve the construction, operation, maintenance and, where relevant, decommissioning of a solar farm and associated infrastructure, including:

- Solar array, with an estimated generated capacity of up to 133.76 Megawatts (MW) alternating current (AC);
- Electrical reticulation infrastructure, including a centralised large-scale BESS with a storage capacity of 360 MW / 1,440 Megawatt hours (MWh);
- Permanent associated and ancillary infrastructure; and
- Temporary construction facilities.

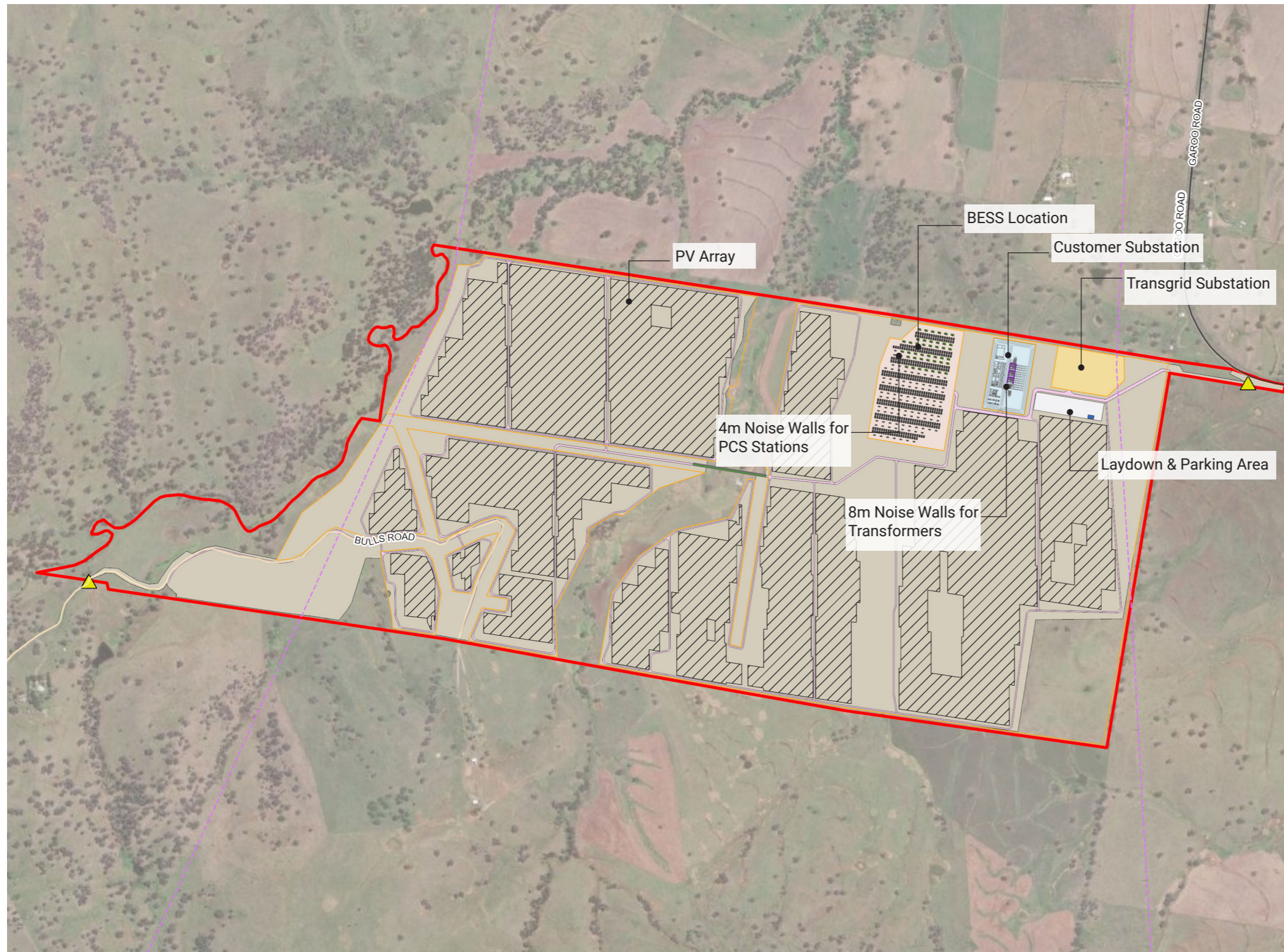


Project Area

Figure 02 Regional Context
Basemap Source - Google Earth, 2021

Project Layout

Refer to Section 3.2



LEGEND

- Project Area
- Development Footprint
- PV Array Area
- Fence
- Internal Roads
- Existing Transmission Lines
- BESS Area
- PCS Stations
- BESS Containers
- Transgrid Substation Area
- Customer Substation Area
- Parking and Laydown Area
- O&M Building
- ▲ Site Access Locations
- 8m Noise Walls
- 4m Noise Walls
- Bridge
- Roads
- Unsealed Roads

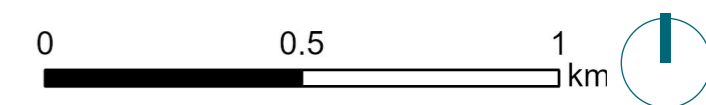


Figure 03 Project Layout
 Basemap Source - ESRI, 2024

3.3 The Solar (PV) Array

The PV Array is the most significant component of the Project. It will comprise approximately 234,000 PV modules installed on single-axis tracking structures. Each PV panel measures 1.1 m by 2.4 m with rows spacing at a minimum of 5.8 m apart (refer to **Figure 04**).

The tracking system structure axis runs from north to south, enabling the PV modules to follow the sun's path from the east in the morning through to the west in the afternoon. The operational rotation range of the tracking system is typically +/- 60 degrees from the horizontal position. The maximum height of the PV modules above natural ground is up to 2.9 m. The modules typically return to a 0 degrees flat position after sunset.

The final number of PV module arrays and tracker designs will depend on detailed design, equipment availability and commercial considerations. These dimensions may alter based on site constraints such as all geotechnical and topographic conditions, boundaries, riparian zones, existing vegetation and access tracks. The assessment has been completed using the worst-case scenario with the panels assumed at their highest pitch (2.9 m).

Throughout the report, the PV Array is also referred to as the Development Footprint, which is inclusive of the PV Array and associated infrastructure.

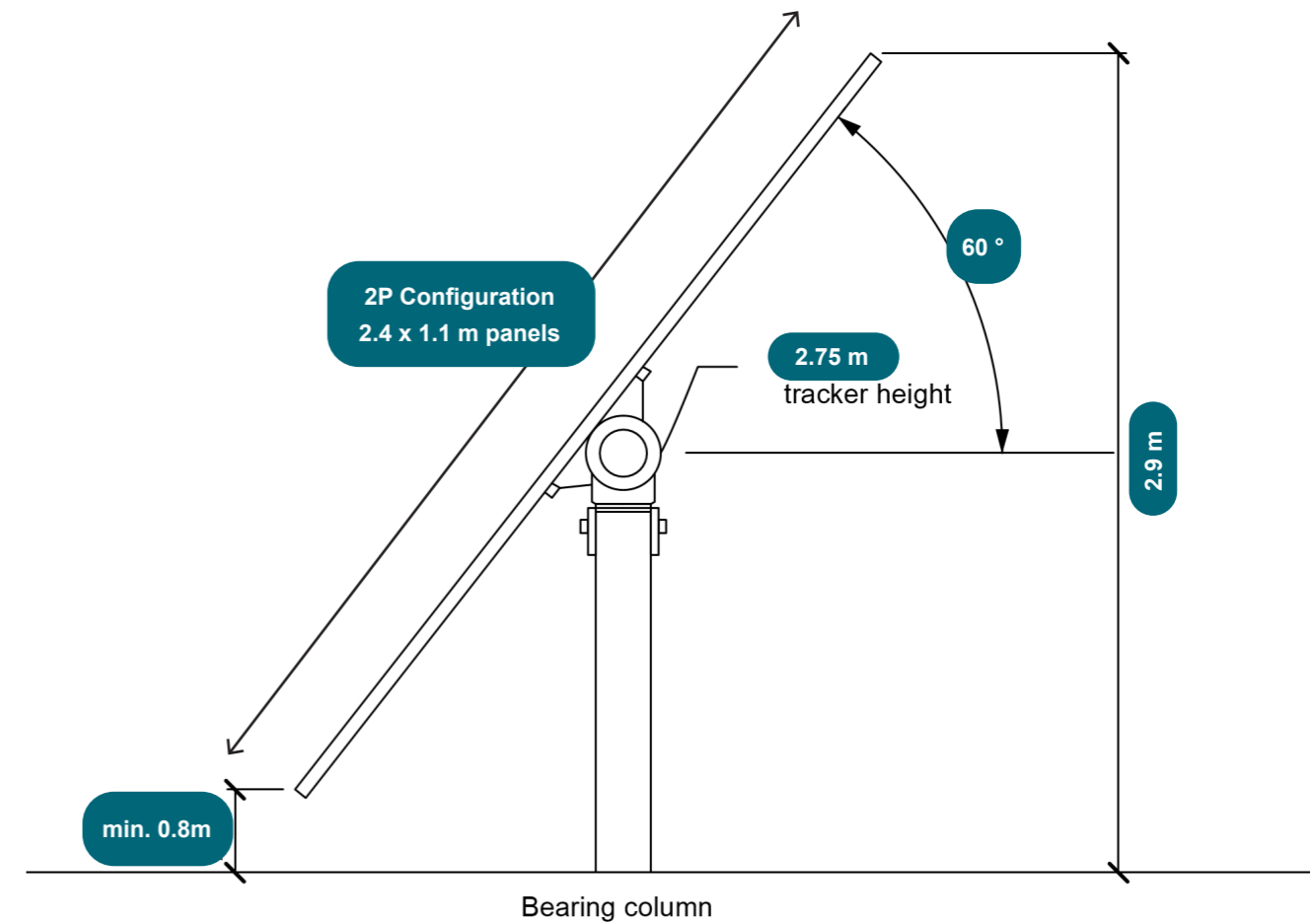


Figure 04 Solar Panel Parameters

04 Landscape Character Assessment



4.0 Landscape Character Assessment

4.1 Landscape Character Assessment Overview

The Technical Supplement states: *"The environmental impact statement must include an assessment of how the project will affect elements that make up the landscape, its aesthetic and perceptual aspects, and its distinctive character. Landscape character assessment can help the community, applicants and consent authorities understand the sensitivities of a landscape and determine the impact of a project on an area's character and sense of place. (DPHI, 2024b)"*

The following provides an overview of the requirements of the landscape character assessment.

4.1.1 Step 1 - Community Consultation



The Guideline requires community consultation to be engaged as early in the process as possible. The purpose of community consultation in the landscape character assessment is to *"establish the importance of particular landscape values and characteristics. Landscape values are the qualities people attribute to a landscape. The values are subjective and reflect the personal, cultural, social and spiritual significance the landscape holds for people"* (DPHI, 2024b).

4.1.2 Step 2 - Baseline Analysis



The Technical Supplement states: *"Applicants must conduct a baseline study to establish the landscape character of the area and its sensitivity. They should base this study on desktop analysis and field visits, and it should provide a descriptive and illustrative analysis of the qualities of the place, what makes it valued and any challenges that could arise from the proposed development. (DPHI, 2024b)"*

4.1.3 Step 3 - Identify Landscape Character Zones



The Technical Supplement states: *"If the landscape includes distinct areas with different qualities, applicants should break down the study area into different character zones. (DPHI, 2024b)"*

4.1.4 Step 4 - Assess Landscape Character Impact



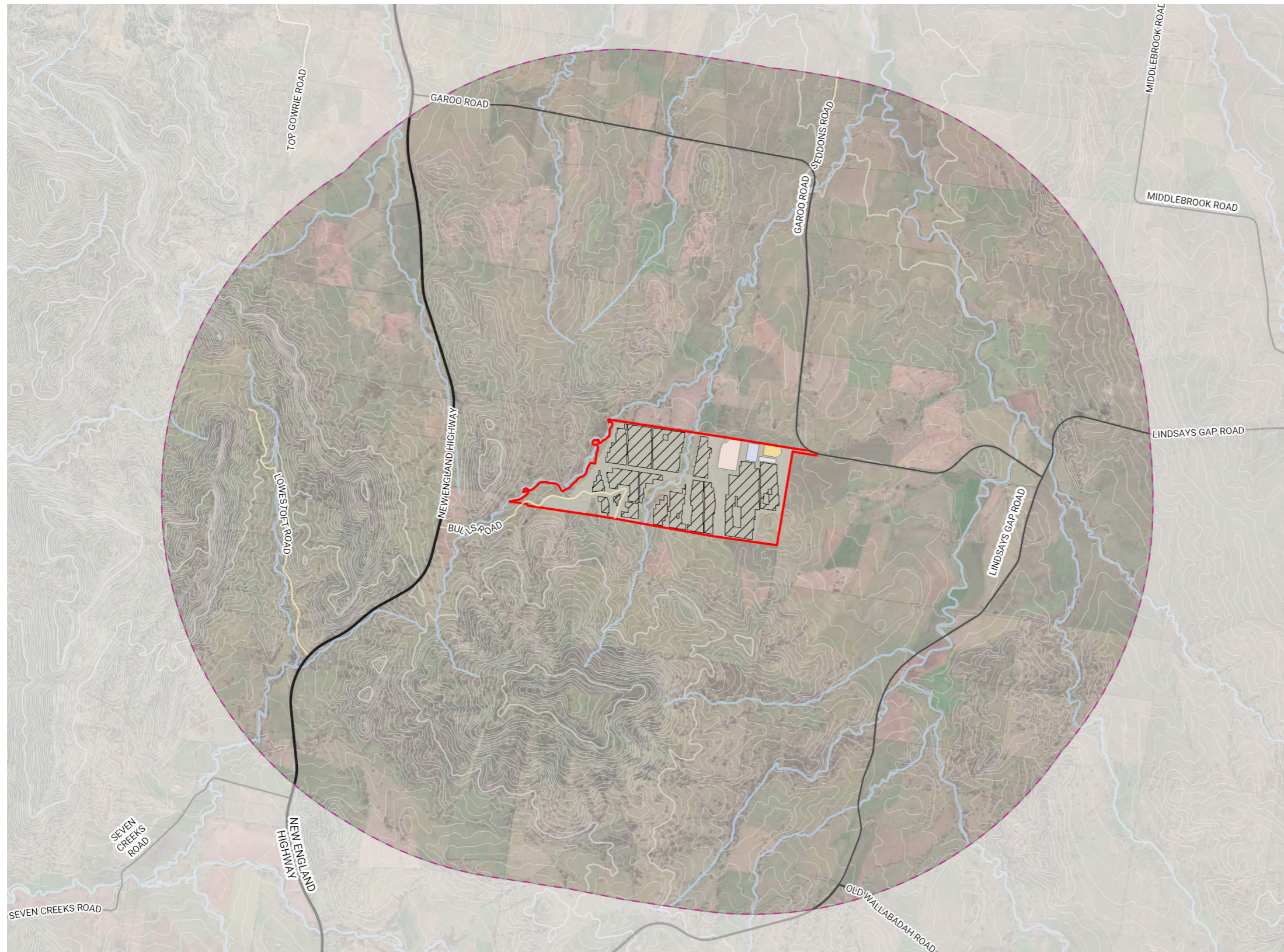
The Technical Supplement states: *"Applicants should determine the impact of the proposal on each landscape character zone by evaluating the sensitivity of the landscape and the magnitude of the project's effects in that area. (DPHI, 2024b)"*

4.2 Landscape Character Study Area

The Technical Supplement states:

"The study area for the landscape character assessment should generally be 5 km from the proposed development. However, the character of landscapes can vary significantly, and applicants may provide justification for analysing a smaller area. (DPHI, 2024b)"

As shown in **Figure 05**, the landscape character of the surrounding area has been assessed to the extent of 5.0 km from the Development Footprint.



Study Area

Refer to Section 4.2

LEGEND

- Project Area
- Development Footprint
- PV Array Area
- Customer Substation Area
- Parking and Laydown Area
- BESS Area
- Transgrid Substation Area
- Study Area (5 km from the Development Footprint)
- Highway
- Roads
- Unsealed Roads
- Waterways
- Lots



Figure 05 Study Area
 Basemap Source - ESRI, 2024



4.3 Overview of Community Consultation

The Guideline states "*Applicants should engage with the community as early as possible to identify potential opportunities and constraints associated with the proposed development. The applicant should identify the elements of the project and the environmental assessment that can be influenced or shaped by the community*" (DPHI, 2024).

The purpose of community consultation in preparation of the LCVIA is to:

- Establish key landscape features significant to the community;
- Define areas of scenic quality; and
- Identify key public viewpoints valued by the community.

Applicants must engage with a variety of stakeholders including local council, indigenous communities, local community businesses and organisations, neighbouring landholders and community members to identify the importance of particular landscape values and characteristics.

4.4 Results of Initial Stakeholder Engagement and Consultation

Community consultation is an ongoing process, and additional drop-in sessions and discussions with affected landowners are anticipated. An initial drop-in information session was held in early 2025 to engage with the community. During this session, feedback was collected, with visual concerns identified including:

- Concerns regarding the potentially negative impact to visual amenity decreasing property values.
- Visitors stated their frustration regarding the potential visual changes the solar farm would have to the landscape and the potential impacts this will cause to their property values.
- Dwelling in line with or overlooking the planned location of the BESS at the Garoo Solar Farm. Screen planting was discussed, it was pointed out that the existing tree line between the house and the proposed Project location already offered some mitigation from visual impacts. There is a potential opportunity further mitigate the project's visual impact by altering the design or positioning of the BESS, however this is subject to investigation and confirmation.
- Loss of visual amenity at property and decrease in property value due to impacted views.
- Property purchased with the view as a significant feature, concerns property value may decrease if the view is impacted with as property overlooks almost all of the Project site.



4.5 Overview of Visual Baseline Analysis

The Technical Supplement states: "Applicants must conduct a baseline study to establish the landscape character of the area and its sensitivity. They should base this study on desktop analysis and field visits, and it should provide a descriptive and illustrative analysis of the qualities of the place, what makes it valued and any challenges that could arise from the proposed development" (DPHI, 2024b).

Fieldwork was undertaken for the Project in **March 2025** to assess and identify the existing landscape character of the area.

The baseline analysis components, as set out in the Technical Supplement, and where they are addressed in this report are outlined in **Table 03**.

| Baseline Analysis Components: | |
|--|------------------------------|
| <i>Physical influences (such as geology, soils, landform, natural drainage and waterbodies)</i> | Refer to Section 4.6 |
| <i>Ecological characteristics and land cover of an area (such as whether it is forested, wetland, scrub or grass) and the quality and type of vegetation cover</i> | Refer to Section 4.7 |
| <i>The influence of human activity, including land use and management and the character of any settlements and buildings</i> | Refer to Section 4.8 |
| <i>Key landscape features or attributes associated with high visual interest or quality that stand out visually, including natural (such as a distinctive mountain peak or hilltop), cultural, agricultural features</i> | Refer to Section 4.9 |
| <i>The aesthetic and perceptual aspects of the landscape, particularly those that are key contributors to the distinctive character of the landscape (such as its scale, complexity, openness, tranquillity or wildness)</i> | Refer to Section 4.9 |
| <i>Aspects that have important Aboriginal cultural heritage value (except artefacts and tangible values that would be assessed as part of an Aboriginal cultural heritage assessment) and why they are valuable to the community</i> | Refer to Section 4.9 |
| <i>The overall character of the landscape in the study area, including any identifiable distinctive landscape character types or areas (see further guidance below)</i> | Refer to Section 4.15 |
| <i>The condition of the landscape, including that of elements or features such as buildings or vegetation</i> | Refer to Section 4.10 |
| <i>The planning designations of an area relating to landscape character, including sensitive land use designations, zonings and heritage listings</i> | Refer to Section 4.11 |
| <i>The location of any proposed, operational or approved local and regional solar energy developments, including projects that may create direct or indirect cumulative impacts with the Project.</i> | Refer to Section 4.12 |

Table 03 Baseline Investigation Components

4.6 Physical Influences

The Project is situated in the southern area of the NSW Nandewar Biogeographic Regionalisation of Australia (IBRA) Bioregion and Peel Sub-Bioregion. The Peel Sub-Bioregion is in northern NSW, to the southwest of the New England Tablelands.

The Peel Sub-Bioregion, which encompasses the Project and broader Study Area, is characterised by wide, undulating valleys of cleared farmland, broken up by strips of vegetated hills with a north-westerly alignment (**Image 01**). The Moonbi Ranges (foothills of the New England Tablelands) are a prominent visual feature to the far east (**Image 05**). The Sub-Bioregion is formed on sedimentary rocks, with a typical soil profile of shallow stony rocks on the ridges and clay or loam soils on the lower slopes. The various soils supporting diverse vegetation communities (NPWS, 2003).

Within the Project Area, the landform is undulating, ranging between 562 AHD - 637 AHD. Situated northwest of a prominent vegetated ridgeline (**Image 03**) in a low-lying area, the overall aspect is sloping towards the northwest, providing open views in that direction (**Image 06**). Depressions in the topography form a network of small creeks, including Sugarloaf and Tamarang Creek, which feed into Goonoo Goonoo Creek. Goonoo Goonoo Creek is a tributary of the Pell River, meeting approximately 40 km north at Tamworth.

4.7 Ecological Characteristics

The vegetation of the Nandewar IBRA Bioregion is influenced primarily by geology and changes in temperature and rainfall. The Project Area and the north-eastern surrounds are located across agricultural areas at low to mid elevation that are characterised by areas of predominately cleared vegetation, with some scattered remnants of box woodlands (**Image 01**).

Southwest and west of the Project area, on steeper ridges that are less agriculturally productive, the grassy woodland communities of Blakelys Red Gum (*Eucalyptus blakelyi*) and White Box (*Eucalyptus albens*) are predominant. Riparian forests occur along the major watercourses (**Image 02**) and include species such as *Casuarina cunninghamiana*, *Eucalyptus camaldulensis* and *Angophora floribunda* (NPWS, 2003).



Image 01 Creek with Vegetated Hills in distance



Image 02 Sugarloaf Creek



Image 03 Vegetated Hills/undulating topography west of Project Site

4.8 Human Activity

The New England Highway is located approximately 1 km west of Project Area and is a major inland road that forms part of the route connecting Sydney to Brisbane (**Image 04**).

Within the Study Area, local roads provide access to surrounding rural dwellings. These include Garoo Road, Lindsay Gap Road, and Bulls Road (. Additionally, Bulls Road is an unsealed road currently used only by the local residences, with primary access to the Project Area from the New England Highway. Lindsay Gap Road is also one of the main roads that leads into Nundle, a rural town located approximately 18 km East.

There are no towns or localities located within the study area. The nearest towns are Tamworth, (located approximately 35 km north), Nundle (located approximately 18 km east) and Wallabadah (located approximately 13 km south). Goonoo Goonoo Station, a heritage-listed working cattle station and luxury accommodation, is located approximately 13 km north.

The entirety of the Study Area is located on land zoned RU1 - Primary Production in the *Tamworth Regional Local Environmental Plan (LEP) 2024*. The majority of the landscape is characterised by land used for native grazing, with areas of cropping and modified pastures (**Image 05**). Less agriculturally productive areas, mainly on the steeper slopes, are covered in native woodland (**Image 03**).

Two existing 330 kV transmission lines run north to south across the Study Area and through the Project.

4.9 Key Landscape Features, Aesthetics & Heritage

The landscape around the area is known for its picturesque pastoral farmland with rolling hills and views of the Moonbi ranges to the far east (**Image 05**).

Chains of vegetated hills, particularly to the southwest of the Project, are also a prominent visual feature of the surrounding landscape (**Image 01** & **Image 03**).

A network of small seasonal creeks runs through the landscape. However, due to their transient state and limited riparian vegetation (many have been cleared and are only visible as small corridors of vegetation), they are not a noticeable feature (**Image 01** & **Image 05**).

The Project Area is located within the extents of the Nungaroo Local Aboriginal Land Council (LALC). The Project is situated on the traditional lands of the Kamilaroi Nation, who are acknowledged as the traditional custodians of this land.

There are no identified areas or items within the Study Area under the Local, State or National Heritage listings. Goonoo Goonoo Station, a heritage-listed working cattle station and luxury accommodation, is located outside of the study area approximately 13 km north from the Project.



Image 04 New England Highway



Image 05 Typical Farmland with Moonbi Ranges in background

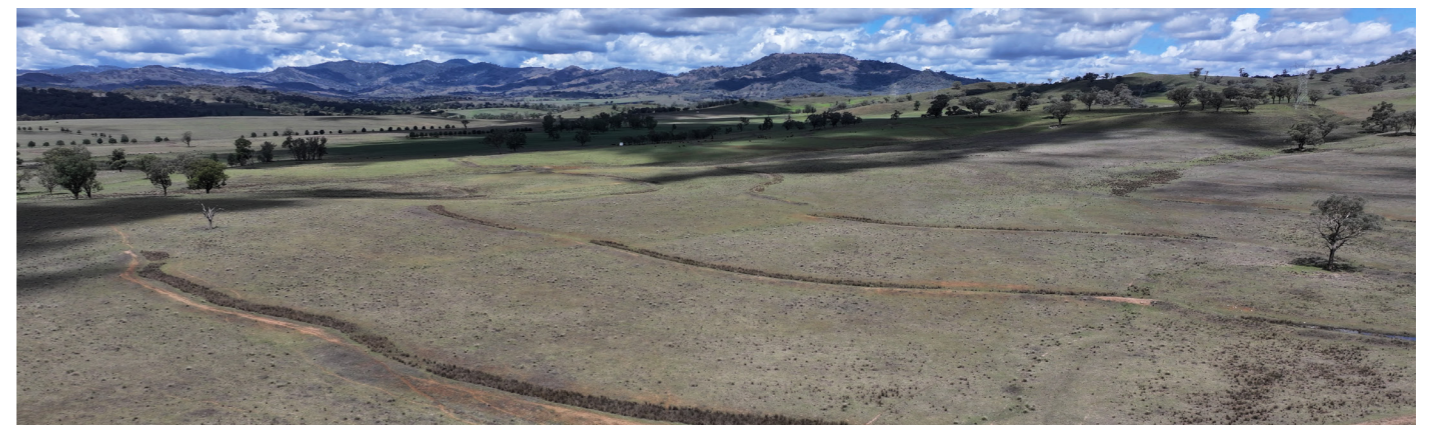
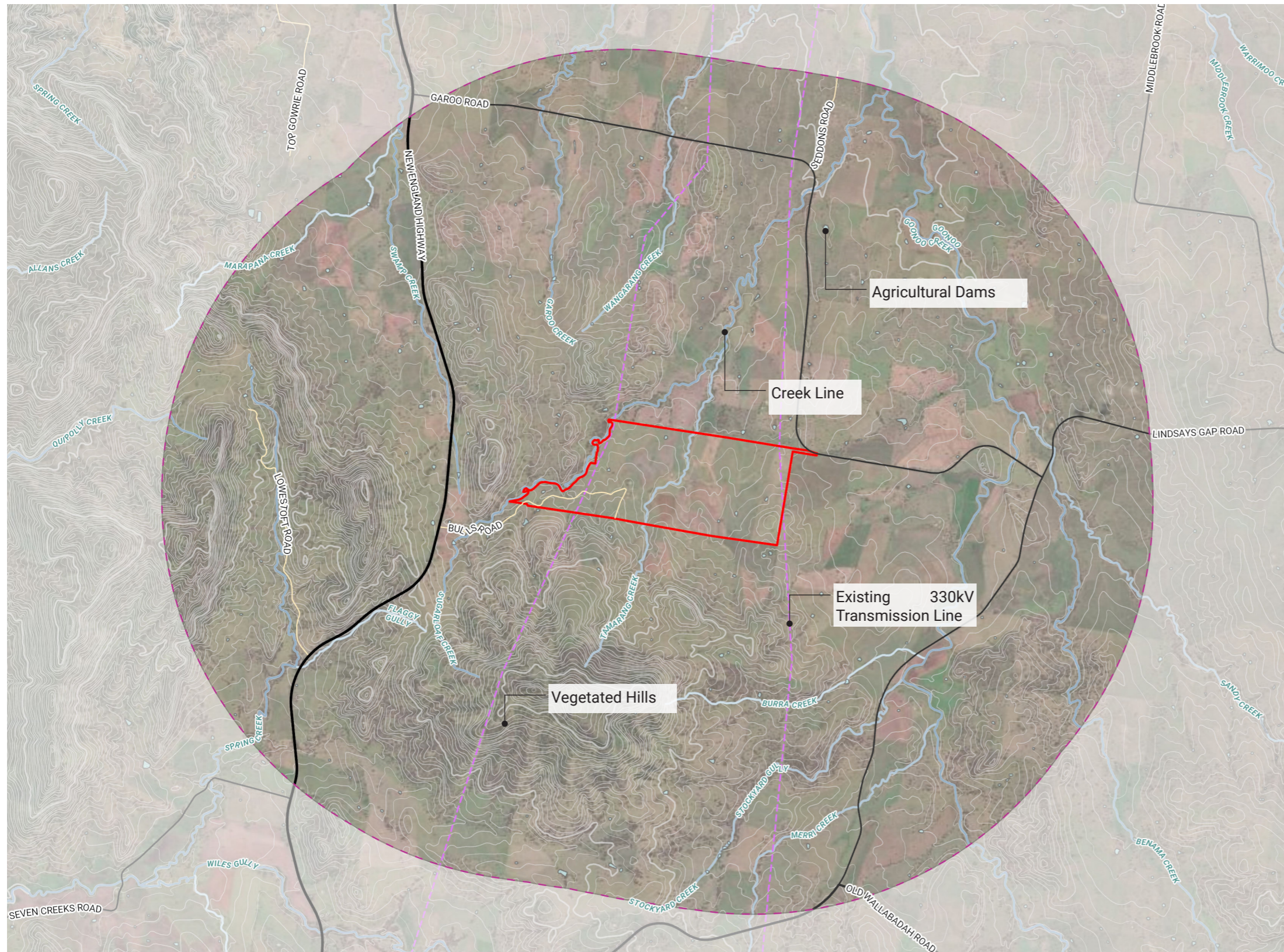


Image 06 Cleared pastures adjacent to Project



Key Landscape Features

Refer to Section 4.9

LEGEND

- Project Area
- Study Area (5 km from the Development Footprint)
- Highway
- Roads
- Unsealed Roads
- Waterways
- 330 kV Existing Transmission Line
- Agricultural Dams
- Contours



Figure 06 Key Landscape Features
 Basemap Source - ESRI, 2024

4.10 Landscape Condition

Land within the study area is primarily utilised for agricultural production, particularly pastoral use with some cropping. Land has been cleared to different degrees depending on the intensity of agricultural activity. On the low-lying, fertile area, the land is more agriculturally productive and hence has been mostly cleared, with some scattered trees remaining (**Image 07**). Open minor woodlands of native vegetation cover the ridges of the steeper slopes/hills, where the land is less agriculturally productive (**Image 08**).

Most of the Project Area has been cleared of vegetation, with some riparian vegetation scattered along Tamarang and Sugarloaf Creek. The topography across the Project Area is undulating, with the elevation across the Project Area ranging between 562 AHD - 637 AHD.

Fourteen (14) rural residential dwellings have been identified within the Study Area. Three (3) dwellings (R2a, R2b, R4) share access to the Project along Bulls Road. Two (2) dwellings (R2a, R2b) access their residents through Bulls Road, which runs through the Project Area (**Image 09**). The remaining residences are located off Garoo Road, New England Highway, and Lindsay Gap Road.

4.11 Land Use & Land Zoning

The land within the Study Area is entirely zoned as RU1 - Primary Production according to the Tamworth Regional LEP 2024 (refer to **Figure 07**).

Land use within the Study Area primarily includes modified pastures and cropping, with some grazing native vegetation along ridgelines. The majority of the Project Area has been cleared for pastoral use, with some small areas of cropping (refer to **Figure 08**).

Some parcels of land within the Study Area, particularly along steep ridgelines, have been left as native vegetation.



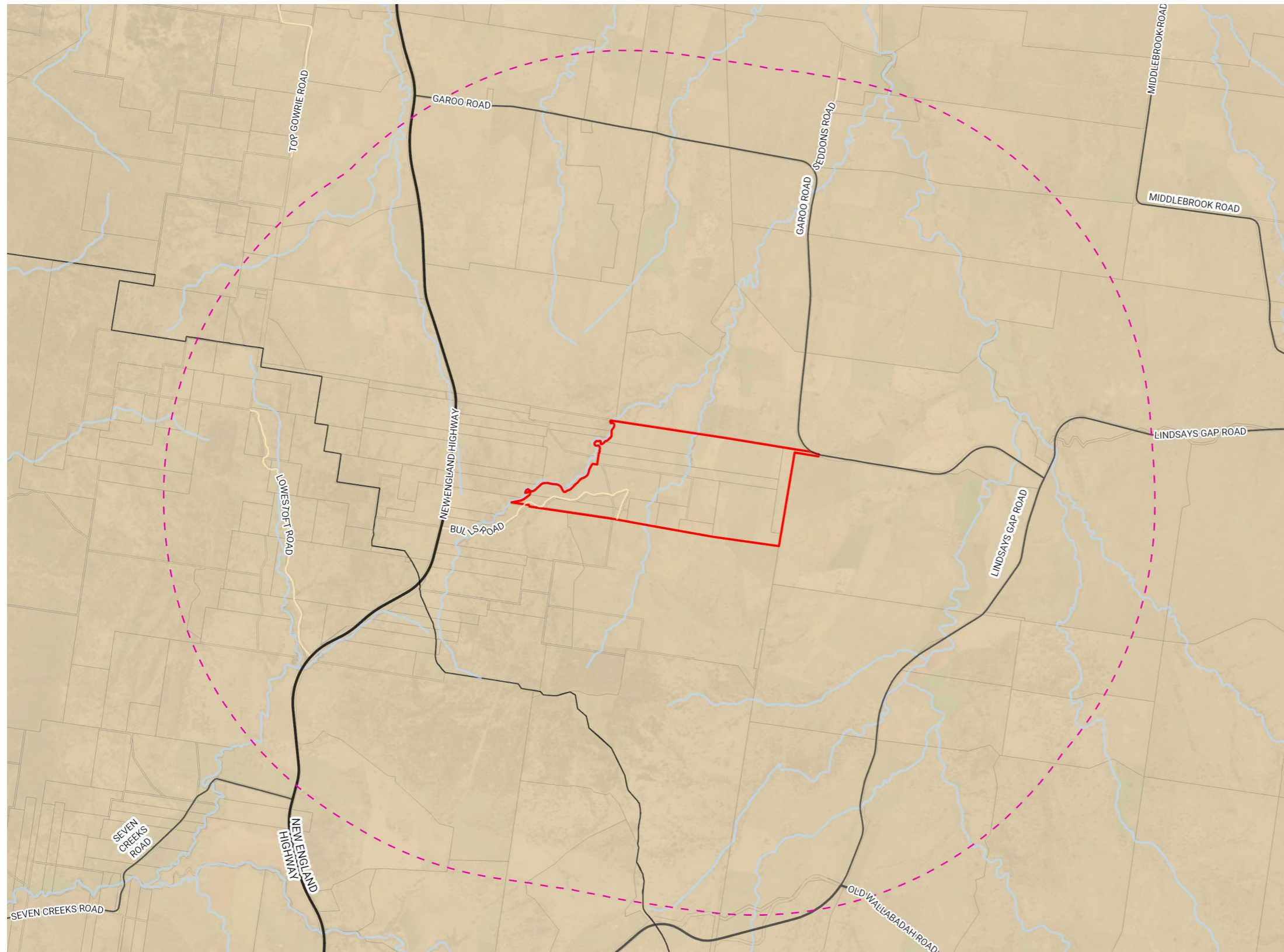
Image 07 Pastures with scattered vegetation



Image 08 Cleared farmland with vegetated ridges in background



Image 09 Bulls Road at Project boundary



Land Zoning

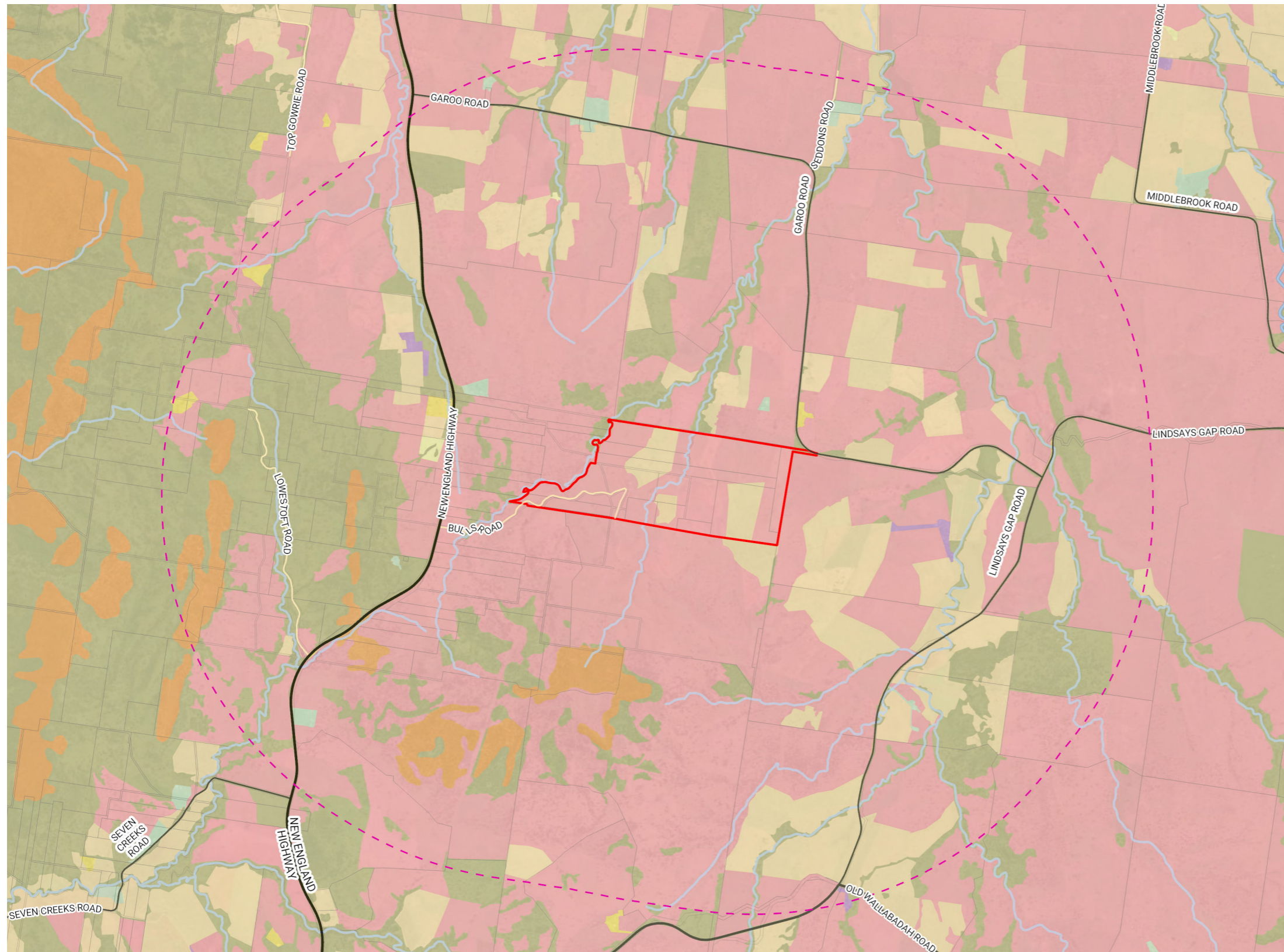
Refer to Section 4.11

LEGEND

- Project Area
- Study Area (5 km from the Development Footprint)
- Highway
- Roads
- Unsealed Roads
- Waterways
- Lots
- Land Zoning Map
- RU1 - Primary Production



Figure 07 Land Zoning
 Basemap Source - ESRI, 2024



Land Use

Refer to Section 4.11

LEGEND

- Project Area
- Study Area (5 km from the Development Footprint)
- Highway
- Roads
- Unsealed Roads
- Waterways
- Lots
- Land Use (EPI)
- 1.3.3 Residual native cover
- 2.1.0 Grazing native vegetation
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 5.4.0 Residential and farm infrastructure
- 5.4.2 Rural residential with agriculture
- 5.4.3 Rural residential without agriculture
- 5.4.5 Farm buildings/infrastructure
- 5.7.2 Roads
- 5.8.0 Mining



Figure 08 Land Use
 Basemap Source - ESRI, 2024

4.12 Large Scale Energy Development

The occurrence of large-scale renewable energy projects within a region has the potential to alter the perception of the overall landscape character irrespective of being viewed in a single viewshed, as these projects could become part of the existing landscape. It is essential to determine whether the effect of multiple projects and other major infrastructure within the region would combine to become the dominant visual element, altering the perception of the general landscape character.

Table 04 summarises proposed, in operation, approved or under construction renewable energy projects or major developments within the 5 km Study Area of the Project.

The Cumulative Impact Assessment Guidelines (DPIE, 2022) state:

- *"While the study area chosen for each matter must be broad enough to capture all relevant cumulative impacts, it should not be unnecessarily large or include areas where the cumulative impacts are likely to be negligible relative to the baseline condition of the relevant matter"*

Cumulative Impacts - Landscape Character Assessment:

An assessment of the cumulative visual impacts on the broader landscape character is provided in **Section 4.16, Table 09**. This includes an evaluation of the Project alongside existing and proposed transmission lines, considering their combined effect on the overall visual character of the landscape.

Cumulative Impacts - Visual Impact Assessment

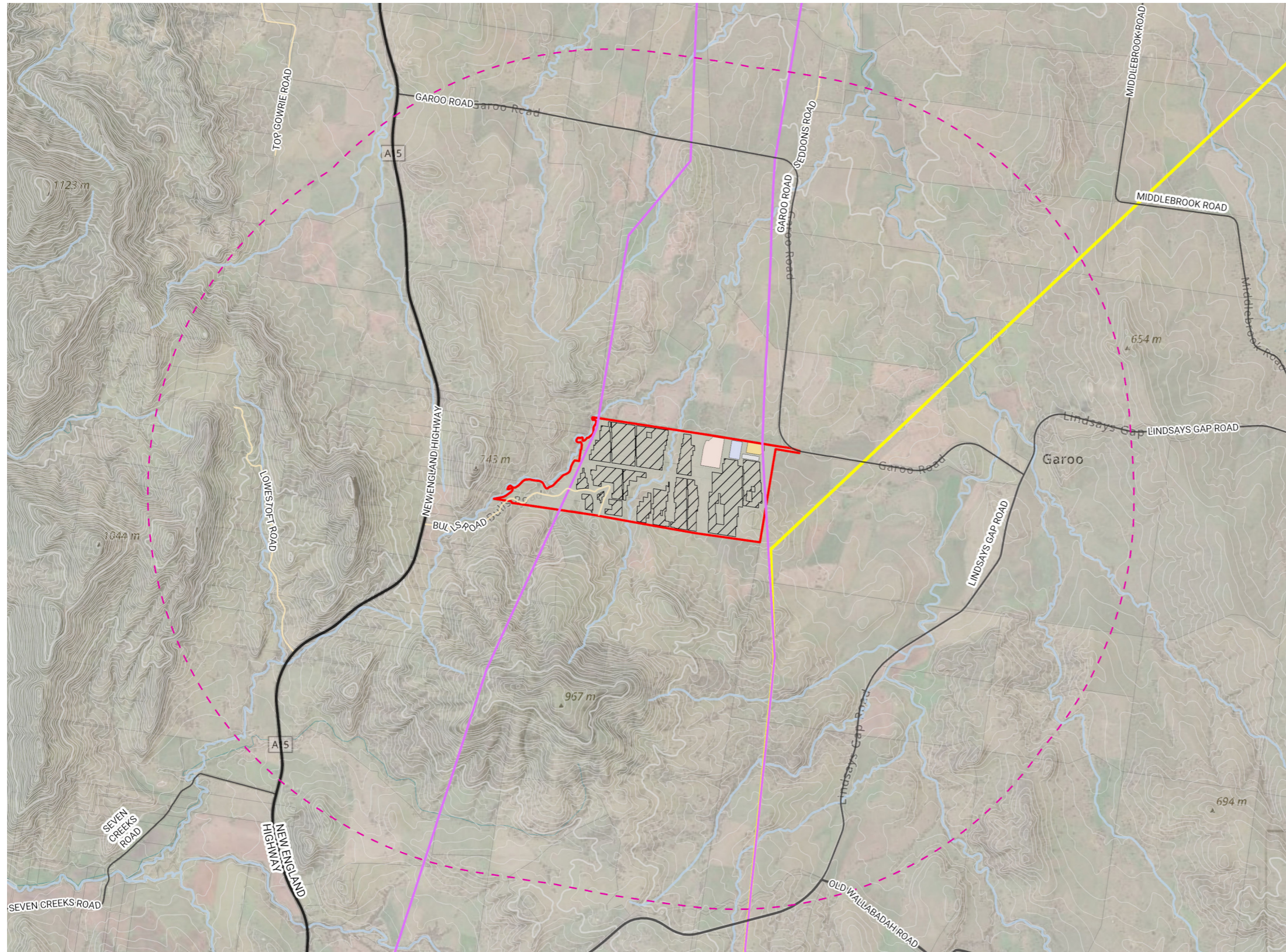
In accordance with the Technical Supplement, the cumulative visual impact assessment must consider *'any visible proposed or approved solar energy projects.'*

Zero (0) solar energy projects have been identified within the 5 km study area (Renewmap, June 2025)

Therefore, **no cumulative impacts have been assessed for public and private viewpoints.**

| Large Scale Energy Development (Within the Study Area) | | | |
|--|--|--------------------------|--|
| Project | Distance & Direction from The Project | Generation Capacity (MW) | Planning Status |
| New England REZ Transmission Project | Adjoins south-eastern boundary of Project Area | 500 kV | Proposed (SEARs issued September 2024) |
| 330kV Transmission Lines | Intersects Project Area | – | Existing/Completed |

Table 04 Overview of Large Scale Energy Developments
Source - Renew Map, 2024 (accessed 26/11/2024)



Nearby Renewable Projects

Refer to Section 4.11

LEGEND

- Project Area
- PV Array Area
- Development Footprint
- Customer Substation Area
- Parking and Laydown Area
- BESS Area
- Transgrid Substation Area
- Lots
- Waterways
- Highway
- Roads
- Unsealed Roads
- 330 kV Existing Transmission Line
- Proposed 500kV Transmission Line (New England REZ Transmission Project)

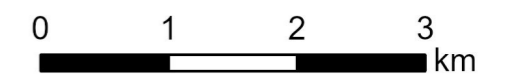


Figure 09 Nearby Renewable Energy Projects
 Basemap Source - ESRI, 2024



4.13 Identify Landscape Character Zones

The Technical Supplement states: "If the landscape includes distinct areas with different qualities, applicants should break down the study area into different character zones."

Landscape character zones should divide the landscape based on common distinguishing visual characteristics, including landforms and major land cover patterns. Combinations of vegetation, waterbodies, landforms and land use form these patterns and allow for the identification of key landscape features. (DPHI, 2024b)"

Figure 10 provides a schematic representation of what defines a Landscape Character Zone (LCZ).

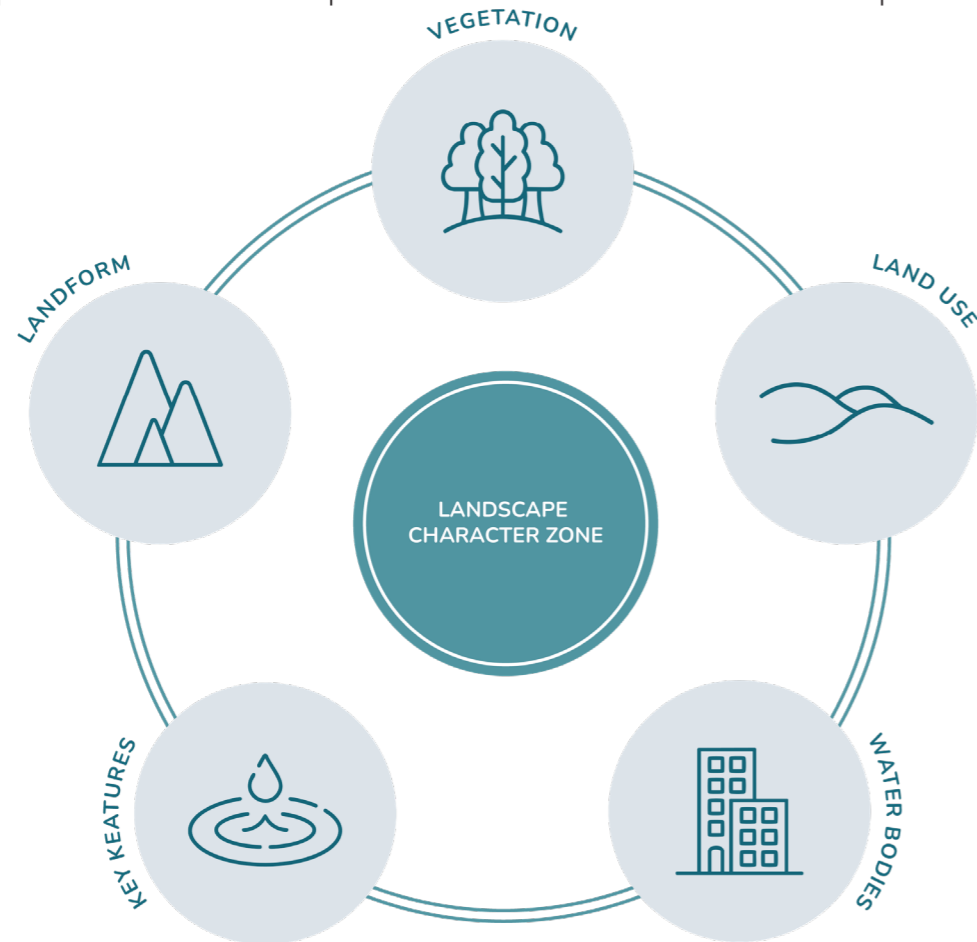


Figure 10 Defining Landscape Character Zones

4.14 Determining Scenic Quality

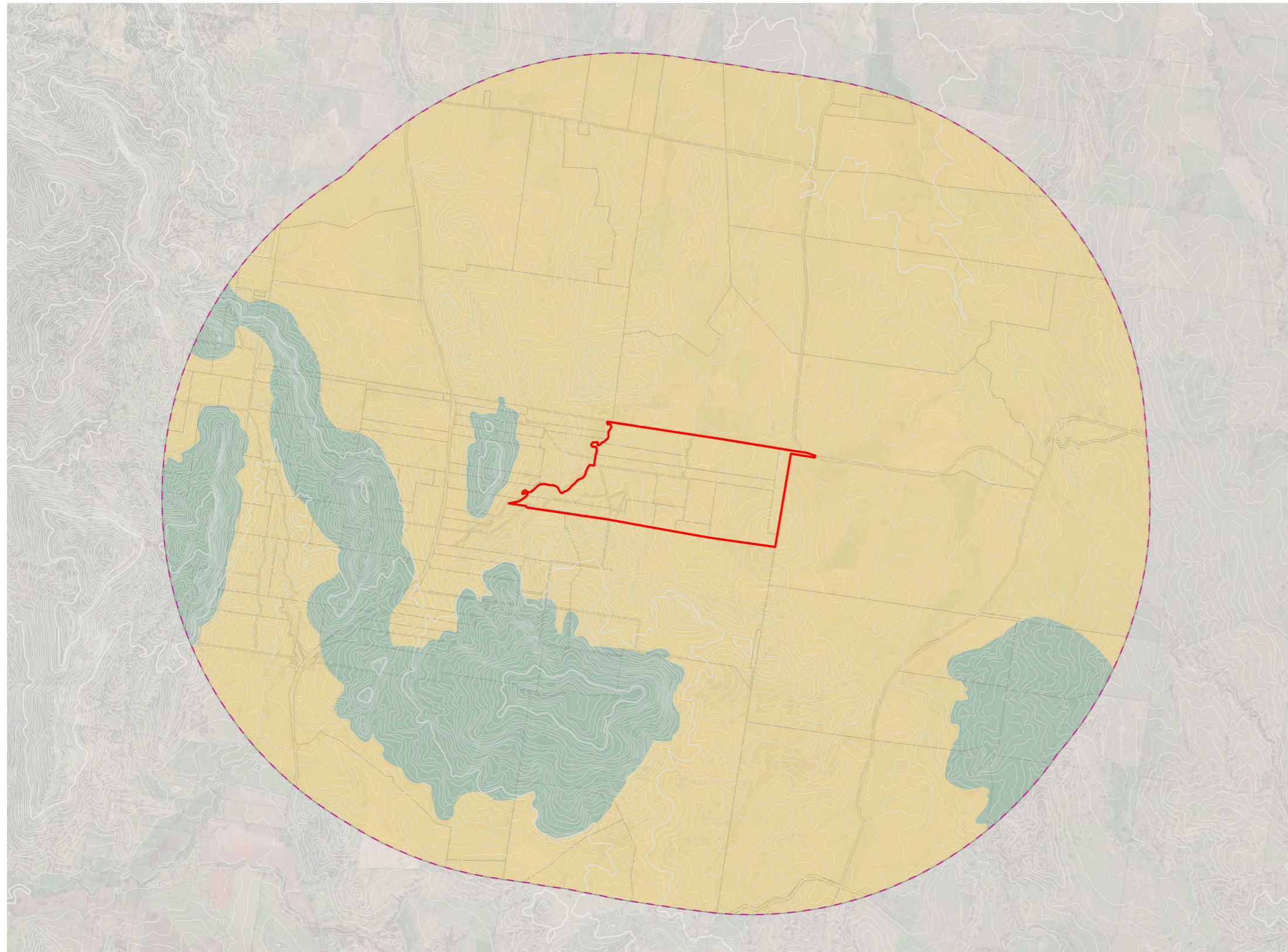
The Technical Supplement states: "Scenic quality refers to the holistic and relative scenic, cultural or aesthetic value of the landscape within the viewshed based on the presence or absence of key landscape features known to be associated with community perceptions of very low, low, moderate or high scenic quality. It is typically a complex process undertaken by experts in visual impact assessment and must also consider community values. (DPHI, 2024b)"

The baseline analysis and landscape character assessment have been used to inform the classification of scenic quality values. A scenic quality rating has been applied to each LCZ based on the Scenic Quality Frame of Reference and the visual reference for scenic quality values provided in the Technical Supplement (as presented in **Table 05** and **Table 06**).

The scenic quality has assisted in determining the sensitivity of each LCZ, results are shown in **Table 09**.

Landscape Character Zones

Refer to Section 4.11



LEGEND





-  Project Area
-  Study Area (5 km from the Development Footprint)
-  LCZ01 - Agricultural Pastures
-  LCZ02 - Vegetated Hills
-  Lots

Figure 11 Landscape Character Zones (LCZ)
Basemap Source - ESRI, 2024

| Scenic Quality Frame of Reference | | | | |
|-----------------------------------|---|--|--|---|
| Feature | Very Low Scenic Quality | Low Scenic Quality | Moderate Scenic Quality | High Scenic Quality |
| Landform | <ul style="list-style-type: none"> Large expanses of flat or gently undulating terrain Indistinct, dissected or unbroken landforms that provide little illusion of spatial definition or landmarks with which to orient | <ul style="list-style-type: none"> Mostly flat or gently undulating terrain with isolated areas of undulating topography | <ul style="list-style-type: none"> Steep, hilly and undulating ranges that are not visually dominant Broad shallow valleys Moderately deep gorges or moderately steep valley walls Minor rock outcrops | <ul style="list-style-type: none"> Isolated peaks, steep rocky ridges, cones or escarpments with distinctive form and/or colour contrast that become focal points Large areas of distinctive rock outcrops or boulders Well defined, steep sided valley gorges |
| Vegetation | <ul style="list-style-type: none"> Extensively cleared and cropped areas with very limited variation in colour and texture Pastoral areas, human created paddocks, pastures or grasslands and associated buildings typical of grazing lands | <ul style="list-style-type: none"> Predominantly cleared and cropped areas with small areas of variation in colour and texture Mostly pastures or grasslands with small blocks of distinct native vegetation | <ul style="list-style-type: none"> Predominantly open forest or woodland combined with some natural openings in patterns that offer some visual relief Vegetative stands that exhibit a range of size, form, colour, texture and spacing including human influenced vegetation such as vineyards, and orchards | <ul style="list-style-type: none"> Strongly defined patterns with combinations of native forest, naturally appearing openings, streamside vegetation and/or scattered exotics Distinctive stands of vegetation that may create unusual forms, colours or textures in comparison to surrounding vegetation |
| Waterform | <ul style="list-style-type: none"> Absence of natural waterbody Farm dams, irrigation canals or stormwater infrastructure | <ul style="list-style-type: none"> Minor waterforms such as creeks and streams | <ul style="list-style-type: none"> Intermittent streams, lakes, rivers, swamps and reservoirs | <ul style="list-style-type: none"> Visually prominent lakes, reservoirs, rivers, streams, wetlands and swamps Presence of harbour, inlet, bay or open ocean |
| Social & Cultural | <ul style="list-style-type: none"> Places of worship, cemeteries/memorial parks, private open spaces | <ul style="list-style-type: none"> Places of worship, cemeteries/memorial parks, private open spaces Local heritage sites | <ul style="list-style-type: none"> Local or state heritage sites Distinguishable entry ways to a regional city identified in the Transport and Infrastructure SEPP | <ul style="list-style-type: none"> Culturally important sites, world heritage areas, national parks/reserves, World, national and state heritage sites |
| Human Presence | <ul style="list-style-type: none"> Dominating presence of infrastructure, human settlements, highly modified landscapes and higher density populations such as regional cities, industrial areas, agricultural transport or electricity infrastructure | <ul style="list-style-type: none"> Highly modified landscapes with visible infrastructure such as transmission lines and railway corridors | <ul style="list-style-type: none"> Dispersed yet evident presence of human settlement such as villages, small towns, isolated pockets of production and industry, lower scale and trafficked transport infrastructure | <ul style="list-style-type: none"> Natural/undisturbed landscape Minimal evidence of human presence and production |

Table 05 Scenic Quality Frame of Reference






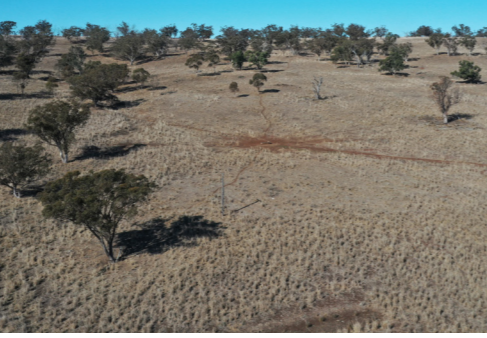














| Visual Scenic Quality Frame of Reference | | | | |
|--|---|--|---|---|
| Feature | Very Low Scenic Quality | Low Scenic Quality | Moderate Scenic Quality | High Scenic Quality |
| Landform |  |  |  |  |
| Vegetation |  |  |  |  |
| Waterforms |  |  |  |  |
| Social & Cultural |  |  |  |  |
| Human Presence |  |  |  |  |

Table 06 Visual Reference of Scenic Quality

4.15 Landscape Character Zones

A total of two (2) LCZs have been identified within the Study Area as part of the Landscape Character Assessment. The LCZs are outlined in **Figure 11**.

4.15.1 LCZ01 - Agricultural Pastures

The landform within this LCZ is characterised by gently undulating farmland that is primarily utilised as pastures, with some cropping. Vegetation is predominately cleared to support livestock grazing. Waterbodies are generally in the form of man-made farm dams or seasonal creeks. The landscape within this LCZ is highly modified through human intervention to support agricultural production. In addition, transport corridors and transmission easements are present throughout.

The overall scenic quality of this LCZ is rated as **Low**.



Image 10 Pastures cleared for farming in LCZ01



Image 11 Pastures and transmission infrastructure in LCZ01

| LANDSCAPE CHARACTER UNIT | KEY LANDSCAPE FEATURES (dominant features within this zone) | KEY VIEWPOINTS | Application of Scenic Quality Rating Frame of Reference | | | | | SCENIC QUALITY RATING | |
|-------------------------------|--|--|---|-----------|------------|----------------|-------------------|-----------------------|---|
| | | | Landform | Waterform | Vegetation | Human Presence | Social & Cultural | | |
| LCZ01 - Agricultural Pastures | Undulating pastures | Garoo Road, Lindsay Gap Road, Bulls Road & New England Highway | H | | | | | LOW | |
| | | | M | | | | | | |
| | | | L | ■ | | ■ | ■ | | |
| | | | VL | | ■ | ■ | ■ | | ■ |

Table 07 LCZ01 - Agricultural Pastures

4.15.2 LCZ02 - Vegetated Hills

This LCZ is characterised by steep vegetated ridges and partially cleared lower hills. Vegetation has been predominately modified or cleared along the lower slopes for pastoral use. Areas of less agricultural use, mainly on the steeper ridges and higher slopes, have remnant vegetation in the form of open minor woodland communities of White Box and Blakelys Red Gum.

The vegetated ridges are a key feature of the region, often seen as a backdrop to views from the surrounding farmland.

The overall scenic quality of this LCZ is rated as **Moderate**.



Image 12 Vegetated hills that defines LCZ02



Image 13 Partially vegetated hills with pastures in foreground

| LANDSCAPE CHARACTER UNIT | KEY LANDSCAPE FEATURES (dominant features within this zone) | KEY VIEWPOINTS | Application of Scenic Quality Rating Frame of Reference | | | | | SCENIC QUALITY RATING |
|--------------------------|--|----------------------------------|---|-----------|------------|----------------|-------------------|-----------------------|
| | | | Landform | Waterform | Vegetation | Human Presence | Social & Cultural | |
| LCZ02 - Vegetated Hills | Vegetated ridgelines and partially cleared hills | Bulls Road & New England Highway | H | | | | | MODERATE |
| | | | M | ■ | | ■ | ■ | |
| | | | L | | ■ | | | |
| | | | VL | | | | ■ | |

Table 08 LCZ02 - Vegetated Hills



4.16 Landscape Character Assessment

The Technical Supplement states: "Applicants should determine the impact of the proposal on each landscape character zone by evaluating the sensitivity of the landscape and the magnitude of the project's effects in that area."

The sensitivity and magnitude should get a rating (low, moderate or high) that can help determine the overall landscape character impact on any given zone. Applicants must provide rationale for the ratings as part of the assessment. (DPHI, 2024b)"

The following provides an overview of determining the sensitivity of a LCZ and the magnitude of effect resulting from the Project. The overall level of landscape character impact on each LCZ has been rated as low, moderate or high.

4.16.1 Determine Magnitude Rating

The Technical Supplement states: "Applicants should consider the following when analysing and rating the magnitude of the project:

- *Size and scale including:*
- *the extent of landscape elements that may be lost and the contribution of those elements make to the landscape character;*
- *the extent to which the project becomes a minor or major element in the landscape and its dominance in the visual catchment; and*
- *the extent to which the project changes the key characteristics of the landscape that are critical to its distinctive character (including the removal of vegetation)*
- *Geographical area – the area of the landscape that will experience the project's effects. This could vary from the immediate site setting to a larger scale, where the project may influence several landscape character zones" (DPHI, 2024b)*

4.16.2 Determine Sensitivity

The Technical Supplement states: "Visual sensitivity refers to the quality of the view and how sensitive it is to the proposed change... Applicants should rate the sensitivity of the landscape character type based on the inherent capability of the area to absorb changes from the project" (DPHI, 2024b).

4.16.3 Determine Impact on LCZ

The overall level of landscape character impact has been determined through the combination of landscape sensitivity and visual magnitude. Results from the Landscape Character Assessment are shown in **Table 09**.

| Landscape Character Assessment | | | | | |
|--------------------------------|-----------------------|------------------------|--|--|------------------------------------|
| LCZ: | Name: | Scenic Quality Rating: | Sensitivity: | Magnitude: | Landscape Character Impact Rating: |
| LCZ01 | Agricultural Pastures | VERY LOW | <p>VERY LOW</p> <p>The landscape within this LCZ has been heavily modified to support agricultural production, mainly for pastoral use and cropping.</p> <p>Electrical transmission infrastructure is present throughout this LCZ.</p> <p>As such it is considered to have some capacity to absorb the type of change envisaged by the solar energy development.</p> <p>The landscape character of this LCZ will remain unchanged as a result of the Project.</p> | <p>LOW</p> <p>Energy infrastructure is an existing element within this LCZ in the form of 330kV transmission lines. Both the Project and the New England REZ Transmission Project (500kV transmission lines) are also proposed within this LCZ.</p> <p>The undulating topography and scattered vegetation along road corridors, ridgelines, and creek lines obstruct and break up views of the multiple projects and their associated infrastructure.</p> <p>Views of the Project would be available from locations within close range, including Bulls Road, which runs through the Project, and a small area along Garoo Road.</p> <p>Although the undulating topography and scattered vegetation will screen views of the Project from most surrounding land and public roads, some infrastructure elements are expected to be visible at close range, particularly along Bulls Road. However, the existing scenic quality of this LCZ is low, not being a rare or unique landscape. Furthermore, Bulls Road—the most affected viewpoint—has a low sensitivity rating, as it is an unsealed, low-use road primarily used to access nearby residences and farmland.</p> | VERY LOW |
| LCZ02 | Vegetated Hills | MODERATE | <p>MODERATE?</p> <p>Some human modification is evident within this LCZ along the lower slopes where vegetation has been cleared for pastoral grazing. Remnant native vegetation covers the less agriculturally productive areas along ridgelines and slopes.</p> <p>The vegetated hills are a key feature of the views from the surrounding landscape, often seen as a backdrop to views from the surrounding farmland.</p> | <p>VERY LOW</p> <p>The Project is sited to avoid areas located within this LCZ.</p> <p>The project is not expected to compete visually with the landform and associated vegetation of this LCZ.</p> <p>Opportunities to view the Project from within the LCZ are limited due to restricted access and screening vegetation.</p> <p>The landscape within this LCZ will be unaltered as a result of the Project.</p> | LOW |

Table 09 Overview of Landscape Character Assessment

05 Visual Impact Assessment



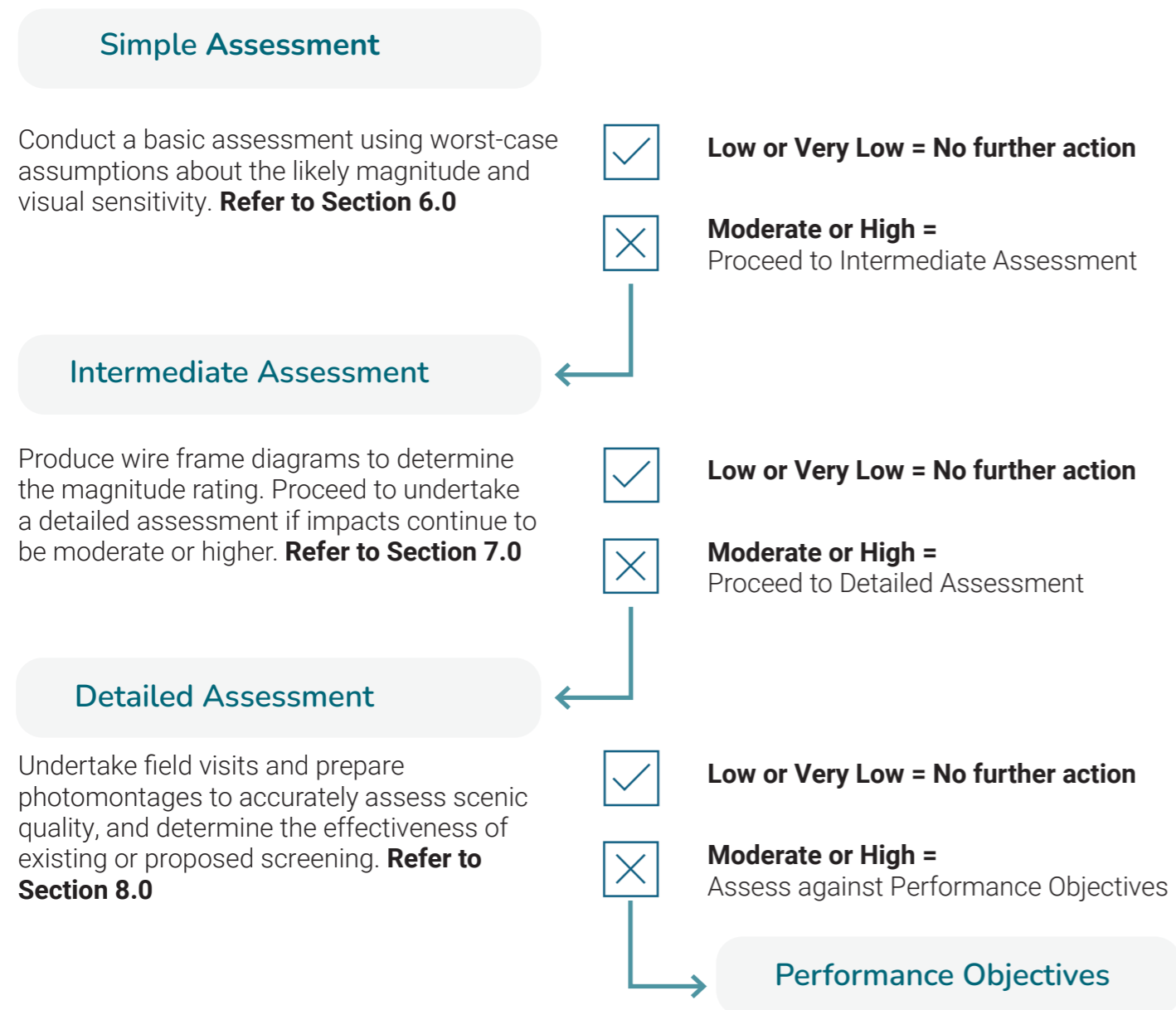
5.0 Visual Impact Assessment

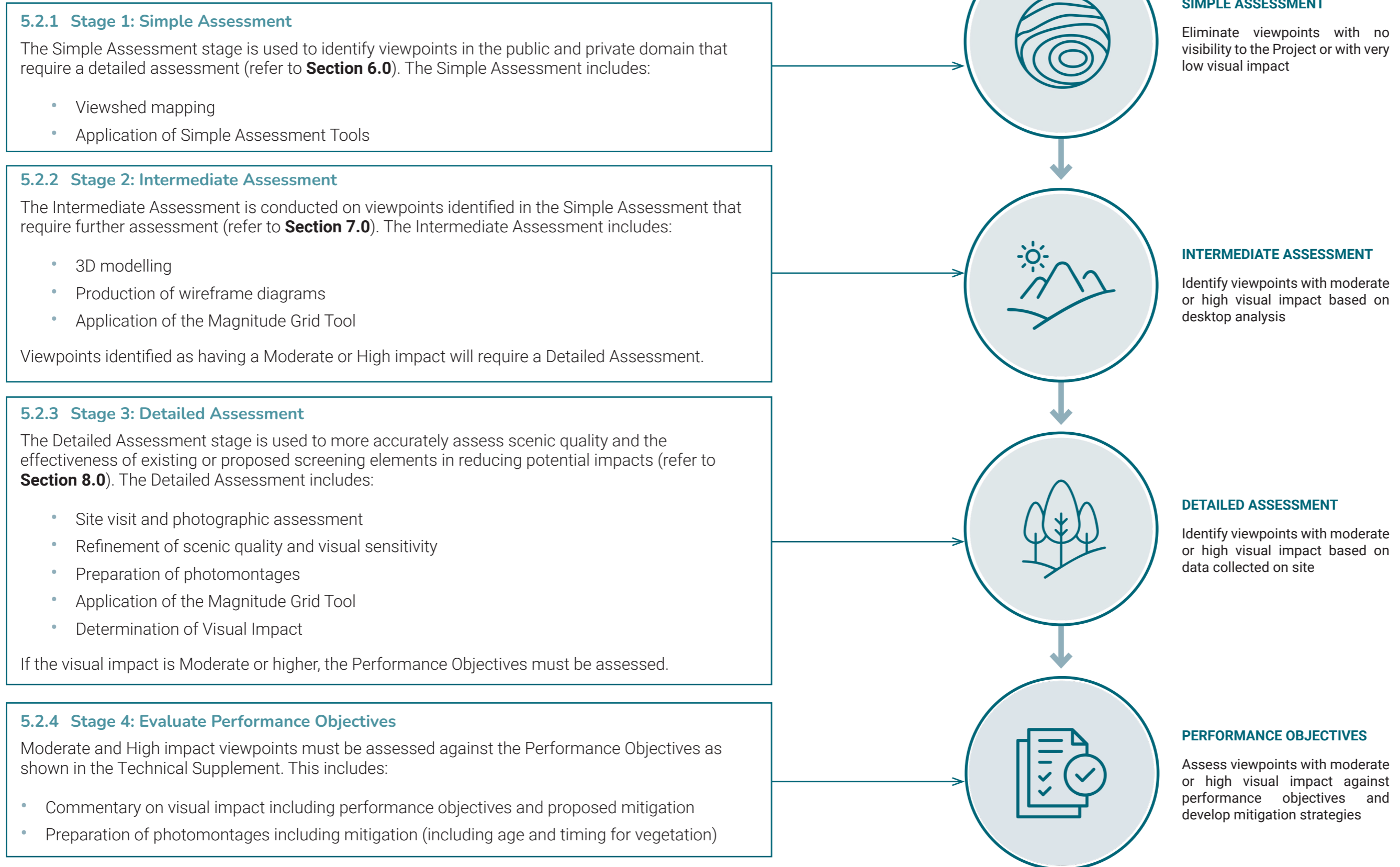
5.1 Overview of Proportionate Assessment Process

A visual impact assessment must be undertaken for all individual viewpoints and private receivers identified as being within the Study Area and having a line of sight to the Project.

The level of assessment required should be proportionate to the likely impacts. Applicants can begin by carrying out a simple assessment based on desktop data and high-level assumptions. Further assessment should then be undertaken if impacts are likely to be moderate or higher.

The following provides an overview of the proportionate assessment process.





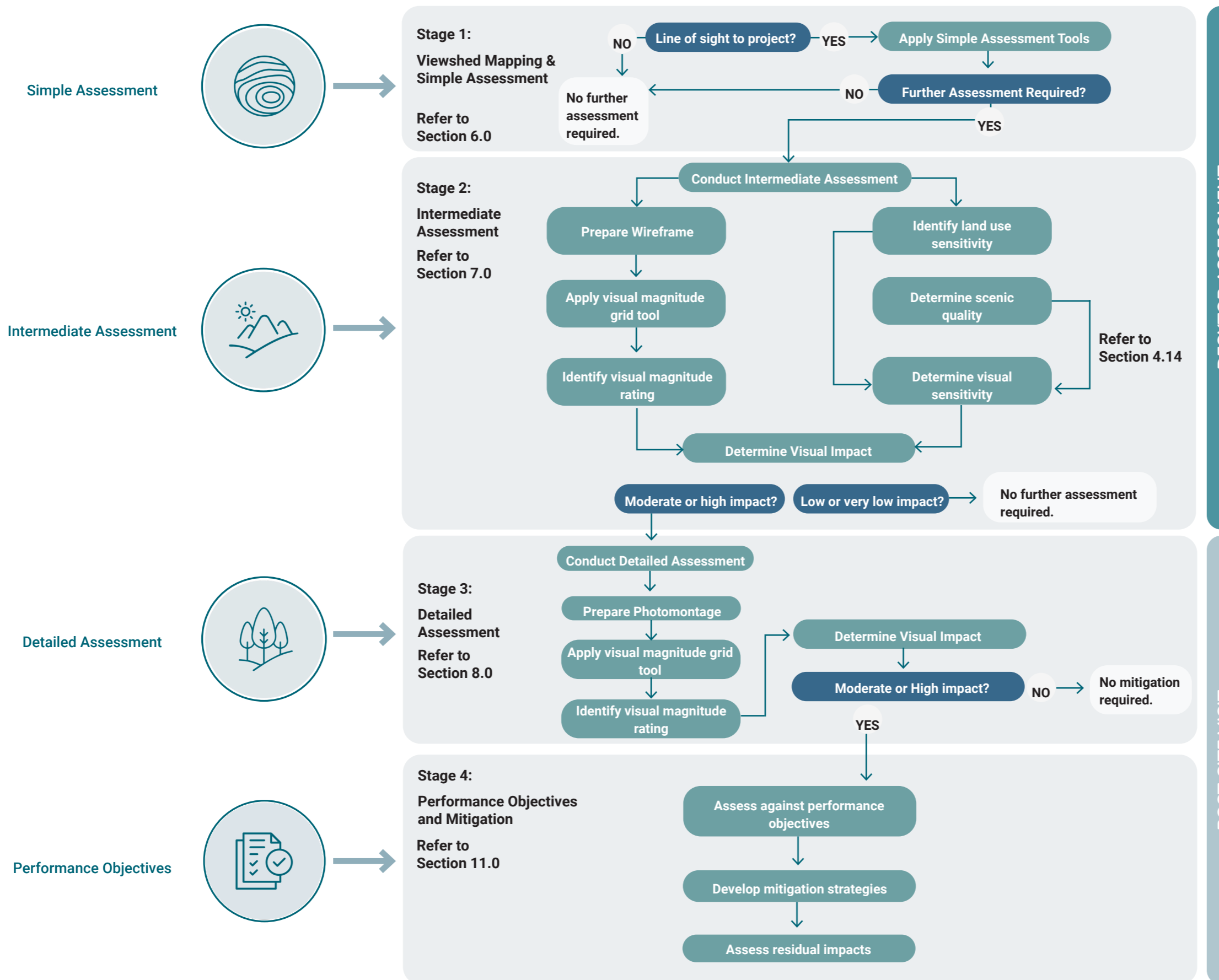


Figure 12 Visual Impact Assessment Process Overview

5.3 Visual Impact Assessment Methodology

The Technical Supplement states: "*The likely impacts of a large-scale solar energy development can only be determined by understanding the sensitivity of an area or view to change and the magnitude of a proposed development in that area or view*" (DPHI, 2024b).

The methodology for determining visual magnitude and visual sensitivity are outlined in **Section 5.5** and **Section 5.7**.

5.4 Study Areas

The Technical Supplement states that the visual study areas should be:

- 2.5 km from the Project for all road and rail receptors
- 4.0 km from the Project for all private receptors and public viewpoints

5.5 Visual Magnitude

The visual magnitude of a project is determined by the volume of the horizontal and vertical fields of view occupied.

5.5.1 Visual Magnitude in the Intermediate Assessment

To determine the visual magnitude for each viewpoint in the Intermediate Assessment, the following methodology has been undertaken:

Step 1. Produce a 3D massing model wireframe diagram that comprises a 180° field of view.

Step 2. Overlay the visual magnitude grid tool on the wireframe.

Step 3. Identify and count the number of grid cells that the Project would occupy (over 25% of the cell must be occupied to count).

Step 4. Determine the magnitude rating base on the number of cells and thresholds (as outlined in **Figure 13 and Table 10**).

5.5.2 Visual Magnitude in the Detailed Assessment

To determine the visual magnitude for each viewpoint in the Detailed Assessment, the following methodology has been undertaken:

Step 1. Produce a photographic panorama that comprises a 180° field of view.

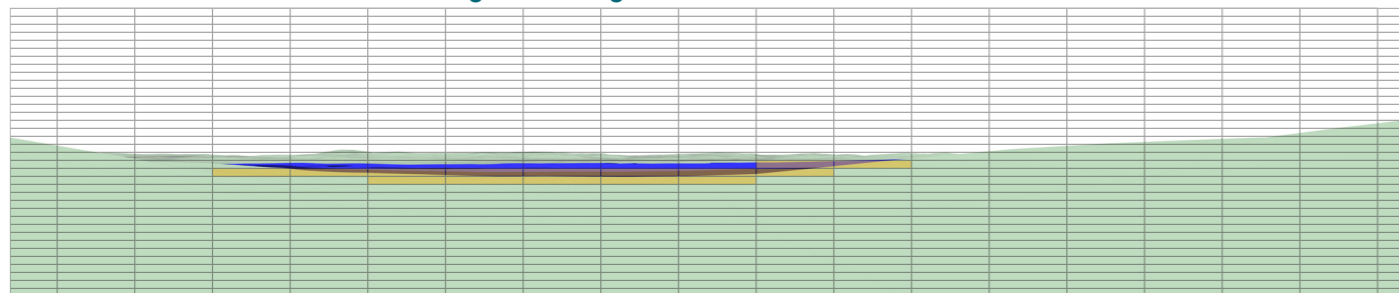
Step 2. Align the panorama and the 3D model and render the photomontage.

Step 3. Overlay the visual magnitude grid tool on the photomontage.

Step 4. Identify and count the number of grid cells that the Project would occupy (over 25% of the cell must be occupied to count).

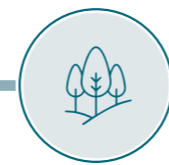
Step 5. Determine the magnitude rating base on the number of cells and thresholds (as outlined in **Figure 13 and Table 10**).

Intermediate Assessment - Calculating Visual Magnitude



Intermediate Assessment

Detailed Assessment - Calculating Visual Magnitude



Detailed Assessment

Figure 13 Visual magnitude for Intermediate vs Detailed Assessment

| VISUAL MAGNITUDE THRESHOLDS | |
|-----------------------------|-------------------------|
| Number of Occupied cells | Visual Magnitude Rating |
| 1 - 7 | Very Low |
| 8 - 14 | Low |
| 15 - 25 | Moderate |
| 26 - 36 | High |
| 37 + | Very High |

Table 10 Visual Magnitude Thresholds

5.7 Visual Sensitivity

Visual sensitivity refers to the quality of the existing view and how sensitive the view is to the proposed change. The visual sensitivity is determined through the following three steps:

Step 1. Determine Viewpoint Sensitivity

Step 2. Determine Scenic Quality

Step 3. Determine Visual Sensitivity

5.7.1 Viewpoint Sensitivity

Viewpoint sensitivity relates to the relative importance of viewpoints and the value that the community or visitors may place on landscapes viewed from public use areas, public travelways and non-associated residences such as dwellings. The sensitivity of each viewpoint has been assigned as one of four (4) sensitivity ratings (very low, low, moderate, high) considering the examples in **Table 11**.

| Viewpoint Type | Very Low sensitivity | Low sensitivity | Moderate sensitivity | High sensitivity |
|-------------------------|---|---|--|--|
| Private receptor | Private recreation areas and sporting fields (land zoned RE2) | Secondary dwelling view from dwelling rural area (zoned RU1, RU2, RU3, RU4 and RU6), large lot residential (zoned R5) and environmental and conservation zones | Primary view from dwellings in rural areas (zoned RU1, RU2, RU3, RU4 and RU6), large lot residential areas (zoned R5) and environmental or conservation areas (zoned C2, C3 and C4) Tourist and visitor accommodation (bed-and-breakfasts, motels and hotels) and places of worship | Dwellings in residential and rural villages (zoned R1, R2, R3, R4 and RU5) Historic rural homesteads/ residences on the national, state or local heritage list |
| Public viewpoint | State highways, freeways and classified main roads Local sealed and unsealed roads | Cemeteries, memorial parks Tourist roads and scenic drives 4. Significant entry ways to regional towns and cities Walking tracks and navigable waterways | Tourist uses in tourist areas (zoned SP3) Publicly accessible green and open spaces, including picnic areas, parks, public recreation areas and lookouts Town centres and central business districts | n/a |

Table 11 Viewpoint Sensitivity Levels and Examples

5.7.2 Scenic Quality

Scenic quality refers to the relative scenic, cultural or aesthetic value of the landscape within the viewshed based on the presence or absence of key landscape features known to be associated with community perceptions of low, moderate, or high scenic quality. It is typically a complex process undertaken by experts in visual impact assessment and considers community values. The methodology for determining scenic quality is outlined in **Section 4.14**.

5.7.3 Overall Visual Sensitivity

Once the viewpoint sensitivity and scenic quality are determined, these can be combined using the visual sensitivity matrix in **Table 13** to determine the overall visual sensitivity of each identified viewpoint.

| VISUAL SENSITIVITY MATRIX | | | | |
|-----------------------------|---------------------|-------------------------|--------------------|-------------------------|
| Viewpoint Sensitivity Level | High Scenic Quality | Moderate Scenic Quality | Low Scenic Quality | Very Low Scenic Quality |
| HIGH | HIGH | HIGH | MODERATE | LOW |
| MODERATE | HIGH | MODERATE | MODERATE | LOW |
| LOW | MODERATE | LOW | LOW | VERY LOW |
| VERY LOW | VERY LOW | VERY LOW | VERY LOW | VERY LOW |

Table 12 Visual Sensitivity Matrix

5.8 Visual Impact

Once visual magnitude and visual sensitivity have been established for each viewpoint, the overall visual impact is determined by combining the magnitude and sensitivity ratings according to the matrix in **Table 13**.

Viewpoints with very low or low visual impact do not require mitigation. Viewpoints that have a moderate or high visual impact will need to be assessed against the Performance Objectives as outlined in the Technical Supplement.

| | | VISUAL SENSITIVITY RATING | | | |
|------------------|-----------|---------------------------|----------|----------|----------|
| | | HIGH | MODERATE | LOW | VERY LOW |
| MAGNITUDE RATING | VERY HIGH | HIGH | HIGH | MODERATE | MODERATE |
| | HIGH | HIGH | MODERATE | MODERATE | LOW |
| | MODERATE | MODERATE | MODERATE | LOW | LOW |
| | LOW | MODERATE | LOW | LOW | VERY LOW |
| | VERY LOW | LOW | LOW | VERY LOW | VERY LOW |

Table 13 Visual Impact Matrix

5.9 Performance Objectives

Viewpoints with a moderate or high visual impact must be assessed against the Technical Supplement's Performance Objectives, as outlined in **Table 14**

| Performance Objectives | |
|--|---|
| Moderate Visual Impact | |
| Public viewpoint (roads & rail) | <ul style="list-style-type: none"> Applicants should seek to reduce moderate visual impacts Mitigation can include vegetation or other screening methods Mitigation cannot obstruct important views or sightlines Mitigation can be confined to a relatively small area |
| Private receptors & all other public viewpoints | <ul style="list-style-type: none"> Mitigation is required in consultation with the land owners Mitigation should be proportionate to the scale of impact Mitigation can include re-designing or re-positioning the PV arrays as well as vegetation screening and landscaping If available mitigation options are not effective or obstruct important views, project redesign should be considered. |
| High Visual Impact | |
| All viewpoints | <ul style="list-style-type: none"> This level of impact should be avoided, unless an agreement has been made with the land owner, or it can be justified that: <ul style="list-style-type: none"> all reasonable efforts have been made to reduce the impact all reasonable mitigation methods have been considered mitigation measures would effectively reduce the impact and not obstruct significant views the project site is significant because of the location the project is in the public interest |

Table 14 Performance Objectives

06 Simple Assessment



6.0 Simple Assessment

6.1 Overview of the Simple Assessment

The Technical Supplement states: “The level of a visual impact assessment required for private receivers and public viewpoints should be proportionate to the likely impacts of the development. Applicants can begin by carrying out a simple assessment using desktop data and high-level assumptions. They should conduct further assessment if impacts are likely to be moderate or higher.” (DPHI, 2024b).

The purpose of the Simple Assessment process is to eliminate the need to further assess public and private viewpoints that are likely to experience very low and low visual impacts.

6.2 Simple Assessment Tools

Initially, viewshed mapping was undertaken to eliminate viewpoint locations that will not have a line of sight to the proposed solar panels (refer to **Figure 19**)

Viewpoints with a theoretical line of sight to the Project were then assessed. The Simple Assessment uses worst-case assumptions to calculate the likely visual magnitude (see **Section 6.5**) and assumed visual sensitivity (see **Section 6.6**). Following the methodology outlined in **Section 5.0**, these ratings are applied to the Visual Impact Matrix (**Table 13**), where a worst-case visual impact is calculated.

As per the guideline ‘If the simple assessment indicates that a moderate or high impact is likely, then applicants must conduct an intermediate assessment.’

Simple Assessment Parameters:

The Technical Supplement states: “The calculations can be based on either the project area, or the development footprint depending on the level of information available at the time. A more refined approach that uses the development footprint, may result in less viewpoints requiring assessment.” (DPHI, 2024b).

For the purpose of this report, the Simple Assessment Tools have been applied to the Development Footprint (the Project).

The Technical Supplement states that the visual study areas should be:

- 2.5 km from the Project for all road and rail receptors
- 4.0 km from the Project for all private receptors and public viewpoints

Viewpoints assessed in the Simple Assessment are shown in **Figure 18**.

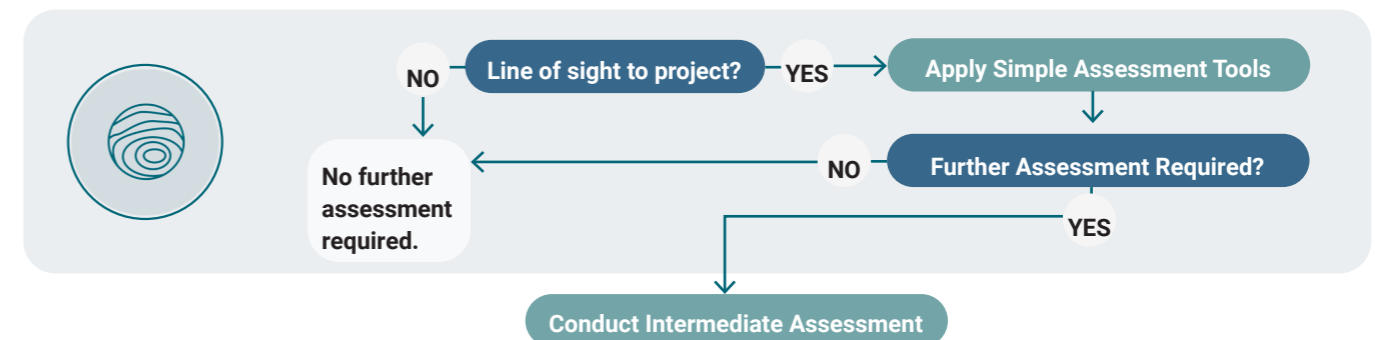


Figure 14 Simple Assessment Overview

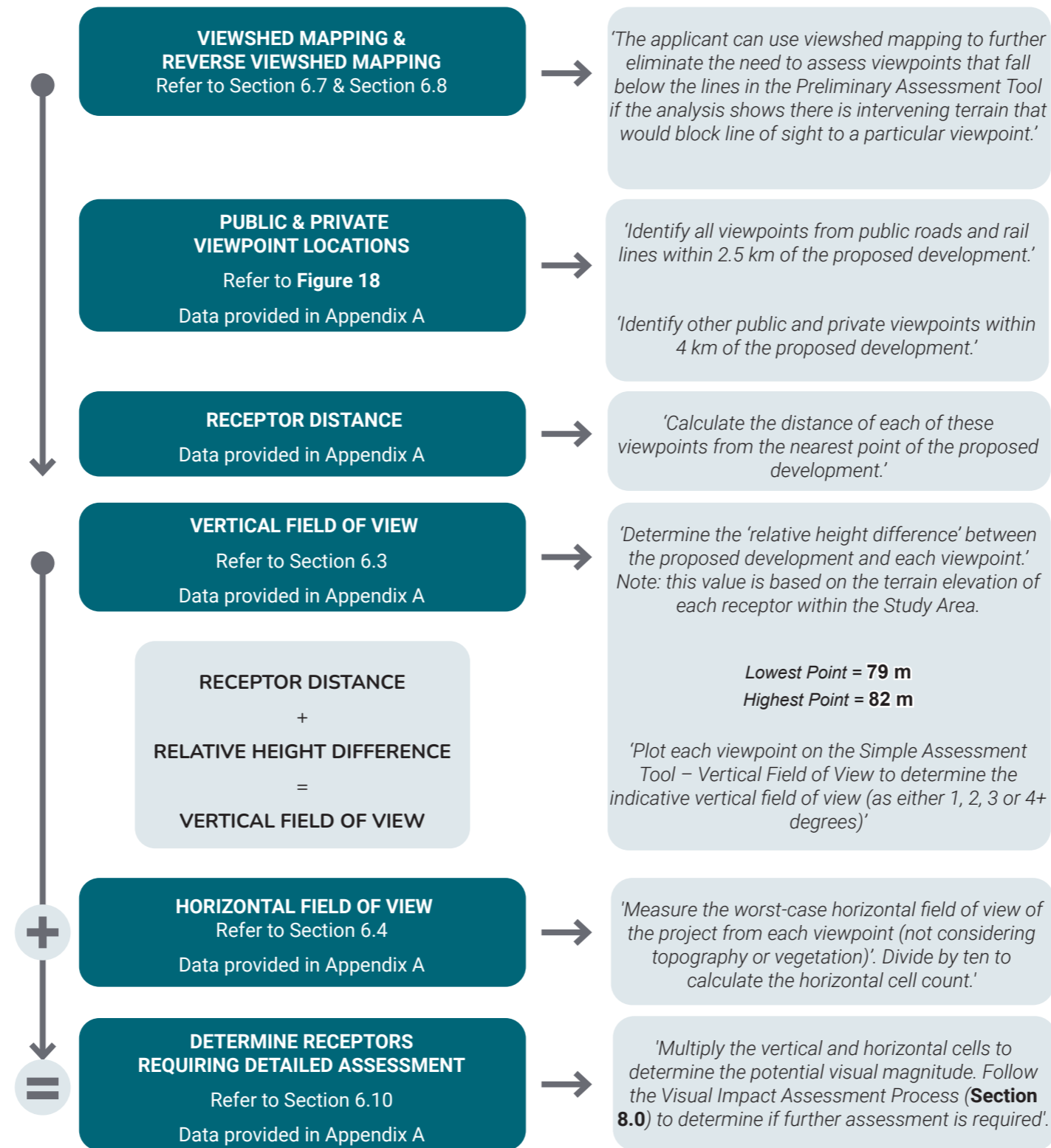


Figure 15 Overview of Simple Assessment Tools

6.3 Vertical Field of View Calculation

Figure 16 below illustrates how the vertical field of view is calculated for each viewpoint location. Once calculated, these points are added to the DPHI-provided spreadsheet document to determine the vertical field of view of either **1, 2, 3, or 4 degrees**, which is derived from the value combined with the receptor distance. Where the spreadsheet document identifies the field of view to be 0, the value is rounded to 1 degree.

Project located above and below viewpoint (a - c)



Project located above viewpoint (a - b)



Project located below viewpoint (b - c)

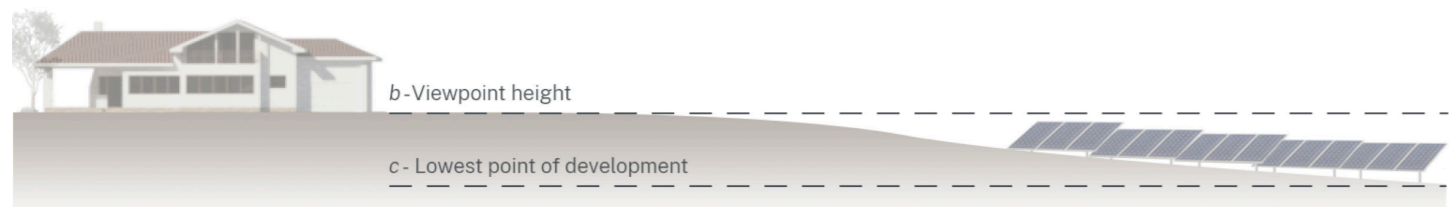


Figure 16 Vertical Field of View Calculations

Source - DPHI, 2022b

6.4 Horizontal Field of View Calculation

Figure 17 below illustrates how the horizontal field of view is calculated for each viewpoint location. After the horizontal field of view has been measured, divide the resulting measurement by 10 to determine the approximate number of horizontal cells that the project would occupy. For the purpose of this report, the horizontal field of view has been calculated based on the Development Footprint to provide a worst-case scenario assessment.

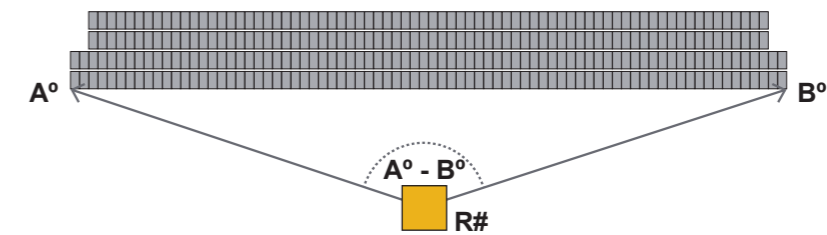


Figure 17 Horizontal Field of View Calculations

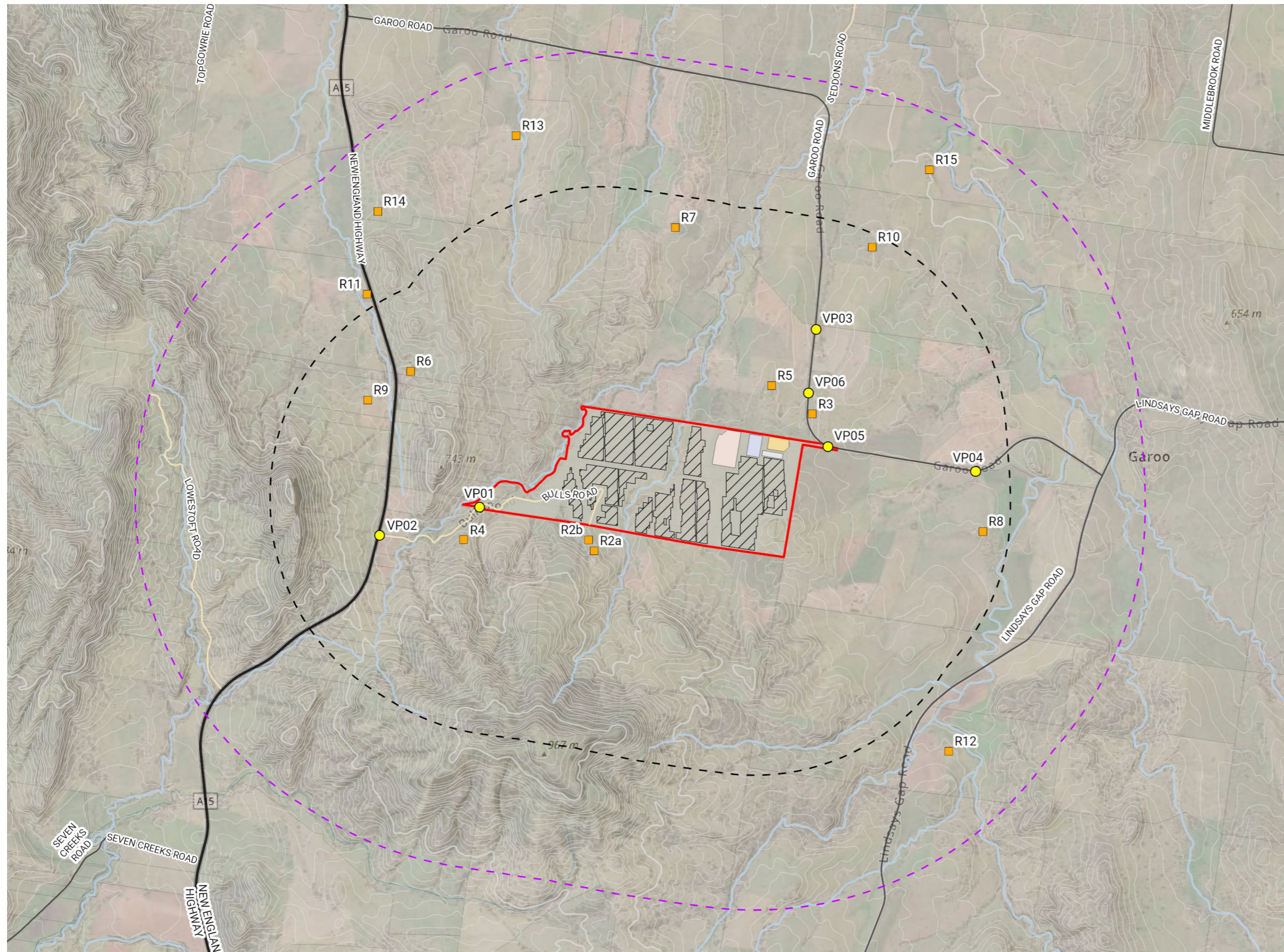
Source - DPHI, 2024b

6.5 Calculation of Potential Magnitude

Multiply the vertical and horizontal cells to determine the potential visual magnitude from a viewpoint and rate it using **Table 10** (Visual Magnitude Thresholds) to determine the magnitude rating.

6.6 Calculation of Sensitivity Rating

At this stage, the characterisation of viewpoint sensitivity and scenic quality are informed by conservative assumptions.



Viewpoints for Simple Assessment

Refer to Section 6.2

LEGEND

- Project Area
- PV Array Area
- Private Receiver Study Area (4 km from the Development Footprint)
- Public Viewpoint Study Area (2.5 km from the Development Footprint)
- Development Footprint
- Transgrid Substation Area
- Parking and Laydown Area
- Customer Substation Area
- BESS Area
- Lots
- Waterways
- Highway
- Roads
- Unsealed Roads
- Non-Associated Dwelling
- Public Viewpoint Locations



Figure 18 Viewpoints Assessed in the Simple Assessment
 Basemap Source - ESRI, 2024

6.7 Viewshed Mapping

A viewshed map identifies all areas from which a development may be viewed. Viewshed mapping can be achieved using geographic information systems (GIS) that account for topography and line of sight between viewpoints and the Project. The purpose of the viewshed map is to eliminate further the need to assess viewpoints that fall below the lines in the Preliminary Assessment Tool if the analysis shows there is intervening terrain that would block the line of sight to a particular viewpoint.

Viewshed mapping was undertaken to eliminate viewpoint locations that will not have a line of sight to the proposed solar panels (refer to **Figure 19**). It is important to note that the viewshed map provides an assessment based on topography alone and does not take into account intervening elements such as vegetation and structures. Therefore, the viewshed map represents a theoretical worst-case scenario.

Viewshed mapping has been undertaken based on a maximum panel height of 2.9 m.

Summary of Viewshed Map Assessment

The following provides a summary of the viewshed map assessment:

- Land to the immediate south and north of the Project have the highest theoretical visibility toward the Project.
- The undulating topography screens the potential views of the Project from the New England Highway and Garoo Road.
- Due to the undulating topography, any high points of land within the immediate vicinity of the Project have a high theoretical visibility of the Project.
- Views of the Project will be obstructed by topography in the land to the immediate east and far south, west and northwest of the Project.

6.8 Reverse Viewshed Mapping

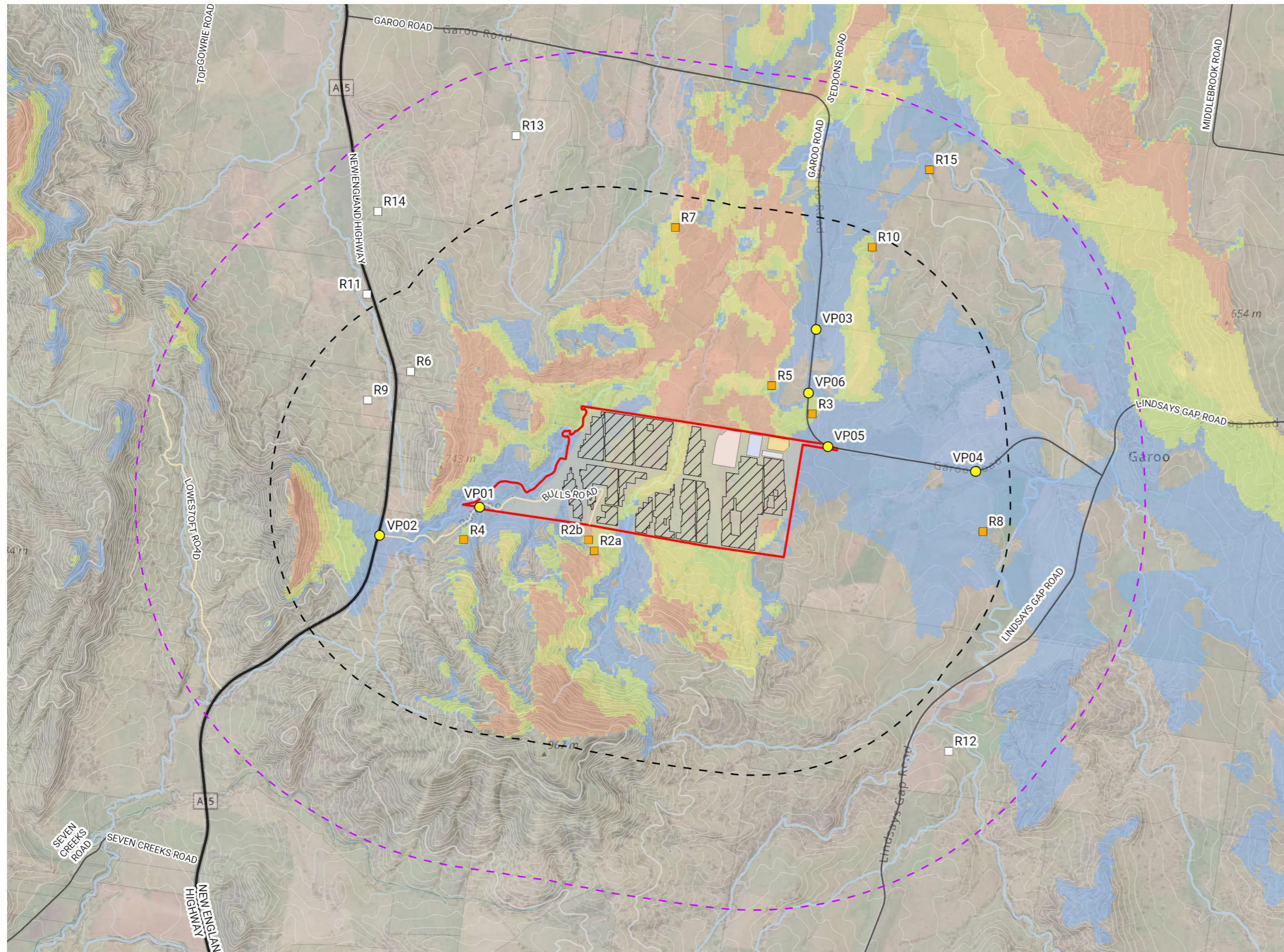
The Technical Supplement states: "*Applicants should also consider undertaking a reverse viewshed analysis. This can be a useful tool to refine the project design process and reduce any significant impacts. It can also be used to communicate the visibility of certain parts of the Project and aid consultation with the community. This analysis should be used to highlight parts of the Project that can be seen from the greatest number of viewpoints*" (DPHI, 2024b).

Figure 20 represents a reverse viewshed map that takes into account nine (9) non-associated dwellings located within 4.0 km of the development footprint that have visibility, as shown in the viewshed mapping. This figure shows parts of the development footprint that are likely to be visible from these non-associated dwellings. This assessment also represents a bare-ground scenario, i.e., a landscape without intervening elements such as vegetation and structures. Therefore, the reverse viewshed map represents a theoretical worst-case scenario.

Summary of Reverse Viewshed Map Assessment

The following provides a summary of the reverse viewshed map:

- The undulating topography results in the number of dwellings potentially able to view the Project varying widely across the development footprint area.
- There is no location within the development footprint where all nine (9) non-associated dwellings will be able to have a theoretical line of sight to the Project.



Viewshed Mapping

Refer to Section 6.7

LEGEND

- Project Area
- PV Array Area
- Private Receiver Study Area (4 km from the Development Footprint)
- Public Viewpoint Study Area (2.5 km from the Development Footprint)
- Development Footprint
- Transgrid Substation Area
- Parking and Laydown Area
- Customer Substation Area
- BESS Area
- Lots
- Waterways
- Highway
- Roads
- Unsealed Roads
- Non-Associated Dwellings with a theoretical line of sight to Project
- Non-Associated Dwellings with no visibility of Project
- Public Viewpoint Locations with a theoretical line of sight to Project

VIEWSHED LEGEND

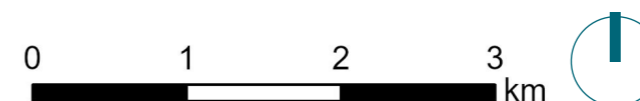
Extent of Project visible based on viewshed map

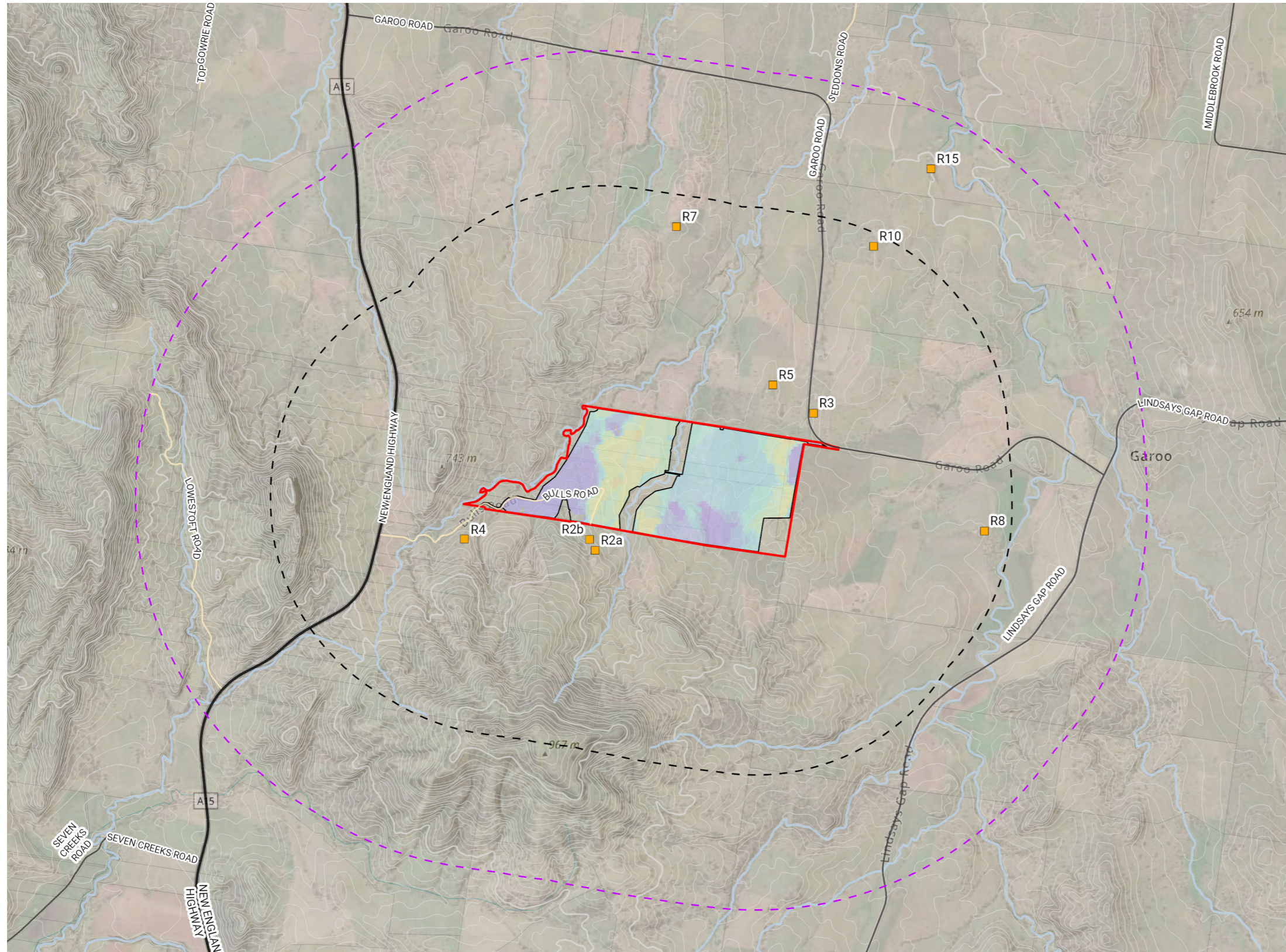
- 75 - 100% Visibility
- 50 - 75% Visibility
- 25 - 50% Visibility
- 0 - 25% Visibility
- No Visibility

NOTE

Viewshed Map is a preliminary assessment tool representing a bare-ground scenario—i.e., a landscape without screening, structures, or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note that the map is based solely on topographic information. Therefore, this form of mapping should be acknowledged as representing the worst-case scenario.

Figure 19 Viewshed Mapping
Basemap Source - ESRI, 2024





Reverse Viewshed Mapping

Refer to Section 6.8

LEGEND

- Project Area
- Development Footprint
- Private Receiver Study Area (4 km from the Development Footprint)
- Public Viewpoint Study Area (2.5 km from the Development Footprint)
- Lots
- Waterways
- Highway
- Roads
- Unsealed Roads
- Non-Associated Dwellings with a theoretical line of sight to Project

ZVI LEGEND

Number of Dwellings Visible

- 1 dwelling visible
- 2 dwellings visible
- 3 dwellings visible
- 4 dwellings visible
- 5 dwellings visible
- 6 dwellings visible
- 7 dwellings visible
- 8 dwellings visible
- 9 dwellings visible

NOTE

Viewshed Map is a preliminary assessment tool representing a bare-ground scenario—i.e., a landscape without screening, structures, or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note that the map is based solely on topographic information. Therefore, this form of mapping should be acknowledged as representing the worst-case scenario.

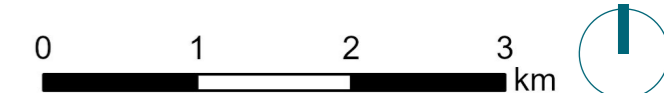


Figure 20 Reverse Viewshed Mapping
Basemap Source - ESRI, 2024

6.9 Identification of Viewpoints

The following provides an overview of the viewpoints assessed. Viewpoint locations have been illustrated in **Figure 18**.

6.9.1 Public Receptors

Six (6) public receptor locations have been selected to represent road and rail receptors within 2.5 km of the Project. These viewpoints were assessed using the Simple Assessment (refer to **Figure 18**).

6.9.2 Private Receptors

Fifteen (15) non-associated dwellings were identified within 4.0 km of the Project.

These fifteen (15) non-associated dwellings were assessed using the Simple Assessment (refer to **Figure 18**).

6.10 Results of Simple Assessment

The simple assessment identifies public and private viewpoints for further assessment. These results are summarised below.

Private Viewpoints

A total of nine (9) non-associated dwellings were identified within 4.0 km of the Development Footprint, with a line of sight to the Project. The Simple Assessment Tools identified that five (5) non-associated dwellings require further intermediate assessment (refer to **Table 15 and Figure 21**).

Public Viewpoints

Six (6) viewpoints were identified within 2.5 km of the Development Footprint. Application of the Preliminary Assessment Tools identified that two (2) viewpoints require further intermediate assessment (refer **Table 16 and Figure 21**).

| SIMPLE ASSESSMENT RESULTS (PRIVATE VIEWPOINTS) | | | | | | | |
|--|--|------------------------|---------------------------------------|---------------------|-----------------------|----------------------|-----------------------------------|
| Dwelling ID | Line of Sight? <i>(Based on viewshed Mapping)</i> | Receiver Elevation (m) | Distance to Development footprint (m) | Vertical Cell Count | Horizontal Cell Count | Total Occupied Cells | Intermediate Assessment Required? |
| R2a | Yes | 654 | 309 | 4 | 16 | 64 | YES |
| R3 | Yes | 572 | 441 | 4 | 8 | 32 | YES |
| R4 | Yes | 653 | 547 | 4 | 7 | 28 | YES |
| R5 | Yes | 566 | 563 | 4 | 12 | 48 | YES |
| R6 | No | 626 | 1664 | 2 | 6 | 12 | NO |
| R7 | Yes | 567 | 2144 | 1 | 7 | 7 | NO |
| R8 | Yes | 546 | 2206 | 2 | 4 | 8 | NO |
| R9 | No | 625 | 1763 | 2 | 4 | 8 | NO |
| R10 | Yes | 535 | 2349 | 2 | 5 | 10 | NO |
| R11 | No | 593 | 2648 | 1 | 5 | 5 | NO |
| R12 | No | 566 | 3108 | 1 | 4 | 4 | NO |
| R13 | No | 550 | 3211 | 1 | 5 | 5 | NO |
| R14 | No | 581 | 3305 | 1 | 4 | 4 | NO |
| R15 | Yes | 505 | 3417 | 2 | 4 | 8 | NO |
| R2b | Yes | 644 | 208 | 4 | 17 | 68 | YES |

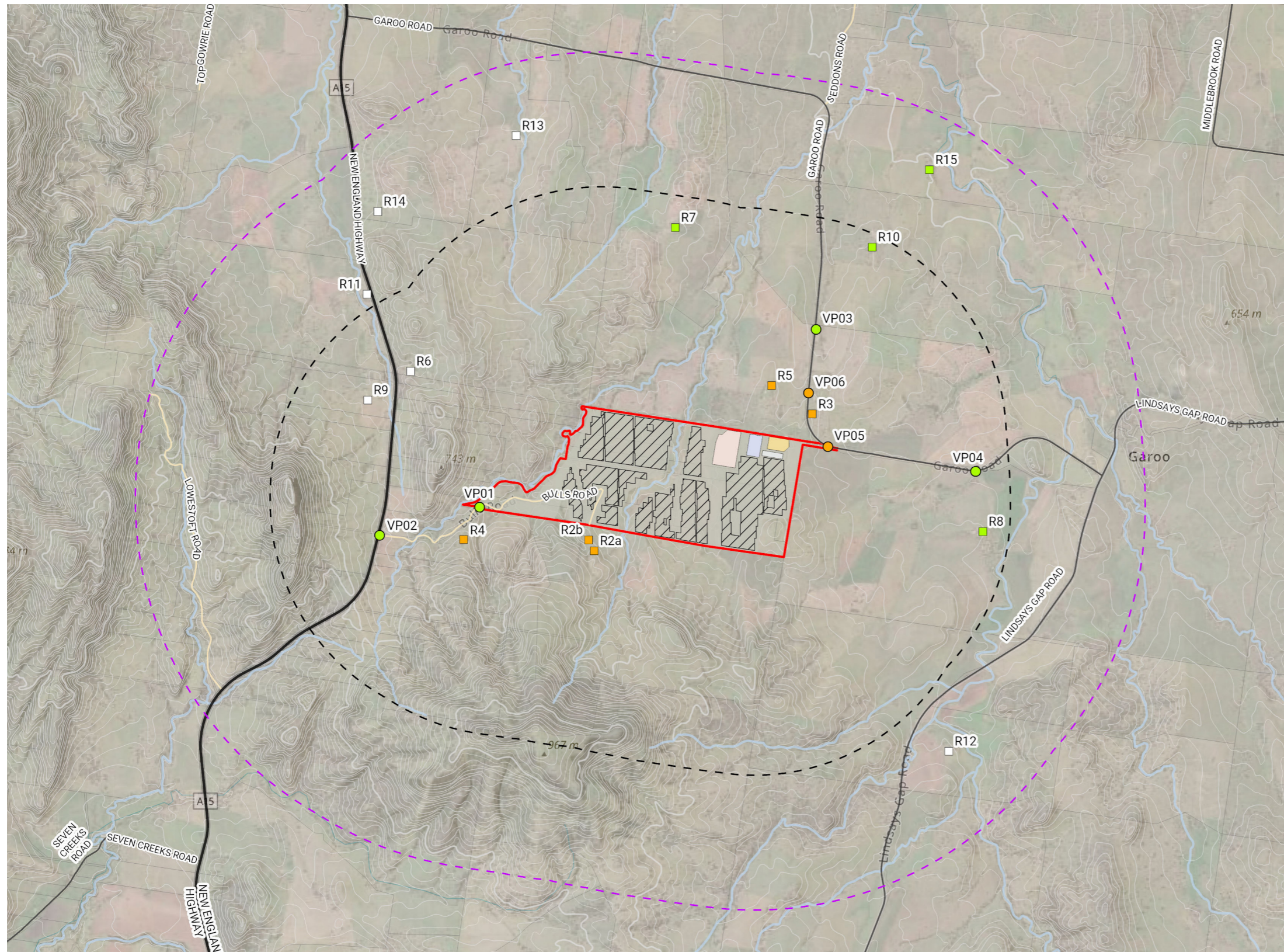
Table 15 Results of Simple Assessment (Private Viewpoints)

| SIMPLE ASSESSMENT RESULTS (PUBLIC VIEWPOINTS) | | | | | | | |
|---|--|------------------------|---------------------------------------|---------------------|-----------------------|----------------------|-----------------------------------|
| Public Viewpoint ID | Line of Sight? <i>(Based on viewshed Mapping)</i> | Receiver Elevation (m) | Distance to Development footprint (m) | Vertical Cell Count | Horizontal Cell Count | Total Occupied Cells | Intermediate Assessment Required? |
| VP01 | Yes | 620 | 3 | 4 | 6 | 24 | NO |
| VP02 | Yes | 655 | 1132 | 4 | 4 | 16 | NO |
| VP03 | Yes | 540 | 1259 | 3 | 7 | 21 | NO |
| VP04 | Yes | 533 | 1645 | 2 | 3 | 6 | NO |
| VP05 | Yes | 559 | 0 | 4 | 7 | 28 | YES |
| VP06 | Yes | 562 | 548 | 4 | 8 | 32 | YES |

Table 16 Results of Simple Assessment (Public Viewpoints)

Simple Assessment Results

Refer to Section 6.10



LEGEND

- Project Area
 - PV Array Area
 - Private Receiver Study Area (4 km from the Development Footprint)
 - Public Viewpoint Study Area (2.5 km from the Development Footprint)
 - Development Footprint
 - Transgrid Substation Area
 - Parking and Laydown Area
 - Customer Substation Area
 - BESS Area
 - Lots
 - Waterways
 - Highway
 - Roads
 - Unsealed Roads
- Simple Assessment Results (Non-Associated Dwellings)
- Intermediate Assessment Required
 - No Further Assessment Required
 - No Visibility of Project
- Simple Assessment Results (Public Viewpoints)
- Intermediate Assessment Required
 - No Further Assessment Required



Figure 21 Results of Simple Assessment
Basemap Source - ESRI, 2024

07 Intermediate Assessment



7.0 Intermediate Assessment

6.11 Overview of the Intermediate Assessment

The Intermediate Assessment stage involves undertaking a more accurate assessment of the visual magnitude of Project. The Intermediate Assessment is applied to viewpoints identified as requiring further assessment as a result of the Simple Assessment.

The methodology for calculating the magnitude of a Project is outlined in **Section 5.5.1**.

A simplified massing model is used during the Intermediate Assessment stage. This model is a simplified solid object to represent a worse case scenario. If viewpoints require further assessment, a detailed model is created to further refine the visual magnitude in the Detailed Assessment stage.

6.12 Results of Intermediate Assessment

Application of the Intermediate Assessment identifies the public and private viewpoints that require further assessment in the Detailed Assessment stage. These results are summarised below.

Private Viewpoints

Following the intermediate assessment, two (2) non-associated dwelling will require a detailed assessment.

The results are shown in **Table 17**, and the wireframe assessment can be found in "**Appendix A**".

Public Viewpoints

Following the intermediate assessment, zero (0) public viewpoints will require a detailed assessment.

The results are shown in **Table 17**, and the wireframe assessment can be found in "**Appendix A**".

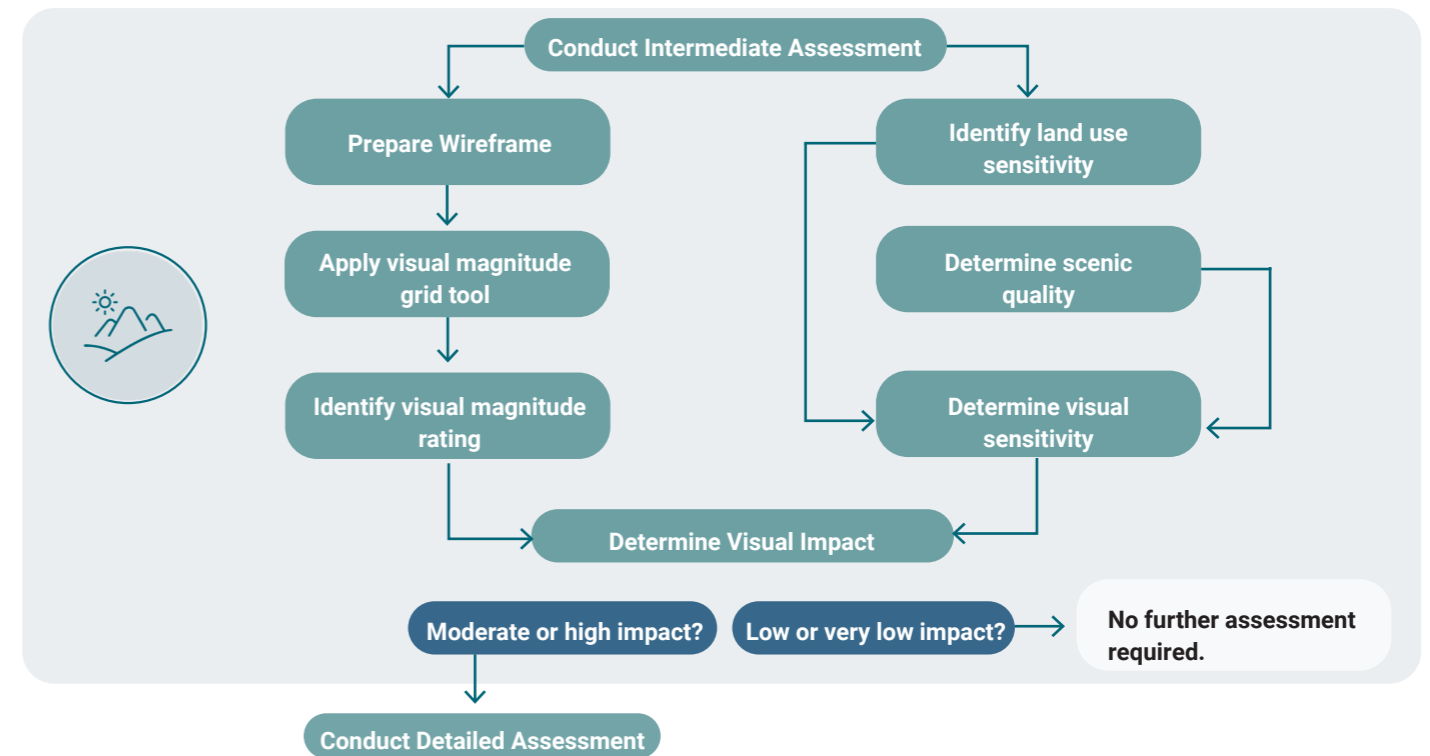


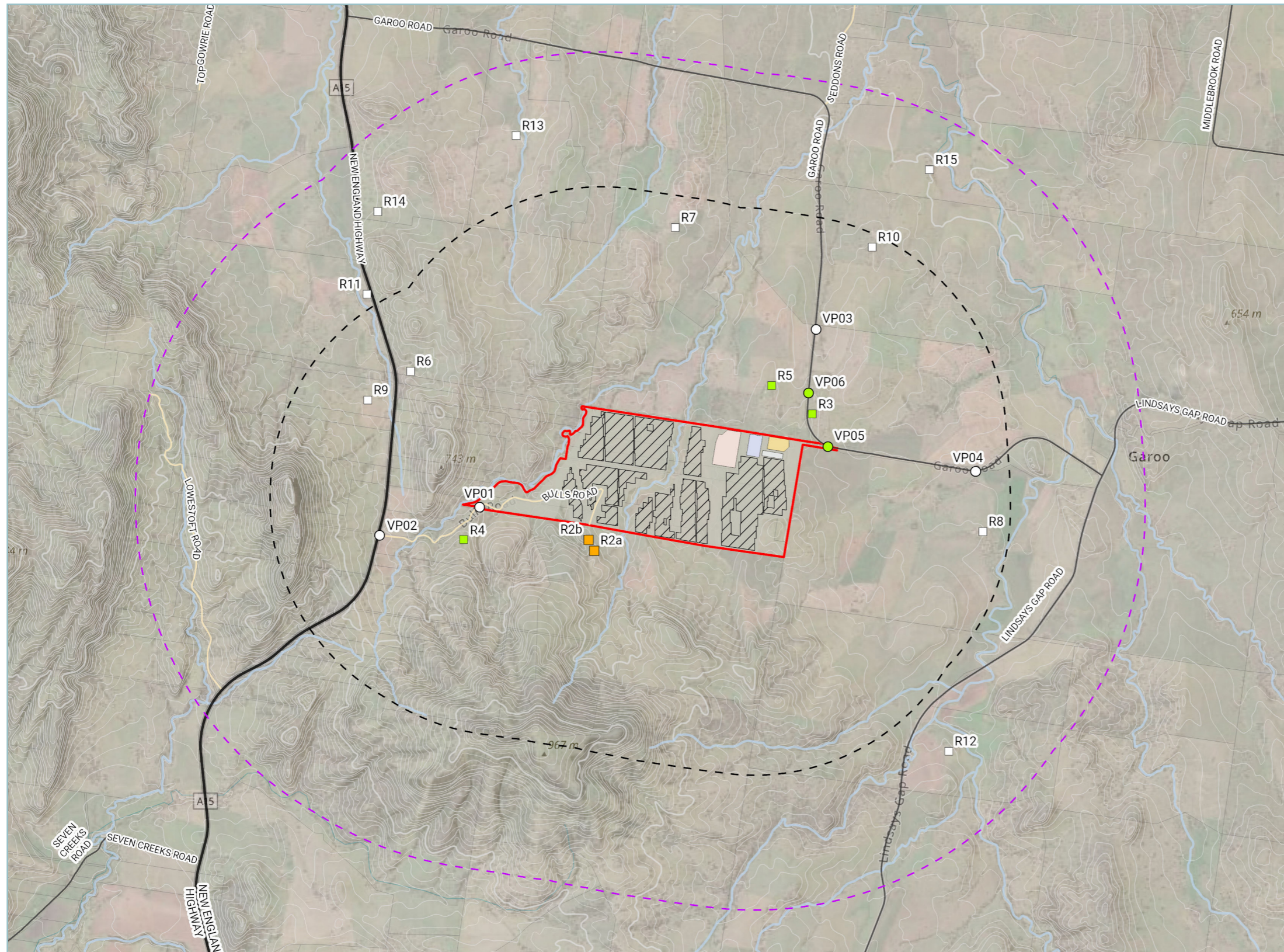
Figure 22 Intermediate Assessment Overview

| SUMMARY OF INTERMEDIATE ASSESSMENT | | | | | | | |
|------------------------------------|------------------------|-------------------------|----------------------|---|--|----------------|-------------------------------|
| Receptor ID | Receiver Elevation (m) | Distance to Project (m) | Receptor Sensitivity | Scenic Quality (Conservative Assumption) | Overall Sensitivity (Conservative Assumption) | Occupied Cells | Detailed Assessment Required? |
| R2a | 654 | 309 | Moderate | Moderate | Moderate | 27 | YES |
| R3 | 572 | 441 | Moderate | Moderate | Moderate | 8 | NO |
| R4 | 653 | 547 | Moderate | Moderate | Moderate | 6 | NO |
| R5 | 566 | 563 | Moderate | Moderate | Moderate | 12 | NO |
| R2b | 644 | 208 | Moderate | Moderate | Moderate | 31 | YES |
| VP05 | 559 | 0 | Low | Moderate | Low | 5 | NO |
| VP06 | 562 | 548 | Low | Moderate | Low | 4 | NO |

Table 17 Results of Intermediate Assessment

Intermediate Assessment Results

Refer to Section 7.0



LEGEND

- Project Area
 - PV Array Area
 - Private Receiver Study Area (4 km from the Development Footprint)
 - Public Viewpoint Study Area (2.5 km from the Development Footprint)
 - Development Footprint
 - Transgrid Substation Area
 - Parking and Laydown Area
 - Customer Substation Area
 - BESS Area
 - Lots
 - Waterways
 - Highway
 - Roads
 - Unsealed Roads
- Intermediate Assessment Results (Non-Associated Dwellings)
- Detailed Assessment Required
 - No Further Assessment Required
 - No Assessment Required
- Intermediate Assessment Results (Public Viewpoints)
- No Assessment Required
 - No Further Assessment Required



Figure 23 Intermediate Assessment Results
Basemap Source - ESRI, 2024

08 Detailed Assessment



8.0 Detailed Assessment

8.1 Overview of the Detailed Assessment

The Detailed Assessment stage involves undertaking a comprehensive assessment of the visual magnitude of Project for viewpoints identified as moderate or high impact in the Intermediate Assessment. The Detailed Assessment takes involves a site visit to ascertain the extent to which a Project is filtered or screened by intervening buildings or vegetation.

The methodology for calculating the magnitude of a Project in the Detailed Assessment is outlined in **Section 5.5.2**.

The results of the Intermediate Assessment identified two (2) non-associated dwellings that require a Detailed Assessment.

8.2 Results of Detailed Assessment

Application of the Detailed Assessment identifies the public and private viewpoints that require mitigation. These results are summarised below.

Private Viewpoints

Following the detailed assessment, **two (2) non-associated dwellings (R2a & R2b) will require mitigation.**

The results are shown in **Table 17**, and the detailed assessment can be found in "**Appendix B**".

Public Viewpoints

Following the intermediate assessment, zero (0) public viewpoints require a detailed assessment.

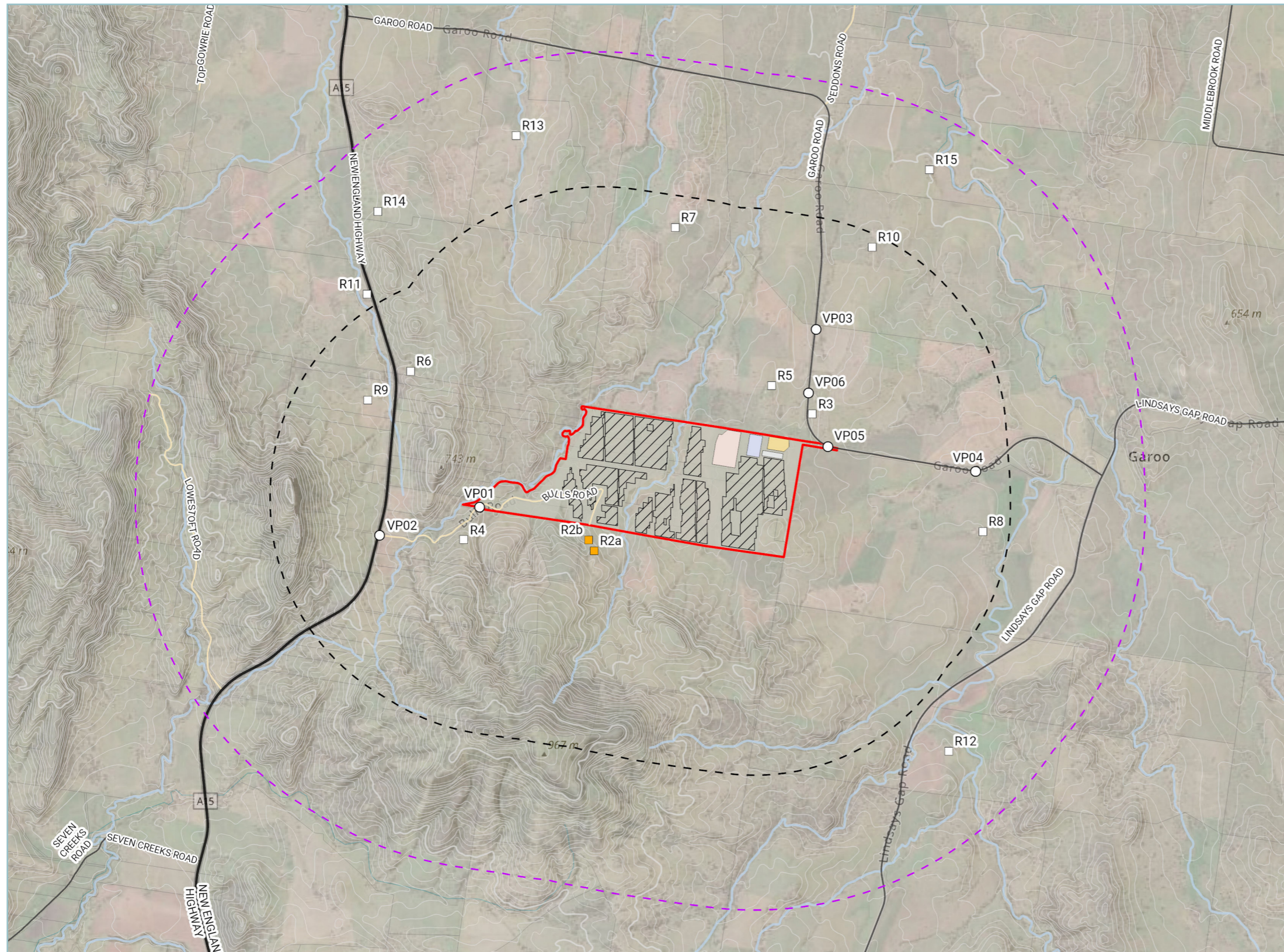
The results are shown in **Table 17**, and the detailed assessment can be found in "**Appendix B**".

| SUMMARY OF DETAILED ASSESSMENT | | | | | | | | | |
|--------------------------------|------------------------|-------------------------|----------------------|----------------|---------------------|----------------|------------------|----------------------|----------------------|
| Receptor ID | Receiver Elevation (m) | Distance to Project (m) | Receptor Sensitivity | Scenic Quality | Overall Sensitivity | Occupied Cells | Magnitude Rating | Visual Impact Rating | Mitigation Required? |
| R2a | 654 | 309 | Moderate | Low | Moderate | 27 | High | Moderate | YES |
| R2b | 644 | 208 | Moderate | Low | Moderate | 31 | High | Moderate | YES |

Table 18 Results of Detailed Assessment

Detailed Assessment Results

Refer to Section 8.0



LEGEND

- Project Area
 - PV Array Area
 - Private Receiver Study Area (4 km from the Development Footprint)
 - Public Viewpoint Study Area (2.5 km from the Development Footprint)
 - Development Footprint
 - Transgrid Substation Area
 - Parking and Laydown Area
 - Customer Substation Area
 - BESS Area
 - Lots
 - Waterways
 - Highway
 - Roads
 - Unsealed Roads
- Detailed Assessment Results (Non-Associated Dwellings)
- Moderate Visual Impact (Mitigation Required)
 - No Assessment Required
- Detailed Assessment Results (Public Viewpoints)
- No Assessment Required



Figure 24 Detailed Assessment Results
 Basemap Source - ESRI, 2024

09 Associated Infrastructure



9.0 Associated Infrastructure

9.1 Assessment of Associated Infrastructure

In addition to the proposed PV arrays, the associated infrastructure has the potential to contrast with the existing visual landscape. Due to a relatively low scale and siting of the Project, access roads, transmission lines and other ancillary infrastructure are unlikely to alter the existing visual landscape outside of the immediate vicinity.

An overview of the potential visual impact resulting from associated infrastructure and Project components is provided below. A summary of the proposed infrastructure associated with the Project can be found in **Section 3.2**. As outlined in the EIS, the ancillary infrastructure located within the Project Area includes the following items:

- BESS
- Two On-Site Substations & associated Switchgear
- Electrical Reticulation connecting the Project Elements
- Temporary Construction Compounds
- O&M Facility
- Temporary Workforce Accommodation

9.1.1 BESS, Switchyard & Substation

A 360 MW BESS is proposed for the Project. It is located along the northern boundary of the Project Area, within the northeastern corner of the development footprint. Two onsite substations (330kV), including switching station, transformers, and associated structures, are proposed for the Project. They are located within the northeastern corner of the development footprint, adjacent to the proposed BESS and existing 330kV transmission line corridor running north-south through the Project.

Rising topography will obstruct views of the BESS and substation infrastructure from Garoo Road, the only nearby public viewpoint (see "**Appendix B**"). According to the reverse ZVI analysis (see **Figure 20**), only 2-3 non-associated dwellings have the potential to see the infrastructure based on topography alone. Additionally, energy infrastructure, such as the 330 kV transmission line, is already present within the landscape.

Therefore, considering the low potential visibility of the infrastructure and existing energy infrastructure in the landscape, the overall visual impact will be low.

9.1.2 Electrical Reticulation

The project proposes an internal transmission line to connect the Project to the National Electricity

Market (NEM). This connection is proposed on the northeastern corner of the development footprint, connecting the proposed substation to the existing 330kV transmission line.

Due to the topography obstructing views, the presence of the existing transmission line, and the area's low visual sensitivity, it is unlikely that the proposed transmission line will alter the existing landscape character within the Study Area.

Therefore, the overall visual impact will be low.

9.1.3 Temporary Construction Compound & Laydown Areas

The project's construction will take approximately 18 months. During that time, the laydown area will be located near the substations in the northeastern corner of the development footprint.

Due to the topography obstructing views, it is unlikely that this infrastructure will be visible along Garoo Road.

Therefore, the overall visual impact will be low.

9.2 Design Considerations

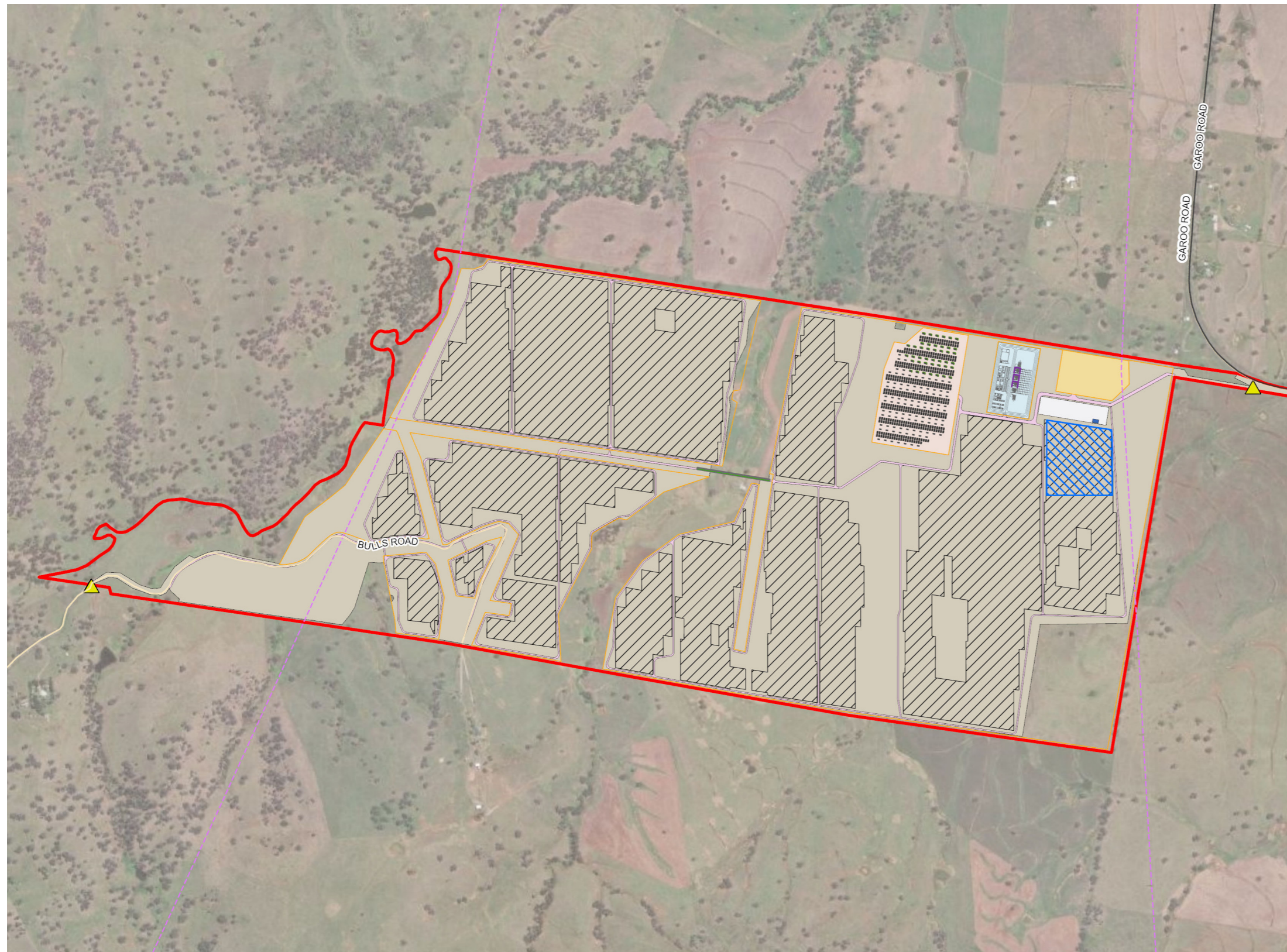
Good design principles employed through the Project design phase can significantly reduce the visual impacts of the Project and associated infrastructure. These include siting principles, access, layout and other aspects of the design which directly influence the appearance of the proposed development.

The following outlines the design considerations that have been developed in response to the associated infrastructure:

- 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.
- Incorporate setbacks to infrastructure to allow for on-site screening where required in the form of perimeter planting.
- Consideration of the height of ancillary structures to ensure the Project does not contrast significantly with the surrounding 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.

Associated Infrastructure

Refer to Section 9.1



LEGEND

- Project Area
- Development Footprint
- PV Array Area
- Fence
- Internal Roads
- Existing Transmission Lines
- BESS Area
- PSC Stations
- BESS Containers
- Transgrid Substation Area
- Customer Substation Area
- Parking and Laydown Area
- O&M Building
- ▲ Site Access Locations
- 8m Noise Walls
- 4m Noise Walls
- Bridge
- Roads
- Unsealed Roads
- Temporary Workforce Accommodation Camp (TWAC) Area

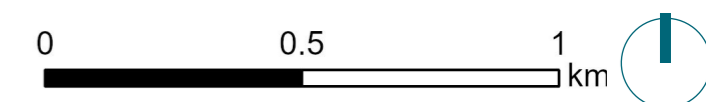


Figure 25 Associated Infrastructure
 Basemap Source - ESRI, 2024

9.3 Temporary Workforce Accommodation Camp

The Project proposes that during the construction phase of the Project, a Temporary Workforce Accommodation Camp (TWAC) will be established to house construction personnel for approximately 18 months. The camp will accommodate up to 250 workers and will include 130 car parking spaces and 4 shuttle bus bays. Upon completion of the construction works, the TWAC will be fully deconstructed and removed. Refer to **Figure 25** and **Figure 26** for the TWAC layout, and **Table 19** for a detailed description of its components.

| Temporary Workforce Accommodation Camp | |
|--|--|
| Facilities / Items | Description of facilities and items |
| Accommodation | <ul style="list-style-type: none"> Portable cabins (4x 4x15 m). |
| Ancillary buildings | <ul style="list-style-type: none"> Laundry, amenities blocks (Showers / washrooms), gymnasiums, recreation facilities, site office, storage, training room, retail shop and maintenance container; and First aid facilities with an on-site nurse. |
| Amenities infrastructure | <p>The following infrastructure would be provided to the amenities:</p> <ul style="list-style-type: none"> Electricity – generator with solar panels, A/C unit; Water – Water storage for potable water, fire water, fire pump and fire hydrant; Sewerage – Grey wastewater treatment plant, including compost toilets; and Internet and telecommunication services – mobile facilities. |
| Waste Facilities | <ul style="list-style-type: none"> Grease trap; and Waste collection area. |
| Fuel / Gas / Chemical Storage | <ul style="list-style-type: none"> Storage facility for generator fuel; 210kg Gas container; and Chemical container for WWTP. |
| Transport and Parking | <ul style="list-style-type: none"> The camp will be accessed via two site access points connected to internal access roads; Car parking for up to 125 car spaces; Four shuttle bus parking; and Truck loading / unloading area |

Table 19 Overview of Temporary Workforce Accommodation Camp

9.3.1 Assessment of Temporary Workforce Accommodation Camp (TWAC)

Viewshed mapping was undertaken to understand which areas will have a potential visual line of sight to the TWAC. It is important to note that the viewshed map provides an assessment based on topography alone and does not take into account intervening elements such as vegetation and structures. Therefore, the viewshed map represents a theoretical worst-case scenario.

Viewshed mapping has been undertaken based on a maximum structure height of **4 m**.

Summary of Viewshed Map Assessment

The following provides a summary of the viewshed map assessment (Refer to **Figure 27**):

- The undulating topography screens potential views of the TWAC from the New England Highway and some of Garoo Road.
- Due to the undulating topography, any high points of land within the immediate vicinity of the TWAC have a high theoretical visibility.
- There is potential for limited visibility of the TWAC along Garoo Road. However, intervening topography and roadside vegetation will further restrict views, limiting visibility to short, fragmented sections along Garoo Road.
- Some private receivers (R2a, R2b, R4, R5, R3, R8, R7), have potential visibility of the TWAC. However, due to the large distance from R4, R7 and R8, the TWAC is unlikely to be visible.

Overall, the rising topography and existing roadside vegetation will obstruct and fragment the majority of views of the TWAC from Garoo Road. Given the transient nature of views from this road and the absence of suitable pull-over areas, any potential views of the Project will be limited to short, fleeting glimpses while travelling by vehicle.

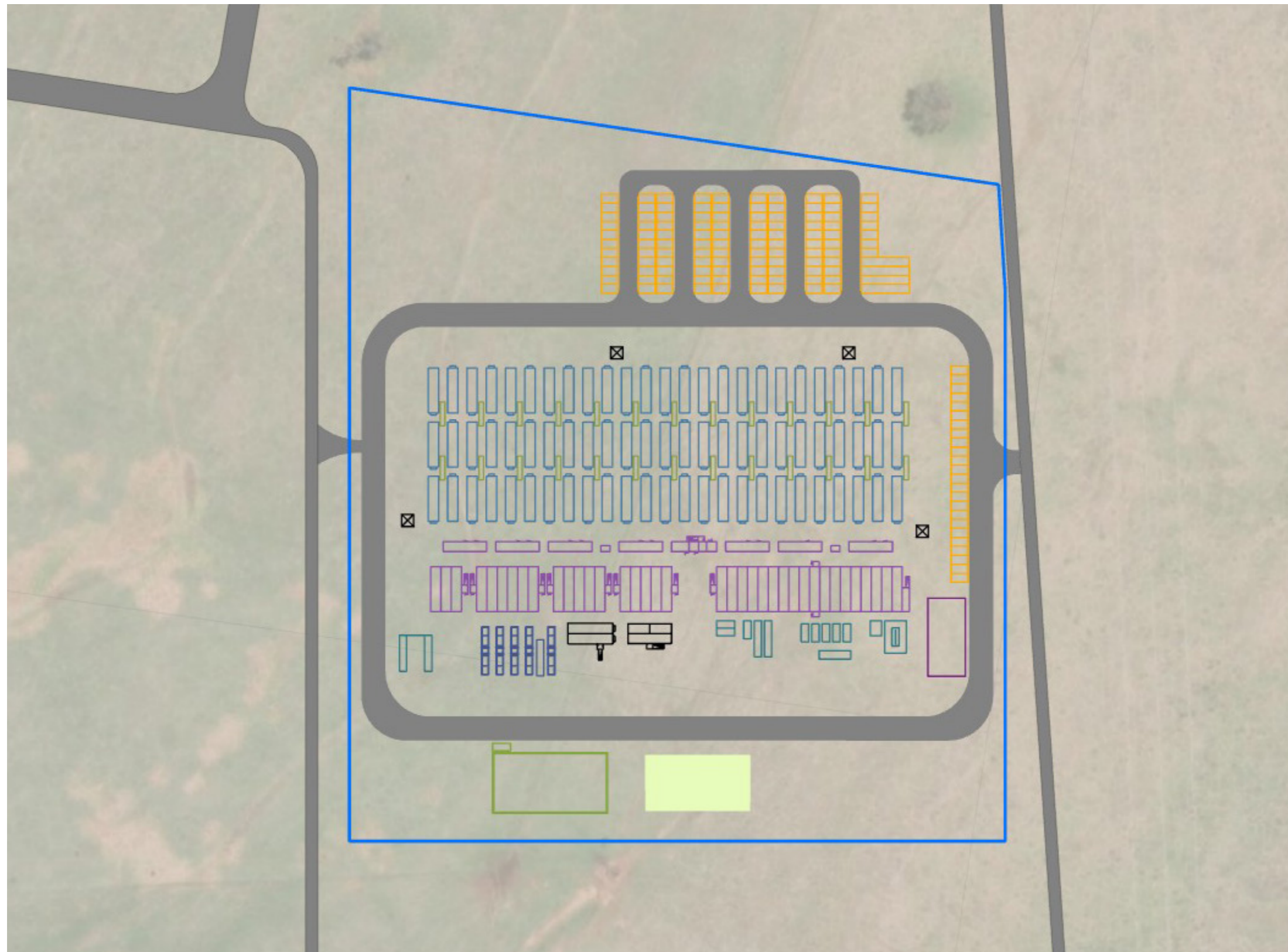
According to the viewshed mapping, seven (7) private receivers have the potential to view the TWAC. However, due to the large distance from R4, R7 and R8, the TWAC is unlikely to be visible from these locations. Private receivers R2a, R2b, R5 and R3 may view the TWAC, however, analysis of aerial imagery shows that R5 and R3 are surrounded by vegetation, which will likely screen and/or fragment any views of the TWAC. Additionally, due to the distance between R2a, R2b and the TWAC, any available views from these location will be distant and the Project is likely to recede into the background.

Given the temporary nature of the infrastructure (limited to the 18-month construction period), any visual impacts will also be temporary.

Therefore, the overall visual impact will be low.

Temporary Workers Accommodation

Refer to Section 9.3



LEGEND

- Temporary Workforce Accommodation Camp (TWAC) Area
- Internal Roads
- Accommodation Units
- Car Parking
- WWTP
- Portable Water
- Waste Area
- Smoking Area
- Shared Area
- Amenities and Services
- Machinery Area
- Loading Area
- Admin Area

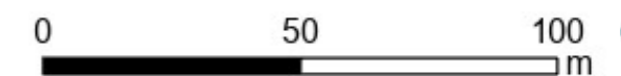
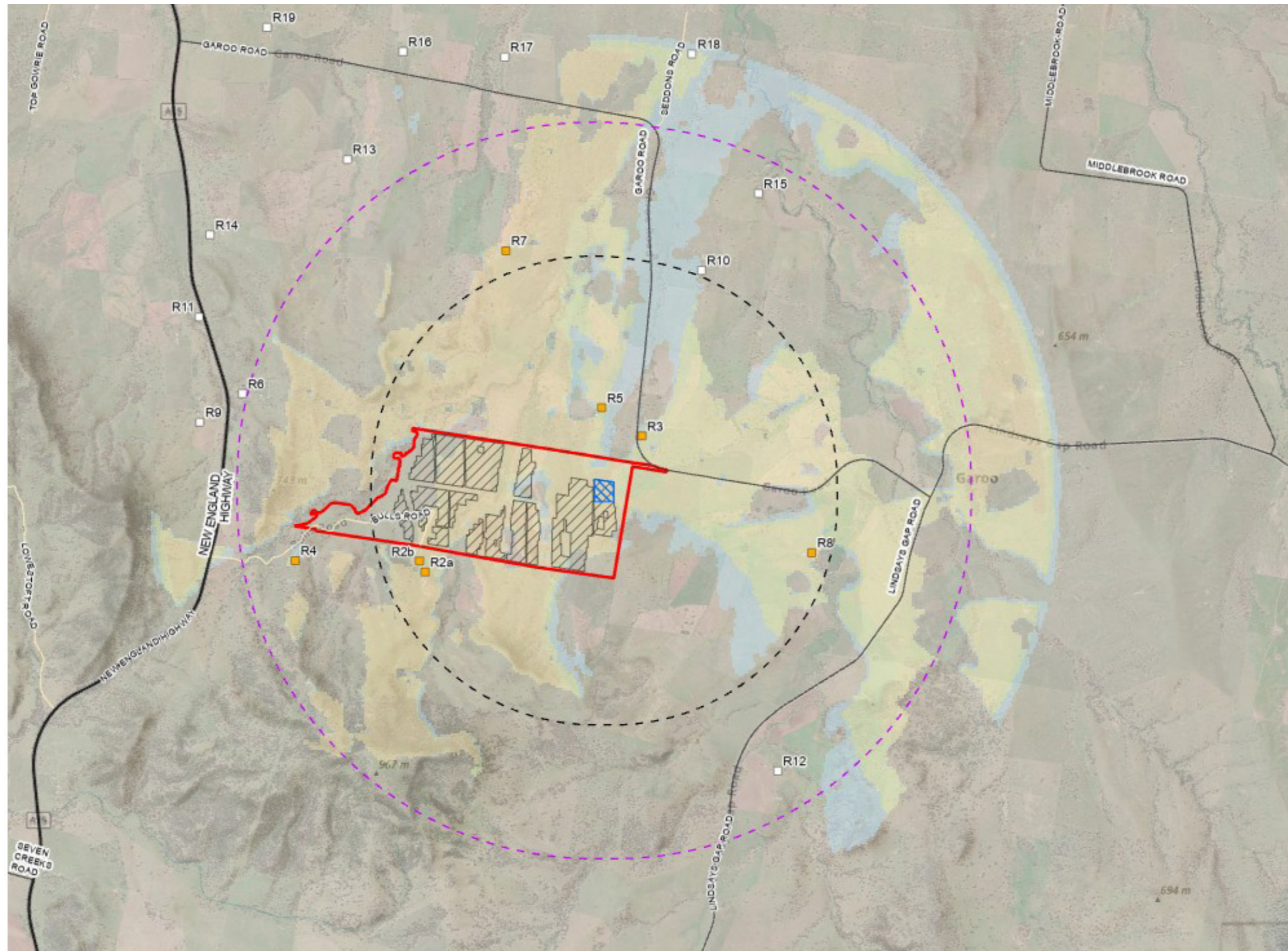


Figure 26 Temporary Workers Accommodation
 Basemap Source - ESRI, 2024



Viewshed Mapping - Temporary Workers Accommodation

Refer to Section 9.3

LEGEND

- Project Area
 - PV Array Area
 - Temporary Workforce Accommodation Camp (TWAC) Area
 - 2.5 km from TWAC
 - 4 km from TWAC
 - Highway
 - Roads
 - Unsealed Roads
 - Non-Associated Dwellings with a theoretical line of sight to TWAC
 - Non-Associated Dwellings with no theoretical visibility of TWAC
 - Non-Associated Dwellings located outside 4km Study Area
- Extent of Temporary Workers Accommodation visible based on Viewshed Map
- No visibility
 - 0 - 25% visibility
 - 25 - 50% visibility
 - 50 - 75% visibility
 - 75 - 100% visibility



Figure 27 Viewshed Mapping - Temporary Workers Accommodation
 Basemap Source - ESRI, 2024

10 Assessment of Development Rights



10.0 Assessment of Development Rights

10.1 Development Right Assessment Requirements

The guideline states: The applicant may need to consider whether the proposed development would impact the right for neighbouring landholders to develop their land for a permitted use.

An assessment of development rights has been undertaken to determine whether the proposed development would impact the right for neighbouring landholders to develop their land for the purposes of any of the following permitted land uses:

- residential accommodation
- tourist and visitor accommodation
- eco-tourist facility.

The guidelines state that the assessment should only be undertaken for impacts on vacant land. That is, land in which there is a development right that has not been acted upon and is vacant of buildings and structures. Additionally, an assessment should only be undertaken if the land is vacant at the time the Planning Secretary's environmental assessment requirements are issued, and would:

- immediately adjoin the development, or
- experience exceedances of the relevant noise criteria.

10.2 Overview of Lots with Development Rights

Zero (0) neighbouring lots (lots adjacent to the project) were identified with development rights. Therefore, no further assessment is required.

11 Performance Objectives & Mitigation



11.0 Visual Performance Objective

11.1 Visual Performance Objectives

In accordance with the Technical Supplement: "Applicants must address the relevant performance objective for each assessable viewpoint and the identified level of impact."

As a result of the Visual Impact Assessment, thirteen (13) of the fifteen (1) non-associated dwellings were identified as having a Low visual impact. In accordance with the Visual Performance Objectives in the Technical Supplement (refer to **Table 20**), no mitigation is required.

- **Two (2)** non-associated dwellings (R2a & R2b) returned a **moderate** visual impact in the Detailed Assessment (refer to **Section 8.0**).

In accordance with the performance objectives:

- For all locations rated as **'moderate'**, **mitigation is required**.

| Performance Objectives | |
|--|---|
| Low & Very Low Visual Impact | |
| All viewpoints | <ul style="list-style-type: none"> • No mitigation required |
| Moderate Visual Impact | |
| Public viewpoint (roads & rail) | <ul style="list-style-type: none"> • Applicants should seek to reduce moderate visual impacts • Mitigation can include vegetation or other screening methods • Mitigation cannot obstruct important views or sightlines • Mitigation can be confined to a relatively small area |
| Private receptors & all other public viewpoints | <ul style="list-style-type: none"> • Mitigation is required in consultation with the land owners • Mitigation should be proportionate to the scale of impact • Mitigation can include re-designing or re-positioning the PV arrays as well as vegetation screening and landscaping • If available mitigation options are not effective or obstruct important views, project redesign should be considered. |
| High Visual Impact | |
| All viewpoints | <ul style="list-style-type: none"> • This level of impact should be avoided, unless an agreement has been made with the land owner, or it can be justified that: <ul style="list-style-type: none"> • all reasonable efforts have been made to reduce the impact • all reasonable mitigation methods have been considered • mitigation measures would effectively reduce the impact and not obstruct significant views • the project site is significant because of the location • the project is in the public interest |

Table 20 Visual Performance Objectives

12.0 Mitigation

12.1 Mitigation Measures

This section of the report provides recommendations which seek to achieve a better visual integration of the Project within the existing visual character at both local and regional scales. The mitigation measures attempt to lessen the visual impact of the proposed solar 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 (The Landscape Institute et al 2008).

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.

12.2 Landscaping Principles

Screen planting is a mitigation method to reduce the visual impact of the Project. General guidelines to adhere to when planning for landscaping and visual screening include:

- Planting should remain in keeping with existing landscape character;
- Species selection is to be typical of the area;
- Plantings should use fast growing small trees and bushes, and low lying vegetation to ensure a naturalistic effect.
- Planting layout should avoid screening views of the broader landscape;
- Avoid the clearing of existing vegetation. Where appropriate reinstate any lost vegetation; and
- Allow natural vegetation to regrow over any areas of disturbance.
- Locally native plant species are preferred, as they help to preserve the landscape character and scenic quality of the area as well as building habitat for local fauna. Native species are also well suited to local conditions (ie. soil, climate, etc.) and will build on the existing vegetation assemblages in the area.

12.3 Overview of Proposed Mitigation

Mitigation in the form of screen planting is proposed to fragment views of the Project from non-associated dwellings R2a & R2b. Where possible, existing vegetation is to be retained, and proposed screen planting should follow the existing vegetation character, and fill in the gaps in existing windbreak vegetation. (Refer to Landscape Mitigation Plan for details).

Artistic renderings of the proposed screen planting after 5 years and 10 years have been included in the Detailed Assessment (see "**Appendix B**").

The re-assessment of the detailed results using the artistic renderings of the vegetation after 10 years is shown in **Table 21**.

| REASSESSMENT OF DETAILED ASSESSMENT WITH PROPOSED MITIGATION (AFTER 10 YEARS) | | | | | | |
|---|----------------------|----------------|---------------------|----------------|------------------|----------------------|
| Receptor ID | Receptor Sensitivity | Scenic Quality | Overall Sensitivity | Occupied Cells | Magnitude Rating | Visual Impact Rating |
| R2a | Moderate | Low | Moderate | 7 | Very Low | Low |
| R2b | Moderate | Low | Moderate | 11 | Low | Low |

Table 21 Re-assessment of Detailed Assessment with Proposed Mitigation (10 years)

12 Conclusion



13.0 Conclusion

13.1 Overall Summary

With all visual impact assessments the objective is not to determine whether the Project is visible or not visible, it is to determine how the Project will impact on existing visual amenity, landscape character and scenic quality. The intent of the LCVIA report is to determine if there is a potential for a negative impact on these factors, and investigated if and how this impact can be mitigated to the extent that the impact is reduced to an acceptable level.

Fieldwork was undertaken by Moir Studio in March 2025 to determine the existing landscape character against which the Project has been assessed. The assessment determined the regional landscape character is typical of the Peel Subregion of the Nandewar Bioregion.

The landscape was categorised into two (2) Landscape Character Zones (LCZs). The Technical Supplement's Scenic Quality Frame of Reference was applied to each LCZ to establish the Scenic Quality Rating of these LCZs which ranged from Very Low to Low.

The visual impact of a solar farm project will depend on the characteristics and values 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 public and private viewpoints within the relevant Study Areas. The Technical Supplement states that the visual study areas should be:

- 2.5 km from the Project for all road and rail receptors
- 4.0 km from the Project for all private receptors and public viewpoints

The location of the Project, combined with the surrounding undulating topography, limits visibility of the development from areas beyond its immediate vicinity. This includes potential views from the New England Highway and Garoo Road. However, due to the undulating topography, any high points of land within the immediate vicinity of the Project have a high theoretical visibility of the Project. This includes land to the immediate south and north of the Project.

A Simple Assessment was undertaken for a total of 15 non-associated dwellings and six (6) public viewpoints from public roads. The assessment identified:

- Five (5) non-associated dwellings required further Intermediate Assessment. The remaining ten (10) non-associated dwellings did not require further assessment according to the Simple Assessment Tools.
- Two (2) public viewpoints required further Intermediate Assessment.

An Intermediate Assessment was conducted for five (5) non-associated dwellings and two (2) public viewpoints as required. The assessment identified:

- Two (2) non-associated dwellings returned a 'moderate' visual impact rating and required further Detailed Assessment. The remaining three (3) non-associated dwellings returned a 'low' or 'very low' impact and therefore did not require further assessment.
- The two (2) public viewpoints returned a 'low' or 'very low' impact rating and therefore did not require further assessment.

A Detailed Assessment was conducted for the two (2) non-associated dwellings and zero (0) public viewpoints as required. The assessment identified:

- Two (2) non-associated dwellings (R2a & R2b) returned a 'moderate' visual impact rating and required mitigation.

In accordance with the Technical Supplement's Performance Objectives, mitigation is required for receptors determined to have a 'moderate' or greater impact at the detailed assessment stage. Therefore mitigation has been proposed for non-associated dwellings R2a and R2b in the form of screen planting along the perimeter of the Project Area (see Landscape Mitigation Plan for details).

Overall, the existing landscape within the Study Area has the ability to absorb the Project with a low degree of visual impact. The Project could be developed whilst still maintaining the landscape character of the area. In this regard, the Project satisfies the objectives as outlined in the Guideline.

References

Department of Planning, Housing and Infrastructure 2024a, *Large-Scale Solar Energy Guideline Guidance for State Significant Development NSW Department of Planning, Housing and Infrastructure* | November 2024, viewed 12 December 2024, <<https://www.planning.nsw.gov.au/sites/default/files/2024-11/large-scale-solar-energy-guideline.pdf>>.

— 2024b, *Large-Scale Solar Energy Guideline Technical Supplement for Landscape Character and Visual Impact Assessment NSW Department of Planning, Housing and Infrastructure* | November 2024, viewed 12 December 2024, <<https://www.planning.nsw.gov.au/sites/default/files/2024-11/large-scale-solar-energy-guideline-visual-technical-supplement.pdf>>.

Department of Planning, Industry and Environment 2022, *Cumulative Impact Assessment Guidelines for State Significant Projects* | October 2022, viewed 12 December 2024, <https://www.planning.nsw.gov.au/sites/default/files/2023-03/cumulative-impact-assessment-guidelines-for-ssp.pdf>.

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Maps and Figures

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Google. (2025). Google Earth Pro. Google Earth. <https://www.google.com/earth/vESRIons/#earth-pro>

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Appendix A

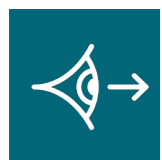
Intermediate Assessment Results





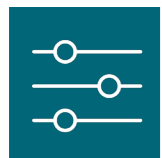
Intermediate Assessment

The purpose of the Intermediate Assessment is to determine the visual magnitude of a Project more accurately. This involves using 3D modelling, which can account for many factors that influence magnitude, including intervening topography and the different distances at which the PV Array will be visible. If the result of the Intermediate Assessment indicates that a moderate or high impact is likely, a site inspection and Detailed Assessment using photomontages are undertaken from these locations.



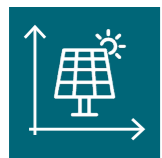
Step 1 - Determine Visual Sensitivity

The visual sensitivity is determined by identifying the sensitivity of each viewpoint and receiver and categorising the scenic quality of the area in view (refer to the LCVIA for an assessment of the existing landscape character).



Step 2 - Determine Visual Magnitude

Visual magnitude is determined by analysing the volume of the field of view that a project would occupy. This can be determined by splitting the wire frame diagram into a grid comprising cells 1 degree high and 10 degrees wide and counting the number of cells that would be occupied by a Project. As per the Guideline, 'a cell is unoccupied if elements of the project, including solar panels, battery energy systems, or other associated infrastructure do not occupy more than approximately 25% of a cell'. The cell count for the Wireframe Diagrams is based on a 2d assessment and does not consider existing screen factors such as vegetation or structures.



Step 3 - Determine Visual Impact Rating

The overall visual impact rating of each viewpoint must be determined for each assessable viewpoint by combining the visual magnitude and visual sensitivity using the matrix adjacent.

| Visual Magnitude (Number of Occupied Cells) | Visual Sensitivity | | | |
|--|--------------------|----------|----------|----------|
| | High | Moderate | Low | Very Low |
| Very High 31+ | High | High | Moderate | Moderate |
| High 22 - 30 | High | Moderate | Moderate | Low |
| Moderate 13 - 21 | Moderate | Moderate | Low | Low |
| Low 7 - 12 | Moderate | Low | Low | Very Low |
| Very Low 1 - 6 | Low | Low | Very Low | Very Low |

Detailed Assessment Required:

Any dwellings with a moderate or high visual impact will require a detailed assessment.
(including a site visit and photomontage)

Yes

Appendix B

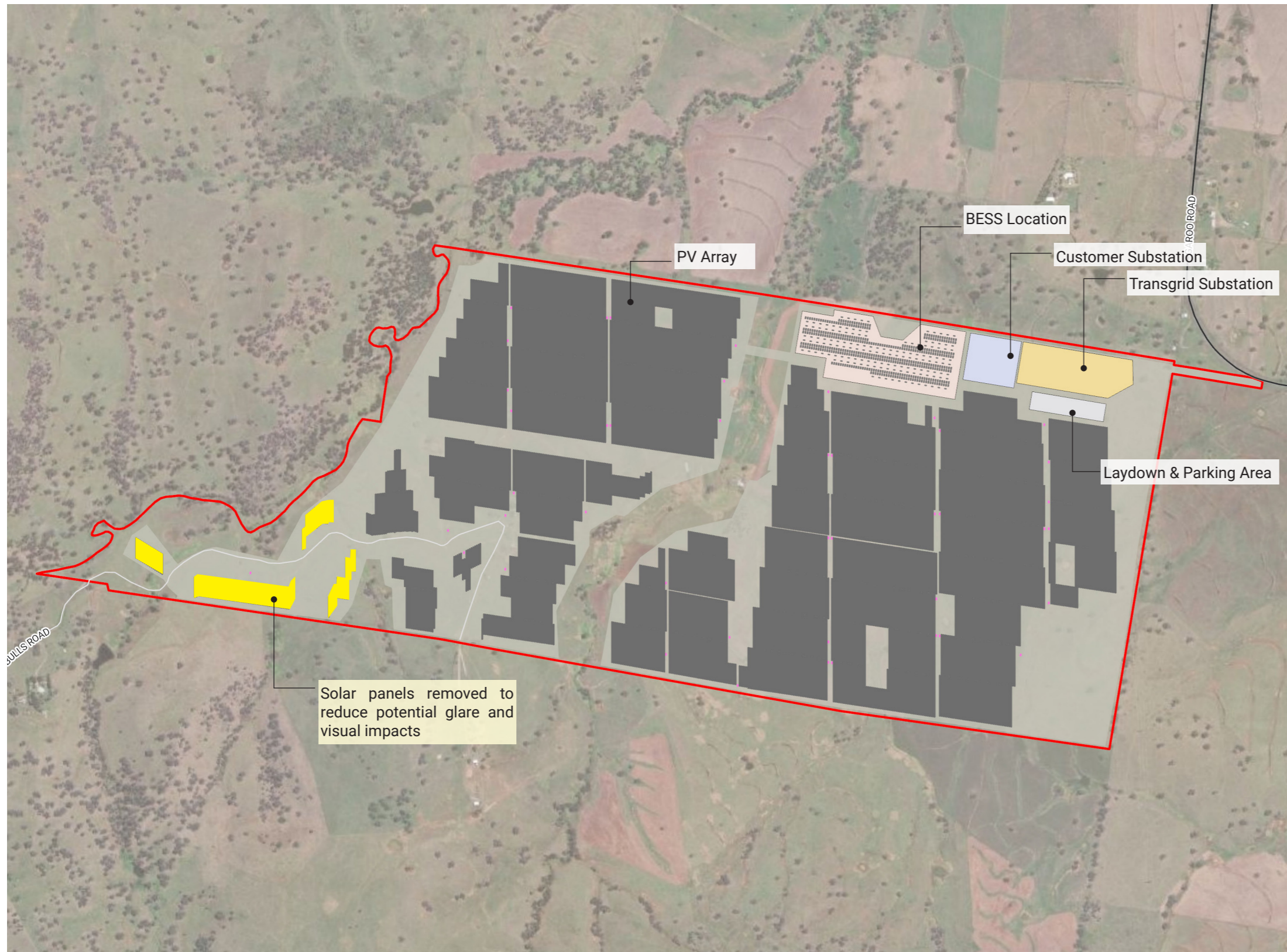
Detailed Assessment



Appendix C

Project Design Iterations





Old Project Layout

LEGEND

- Project Area
- Development Footprint
- PV Array Area
- BESS Area
- BESS Layout
- Inverter Station
- Laydown & Parking Area
- Transgrid Substation Area
- Customer Substation Area
- Roads
- Unsealed Roads

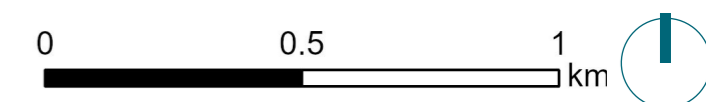
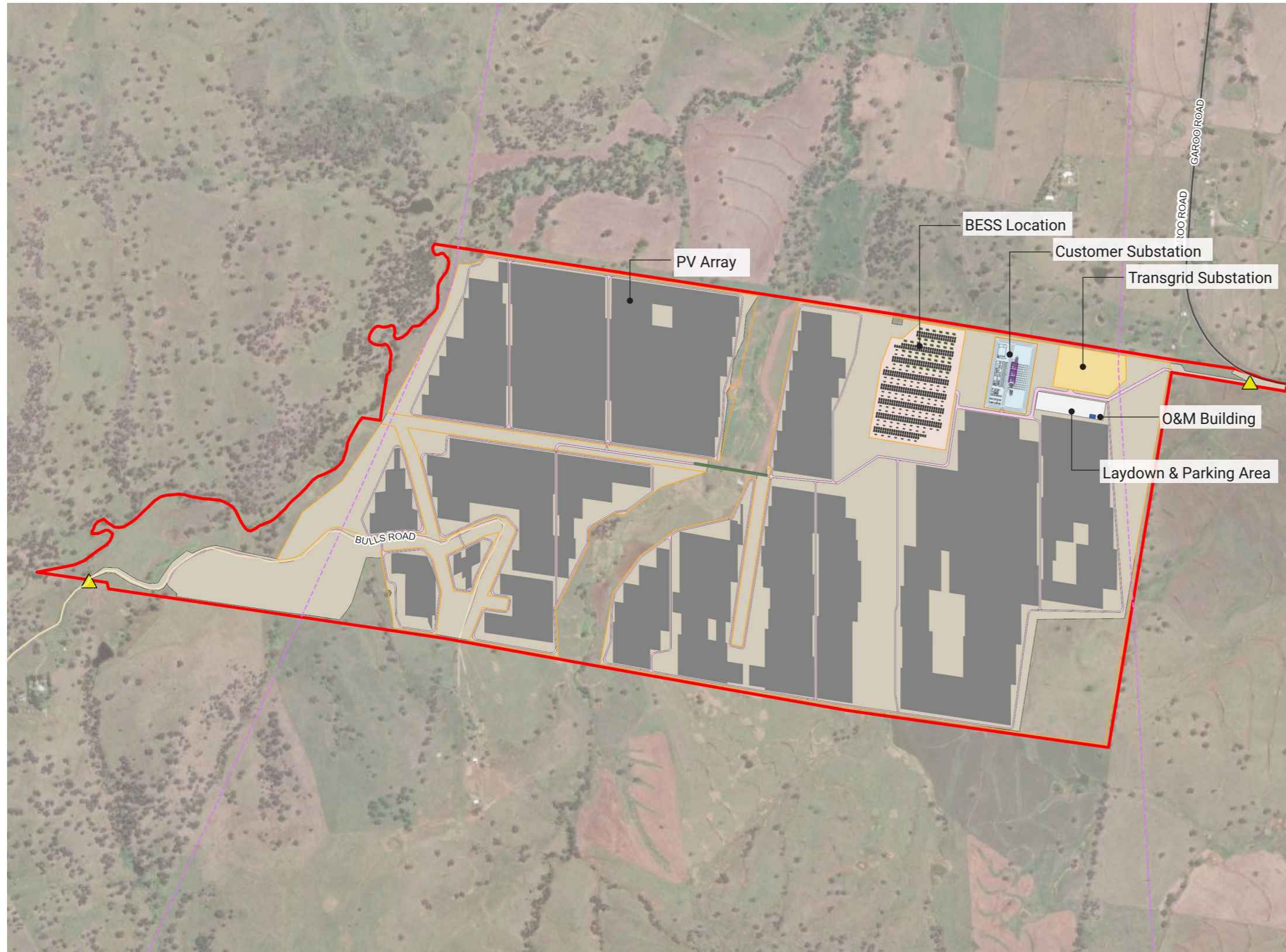


Figure 28 Old Project Layout
 Basemap Source - ESRI, 2024

Project Layout



LEGEND

- Project Area
- Development Footprint
- PV Array Area
- Fence
- Internal Roads
- Existing Transmission Lines
- BESS Area
- PSC Stations
- BESS Containers
- Transgrid Substation Area
- Customer Substation Area
- Parking and Laydown Area
- O&M Building
- ▲ Site Access Locations
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- 4m Noise Walls
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- Unsealed Roads

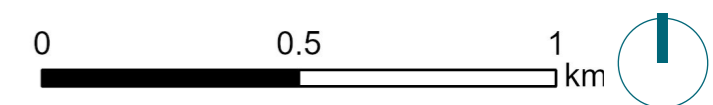


Figure 29 Project Layout
 Basemap Source - ESRI, 2024