State Significant Development Committee

Business Paper

9 DECEMBER 2025

muswellbrook shire council

State Significant Development Committee

Terms of Reference

1. Objective

The objective of the State Significant Development Committee (the Committee) is to enable submissions and responses relating to state significant development in the Muswellbrook Shire to be considered in a timely manner to meet timeframes set by the NSW Government.

2. Scope

The scope of activities to be overseen by the Committee include:

- Assess State Significant Development and prepare submissions and responses relating to state significant development.
- Consider changes in Government legislation and guidelines on planning matters.
- Receive updates on proposed State Significant Development projects, and existing quarry operations.
- Authorise submissions and responses to the Independent Planning Commission (IPC) on state significant development.

3. Authority

Muswellbrook Shire Council authorises the Committee, within the scope of its role and responsibilities, to:

- Use delegated authority to authorise submissions and responses to the Department of Planning, Housing and Infrastructure and the Independent Planning Commission (IPC).
- Assess State Significant Development and prepare submissions and responses relating to state significant development in the Muswellbrook Shire.
- Request information required to inform decision making (subject to their legal obligations to protect information and with prior consultation with the General Manager).
- Request information from employees (with approval of the General Manager) or Councillors.
- The Committee may request these persons to present information at Committee meetings to assist in understanding any matter under consideration.
- Obtain external legal or other professional advice, as considered necessary, to meet its responsibilities (in accordance with Council Budget and procurement arrangements and subject to prior consultation with the General Manager).

4. Composition and Tenure

The members of the Committee shall be 9 Councillors elected by Council.

Members (voting)

All members of the Committee (Councillors) are entitled to one vote with the Chair having a casting vote in the event of a tied vote.

Attendees (non-voting)

The following Council officers will act as liaison officers to the Committee:

Department	Role
Director – Planning & Environment	Liaison Officer
General Manager	Attendee
Director – Community & Economy	Attendee
Environmental Planning Officer	Attendee
Legal Counsel	Attendee

Invitees (non-voting) for specific Agenda items

Other officers may attend by invitation as requested by the Committee or the General Manager.

5. Responsibilities of Members

Members of the Committee are expected to:

- Agree that they are bound by Council's Code of Conduct.
- Understand the relevant legislative and regulatory requirements appropriate to Muswellbrook Shire Council.
- Contribute the time needed to study and understand the papers provided.
- Apply sound analytical skills, objectivity and judgement.
- Express opinions frankly, ask questions that go to the fundamental core of the issues, and pursue independent lines of enquiry.
- Act, and be seen to act, properly and in accordance with the requirements of the law and the terms of Council's Code of Conduct.
- Act in good faith and fidelity in the interests of Council and the community.

6. Reporting

Following each meeting, the minutes will be reported to the next Council Meeting and the Chair will be required to provide a brief summary.

7. Meetings

- The Committee will meet at 4pm on the second Tuesday of each month except for January.
- The need for any additional meetings will be decided by the Chair of the Committee, though other Committee members may make requests to the Chair for additional meetings.
- The Committee shall comply with Council's adopted Code of Meeting Practice and Code of Conduct.
- Councillors may attend and participate in meetings of the committee by audio-visual link with the approval of the committee.

8. Attendance at Meetings and Quorums

A quorum will consist of six (6) Committee members. Meetings can be held in person or by video conference.

Voting

The Committee is expected to make decisions by consensus, however if voting becomes necessary, then the details of the vote are to be recorded in the minutes. Each member of the Committee shall be entitled to one vote only. In the event of a tied vote, the Chair will have a casting vote.

9. Secretariat

The General Manager will ensure that appropriate secretariat support is provided to the Committee. The Secretariat will ensure the agenda for each meeting and supporting papers are circulated at least one week before the meeting and ensure minutes of the meeting are prepared and maintained.

Minutes shall be approved by the Chair and circulated to all Committee members within one week of the meeting and filed in accordance with Council's Records Management Policy.

10. Conflicts of Interest

Members of Council committees must comply with the applicable provisions of Council's Code of Conduct in carrying out their functions as Council officials. It is the personal responsibility of Council officials to comply with the standards in the Code of Conduct and regularly review their personal circumstances with this in mind.

Committee members must declare any conflict of interest at the start of each meeting or before discussion of a relevant agenda item or topic. Details of any conflict of interest should be appropriately minuted.

Where members or invitees at Committee meetings are deemed to have a real or perceived conflict of interest, it may be appropriate they be excused from Committee deliberations on the issue where the conflict of interest may exist. The final arbiter of such a decision is the Chair of the Committee.

11. Induction

New members will receive relevant information and briefings on their appointment to assist them to meet their Committee responsibilities.

12. Review of Committee Terms of Reference

At least once every two years the Committee will review this Committee's Terms of Reference and make recommendations on any changes to Council for its determination.

Any changes to the Committee Terms of Reference must be approved by Council.

MUSWELLBROOK SHIRE COUNCIL

P.O Box 122
MUSWELLBROOK

3 December 2025

Cr J. Drayton (Chair)
Cr D. Hartley (Deputy Chair)
Cr C. Bailey
Cr D. Douglas
Cr L. Dunn
Cr G. McNeill
Cr D. Marshall
Cr R. Scholes
Cr S. Ward
Mr D. Finnigan (General Manager)
Ms S. Pope (Director – Planning & Environment)
Ms S. Richards (Director - Community & Economy)
Ms T. Folpp (Environmental Planning Officer)
Ms A. Hathway (Legal Counsel)

You are hereby requested to attend the State Significant Development Committee to be held in the Meeting Room, Level 1 Tertiary Education Centre, 87 Hill Street, Muswellbrook on **9 December 2025** commencing at **4:00 pm**.

Sharon Pope
DIRECTOR – PLANNING & ENVIRONMENT

Order of Business

1 Acknowledgement of Country

Acknowledgement of Country

Council would like to respectfully acknowledge the local Aboriginal people who are the Traditional Owners and custodians of the land on which this meeting takes place

2 Apologies

3 Confirmation of Minutes of Previous Meeting

RECOMMENDATION

The Minutes of the State Significant Development Committee Meeting held on **11 November 2025**, a copy of which has been distributed to all members, be taken as read and confirmed as a true record.

Moved: _____ **Seconded:** _____

MINUTES OF THE STATE SIGNIFICANT DEVELOPMENT COMMITTEE MEETING OF THE MUSWELLBROOK SHIRE COUNCIL HELD IN THE SEMINAR ROOMS MUSWELLBROOK LIBRARY, 136 BRIDGE STREET, MUSWELLBROOK ON TUESDAY 11 NOVEMBER 2025 COMMENCING AT 4.10PM.

PRESENT: Cr J. Drayton (Chair), Cr D. Hartley, Cr C. Bailey, Cr D. Douglas, Cr L. Dunn, Cr D. Marshall, Cr R. Scholes and Cr S. Ward.

IN ATTENDANCE: Cr A. Barry, Cr M. Morris, Mr D. Finnigan (General Manager), Ms S. Pope (Director – Planning & Environment), Ms S. Richards (Director - Community & Economy), Ms T. Folpp (Environmental Planning Officer), Mrs T. Ward (Sustainability Officer), Mr M. Lysaught (Director - Infrastructure & Property), Mr J. Hogan (Chief Financial Officer), Mr N. Mowbray (Policy Officer), Mrs M. Sandell-Hay (Governance Officer), Ms L. Ward (EA to Mayor and GM) and Mr M. Aafjes (Newcastle University).

1 Acknowledgement of Country

The Acknowledgement of Country was read by Cr D. Douglas.

2 Apologies

RESOLVED on the motion of Cr C. Bailey and Cr D. Hartley that:

The apology for inability to attend the meeting submitted by Cr G. McNeill be ACCEPTED.

In Favour: Cr J. Drayton, Cr D. Hartley, Cr C. Bailey, Cr D. Douglas, Cr D. Marshall, Cr L. Dunn, Cr S. Ward and Cr R. Scholes

Against: Nil

3 Confirmation of Minutes of Previous Meeting

RESOLVED on the motion of Cr R. Scholes and Cr D. Hartley that:

The Minutes of the State Significant Development Committee Meeting held on **9 September, 2025**, a copy of which has been distributed to all members, be taken as read and confirmed as a true record.

In Favour: Cr J. Drayton, Cr D. Hartley, Cr C. Bailey, Cr D. Douglas, Cr D. Marshall, Cr L. Dunn, Cr S. Ward and Cr R. Scholes

Against: Nil

4 Disclosure of Any Pecuniary and Non-Pecuniary Interests

Cr C. Bailey - Declared an insignificant non-pecuniary interest in Item 6.2 - Cr Bailey advised the Committee that she works at the site mentioned in the report.

Cr D. Hartley - Declared an insignificant non-pecuniary interest in item 6.2 - Cr Hartley advised the Committee that he works at the site mentioned in the report.

5 Business Arising

Nil

6 Business

6.1 Air Quality – University of Newcastle Research and EPA Monitoring Update

Mr Mitchell Aafjes provided the Committee with a brief overview of the Research he was undertaking on using low cost sensors to monitor air quality in Muswellbrook.

RESOLVED on the motion of Cr L. Dunn and Cr C. Bailey that:

The information contained in this report be noted.

In Favour: Cr J. Drayton, Cr D. Hartley, Cr C. Bailey, Cr D. Douglas, Cr D. Marshall, Cr L. Dunn, Cr S. Ward and Cr R. Scholes

Against: Nil

6.2 Activities Summary for State Significant Development and Energy Generation Projects

RESOLVED on the motion of Cr S. Ward and Cr D. Hartley that:

The information contained in this report be noted.

In Favour: Cr J. Drayton, Cr D. Hartley, Cr C. Bailey, Cr D. Douglas, Cr D. Marshall, Cr L. Dunn, Cr S. Ward and Cr R. Scholes

Against: Nil

Muswellbrook Coal Community Consultative Committee

Cr Scholes advised the Committee that he had attended the Muswellbrook Coal Community Consultative Committee today which would be the last meeting of this Committee. Cr Scholes also advised the Committee that he had received information at the meeting that would be provided to Council Officers.

7 Adjournment into Closed Committee

8 Closed Committee

Nil

9 Resumption of Open Committee

10 Date of Next Meeting

9 December, 2025

11 Closure

The meeting was declared closed at 4:33pm.

.....	.....
Mr D. Finnigan	Cr J. Drayton
General Manager	**Chairperson**

4 Disclosure of Any Pecuniary and Non-Pecuniary Interests

5 Business Arising

Nil

6 Business

6.1 Denman Renewable Energy Hub Battery Energy Storage System – Comments on the Environmental Impact Statement

Responsible Officer: Director - Planning & Environment

Author: Environmental Planning Officer

Community Strategic Plan: *3 - Thriving Economy*

Our community has opportunities for employment, business and training and we drive investment into our economy to benefit our community.

Delivery Program Goal: 3.4.1 - Work with industry and government to fast-track land use planning and infrastructure to support future industry uses.

Operational Plan Action: 3.4.1.3 - Advocate on behalf of the community on matters related to State Significant Development and the renewable energy roll-out.

Attachments: Nil

PURPOSE

To consider Council's submission in relation to the Denman Renewable Energy Hub Battery Energy Storage System (BESS) Environmental Impact Statement (EIS).

The Denman Renewable Energy Hub BESS is considered a State Significant Development (SSD-76189216) and will be determined by either the Minister for Planning or the Independent Planning Commission.

OFFICER'S RECOMMENDATION

The Committee ENDORSES the draft submission on the Denman Renewable Energy Hub Battery Energy Storage System for submission to the Department of Planning, Housing and Infrastructure.

Moved: _____ **Seconded:** _____

REPORT

Denman BESS Holdings Pty Ltd (the Proponent) proposes to construct, operate, maintain and decommission the Denman Renewable Energy Hub Battery Energy Storage System (BESS), located at 1711 Denman Road, Denman.

The Project is located within the Muswellbrook Local Government Area (LGA) and is situated near the proposed Upper Hunter South Solar Farm (SSD-65996959) as part of the broader Denman Renewable Energy Hub; and is adjacent to an existing 500kV TransGrid transmission line (see Figure 1).

The Project includes the following key components:

- The construction, operation, maintenance and decommissioning of a BESS with a capacity of 2.4 gigawatts (GW) / 4.8 gigawatt hours (GWh);
- Electrical reticulation and connection point to the TransGrid 500kV transmission line, including medium and high voltage substations;
- Security lighting for the high voltage substation;
- A new site access from Denman Road;
- An operations and maintenance facility will be delivered as part of the Upper Hunter South Solar Farm project and will be utilised by the Denman Renewable Energy Hub BESS;
- 36-month construction period;
- A peak construction workforce of approx. 75 FTE and an operations workforce of approx. 10 FTE; and
- An operational life of 30 years minimum.

The Environmental Impact Statement (EIS) was formally exhibited on 3 November 2025, with submissions due by 12 December (subject to DPHI accepting Council's extension request).

As Staff have only recently commenced reviewing the EIS, the draft submission will be tabled at the Committee Meeting.

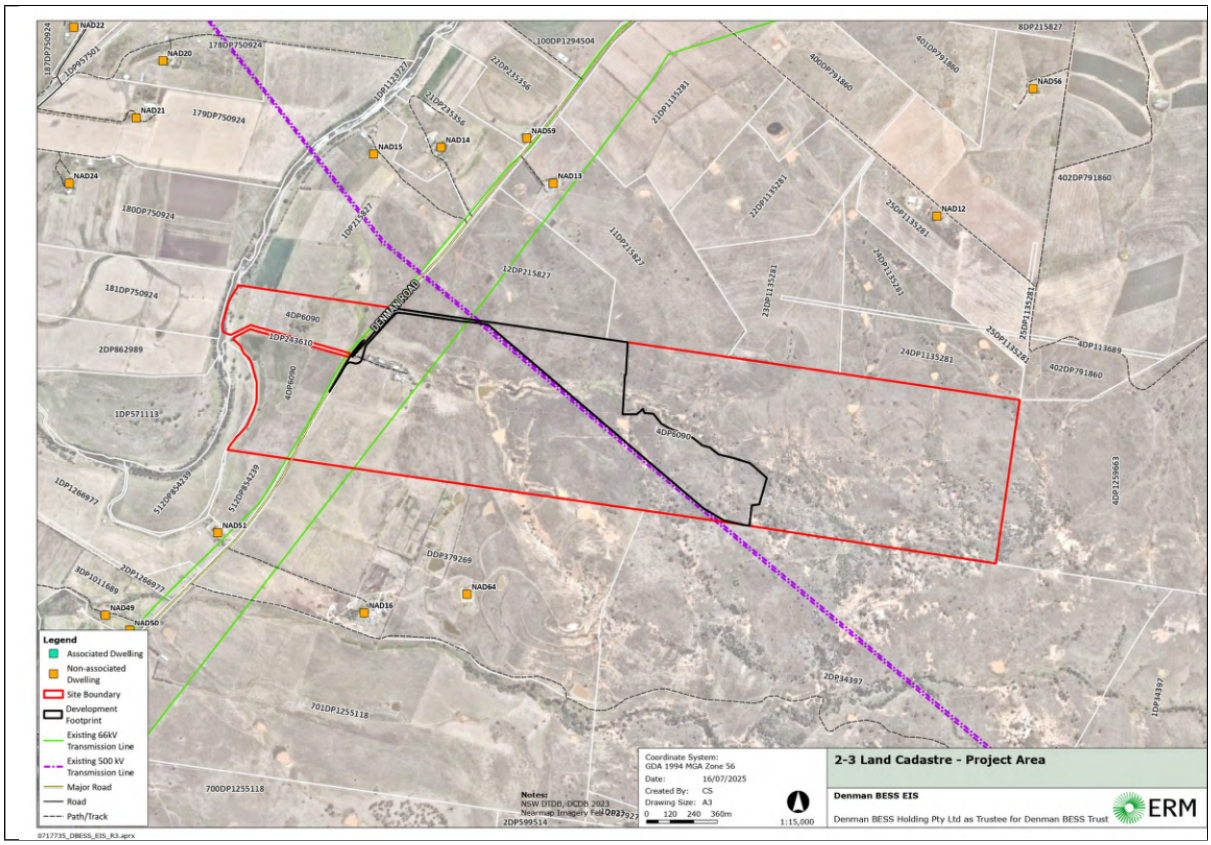

Figure 1 – Project Area (source, EIS figure 2-3)

The project area is approx. 39 ha.

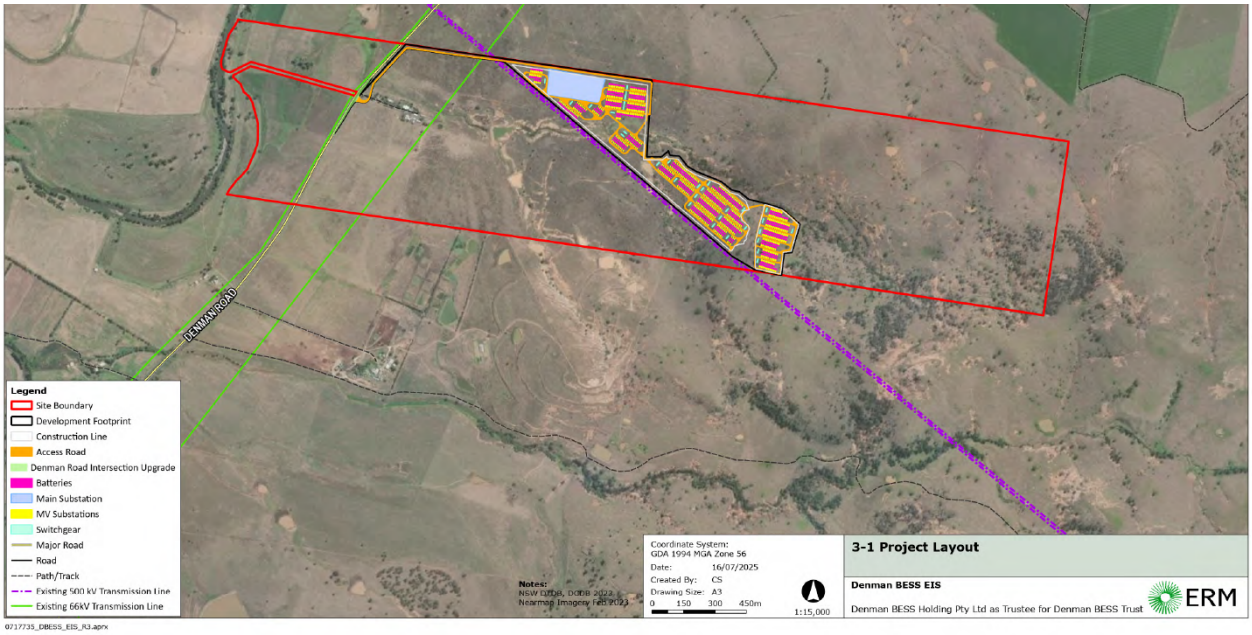

Figure 2 . Location of proposed batteries

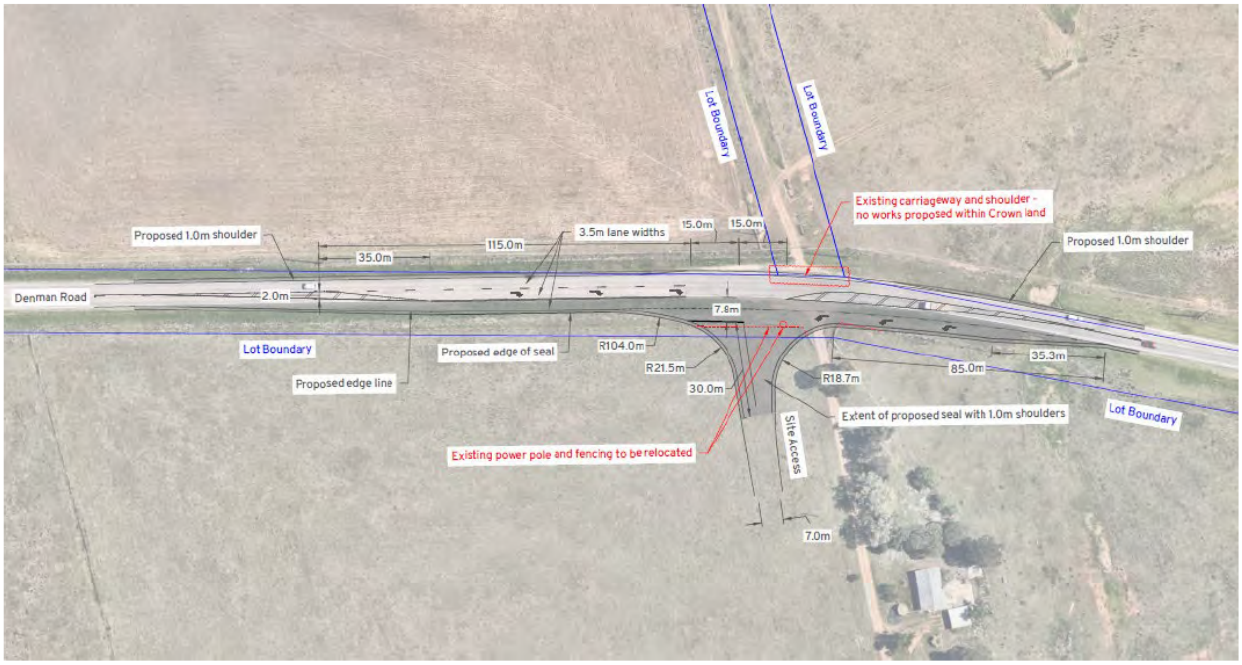

Figure 3. Proposed access off Denman Rd

6.2 Upper Hunter South Solar Farm - Council comments on the Environmental Impact Statement

Responsible Officer:	Director - Planning & Environment
Author:	Environmental Planning Officer
Community Strategic Plan:	*3 - Thriving Economy* Our community has opportunities for employment, business and training and we drive investment into our economy to benefit our community.
Delivery Program Goal:	3.4.1 - Work with industry and government to fast-track land use planning and infrastructure to support future industry uses.
Operational Plan Action:	3.4.1.3 - Advocate on behalf of the community on matters related to State Significant Development and the renewable energy roll-out.
Attachments:	1. Attachment A - Upper Hunter South Solar Farm - Landscape & Visual Impact Assessment [**6.2.1** - 105 pages]

PURPOSE

To consider Council's submission in relation to the Upper Hunter South Solar Farm (Project) Environmental Impact Statement (EIS).

The Project is considered a State Significant Development (SSD-65996959) and will be determined by either the Minister for Planning or the Independent Planning Commission.

OFFICER'S RECOMMENDATION

The Committee ENDORSES the draft submission on the Upper Hunter South Solar Farm for submission to the Department of Planning, Housing and Infrastructure.

Moved: _____ **Seconded:** _____

REPORT

Upper Hunter SF Pty Ltd (the Proponent) proposes to construct, operate, maintain and decommission the Upper Hunter South Solar Farm (Project)**,** located at 1711 Denman Road, Denman.

The Project is located within the Muswellbrook Local Government Area (LGA) and is situated near the proposed Denman Renewable Energy Hub Battery Energy Storage System (BESS) (SSD 76189216) and adjacent to an existing 500kV TransGrid transmission line (see Figure 1).

The Project includes the following key components:

- A photovoltaic solar facility with generating capacity of up to 90 megawatts (MW);
- A BESS with a storage capacity of up to 30 MW / 60 megawatt hours (MWh) - this is separate to the Denman Renewable Energy Hub BESS;

- Electrical reticulation;
- Associated and ancillary infrastructure;
- Connection to the existing Ausgrid twin 66 kilovolt (kV) overhead distribution line;
- New site access via Denman Road shared with the Denman Renewable Energy Hub BESS;
- 18-month construction period;
- 150 full time equivalent employees (FTE) during construction, and 200-230 FTE during peak construction (for approximately six months); and
- Approximately 17 direct and indirect jobs during operation.

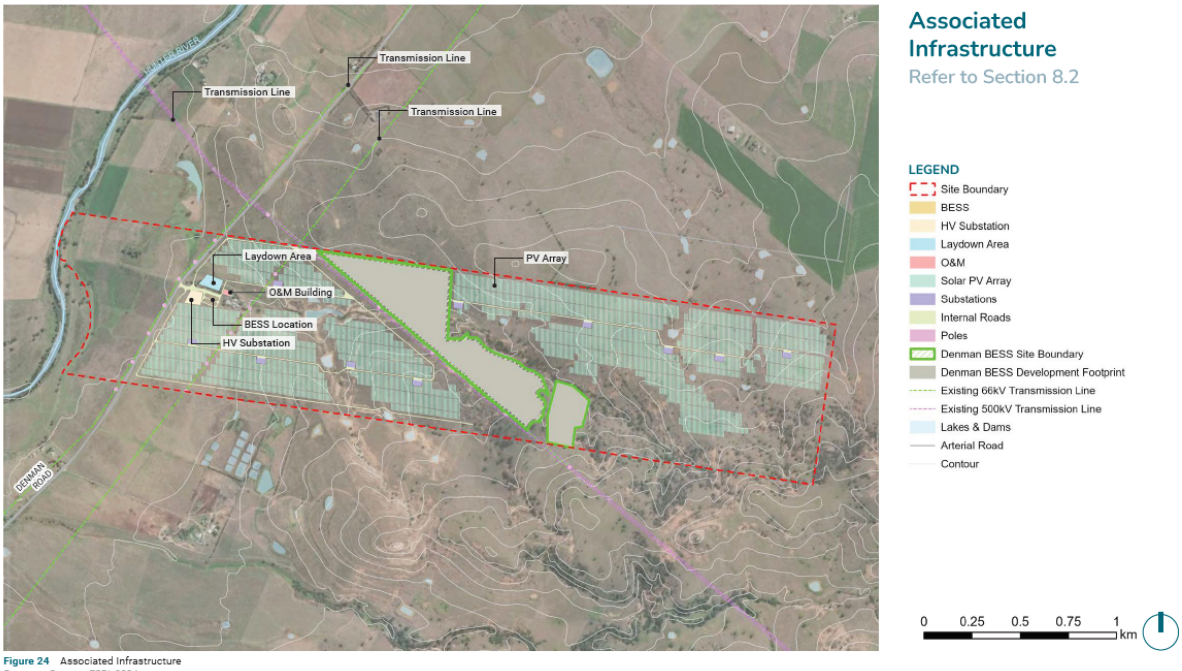

Figure 24 Associated Infrastructure
Basemap Source - ESRI, 2024

Figure 1 – Project Layout (source, EIS Appendix K figure 24)

A Landscape Character and Visual Impact Assessment report has been prepared for the application and is provided in Attachment A. Some extracts from that study are provided below.

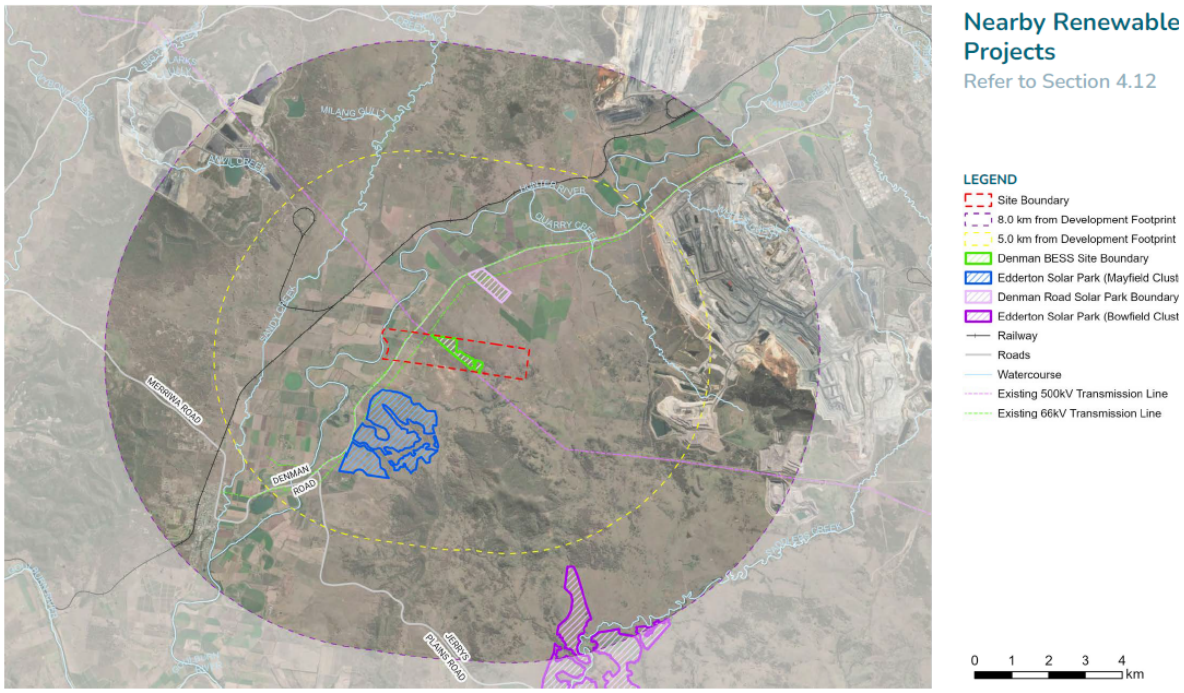

Figure 2 – Locations of renewable energy projects under consideration in vicinity of the site

Figure 3 – Current view from proposed entrance

The EIS provides minimal details of the proposed screen planting adjacent to Denman Road. Our recent visit to the Wellington Solar Farm highlighted the importance of well-designed and maintained screen planting to reduce the visual impact of an extensive solar array field on the visual amenity for neighbours and the travelling public.

The Environmental Impact Statement (EIS) formally commenced exhibition on 3 November

2025, with submissions due by 12 December (subject to DPHI accepting Council's extension request). As staff have only recently commenced reviewing the EIS, the draft submission will be tabled at the Committee meeting.

Upper Hunter South 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 Gamilaraay people of the Wanaruah Nation, 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.

Upper Hunter South Solar Farm

Landscape Character and Visual Impact Assessment

Prepared for
ERM

Project Number
2498

Revision	Date	Author	Checked	Comment
A	03/02/2025	NL	AR	Draft LCVIA Report
B	06/03/2025	NL	AR	Draft LCVIA Report
C	2/03/2025	NL	AR	LCVIA Report For Submission

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Executive Summary

ERM has commissioned Moir Studio (Moir Landscape Architecture Pty Ltd) on behalf of Upper Hunter SF Pty Ltd (the Proponent) to prepare a Landscape Character and Visual Impact Assessment (LCVIA) for the proposed Upper Hunter South Solar Farm (the Project). The Project is proposed on the traditional lands of the Gamilaraay people of the Wanaruah people, approximately 6.65 km northeast of Denman township in the Muswellbrook Shire Local Government Area (LGA).

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 for Landscape Character and Visual Impact Assessment* (referred to hereafter as the 'Technical Supplement').

Fieldwork was undertaken by Moir Studio in October 2024 to determine the existing landscape character against which the Project has been assessed. The assessment determined the regional landscape character is typical of the Hunter Subregion of the NSW Sydney Basin Biogeographic Regionalisation of Australia (IBRA) Bioregion, and is a highly modified landscape featuring cleared agricultural pastures and electrical and mining infrastructure. The landscape was categorised into four (4) 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 landscape features and viewpoints within the Study Area. The Study Area is defined as 5.0 km from the Development Footprint of the Project. Due to the undulating topography of the Project site, the Project is often partially screened by topography, and the lack of vertical scale of the Project, key visual features and characteristics can be maintained.

A Simple Assessment was undertaken for a total of 37 non-associated dwelling viewpoints and seven (7) public viewpoints within the Study Area. The assessment identified:

- 30 non-associated dwellings resulted in a Low visual impact and did not require further assessment.
- Five (5) non-associated dwellings resulted in a Moderate visual impact and required Intermediate Assessment.
- Two (2) non-associated dwellings resulted in a High visual impact and required Intermediate Assessment.
- Three (3) public viewpoints resulted in a Very Low visual impact and did not require further assessment.
- Four (4) public viewpoints resulted in a Low visual impact and did not require further assessment.

An Intermediate Assessment was conducted for the seven (7) non-associated dwellings identified as Moderate or High visual impact in the Simple Assessment. An additional dwelling was also identified on the same lot as NAD16, and was also assessed in the Intermediate Assessment. The assessment identified:

- All eight (8) non-associated dwellings resulted in a Low visual impact and did not require further assessment.

A cumulative visual impact assessment was conducted for the non-associated dwellings identified in the Study Area with a line of sight to the Project. Non-associated dwellings identified as Low visual impact in the Simple Assessment were not examined, as the worst-case visual impact of the Project has already been identified as Lowe and can be assumed will not significant;y contribute to cumulative impacts. Of the remaining eight (8) non-associated dwellings, the assessment identified:

- Six (6) non-associated dwellings were assessed as having Low cumulative visual impacts from the Project.
- Two (2) non-associated dwellings were assessed as having a Moderate cumulative visual impact from the Project. The dwellings impacted (NAD16 and NAD16a) were already facing Moderate impacts from Edderton Solar Park (ESP), and the visual magnitude impact from the Project is Very Low. However, the Moderate rating required further Detailed Assessment.

A Detailed Assessment was unable to be undertaken due to lack of permission to visit the property, so the worst-case impact has been assumed and mitigation is required. Off-site screen planting is recommended at the affected dwellings to reduce the visual impacts of the Project to an acceptable level.

A Glint and Glare Assessment was prepared in accordance with the Guideline and Technical Supplement. No 'yellow' glare impacts were assessed for the private receptors or the public road receptor identified within the nominated Study Areas for the assessment. No rail or aviation receptors were identified within the Study Areas. A low level of 'green' glare was identified at some of the residential receptors and the road receptor, however a low level of 'green' glare does not require mitigation in accordance with the glint and glare Performance Objectives in the Guideline.

Overall, the existing landscape within the Study Area has the ability to absorb the Project with a low degree of visual impact. In this regard, the Project satisfies the objectives as outlined in the Guideline.

Contents

moir STUDIO

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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 Proponent 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 Biogeogrpahic Regionalisation of Australia

kV
Kilovolt

LALC
Local Aboriginal Land Council

LCZ
Landscape Character Zone

LEP
Local Environmental Plan

LGA
Local Government Area

LCVIA
Landscape and Visual Impact Assessment

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

HCC-REZ
Hunter-Central Coast Renewable Energy Zone

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 Upper Hunter South Solar Farm (the Project) for Upper Hunter SF Pty Ltd (the Proponent).

This report supports a State Significant Development (SSD) Consent application under Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (SSD-65996959) which will form part of the Environmental Impact Statement (EIS) for the Project.

The Proponent is proposing the construction, operation and decommissioning of a large-scale solar farm, Battery Energy Storage System (BESS) and associated infrastructure, within the Hunter-Central Coast Renewable Energy Zone (HCC-REZ) of New South Wales (NSW). The Project is located in the locality of Denman in the Upper Region of NSW approximately 113 kilometres (km) northwest of Newcastle and 6.65 km northeast of Denman township, within the Muswellbrook Shire Local Government Area (LGA). Muswellbrook is the nearest major township, located approximately 15 km northeast of the Project Area.

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 for Landscape Character 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 Character and Visual Impact Assessment. Our team has extensive experience undertaking LCVIA's 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 15 January 2024 for the Project states 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	
SEARs Requirements	Relevant Section of LCVIA
A landscape and visual impact assessment, prepared in accordance with the *Solar Guideline and the Technical Supplement – Landscape and Visual Impact Assessment*	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 compo6nents 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	**Section 5.0** Visual Impact Assessment **Section 6.0** Simple Assessment **Section 7.0** Intermediate Assessment **Section 8.0** Detailed Assessment **Section 9.0** Associated Infrastructure **Section 10.0** Cumulative Impacts
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 14.0** Performance Objectives & Mitigation
Detailed consideration on the siding Spring Observatory in accordance with the Dark Sky Planning Guideline (2016)	**Section 12.0** Nightlighting
Glint and Glare – provide a glint and glare assessment prepared in accordance with the Solar Guideline	**Section 13.0** Glint & Glare Assessment

Table 01 Overview of SEARs

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.

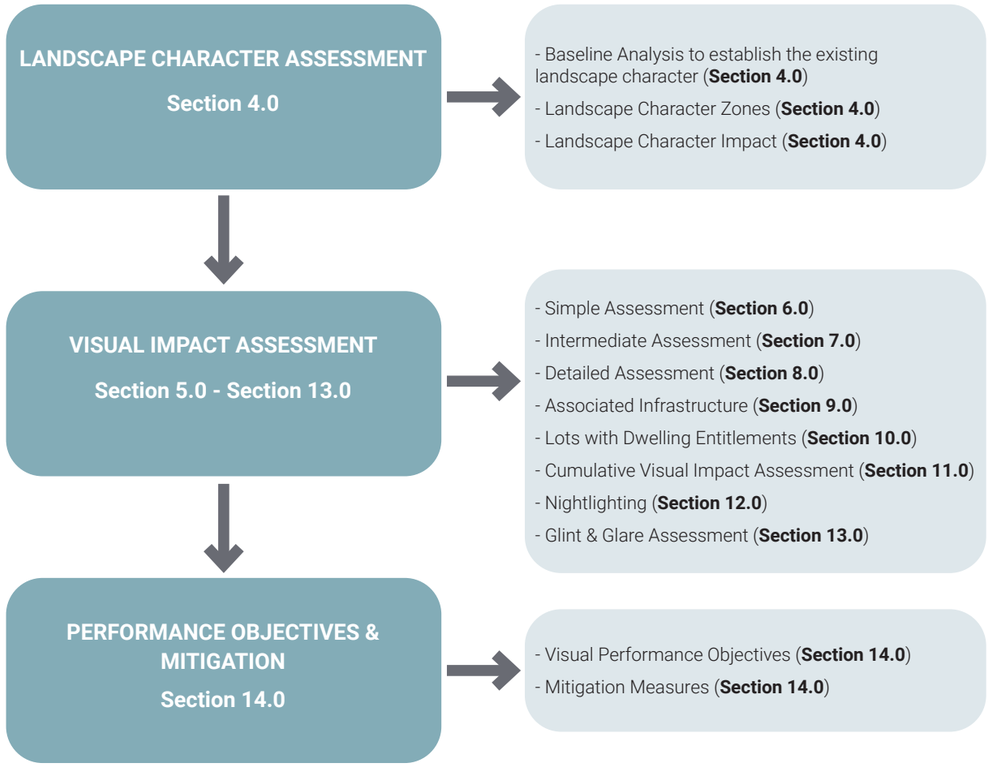


Figure 01 Study Method Overview

03 Project Overview

3.0 Project Overview

3.1 Regional Context

The Project is located to the northeast of Denman township, approximately 15 km southwest of Muswellbrook within the Muswellbrook Shire LGA and the Wanaruah Local Aboriginal Land Council (LALC) area.

The land use within the LGA is historically and currently used for agricultural activities and food production. 43% of the land within the LGA is National Park.

The Project Area is situated in Denman, and is currently used for agricultural purposes, predominately irrigated cropping and grazing. The Project Area features gently undulating to undulating topography, with prominent hills in the surrounding area including Ogilvies Hill (468m) to the southeast and Limb of Addy Hill (424m) to the northwest. Access to the Project Area is via Denman Road.

3.2 The Project

The Project includes the construction, operation and decommissioning of a large-scale solar project with a capacity of up to 90MW, and Battery Energy Storage System (BESS). The Project includes the following key components:

- Photovoltaic (PV) array using a single axis tracker racking system;
- On-site substation and associated switchgear;
- Electrical reticulation connecting the project elements;
- One BESS and associated switch and electrical equipment;
- Access roads;
- Operations and management facility (O&M Facility)
- Security fencing; and
- Temporary construction compounds and laydown areas

3.3 Denman Renewable Energy Hub

The Denman Renewable Energy Hub refers to the Project and the proposed Denman BESS (SSD-76189216). The Project and Denman BESS, while on the same parcel of land, will be delivered as separate and independent projects and are being assessed as two separate SSD applications. **Figure 03** illustrates the Project layout and the location of Denman BESS.

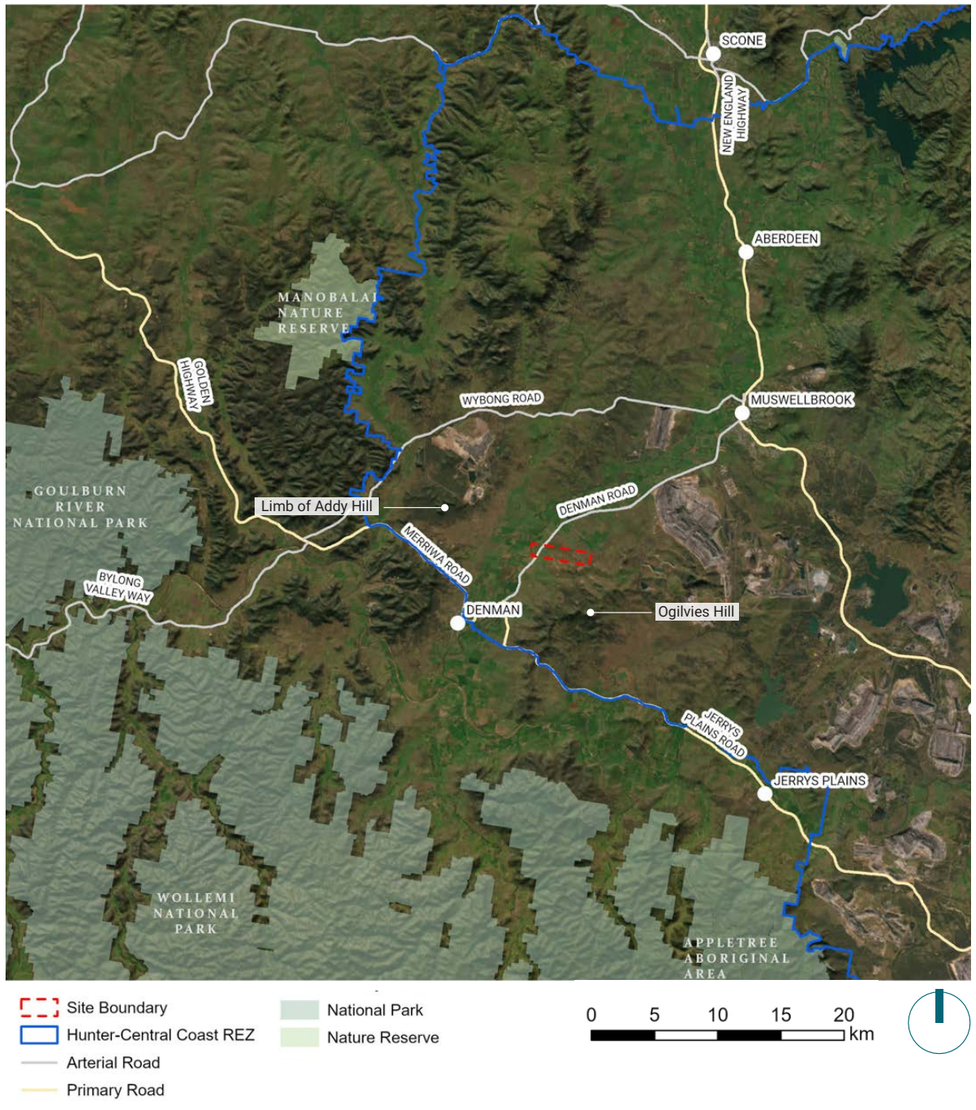
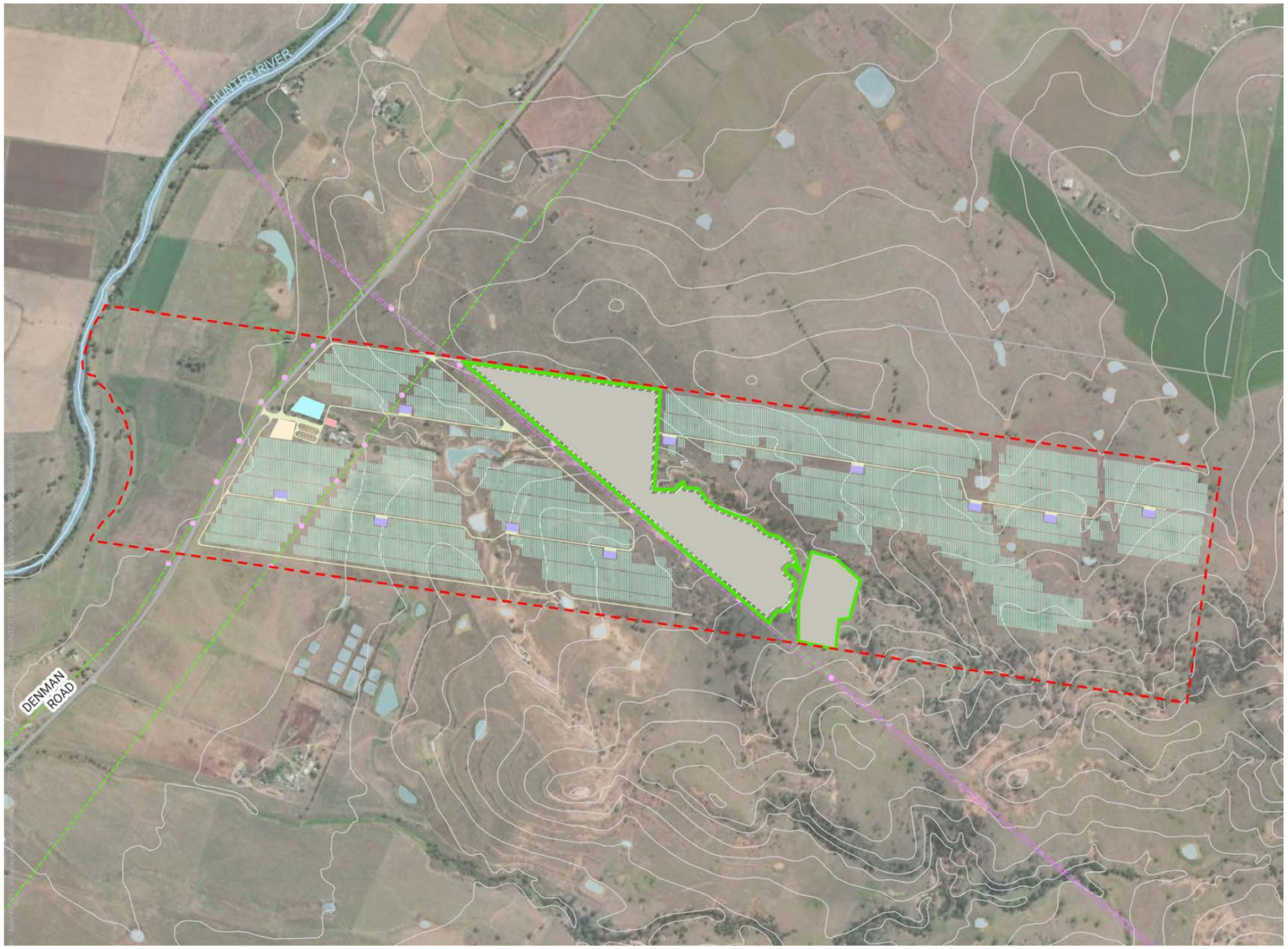


Figure 02 Regional Context
Basemap Source - ESRI, 2024



Project Layout

Refer to Section 3.2

LEGEND

- Site Boundary
- BESS
- HV Substation
- Laydown Area
- O&M
- Solar PV Array
- Substations
- Internal Roads
- Poles
- Denman BESS Site Boundary
- Denman BESS Development Footprint
- Existing 66kV Transmission Line
- Existing 500kV Transmission Line
- Lakes & Dams
- Arterial Road
- Contour

0 0.25 0.5 0.75 1 km

Figure 03 Project Layout
Basemap Source - ESRI, 2024

3.4 The Solar (PV) Array

The PV Array is the most significant component of the Project. It will comprise approximately 142,268 PV Module Arrays installed on single-axis tracking structures. Each PV module is 2.38 m in height with rows spacing at a minimum of 6.5 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 2.28 m. The modules typically return to face east 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 (2.28 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.

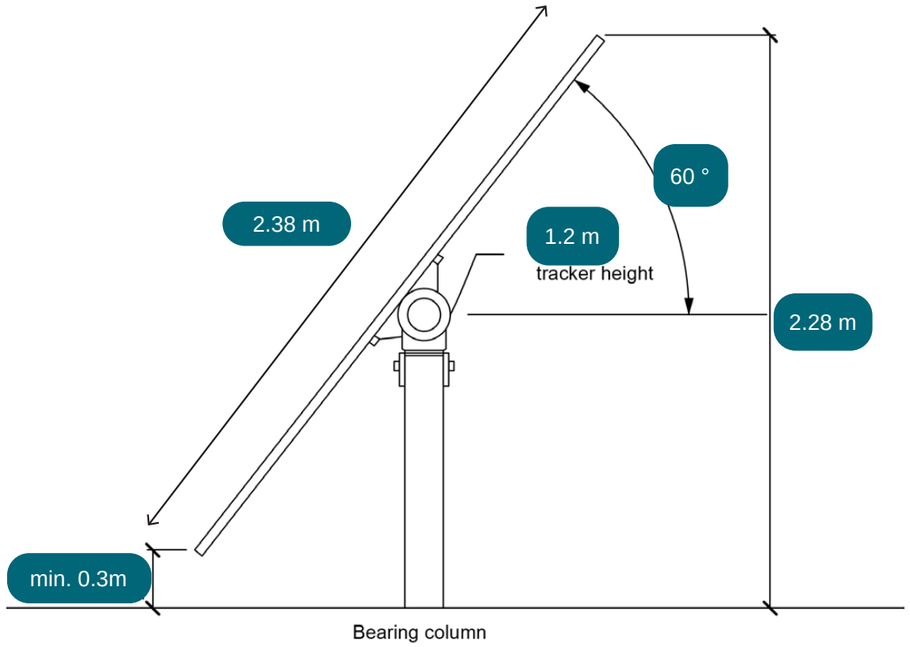


Figure 04 Solar Panel Parameters

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

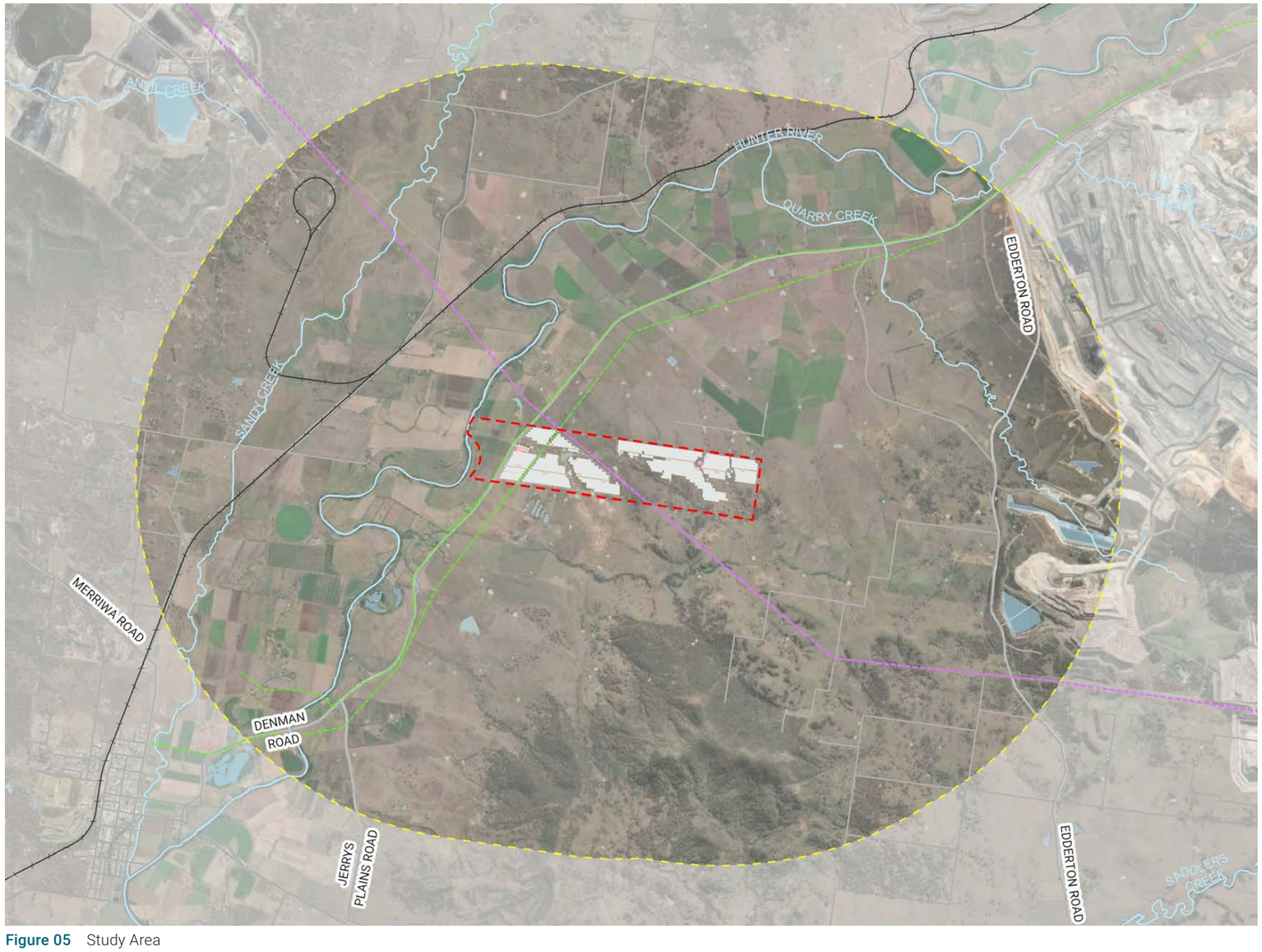
The Technical Supplement states: *"Applicants should determine the impact of the proposal on each landscape character zone by evaluating the sensitivity of the landscape and the magnitude of the project's effects in that area.* (DPHI, 2024b)"

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

- Site Boundary
- 5.0 km from Development Footprint
- PV Array Areas
- Ancillary Infrastructure
- Internal Roads
- Railway
- Roads
- Existing 500kV Transmission Line
- Existing 66kV Transmission Line
- Lakes & Dams
- Watercourse
- Contour

0 1 2 3 4 km

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 Stakeholder Engagement and Consultation

The community engagement approach utilised by ERM involved establishing early and genuine connections with the local community, council and authorities. The consultation process is ongoing and involves using a diverse range of traditional and digital methods of engagement to capture feedback and ongoing comments and conversations.

Engagement tools include phone calls, introductory letters, Project fact sheets, Project website, social media, community drop-in sessions and direct enquiries.

Through these engagement methods, community feedback was collected and visual concerns include:

- General concern of the potential impact to the visual amenity in the area.
- Concern of the visual impacts affecting property values.
- Other landowners were either agnostic about the Project or thought the Project provided a good balance to the area.

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 **October 2024** 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 02.**

Baseline Analysis Components:	
Physical influences (such as geology, soils, landform, natural drainage and waterbodies)	Refer to **Section 4.6**
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	Refer to **Section 4.7**
The influence of human activity, including land use and management and the character of any settlements and buildings	Refer to **Section 4.8**
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	Refer to **Section 4.9**
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)	Refer to **Section 4.9**
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	Refer to **Section 4.9**
The overall character of the landscape in the study area, including any identifiable distinctive landscape character types or areas (see further guidance below)	Refer to **Section 4.15**
The condition of the landscape, including that of elements or features such as buildings or vegetation	Refer to **Section 4.10**
The planning designations of an area relating to landscape character, including sensitive land use designations, zonings and heritage listings	Refer to **Section 4.11**
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.	Refer to **Section 4.12**

Table 02 Baseline Investigation Components

4.6 Physical Influences

The Project is situated at the northern section of the Sydney Basin Biogeographic Regionalisation of Australia (IBRA) Bioregion. The Sydney Basin Bioregion covers an area from Batemans Bay in southeast NSW to Nelson Bay to the north and as far west as Mudgee. The bioregion includes Sydney, Newcastle, Wollongong, Cessnock, Muswellbrook and the Blue Mountains.

The Project is situated within the Hunter Subregion, which is characterised by rolling hills, wide valleys and large floodplains. The major tributary in the Subregion is the Hunter River (NPWS, 2003). The landform within the Project Area is characterised by gently undulating to undulating terrain.

The Study Area includes a number of agricultural dams, as well as the Hunter River, Quarry Creek and Sandy Creek. The Hunter River is located adjacent to the west boundary of the Project Area.

4.7 Ecological Characteristics

The Study Area has very minimal vegetation, with the majority of the land having been cleared for agricultural purposes. Scattered remnant vegetation is located in the open plains and paddocks and clustered in areas around dwellings. More prominent vegetation is located along riparian corridors and ephemeral creek lines. The riparian corridor along the Hunter River includes river red gum communities (*Eucalyptus camaldulensis*).

The lower vegetated slopes on the periphery of the Study Area near Ogilvies Hill feature the most prominent areas of vegetation within the Study Area. These areas typically include forest and open woodland of narrow-leafed ironbark (*Eucalyptus crebra*), grey box (*Eucalyptus moluccana*), and white box (*Eucalyptus albens*).

Image 01 Cleared rolling hills typical of Study Area

Image 02 Agricultural pastures viewed from Denman Rd

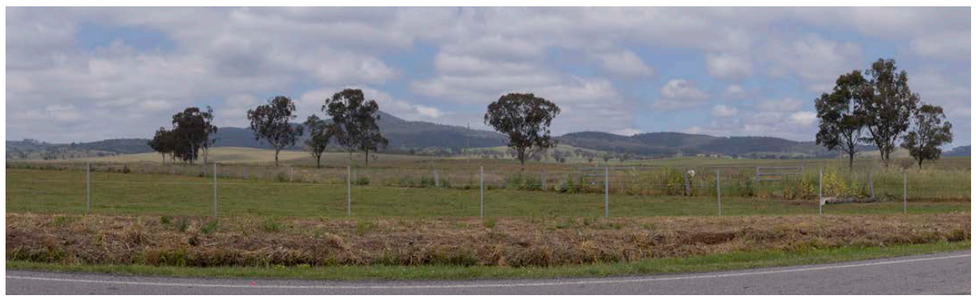


Image 03 Pastures with forested slopes beyond

4.8 Human Activity

The Project Area is located on Denman Road, between the Golden Highway and New England Highway. Other local roads within the Study Area include Edderton Road and Mangoola Road. The Merriwa Railway line also runs through the Study Area to the northwest of the Project.

There are no towns within the Study Area. The nearest town is Denman, approximately 6.65 km southwest. The nearest major town centre is Muswellbrook, approximately 15 km northeast of the Project.

The majority of the Study Area is zoned RU1—Primary Production in the Muswellbrook Local Environmental Plan (LEP) 2009. The other prominent zoning in the Study Area is C3—Environmental Management, located at Ogilvies Hill to the south of the Project and in scattered areas to the north. The majority of the landscape is characterised by land used for native grazing, modified pastures, and irrigated pastures.

An existing 500kV transmission line runs northwest to southeast across the Study Area, through the centre of the Project Area, and two 66kV transmission lines run parallel with Denman Road.

The northeastern edge of the Study Area reaches the Mount Arthur coal mine. Multiple coal mines are located in proximity to the Study Area; these highly modified landscapes dominate the region's landscape character, particularly between Singleton and Muswellbrook.

4.9 Key Landscape Features, Aesthetics & Heritage

The land within the Study Area has largely been cleared for agricultural purposes and features undulating hills and some steep slopes, such as Ogilvies Hill and Limb of Addy Hill. These small vegetated peaks are the most significant landscape features and form a visual backdrop for some views within the Study Area.

The Hunter River is the closest major watercourse and runs generally northwest to southeast across the Study Area. Other smaller watercourses within the Study Area include Sandy Creek and Quarry Creek. There are no formal picnic areas, camping areas or other visitor facilities within the Study Area.

The Project is located within the extent of the Wanaruah Local Aboriginal Land Council (LALC). The Wanaruah people are acknowledged as the traditional custodians of the land. There are no National or State Heritage Listings within the Study Area.

Image 04 Pastures typical of the Study Area

Image 05 Existing 500kV transmission line

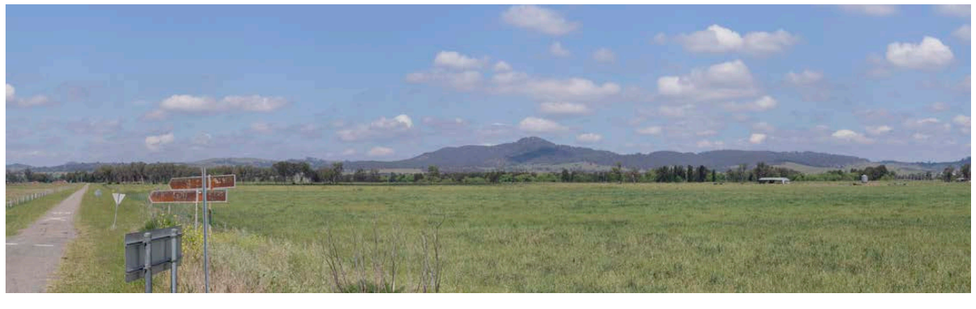
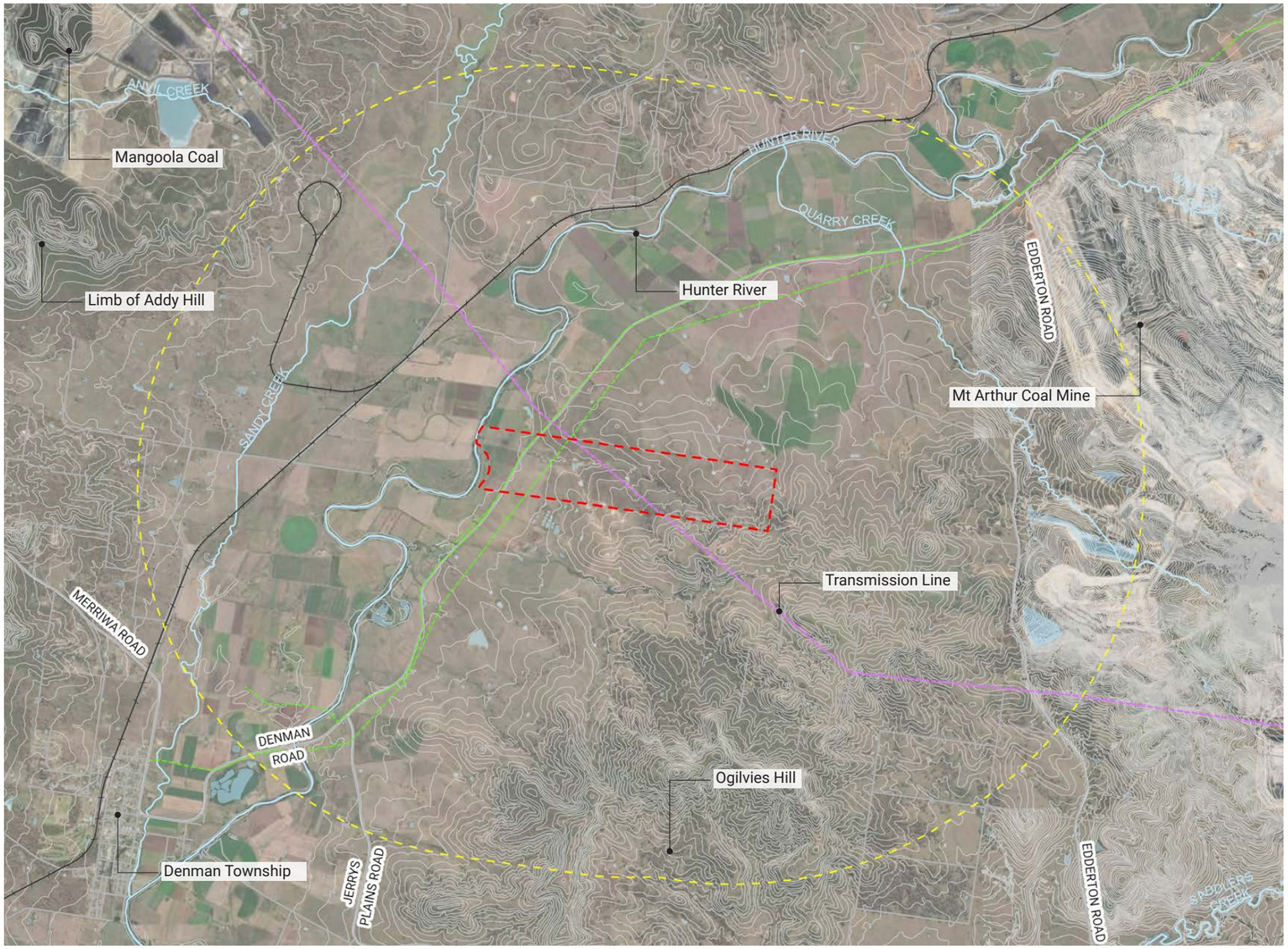


Image 06 View toward Ogilvies Hill



Key Landscape Features

Refer to Section 4.9

LEGEND

- Site Boundary
- 5.0 km from Development Footprint
- Lakes & Dams
- Railway
- Roads
- Watercourse
- Contour
- Existing 500kV Transmission Line
- Existing 66kV Transmission Line

0 1 2 3 4 km

Figure 06 Key Landscape Features
Basemap Source - ESRI, 2024

4.10 Landscape Condition

Land within the Study Area has predominantly been modified for agricultural purposes, including grazing and cropping. Vegetation in the Study Area has generally been cleared, with the exception of the environmental management areas, including Ogilvies Hill, which features dense vegetated slopes to the south of the Project Area, and riparian vegetation along the Hunter River and creek lines.

The Study Area and surrounding region contain highly modified landscapes. Open-cut coal mining operations are prominent in the region and have altered the natural landscape condition.

The topography within the Project Area ranges from 121 AHD to the west and 220 AHD to the east. Several rural residential dwellings are scattered throughout the Study Area, primarily along Denman Road and Mangoola Road.

4.11 Land Use & Land Zoning

The land within the Study Area is primarily zoned as RU1—Primary Production and C3—Environmental Management according to the Muswellbrook LEP 2009 (refer to **Figure 07**).

Land use within the Study Area includes grazing native vegetation, modified and irrigated modified pastures, cropping and irrigated cropping (refer to **Figure 08**).

Land within the Project Area is zoned RU1 and is used for grazing native vegetation, grazing modified pastures and residential and farm infrastructure.

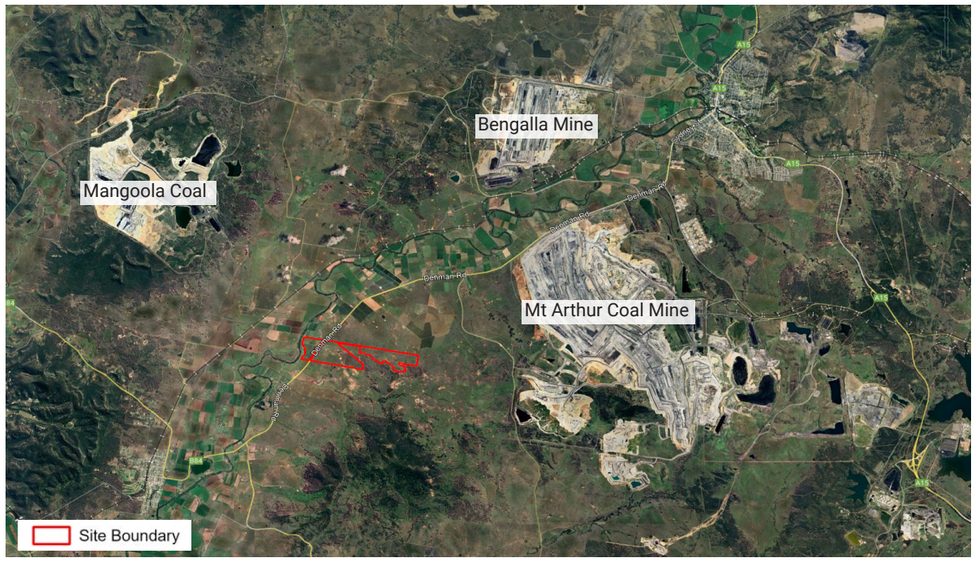
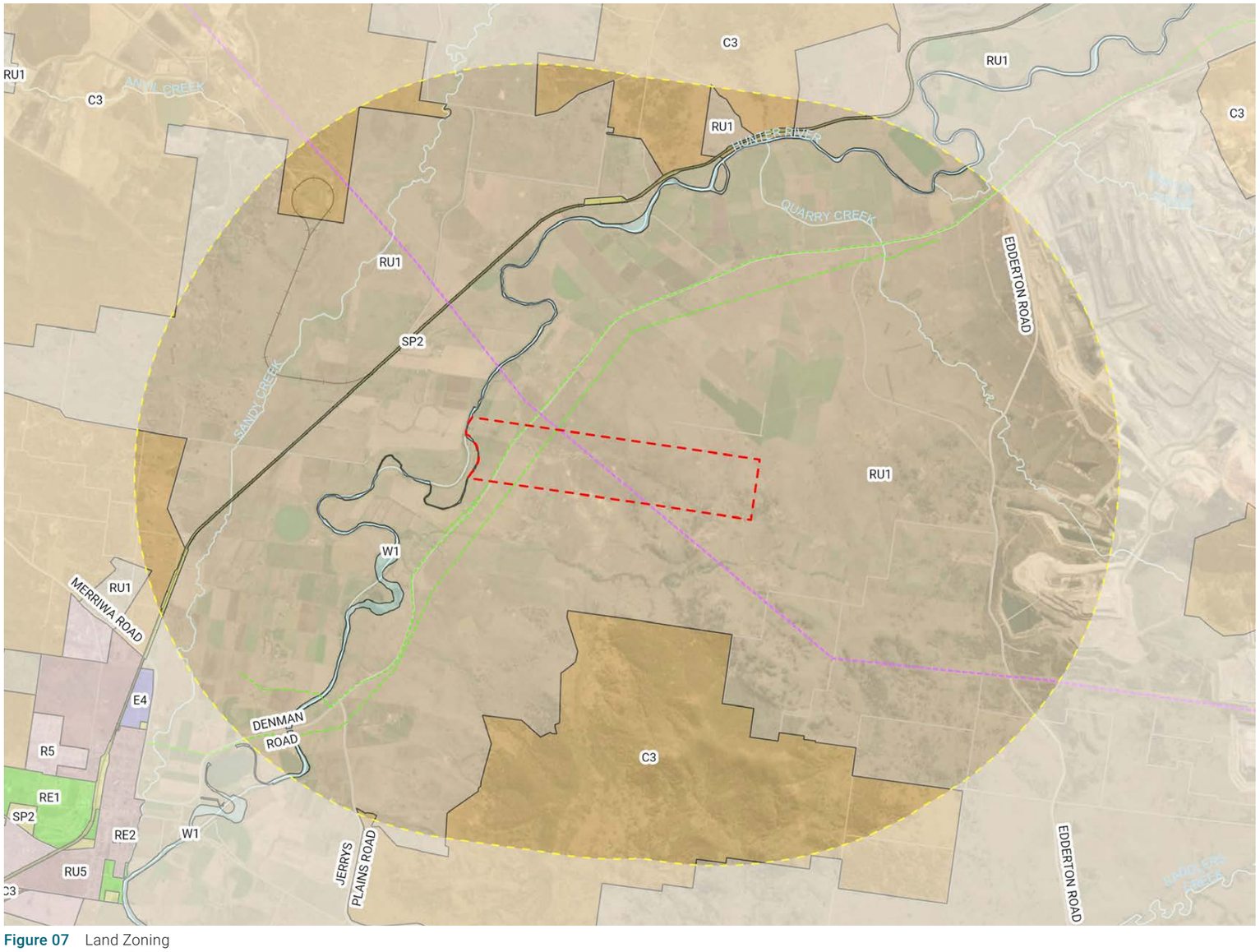


Image 07 Existing landscape condition



Land Zoning

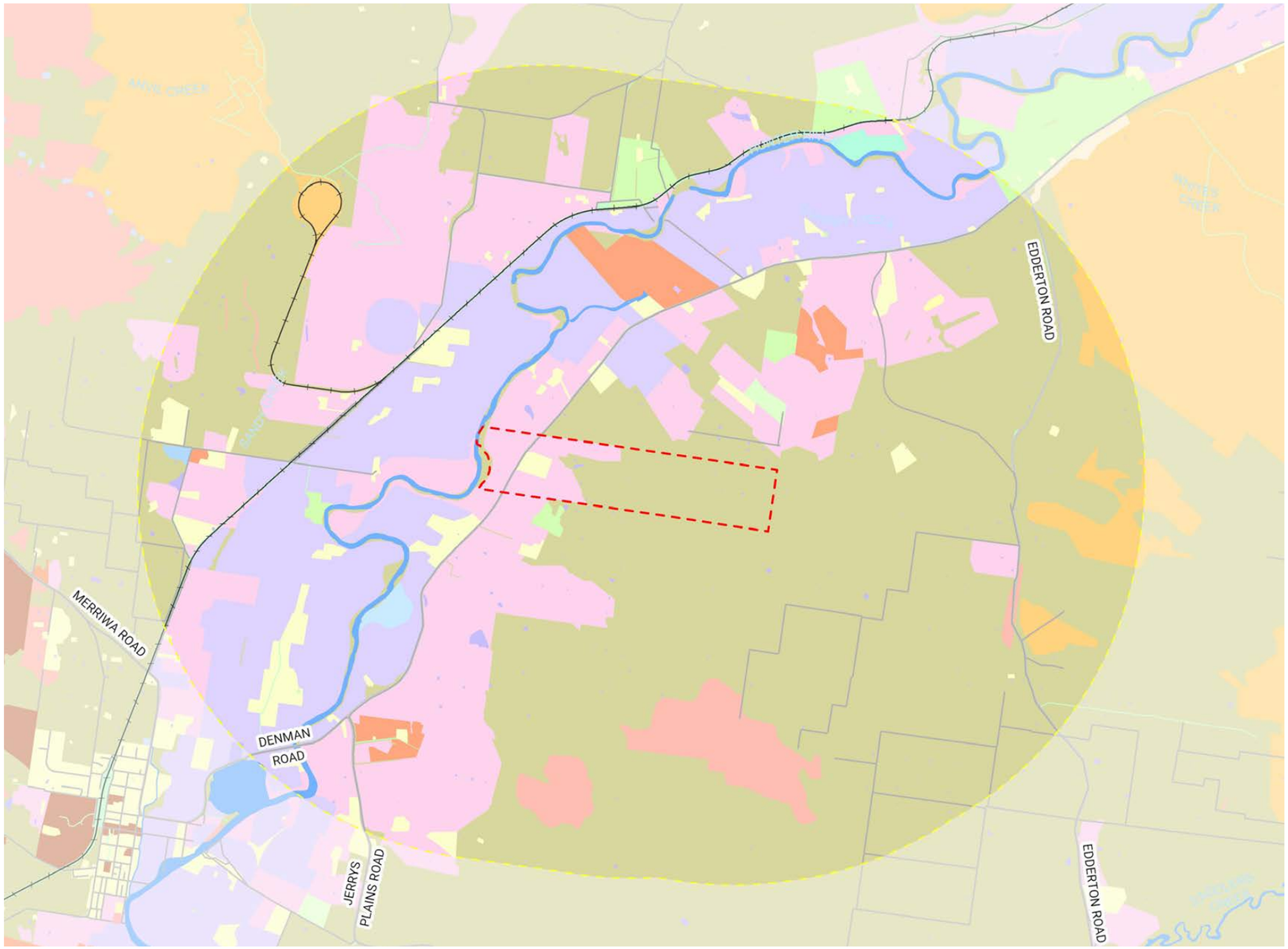
Refer to Section 4.11

LEGEND

- Site Boundary
- 5.0 km from Development Footprint
- C3 - Environmental Management
- E4 - General Industrial
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RE2 - Private Recreation
- RU1 - Primary Production
- RU5 - Village
- SP2 - Infrastructure
- W1 - Natural Waterways
- Railway
- Roads
- Watercourse
- Existing 500kV Transmission Line
- Existing 66kV Transmission Line

0 1 2 3 4 km

Figure 07 Land Zoning
Basemap Source - ESRI, 2024



Land Use

Refer to Section 4.11

LEGEND

- Site Boundary
- 5.0 km from Development Footprint
- 1.2.0 Managed resource protection
- 1.3.0 Other minimal use
- 2.1.0 Grazing native vegetation
- 3.1.0 Plantation forests
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture
- 3.5.0 Seasonal horticulture
- 3.6.0 Land in transition
- 4.2.0 Grazing irrigated modified pastures
- 4.4.0 Irrigated perennial horticulture
- 5.2.0 Intensive animal production
- 5.3.0 Manufacturing and industrial
- 5.4.0 Residential and farm infrastructure
- 5.5.0 Services
- 5.6.0 Utilities
- 5.7.0 Transport and communication
- 5.8.0 Mining
- 5.9.0 Waste treatment and disposal
- 6.2.0 Reservoir/dam
- 6.3.0 River
- 6.4.0 Channel/aqueduct
- 6.5.0 Marsh/wetland
- Railway
- Roads

0 1 2 3 4 km

Figure 08 Land Use
Basemap Source - ESRI, 2024

4.12 Large Scale Energy Development

The Project is located within the HCC-REZ, which was designated following a detailed state-wide geospatial mapping exercise undertaken by the NSW Government in 2018. This initial analysis sought to identify optimal locations to host renewable energy generation around the State, including areas with strong renewable energy resource potential, proximity to the existing electricity network, and consideration of potential interactions with existing land uses, including agricultural lands and biodiversity conservation.

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 03 summarises proposed, in operation, approved or under construction renewable energy projects or major developments within 8 km of the Project.

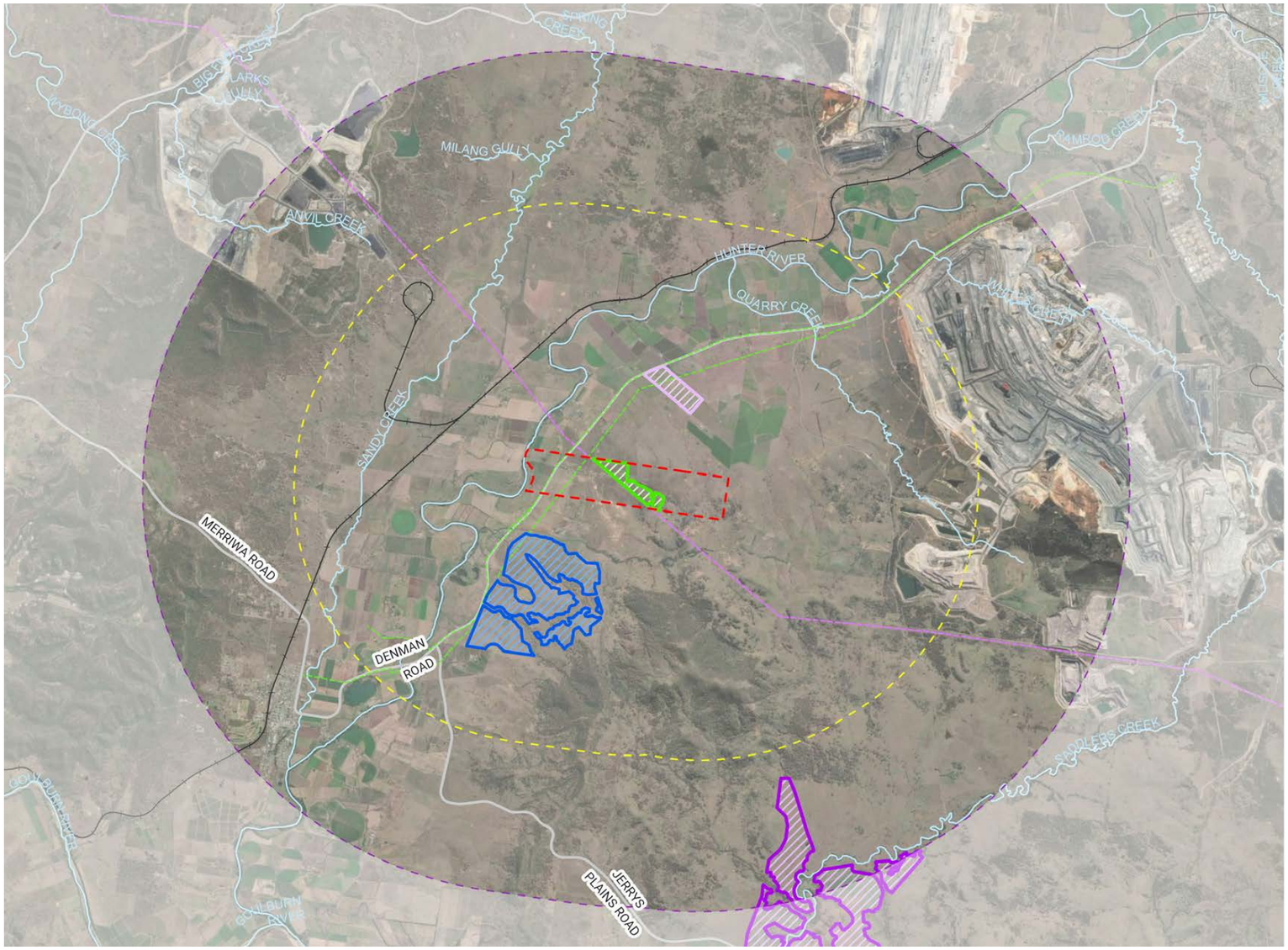
The Cumulative Impact Assessment Guidelines (DPIE, 2022) state:

- *"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" and;*
- *"The application of the cumulative tool (to a distance of 8km from a dwelling or public viewpoint) is based on visibility research which found turbines and objects recede into the background in terms of visibility at 8km."*

Cumulative impacts associated with the Project are assessed in **Section 11.0**.

Large Scale Energy Development (Within the Study Area)			
Project	**Distance & Direction from The Project**	**Generation Capacity (MW)**	**Planning Status**
Denman BESS	Located on same lot as the Project	2.4 GW	Proposed, SEARs issued October 2024
Edderton Solar Project - Mayfield Cluster (ESP)	Approx. 900 m	350 MW	Proposed, SEARs issued May 2024
Denman Road Solar Park (DRSP)	Approx. 1.1 km	22 MW	Approved 2021 (DA 49/2020)
Large Scale Energy Development (Within 8 km)			
ESP (Bowfield Cluster)	Approx. 6.1 km	350 MW	Proposed, SEARs issued May 2024

Table 03 Overview of Large Scale Energy Developments
Source - Renew Map, 2024 (accessed 23/01/25)



Nearby Renewable Projects

Refer to Section 4.12

LEGEND

- Site Boundary
- 8.0 km from Development Footprint
- 5.0 km from Development Footprint
- Denman BESS Site Boundary
- Edderton Solar Park (Mayfield Cluster)
- Denman Road Solar Park Boundary
- Edderton Solar Park (Bowfield Cluster)
- Railway
- Roads
- Watercourse
- Existing 500kV Transmission Line
- Existing 66kV Transmission Line

0 1 2 3 4 km

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

4.13 Identify Landscape Character Zones

The Technical Supplement states: "I*f 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).

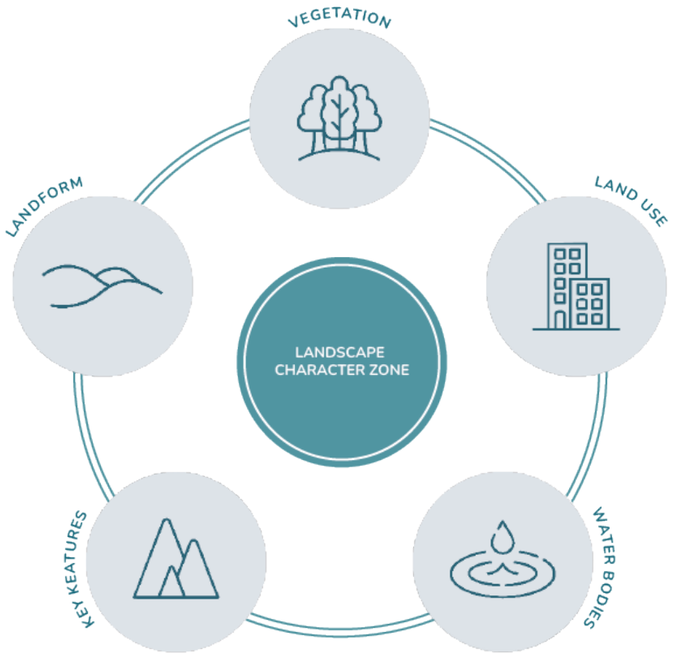


Figure 10 Defining Landscape Character Zones

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 04 and Table 05**).

The scenic quality has assisted in determining the sensitivity of each LCZ, results are shown in **Table 10**.

Scenic Quality Frame of Reference				
Feature	**Very Low Scenic Quality**	**Low Scenic Quality**	**Moderate Scenic Quality**	**High Scenic Quality**
Landform	• 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	• Mostly flat or gently undulating terrain with isolated areas of undulating topography	• Steep, hilly and undulating ranges that are not visually dominant • Broad shallow valleys • Moderately deep gorges or moderately steep valley walls • Minor rock outcrops	• 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	• 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	• 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	• 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	• 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	• Absence of natural waterbody • Farm dams, irrigation canals or stormwater infrastructure	• Minor waterforms such as creeks and streams	• Intermittent streams, lakes, rivers, swamps and reservoirs	• Visually prominent lakes, reservoirs, rivers, streams, wetlands and swamps • Presence of harbour, inlet, bay or open ocean
Social & Cultural	• Places of worship, cemeteries/memorial parks, private open spaces	• Places of worship, cemeteries/memorial parks, private open spaces • Local heritage sites	• Local or state heritage sites • Distinguishable entry ways to a regional city identified in the Transport and Infrastructure SEPP	• Culturally important sites, world heritage areas, national parks/reserves, • World, national and state heritage sites
Human Presence	• Dominating presence of infrastructure, human settlements, highly modified landscapes and higher density populations such as regional cities, industrial areas, agricultural transport or electricity infrastructure	• Highly modified landscapes with visible infrastructure such as transmission lines and railway corridors	• Dispersed yet evident presence of human settlement such as villages, small towns, isolated pockets of production and industry, lower scale and trafficked transport infrastructure	• Natural/undisturbed landscape • Minimal evidence of human presence and production

Table 04 Scenic Quality Frame of Reference

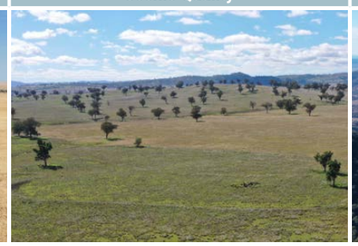
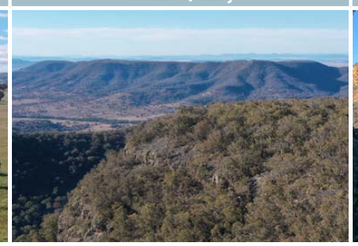
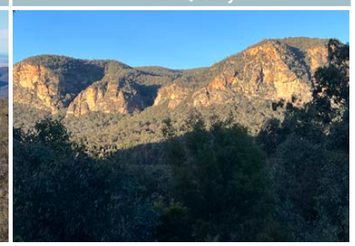
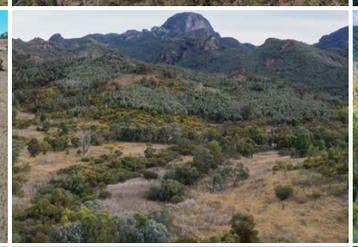
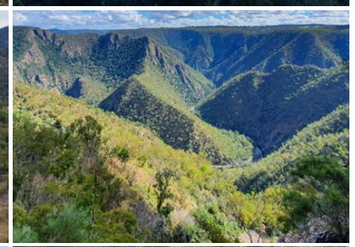
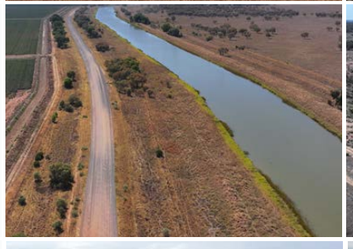
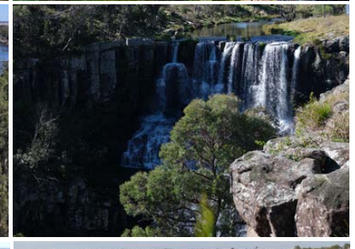
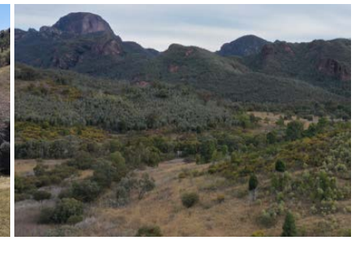
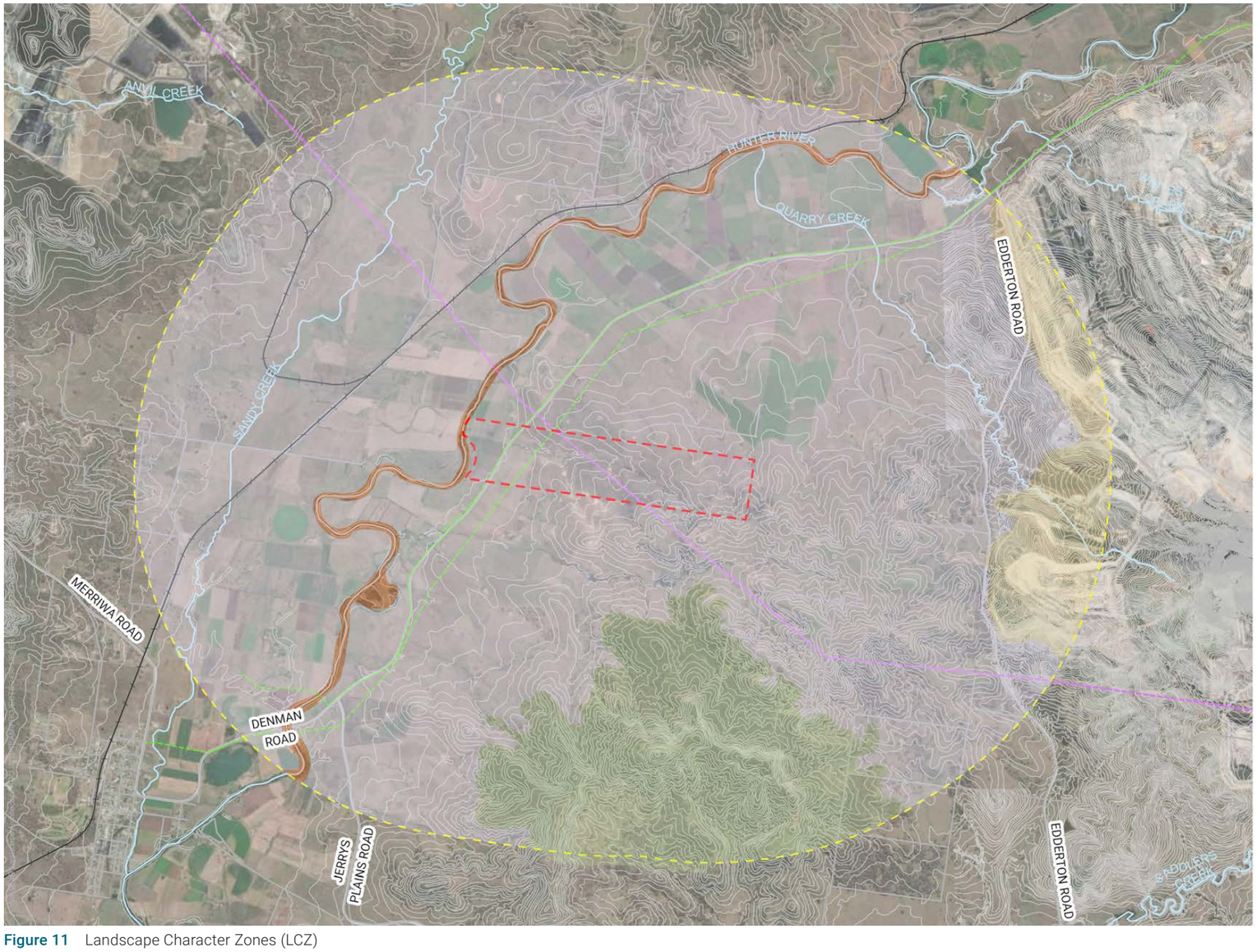
Visual Scenic Quality Frame of Reference				
Feature	**Very Low Scenic Quality**	**Low Scenic Quality**	**Moderate Scenic Quality**	**High Scenic Quality**
Landform				
Vegetation				
Waterforms				
Social & Cultural				
Human Presence				

Table 05 Visual Reference of Scenic Quality



Landscape Character Zones

Refer to Section 4.13

LEGEND

- Site Boundary
- 5.0 km from Development Footprint
- Railway
- Roads
- Watercourse
- Contour
- LCZ01 - Agricultural Pastures
- LCZ02 - Vegetated Watercourses
- LCZ03 - Vegetated Slopes
- LCZ04 - Mining Landscapes
- Existing 66kV Transmission Line
- Existing 500kV Transmission Line

0 1 2 3 4 km

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

4.15 Landscape Character Zones

A total of four (4) 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 Project is located within this LCZ. The landform is typically characterised by slightly undulating hills cleared for agricultural purposes. Some areas within this LCZ feature isolated clusters of remnant vegetation; however, the typical condition is cleared pastures with areas of colour and texture variation, with scattered native vegetation. Minor waterforms such as Sandy Creek and Quarry Creek flow through this LCZ. The land within this LCZ is a highly modified landscape with visible infrastructure such as the transmission line and railway. There are no socially or culturally significant locations within this LCZ.

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

Image 08 Undulating pastures typical of LCZ01

Image 09 Cleared pastures 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	Agricultural Pastures	Denman Road & Mangoola Road							LOW
			H						
			M						
			L	■	■		■		
			VL	■	■	■	■	■	

Table 06 LCZ01 - Agricultural Pastures

4.15.2 LCZ02 - Vegetated Watercourses

This LCZ is characterised by the Hunter River. The topography in this LCZ is slightly undulating to flat. The vegetation within this LCZ features river red gum communities that are prominent along the riparian corridor. The vegetation along the riparian corridor within the Study Area is relatively sparse compared to other areas along the Hunter River. There are no publicly accessible locations for visitors along the Hunter River within the Study Area, and no socially or culturally significant locations. This LCZ features dispersed yet evident presence of human interference as the Hunter River borders agricultural pastures and cropping.

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

Image 10 Riparian corridor vegetation in LCZ02

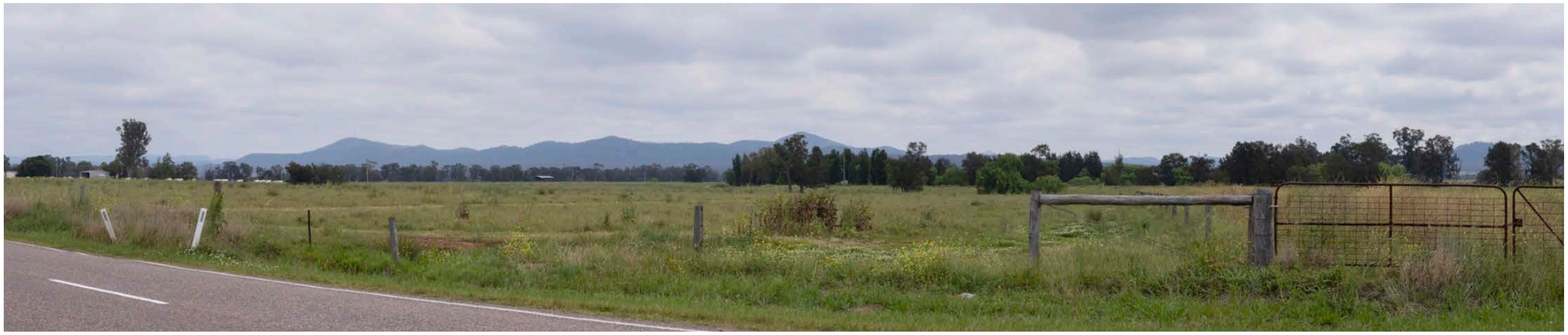


Image 11 Riparian corridor provides contrast with the cleared pastures

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 Watercourses	Hunter River & riparian vegetation corridor	Denman Road & Mangoola Road							LOW
			H						
			M				■		
			L	■	■	■			
			VL				■	■	

Table 07 LCZ02 - Vegetated Watercourses

4.15.3 LCZ03 - Vegetated Slopes

The landscape within this LCZ is defined by undulating to steep terrain with dense vegetation including narrow-leafed ironbark, white box and grey box communities. Steeper areas of this LCZ are not used for agricultural purposes. There are no natural waterbodies located within this LCZ, or any publicly accessible areas such as lookouts or picnic areas. There is little evidence of human interference with this landscape with the exemption of the base of the slopes, which is used for agricultural production and compromises the undisturbed nature of the LCZ.

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

Image 12 Vegetated slopes in LCZ03 at Ogilvies Hill

Image 13 Ogilvies Hill vegetated slopes

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	
LCZ03 - Vegetated Slopes	Ogilvies Hill & narrow-leafed ironbark, grey box and white box vegetation	Denman Road & Mangoola Road	H						LOW
			M	■		■	■		
			L	■		■	■		
			VL	■	■	■	■	■	

Table 08 LCZ03 - Vegetated Slopes

4.15.4 LCZ03 - Mining Landscapes

The landscape within this LCZ is defined by an extremely modified landscape as a result of the Mount Arthur Coal Mine. This LCZ comprises only a small portion of the northeastern edge of the Study Area. The LCZ is extensively cleared, and has altered the path of natural waterbodies. There are no socially or culturally significant locations within this LCZ.

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

Image 14 Aerial view of Mount Arthur Coal Mine

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	
LCZ03 - Mining Landscapes	Mount Arthur Coal Mine	Denman Road	H						VERY LOW
			M						
			L						
			VL	■	■	■	■	■	

Table 09 LCZ03 - Vegetated Slopes

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 10.**

Landscape Character Assessment					
LCZ:	**Name:**	**Scenic Quality Rating:**	**Sensitivity:**	**Magnitude:**	**Landscape Character Impact Rating:**
LCZ01	**Agricultural Pastures**	**LOW**	**VERY LOW** The LCZ is a modified environment defined by land predominantly cleared to support agricultural activities such as livestock grazing and cropping. As such, it is considered to have capacity to absorb the change associated with the Project.	**LOW** The Project is located within this LCZ and as a result, views toward the Project will be available at close range along Denman Road. The Project will be a visible element in the landscape from areas at close range. However, the extent of this change is considered minor due to the modified nature of the existing landscape in this LCZ.	**LOW**
LCZ02	**Vegetated Watercourses**	**LOW**	**LOW** Riparian vegetation borders the watercourses in this LCZ. Watercourses support the agricultural activities that adjoin this LCZ. These watercourses are not publicly accessible within the Study Area.	**LOW** The Project is not located within this LCZ. Due to the vegetation surrounding the LCZ, views toward the Project are likely to be fragmented or screened. Where views are available, they are likely to occupy a small proportion of the view.	**LOW**
LCZ03	**Vegetated Slopes**	**LOW**	**MODERATE** This LCZ is predominantly intact with minor evidence of human intervention. The lack of nature reserves, public open spaces or lookouts limits the possibility of public access.	**LOW** Opportunities to view the Project from within the LCZ are limited due to lack of public accessibility. Due to the low vertical scale of the Project, views toward the LCZ and associated landscape features will likely remain unchanged as a result of the Project.	**LOW**
LCZ04	**Mining Landscapes**	**VERY LOW**	**VERY LOW** This LCZ is an extremely modified landscape and has very low sensitivity to change.	**VERY LOW** Opportunities to view the Project from within this LCZ are limited due to lack of public accessibility. Due to the scale of change within this LCZ, the magnitude of change produced by the Project is very low.	**VERY LOW**

Table 10 Overview of Landscape Character Assessment

05 Visual Impact Assessment

5.0 Visual Impact Assessment

5.1 Overview of the Visual Impact Assessment

The Technical Supplement states that the Visual Impact Assessment "*determines the day-to-day visual effects of a project on people's views from the private and public domain. 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 Visual Impact Assessment Process "*should be proportionate to the likely impacts of the development*" (DPHI, 2024b) and is therefore broken down into three (3) assessment stages, the Simple Assessment, Intermediate Assessment and Detailed Assessment (refer to **Figure 12**). A description of each assessment is outlined in following sections, and outlined in **Figure 13.**

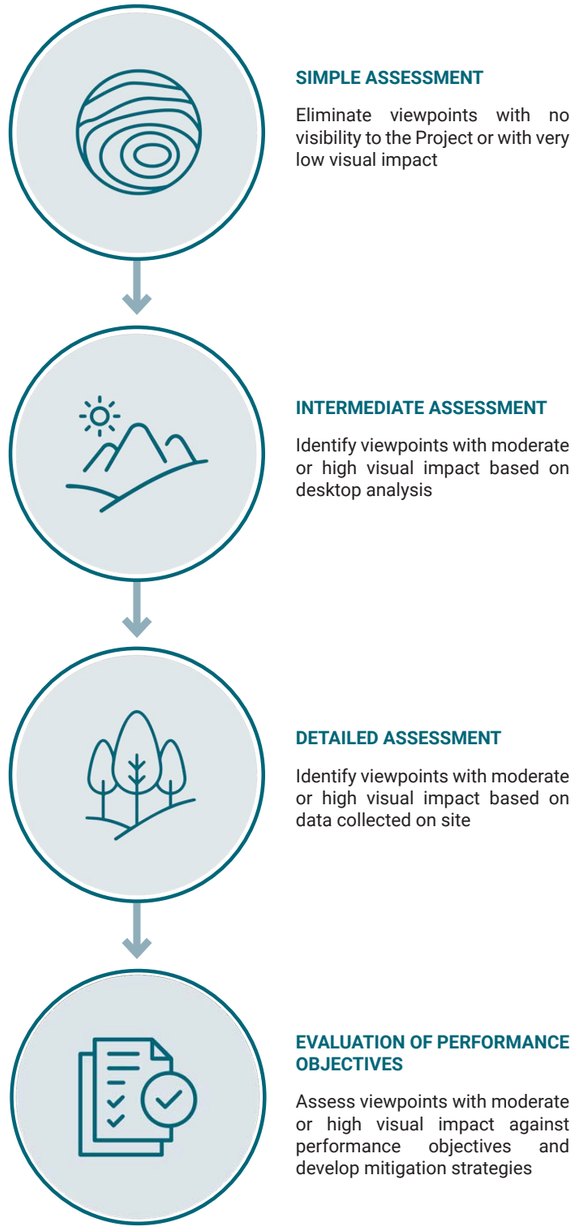


Figure 12 Visual Impact Assessment Stages

5.1.1 Stage 1: Simple Assessment

The Simple Assessment stage is used to identify viewpoints in the public and private domain that require a detailed assessment (refer to **Section 6.0**). The Simple Assessment includes:

- Application of Simple Assessment Tools
- Viewshed mapping

5.1.2 Stage 2: Intermediate Assessment

The Intermediate Assessment is conducted on viewpoints identified in the Simple Assessment that require further assessment (refer to **Section 7.0**). The Intermediate Assessment includes:

- 3D modelling
- Production of wireframe diagrams
- Application of the Magnitude Grid Tool

Viewpoints identified as having a Moderate or High impact will require a Detailed Assessment.

5.1.3 Stage 3: Detailed Assessment

The Detailed Assessment stage is used to more accurately assess scenic quality and the effectiveness of existing or proposed screening elements in reducing potential impacts (refer to **Section 8.0**). The Detailed Assessment includes:

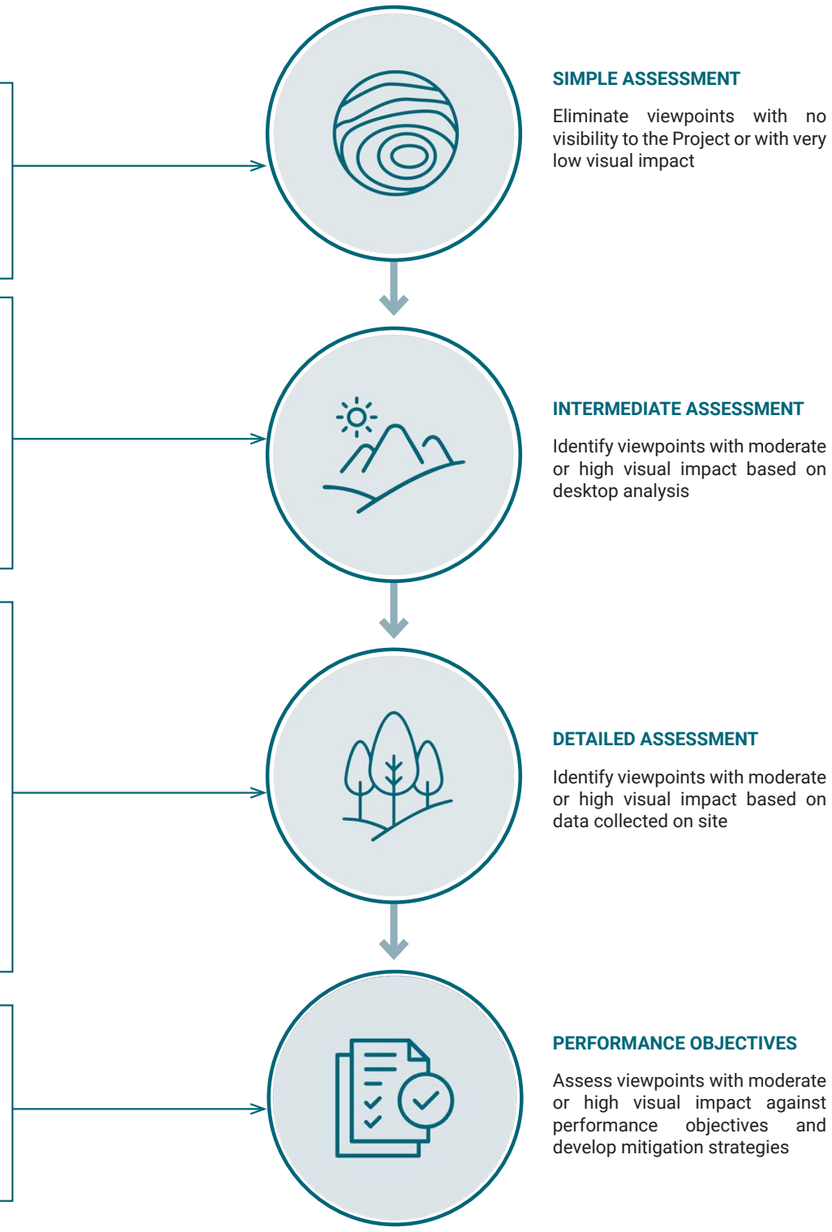
- Site visit and photographic assessment
- Refinement of scenic quality and visual sensitivity
- Preparation of photomontages
- Application of the Magnitude Grid Tool
- Determination of Visual Impact

If the visual impact is Moderate or higher, the Performance Objectives must be assessed.

5.1.4 Stage 4: Evaluate Performance Objectives

Moderate and High impact viewpoints must be assessed against the Performance Objectives as shown in the Technical Supplement. This includes:

- Commentary on visual impact including performance objectives and proposed mitigation
- Preparation of photomontages including mitigation (including age and timing for vegetation)



SIMPLE ASSESSMENT

Eliminate viewpoints with no visibility to the Project or with very low visual impact

INTERMEDIATE ASSESSMENT

Identify viewpoints with moderate or high visual impact based on desktop analysis

DETAILED ASSESSMENT

Identify viewpoints with moderate or high visual impact based on data collected on site

PERFORMANCE OBJECTIVES

Assess viewpoints with moderate or high visual impact against performance objectives and develop mitigation strategies

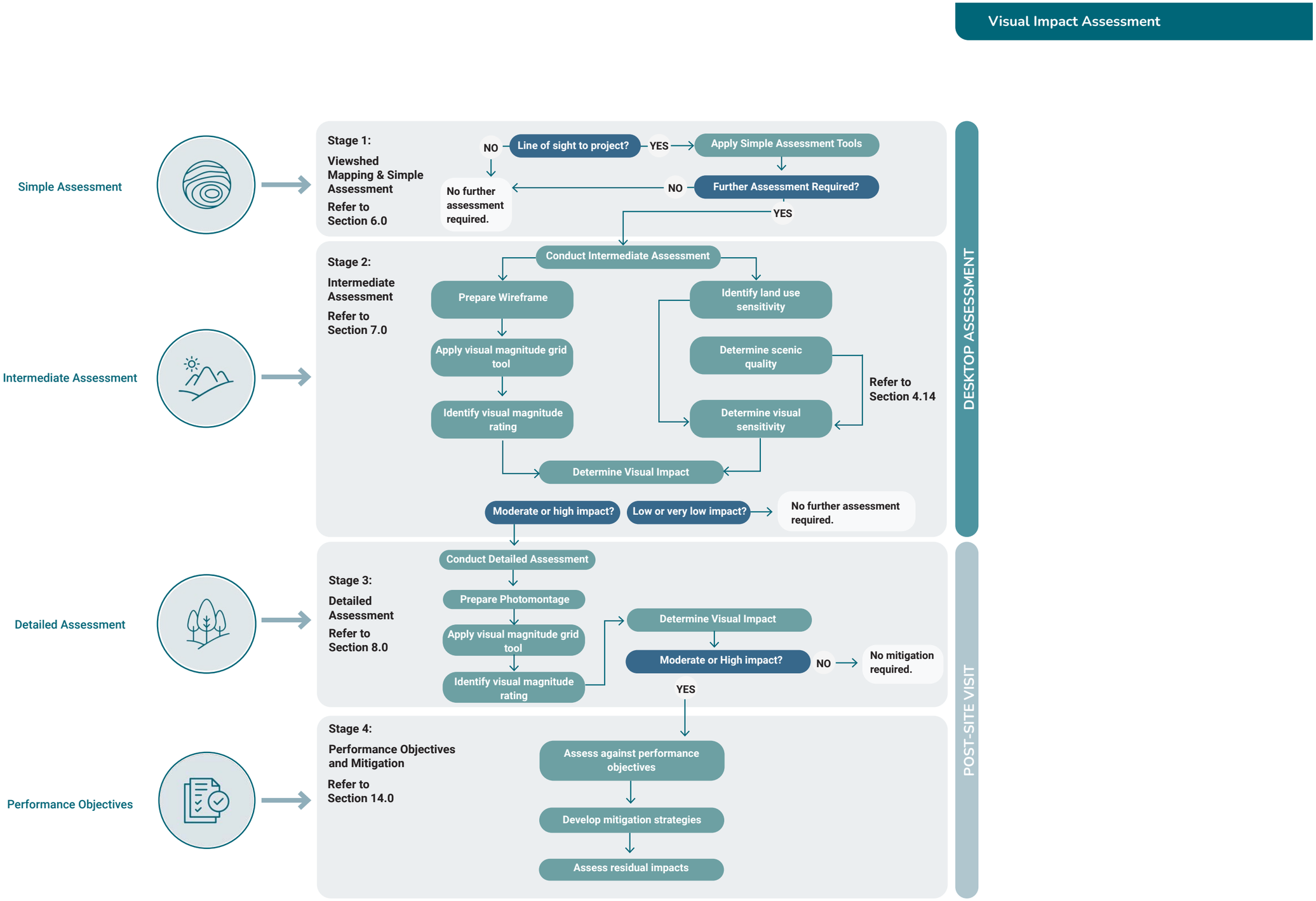


Figure 13 Visual Impact Assessment Process Overview

5.2 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 5.4** and **Section 5.6**.

5.3 Viewpoint Selection

As stated in the Technical Supplement, private receptors (non-associated dwellings) and public viewpoints (picnic areas, lookouts, recreation areas, etc.) are assessed to within 4.0 km of the Project, and road and rail receptors (public receptors) were assessed within 2.5 km of the Project (DPHI 2022b, p.35).

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).

5.4 Visual Magnitude

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

5.4.1 Visual Magnitude in the Simple Assessment

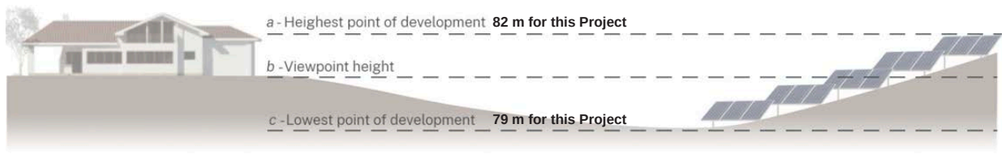
The Simple Assessment determines the visual magnitude of a project based on theoretical calculation using simple parameters that represent a worst-case scenario for the Project. To determine the visual magnitude for each viewpoint in the Simple Assessment, the following methodology is undertaken:

Step 1. Calculate the worst-case vertical field of view from each viewpoint (refer to **Figure 14**) to determine the potential number of vertical cells the Project could occupy.

Step 2 Measure the horizontal field of view of the Project (refer to **Figure 15**), and divide the number by 10 to determine the worst-case number of horizontal cells the Project could occupy.

Step 3. Multiply the vertical and horizontal cells and determine the visual magnitude rating based on the number of theoretical cells occupied (as outlined in **Figure 16 and Table 11**).

Project located above and below viewpoint (a - c)



Project located above viewpoint (a - b)

Project located below viewpoint (b - c)

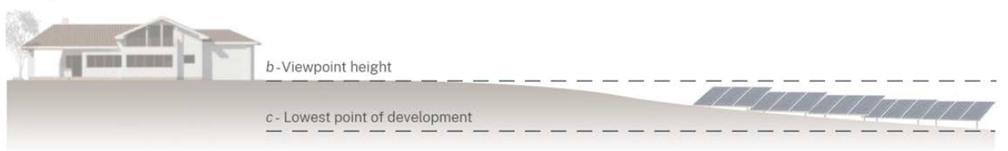


Figure 14 Vertical Field of View Calculations
Source - DPHI, 2022b

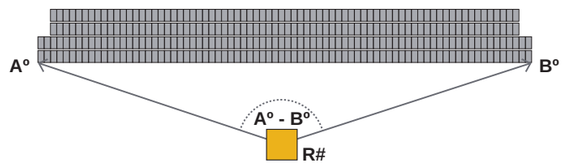


Figure 15 Horizontal Field of View Calculations
Source - DPHI, 2022b

5.4.2 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 180º 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 based on the number of cells and thresholds (as outlined in **Figure 16 and Table 11**).

5.4.3 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 180º field of view.

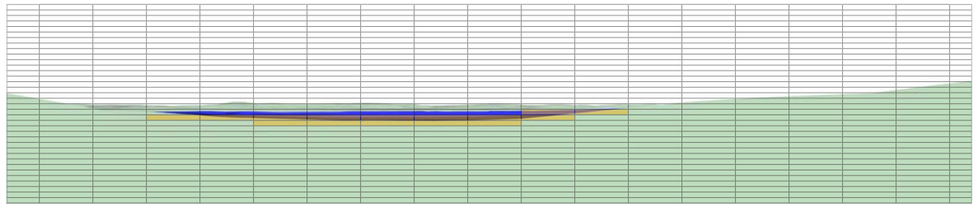
Step 2 Align the panorama and the 3D model and render the photomontage.

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 based on the number of cells and thresholds (as outlined in **Figure 16 and Table 11**).

Intermediate Assessment - Calculating Visual Magnitude



Detailed Assessment - Calculating Visual Magnitude

Figure 16 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 11 Visual Magnitude Thresholds

5.6 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

5.6.1 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 12**.

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 (bedand-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. 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 12 Viewpoint Sensitivity Levels and Examples

5.6.2 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 very low, 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.**

5.6.3 Overall Visual Sensitivity

Once the viewpoint sensitivity and scenic quality are determined, these can be combined using the visual sensitivity matrix in **Table 14** 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 13 Visual Sensitivity Matrix

5.7 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 14.**

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 14 Visual Impact Matrix

5.8 Performance Objectives

Viewpoints with a moderate or high visual impact must be assessed against the Technical Supplement's Performance Objectives, as outlined in **Table 15**

Performance Objectives	
Moderate Visual Impact	
Public viewpoint (roads & rail)	• 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	• 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	• This level of impact should be avoided, unless an agreement has been made with the land owner, or it can be justified that:
	  ◦ 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 15 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

The Simple Assessment Tools are used to identify viewpoints that require further assessment. The tools are designed to eliminate the need to assess viewpoints that are likely to experience very low to low impacts. This is based on the vertical and horizontal field of view that a development is likely to occupy when viewed from each viewpoint and is influenced by distance, height elevation changes, and width of a project.

Table 16 provides an overview of the requirement of the Simple Assessment Tools (in accordance with the Technical Supplement) and where these have been addressed in this report.

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**.

Assessment Assumptions:

For the purposes of the Simple Assessment, a preliminary desktop assessment of the landscape character needs to be completed to determine the visual sensitivity of each viewpoint. The preliminary visual sensitivity was as follows:

- For all private viewpoints (non-associated dwellings) a viewpoint sensitivity of Moderate was used as per the DPHI matrix shown in **Table 12**.
- For all public road and rail viewpoints, a viewpoint sensitivity of Very Low was used as per the DPHI matrix shown in **Table 12**.

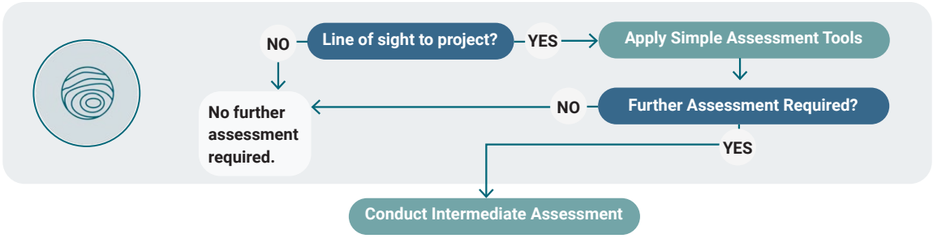


Figure 17 Simple Assessment Overview

Simple Assessment

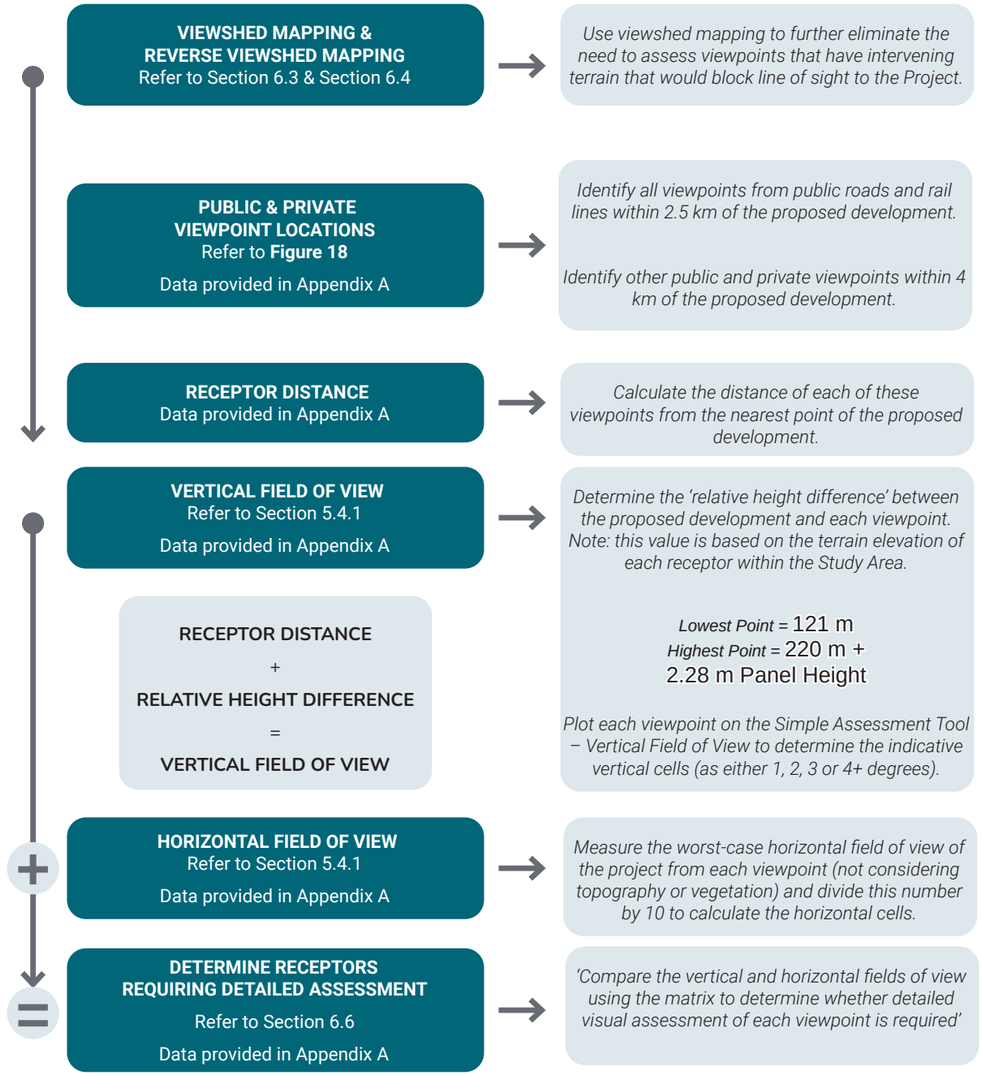
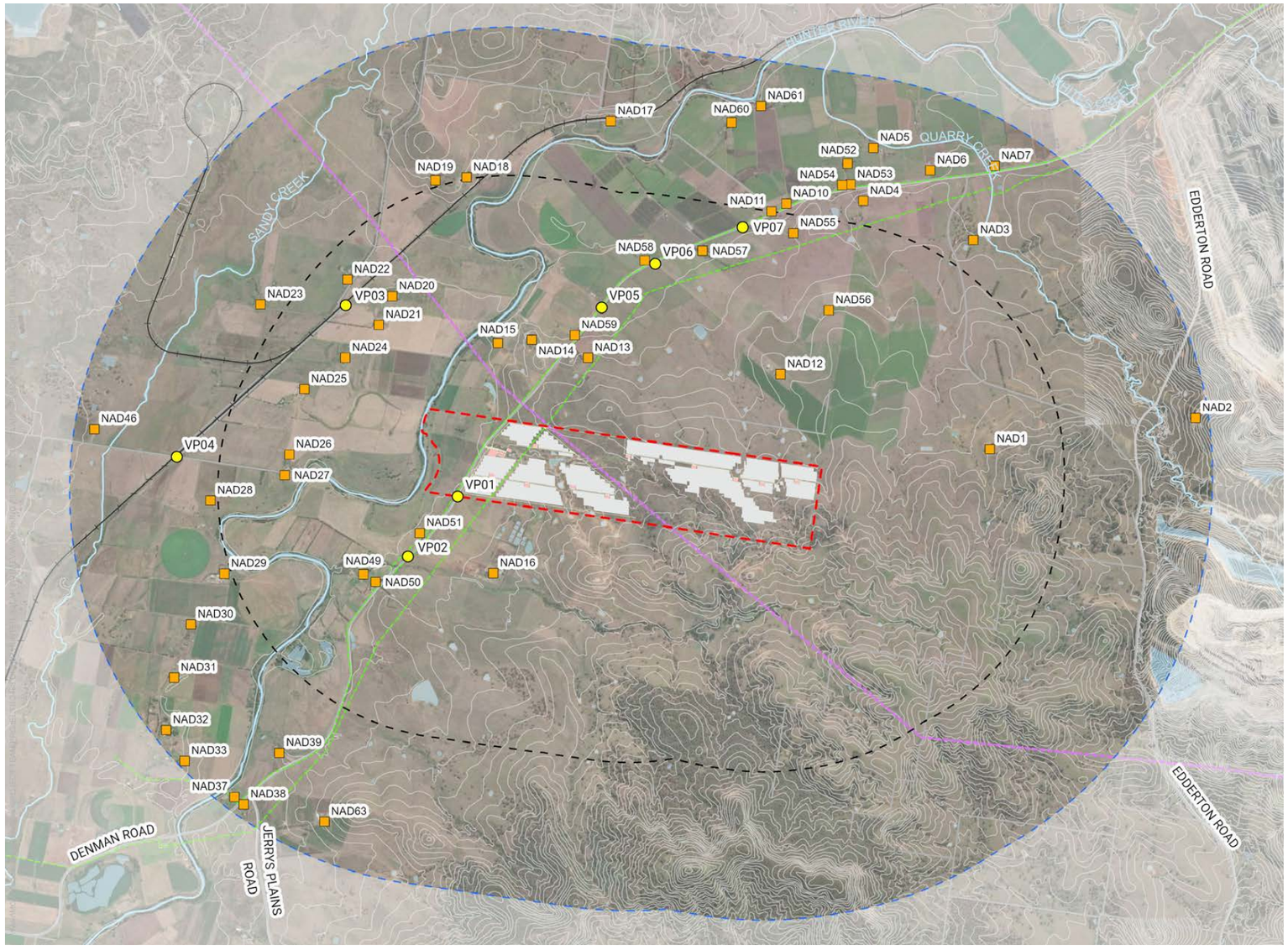


Table 16 Overview of Simple Assessment Tools



Viewpoints for Simple Assessment

Refer to Section 6.2

LEGEND

- Site Boundary
- 4 km from Development Footprint
- 2.5 km from Development Footprint
- Viewpoint Locations
- Non-Associated Dwellings Within 4 km
- PV Array Areas
- Ancillary Infrastructure
- Internal Roads
- Lakes & Dams
- Railway
- Roads
- Watercourse
- Contour
- Existing 66kV Transmission Line
- Existing 500kV Transmission Line

0 0.5 1 1.5 2 km

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

6.3 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 2.28 m.

Summary of Viewshed Map

The following provides a summary of the viewshed map assessment:

- Out of the 49 non-associated dwellings identified within 4.0 km of the Project, 12 dwellings were identified as having no visibility toward the Project due to intervening topography. The remaining 37 require further assessment.
- Land to the to the west of the Project within 4.0km have the highest theoretical visibility toward the Project.
- There are limited opportunities to view the Project from the east.

6.4 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).

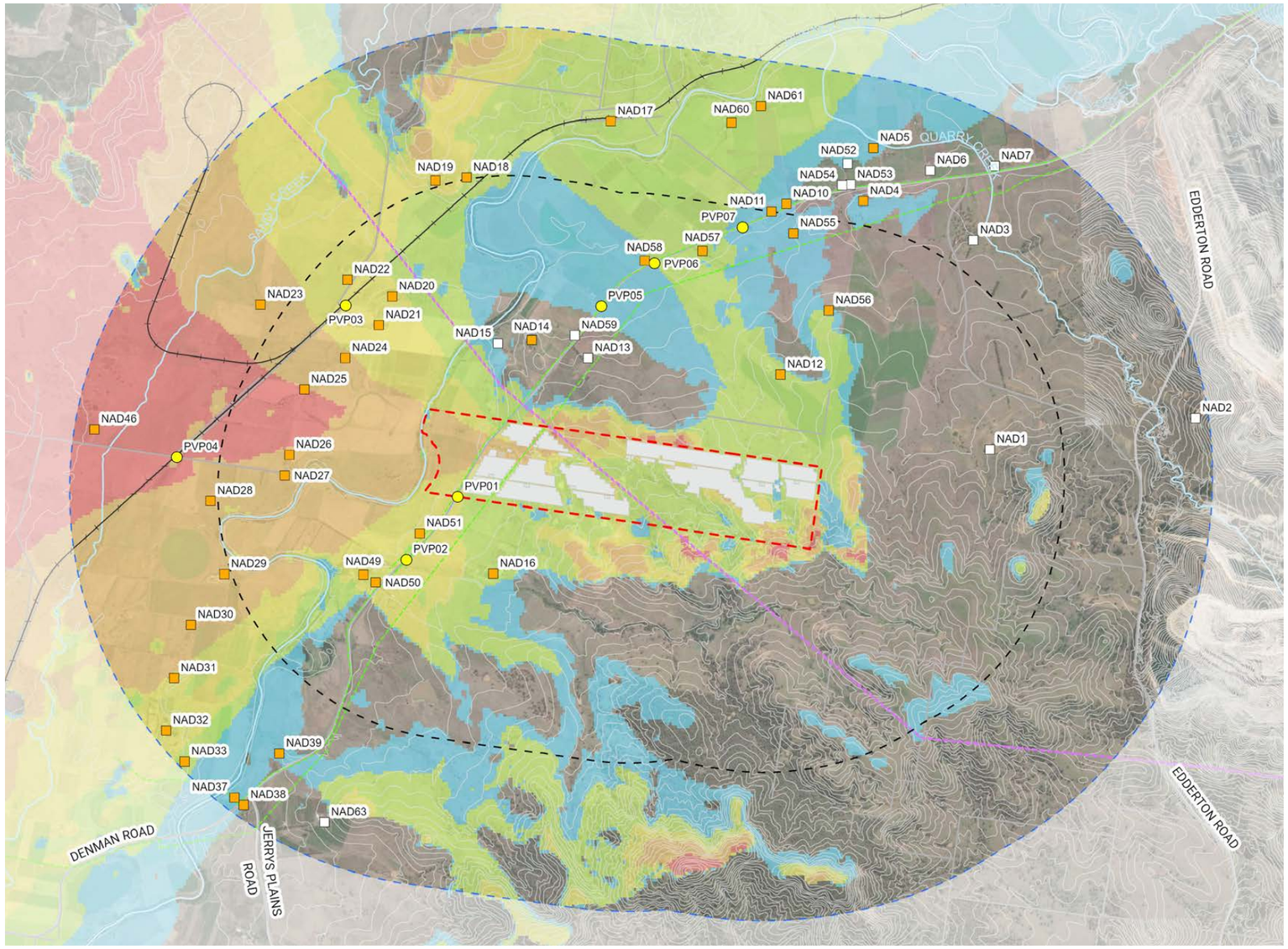
Figure 20 represents a reverse viewshed map that takes into account 37 non-associated dwellings located within 4.0 km of the development footprint that have visibility, as shown in the viewshed mapping. This figure shows parts of the development footprint that are likely to be visible from these non-associated 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

The following provides a summary of the reverse viewshed map:

- Based on the reverse viewshed mapping, the majority of the Development Footprint can be viewed by up to 20 dwellings.
- The southeastern tip of the Development Footprint has the highest potential visibility of up to 37 dwellings.
- The northeastern corner of the Development Footprint has the lowest potential visibility, from up to five (5) dwellings.

Simple Assessment



Viewshed Mapping

Refer to Section 6.3

LEGEND

- Site Boundary
- 4 km from Development Footprint
- 2.5 km from Development Footprint
- Non-Associated Dwellings With Visibility
- Non-Associated Dwellings With No Visibility
- Potential Public Viewpoints
- Development Footprint
- Railway
- Roads
- Watercourse
- Contour

ZVI LEGEND

- 1% - 20% Visibility
- 21% - 40% Visibility
- 41% - 60% Visibility
- 61% - 80% Visibility
- 81% - 100% Visibility

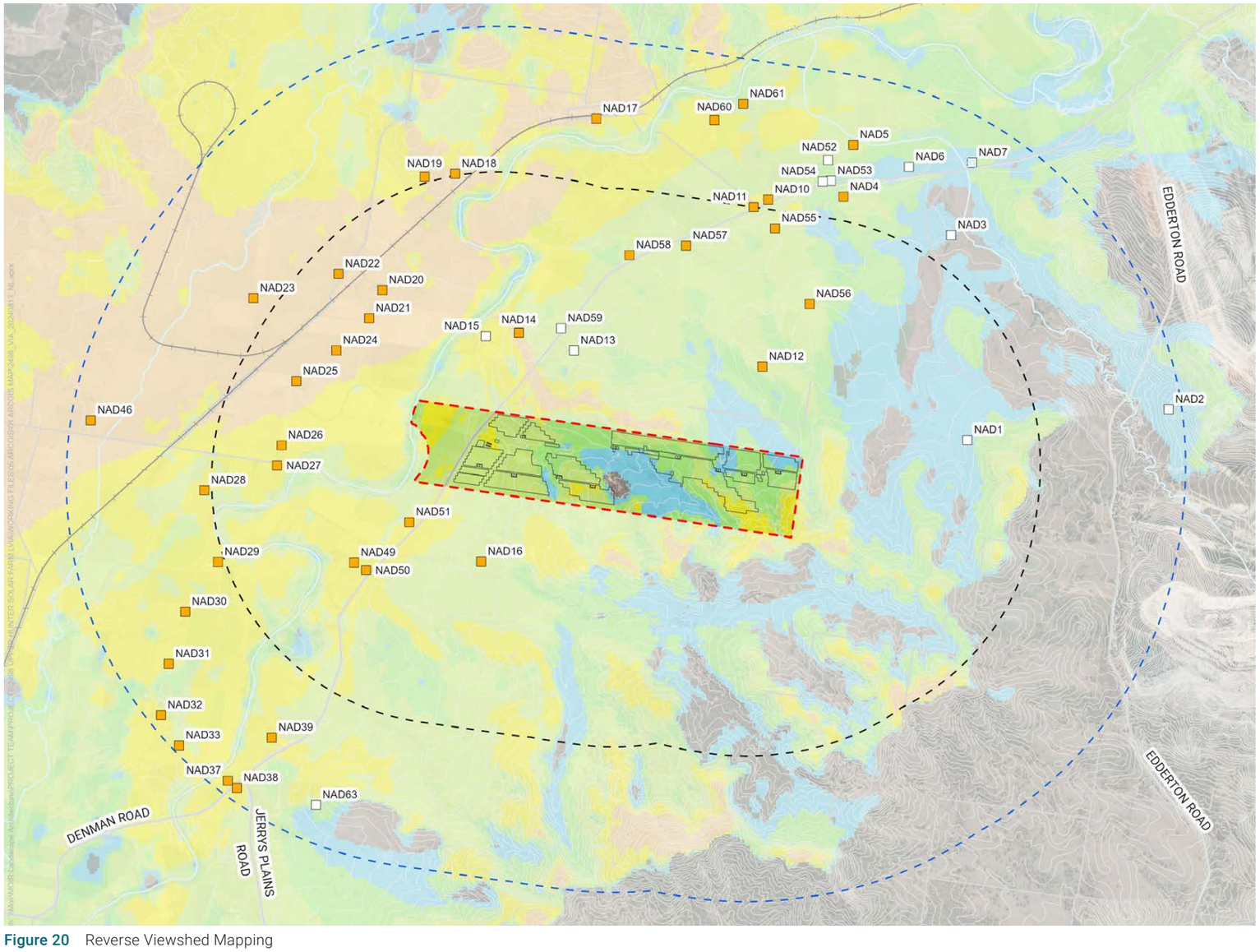
NOTE

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.

0 0.5 1 1.5 2 km

Figure 19 Viewshed Mapping
Basemap Source - ESRI, 2024

Simple Assessment



Reverse Viewshed Mapping

Refer to Section 6.4

LEGEND

- Site Boundary
- 4 km from Development Footprint
- 2.5 km from Development Footprint
- Development Footprint
- Non-Associated Dwellings With Visibility
- Non-Associated Dwellings With No Visibility
- Railway
- Roads
- Watercourse
- Contour

ZVI LEGEND

- 1 - 5 Dwellings
- 6 - 12 Dwellings
- 13 - 20 Dwellings
- 21 - 28 Dwellings
- 29 - 37 Dwellings

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.

0 0.5 1 1.5 2 km

Figure 20 Reverse Viewshed Mapping
Basemap Source - ESRI, 2024

6.5 Identification of Viewpoints

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

6.5.1 Public Receptors

Seven (7) public receptor locations have been selected to represent road and rail receptors within 2.5 km of the Project. These viewpoints represent a preliminary visual impact of the Project (refer to **Figure 18**). No other public receptors were located within 4.0 km of the Project.

6.5.2 Private Receptors

49 non-associated dwellings were identified within 4.0 km of the Project.

Of these 49 non-associated dwellings, 37 dwellings were identified through viewshed mapping as having potential visibility of the Project, and were assessed using the Simple Assessment Tools (refer to **Figure 18**).

6.6 Results of Simple Assessment Tool

Application of the Simple Assessment identifies public and private viewpoints that have the potential to have Moderate to High visual impacts and require Intermediate Assessment in accordance with the Guideline. These results are summarised below.

Private Viewpoints

A total of 37 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 30 non-associated dwellings have a Low visual impact, and require no further assessment. Five (5) non-associated dwellings were assessed as Moderate visual impact, and two (2) non-associated dwellings were assessed as High visual impact. These seven (7) receptors require Intermediate Assessment (refer to **Table 17 and Figure 21**).

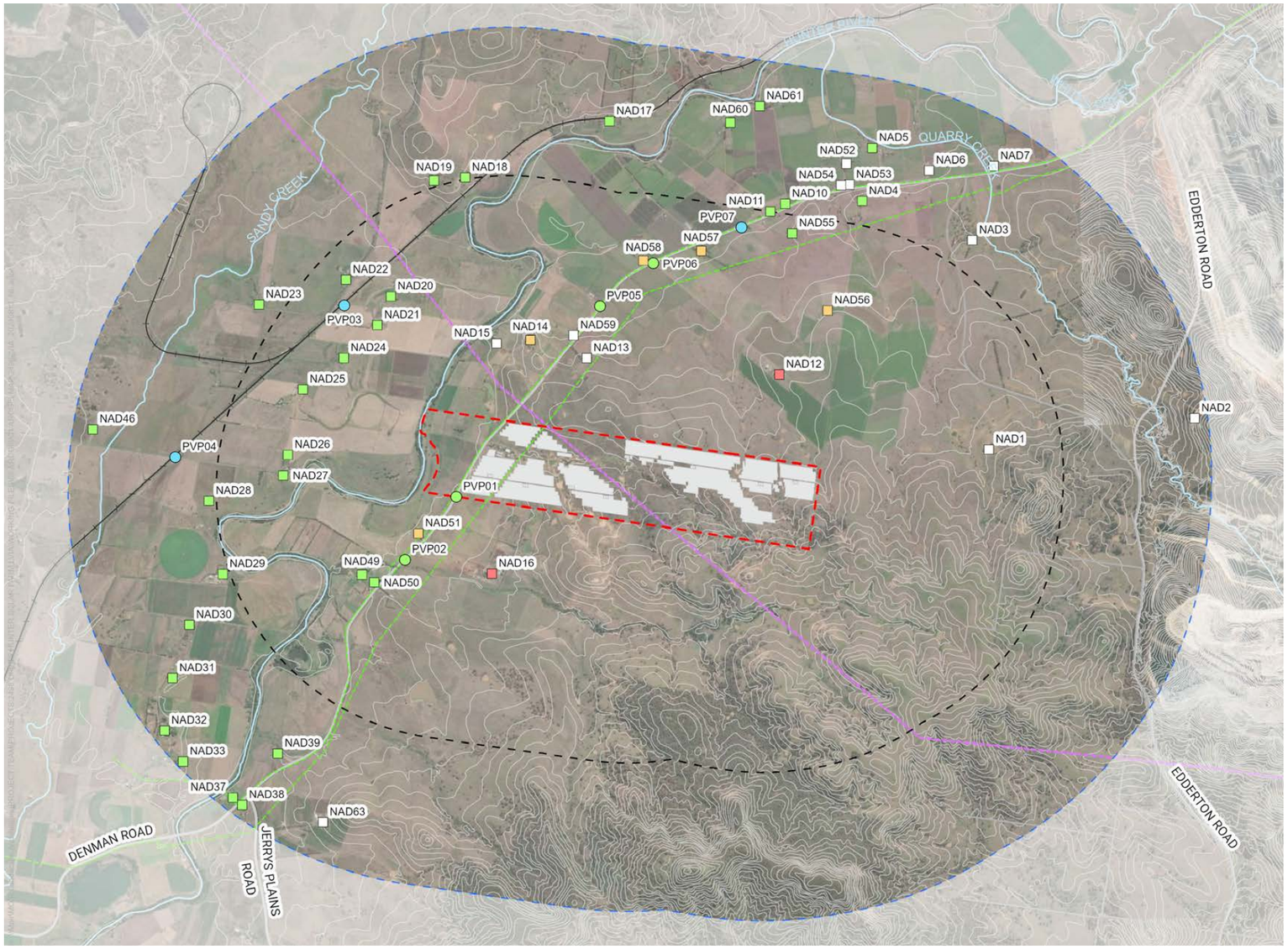
Public Viewpoints

Seven (7) viewpoints were identified within 2.5 km of the Development Footprint. Application of the Preliminary Assessment Tools identified that of the seven (7) viewpoints, four (4) viewpoints were assessed as Low visual impact, and the remaining three (3) viewpoints were assessed as Very Low visual impact (refer to **Figure 21**). Therefore the public viewpoints do not require further assessment in accordance with the Guidelines.

Detailed results of the Simple Assessment can be found in **Appendix A.**

SUMMARY OF SIMPLE ASSESSMENT										
Receptor ID	Viewpoint Type	Scenic Quality	Viewpoint Sensitivity	Potential Visual Sensitivity	Vertical FOV	Horizontal FOV	Maximum Occupied Cells	Potential Magnitude	Potential Visual Impact Rating	Assessment Requirements
NAD12	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	100º (10 cells)	40	**Very High**	**High**	**Intermediate Assessment Required**
NAD14	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	90º (9 cells)	36	**High**	**Moderate**	**Intermediate Assessment Required**
NAD16	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	100º (10 cells)	40	**Very High**	**High**	**Intermediate Assessment Required**
NAD51	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	48º (5 cells)	20	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD56	Rural Dwelling	Low	Moderate	**Moderate**	3º (3 cells)	67º (7 cells)	21	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD57	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	77º (8 cells)	16	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD58	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	80º (8 cells)	16	**Moderate**	**Moderate**	**Intermediate Assessment Required**

Table 17 Viewpoints that require Intermediate Assessment



Simple Assessment Results

Refer to Section 6.6

LEGEND

- Site Boundary
- 4 km from Development Footprint
- 2.5 km from Development Footprint
- Development Footprint
- Potential Public Viewpoints - Very Low Visual Impact
- Potential Public Viewpoints - Low Visual Impact
- Non-Associated Dwellings - High Visual Impact
- Non-Associated Dwellings - Moderate Visual Impact
- Non-Associated Dwellings - Low Visual Impact
- Non-Associated Dwellings With No Visibility
- Existing 500kV Transmission Line
- Existing 66kV Transmission Line
- Railway
- Roads

0 0.5 1 1.5 2 km

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

07 Intermediate Assessment

7.0 Intermediate Assessment

7.1 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 Tools.

The methodology for calculating the magnitude of a Project is outlined in **Section 5.4.2**.

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.

7.2 Results of Intermediate Assessment Tool

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

Seven (7) private viewpoints were identified as requiring Intermediate Assessment. All seven (7) private viewpoints resulted in a Low visual impact rating in the Intermediate Assessment, therefore, no viewpoints require further Detailed Assessment.

The results are shown in **Table 18**, and the wireframe assessment can be found in **Appendix B**.

Public Viewpoints

No public viewpoints were identified as requiring an Intermediate Assessment based on the Simple Assessment results.

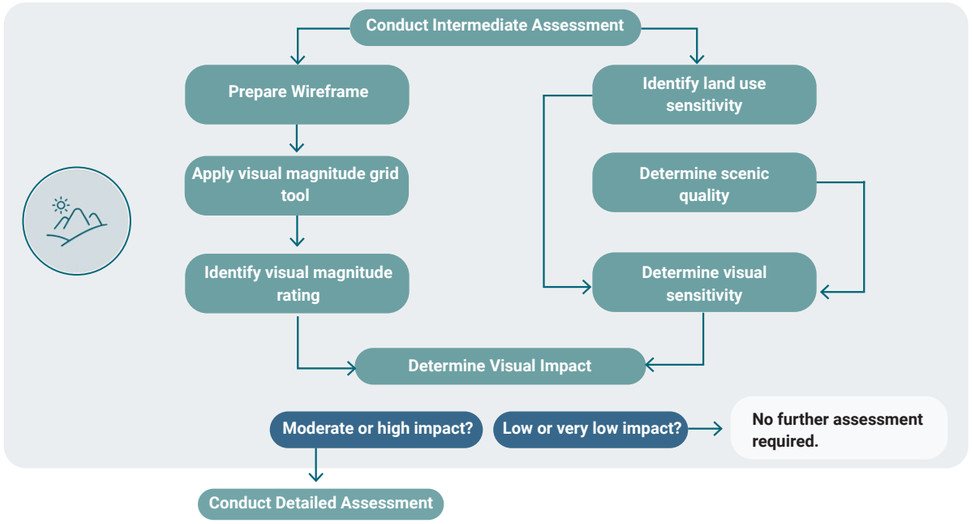
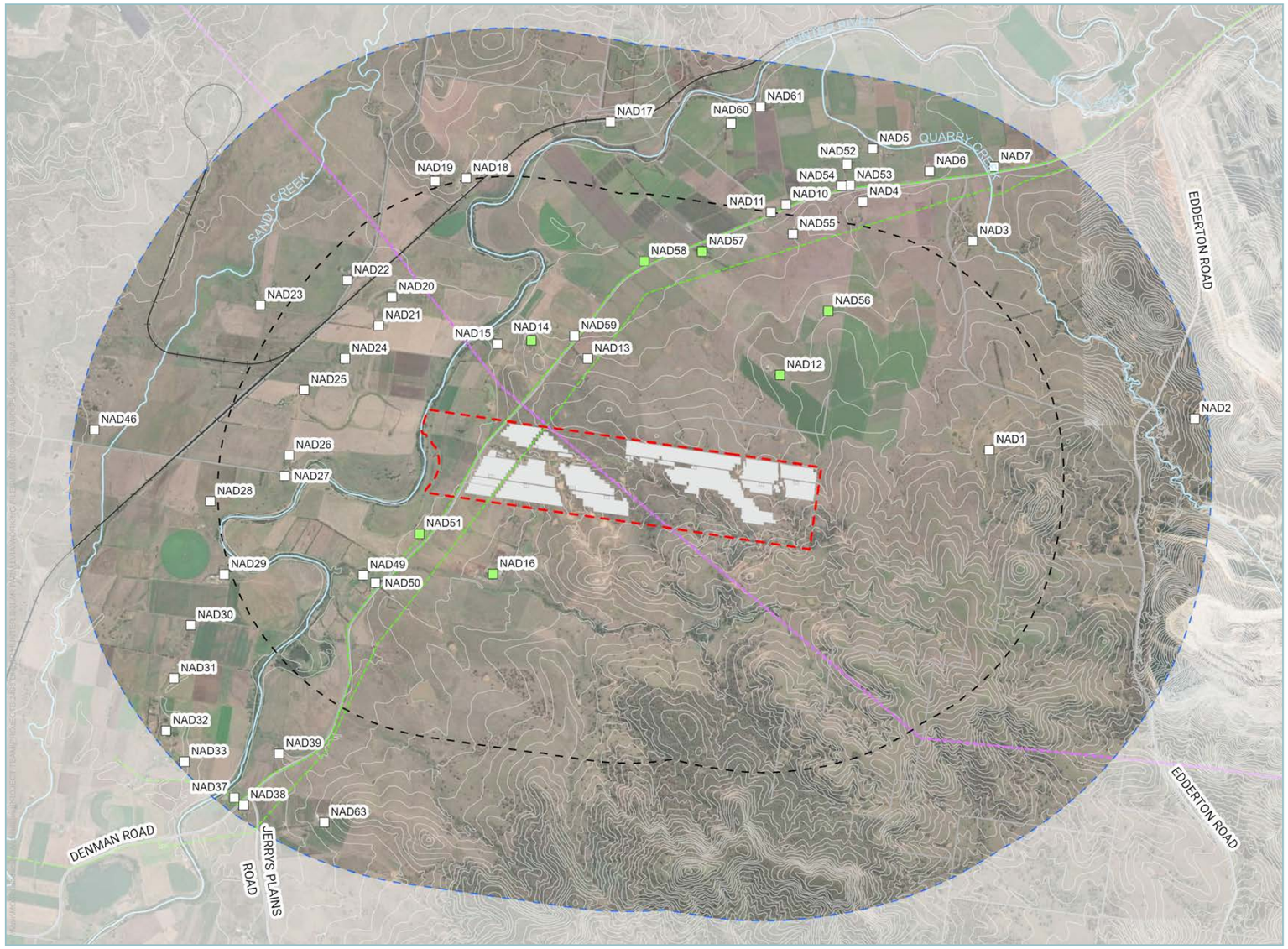


Figure 22 Intermediate Assessment Overview

SUMMARY OF INTERMEDIATE ASSESSMENT								
Receptor ID	Viewpoint Type	Scenic Quality	Viewpoint Sensitivity	Visual Sensitivity	Occupied Cells (Wireframe)	Visual Magnitude	Visual Impact Rating	Assessment Requirements
NAD12	Rural Dwelling	Low	Moderate	**Moderate**	10	**Low**	**Low**	No Further Assessment Required
NAD14	Rural Dwelling	Low	Moderate	**Moderate**	0	**Very Low**	**Low**	No Further Assessment Required
NAD16	Rural Dwelling	Low	Moderate	**Moderate**	7	**Very Low**	**Low**	No Further Assessment Required
NAD16a	Rural Dwelling	Low	Moderate	**Moderate**	7	**Very Low**	**Low**	No Further Assessment Required
NAD51	Rural Dwelling	Low	Moderate	**Moderate**	7	**Very Low**	**Low**	No Further Assessment Required
NAD56	Rural Dwelling	Low	Moderate	**Moderate**	2	**Very Low**	**Low**	No Further Assessment Required
NAD57	Rural Dwelling	Low	Moderate	**Moderate**	3	**Very Low**	**Low**	No Further Assessment Required
NAD58	Rural Dwelling	Low	Moderate	**Moderate**	2	**Very Low**	**Low**	No Further Assessment Required

Table 18 Results of Intermediate Assessment



Intermediate Assessment Results

Refer to Section 7.0

LEGEND

- Site Boundary
- 4 km from Development Footprint
- 2.5 km from Development Footprint
- Development Footprint
- Non-Associated Dwellings - Low Visual Impact
- Not Assessed in the Intermediate Assessment
- Railway
- Roads
- Watercourse
- Contour
- Existing 66kV Transmission Line
- Existing 500kV Transmission Line

0 0.5 1 1.5 2 km

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 5.4.3**.

The results of the Intermediate Assessment identified that no receptors require a Detailed Assessment.

The results of the cumulative visual impact assessment identified that two (2) non-associated dwellings required a Detailed Assessment, however permission was not given to access the site therefore the assessment could not be undertaken. The worst-case scenario was assumed, findings are detailed in **Section 11.4** and **Appendix B.**

09 Associated Infrastructure

9.0 Associated Infrastructure

8.2 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 on the EIS, the ancillary infrastructure located within the Project Area includes the following items:

- On-Site Substations and associated Switchgear;
- Electrical Reticulation connecting the Project Elements;
- BESS and associated switch and electrical equipment;
- Access Roads;
- Operations and Management Facility (O&M Facility)
- Security Fencing; and
- Temporary Construction Compounds and Laydown Areas

8.2.1 BESS, Switchyard & Substations

The high voltage (HV) substation is located on the western boundary of the Project Area, adjacent to Denman Road, with the proposed BESS located behind it to the east. The final design of the HV substation and BESS will be further refined during the detailed design phase of the Project.

Due to its proximity and lack of tall roadside vegetation, the BESS and substation will be visible when travelling on Denman Road. Denman Road is a local road with a low receptor sensitivity and lies within a low scenic quality area. Therefore, the presence of the BESS and substation infrastructure will not be detrimental to the existing landscape character, where existing energy infrastructure is already present.

Views from non-associated dwellings within 2.5 km of the BESS and substation are limited due to the undulating topography and other existing intervening elements, such as vegetation and surrounding ancillary buildings.

Therefore, the overall visual impact will be low.

8.2.2 Electrical Reticulation

The Project proposes two transmission lines to connect the PV array to the on-site substation and the existing High-Voltage transmission line. The transmission line design will be refined in the detailed design stage of the Project.

However, due to 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.

The overall visual impact will be low.

8.2.3 Temporary Construction Laydown Areas

The construction laydown area is located on the western boundary of the Project Area adjacent to Denman Road, and will be visible from this road receptor due to the lack of intervening screening elements.

Views from non-associated dwellings within 2.5 km of the Project are limited due to the undulating topography, existing intervening elements such as vegetation and surrounding ancillary buildings and ther temporary nature of the laydown area.

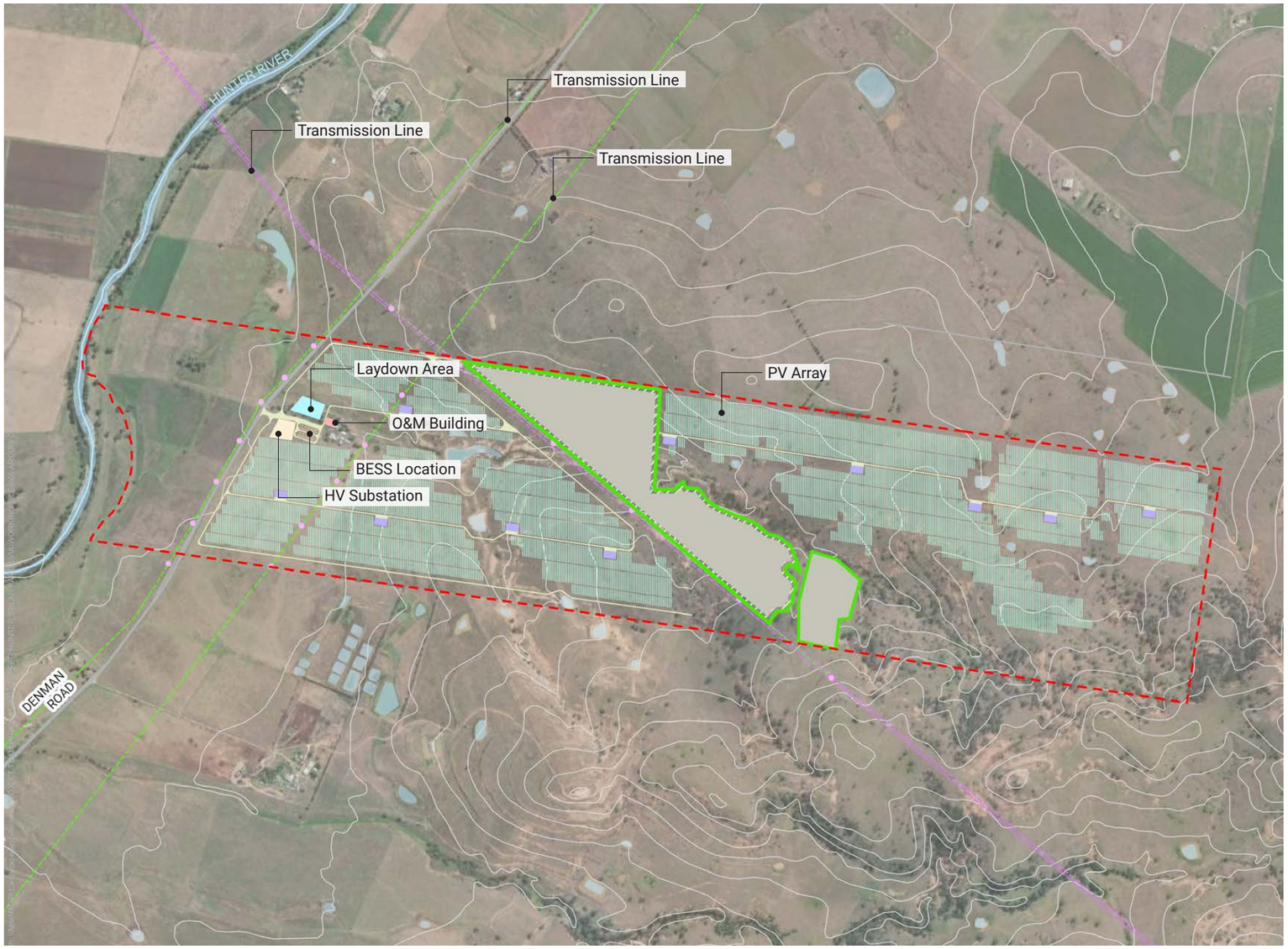
The overall visual impact will be low.

8.3 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 8.2

LEGEND

- Site Boundary
- BESS
- HV Substation
- Laydown Area
- O&M
- Solar PV Array
- Substations
- Internal Roads
- Poles
- Denman BESS Site Boundary
- Denman BESS Development Footprint
- Existing 66kV Transmission Line
- Existing 500kV Transmission Line
- Lakes & Dams
- Arterial Road
- Contour

0 0.25 0.5 0.75 1 km

Figure 24 Associated Infrastructure
Basemap Source - ESRI, 2024

10 Lots With Dwelling Entitlements

10.0 Lots with Dwelling Entitlements

10.1 Dwelling Entitlement Assessment Requirements

The SEARs issued for the Project outlines the following assessment requirements for the LCVIA:
"*a detailed assessment of the likely visual impacts... of all components of the project on surrounding dwellings (including approved developments, lodged development applications and dwelling entitlements*)"

There are no lots within 4.0 km of the Project with dwelling entitlements, therefore no further assessment is required.

11 Cumulative Impact Assessment

11.0 Cumulative Impact Assessment

11.1 Cumulative Impacts on Broader Landscape Character

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. **Figure 25** shows the locations of the surrounding developments in the region and highlights developments within 5.0 km and 8.0 km 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" and;*
- *"The application of the cumulative tool (to a distance of 8km from a dwelling or public viewpoint) is based on visibility research which found turbines and objects recede into the background in terms of visibility at 8km."*

11.2 Nearby Developments Within Study Area

Within 5.0 km of the Project there are three (3) large scale renewable energy developments:

- Denman BESS (Adjacent to Project)
- Edderton Solar Park - Mayfield Cluster (approx. 0.9 km from Project)
- Denman Road Solar Park (approx. 1.1 km from Project)

An assessment using viewshed analysis was undertaken to determine the level of visibility toward the Project and nearby developments based on topography alone. The assessment considered a 4 km Study Area from the Project and the three (3) nearby developments to determine non-associated residences with a potential line of sight to multiple developments.

Cumulative viewshed mapping (refer to **Figure 26**) indicates that a small section of the Study Area has the potential to view all three (3) nearby energy developments simultaneously with the Project. However, all receptors within this area were established as low visual impact during the Simple Assessment; therefore, due to the distance and intervening topography, vegetation, and built structures, it is unlikely that all Projects would be visible in actuality. Cumulative visual impacts on surrounding private receptors has been outlined in **Table 19**.

11.2.1 Denman BESS

Denman Renewable Energy Hub is the name given to both the Project and the Denman BESS. Both the Project and Denman BESS are located on Lot 4 DP 6090, however Denman BESS has been assessed as part of a separate EIS (SSD-76189216). As shown in **Figure 25**, the Denman BESS project boundary is located in between the two sections of the solar farm in the Project Area. Due to this placement and the similar size of the BESS modules to the PV Array, it is likely that Denman BESS will seamlessly blend into the Project, and will not appear as separate from the Project. Therefore the cumulative impacts will be low.

11.2.2 Edderton Solar Park - Mayfield Cluster

The Edderton Solar Park is located approximately 0.9 km south of the Project. Viewshed mapping (refer to **Figure 26**) indicates that receptors to the south and west have potential views toward the Project and ESP. However, the Simple Assessment indicated most of these receptors were very low or low impact. The Intermediate Assessment indicated that the remaining receptors had a low impact due to intervening topography. Existing structures and vegetation will also assist in fragmenting views toward the Project. Due to the proximity of NAD16 to ESP, this receptor has a higher chance of cumulative impacts, refer to results in **Table 19**.

11.2.3 Denman Road Solar Park

The Denman Road Solar Park is located approximately 1.1 km north of the Project. Viewshed mapping (refer to **Figure 26**) indicates that receptors to the north and west have potential views toward the Project and DRSP. However, the Simple Assessment indicated most of these receptors were very low or low impact. The Intermediate Assessment indicated that the remaining receptors had a low impact due to intervening topography. However, due to the location of NAD12, this receptor has the potential to view the Project, and DRSP in a close radius. The cumulative impacts on NAD12 are discussed in **Table 19**.

11.3 Cumulative Impacts on Public Receptors

The viewshed mapping (refer to **Figure 26**) indicates that there are potential cumulative impacts to Denman Road, Mangoola Road and Merriwa Railway Line.

Mangoola Road is likely to have negligible impacts due to the distance from the Project and nearby developments. The public viewpoints from Mangoola Road were identified as very low visual impact.

Merriwa railway Line is located parallel to Mangoola Road and similarly is predicted to have very low visual impact from the Project and nearby developments.

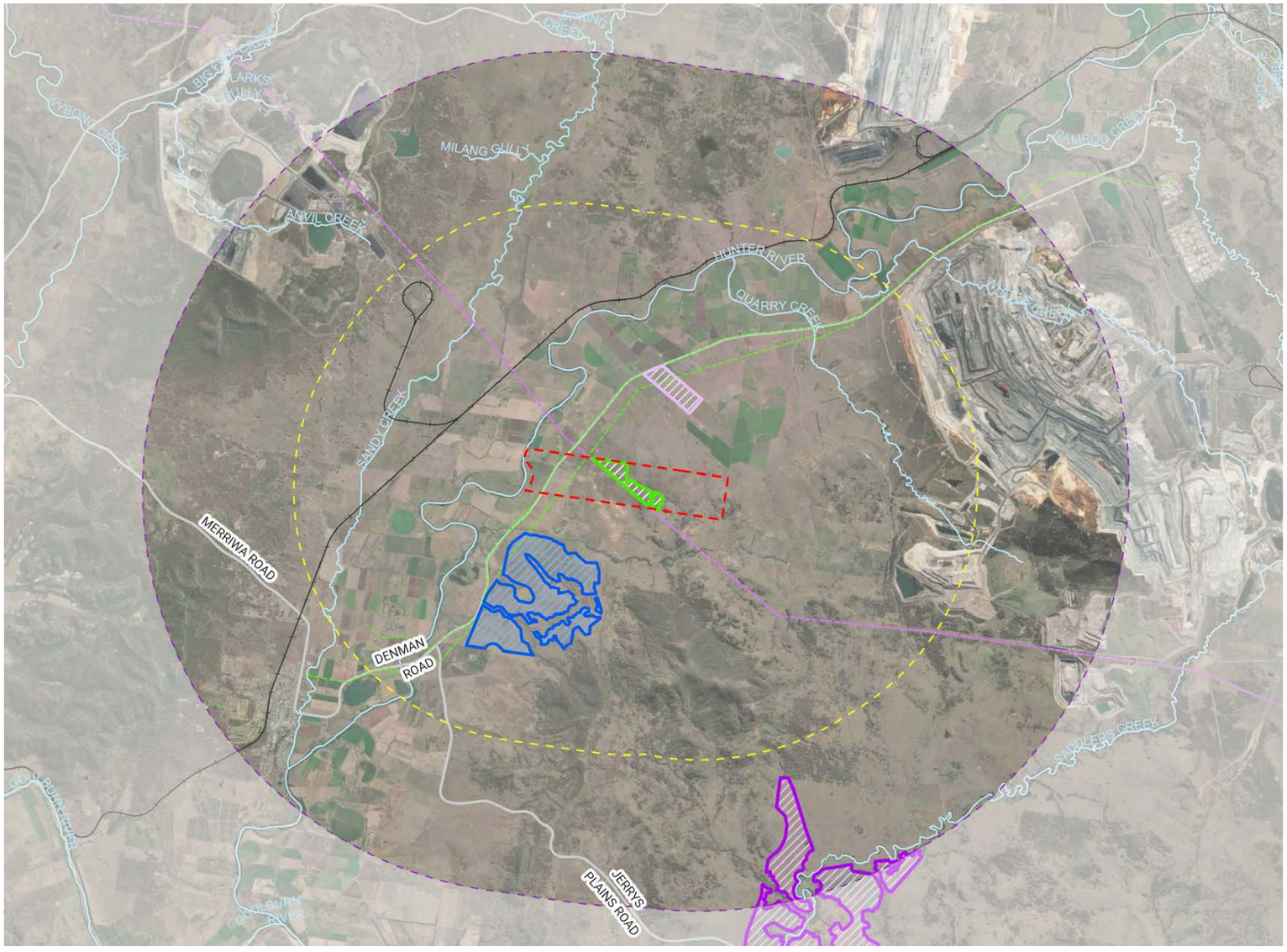
Denman Road is located adjacent to the Project and all three (3) nearby developments. The magnitude of change along this travel receptor is high, however; due to the speed of travel and the very low visual sensitivity of the road corridor, the overall visual impact is low.

There are no other public receptors within the Study Area that are not road or railway receptors.

11.4 Cumulative Impacts on Private Receptors

The viewshed mapping (refer to **Figure 26**) indicates that there are potential cumulative impacts on surrounding private receptors. Cumulative impacts have been considered as 'not applicable' to receptors that were identified as Very Low or Low visual impact in the Simple Assessment, as the Project will not significantly contribute to cumulative impacts at these receptors. The results of the cumulative impact assessment are outlined in **Table 19**.

Two (2) receptors (NAD16 and NAD16a) returned a Moderate visual impact when considering cumulative visual impacts in the Intermediate Assessment. A Detailed Assessment was unable to be undertaken due to inability to access the site. Based on aerial imagery and on-site fieldwork along Denman Road, it has been identified that there is little vegetation or other elements to screen the Project. Mitigation is required, however screening the Project will not reduce visual impacts to an acceptable level, as the majority of the impact occurs from Edderton Solar Park. However, providing mitigation will reduce the cumulative visual impacts caused by the Project. Further mitigation measures will be required from ESP to reduce overall visual impacts at NAD16 and NAD16a to an acceptable level.



Nearby Renewable Projects

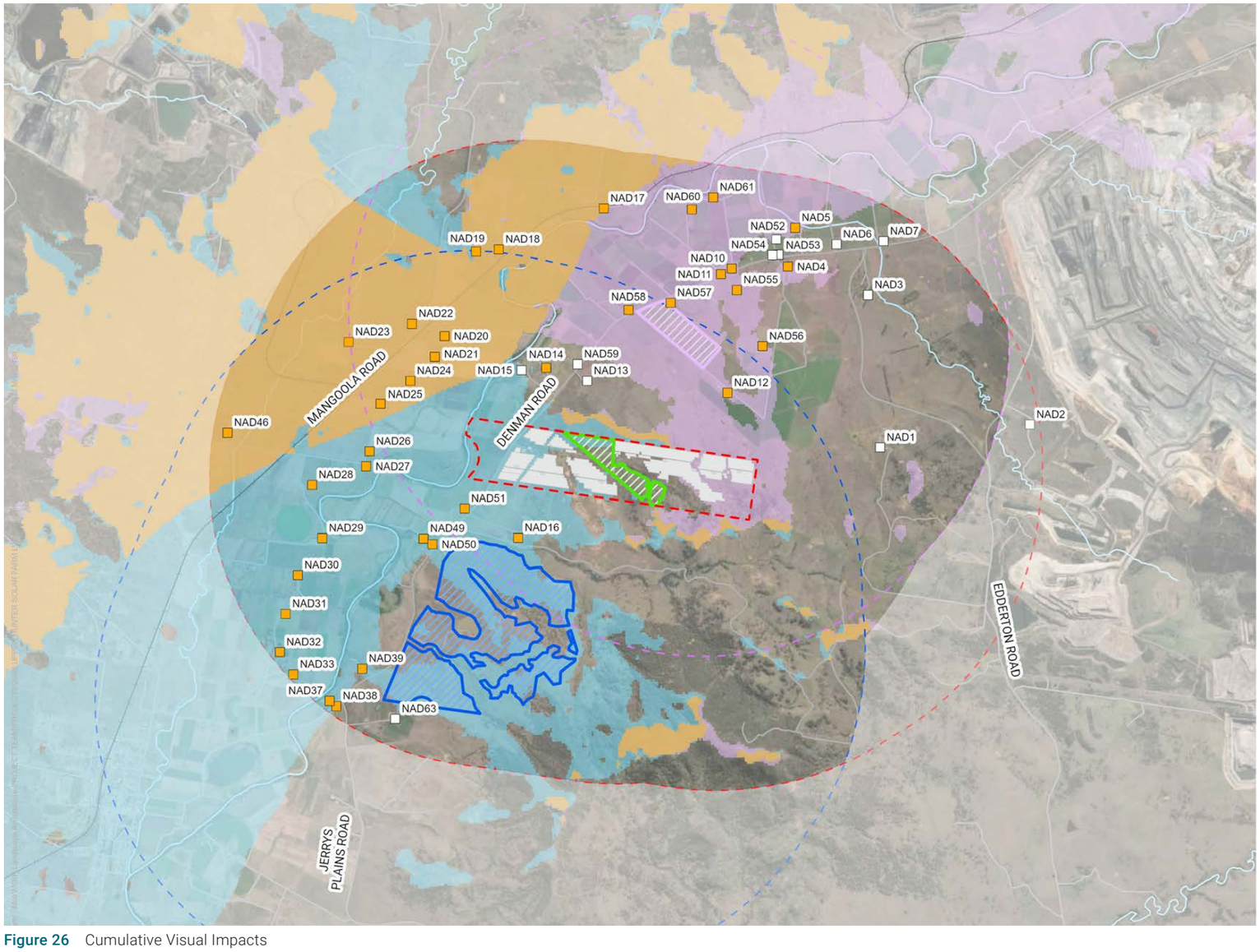
Refer to Section 11.1

LEGEND

- Site Boundary
- 8.0 km from Development Footprint
- 5.0 km from Development Footprint
- Denman BESS Site Boundary
- Edderton Solar Park (Mayfield Cluster)
- Denman Road Solar Park Boundary
- Edderton Solar Park (Bowfield Cluster)
- Railway
- Roads
- Watercourse
- Existing 500kV Transmission Line
- Existing 66kV Transmission Line

0 1 2 3 4 km

Figure 25 Nearby Renewable Projects
Basemap Source - ESRI, 2024



Cumulative Visual Impacts

Refer to Section 11.1

LEGEND

- Site Boundary
- 4 km from Development Footprint
- 4 km from ESP
- 4 km from DRSP
- Non-Associated Dwellings Within 4 km
- Non-Associated Dwellings With No Visibility
- DevelopmentFootrpint
- Denman BESS Site Boundary
- Denman Road Solar Park Boundary
- Edderton Solar Park (Mayfield Arrays)
- Visibility of the Project, ESP & DRSP
- Visibility of the Project & ESP
- Visibility of the Project & DRSP
- Railway
- Roads
- Watercourse

0 1 2 3 4 km

Figure 26 Cumulative Visual Impacts
Basemap Source - ESRI, 2024

Summary of Cumulative Impact				
Receptor ID	**Other Visible Projects within 4.0 km***	**Viewpoint Type**	**Results of Intermediate Assessment**	**Potential Cumulative Impacts**
NAD10	DRSP	Dwelling	NA	NA
NAD11	DRSP	Dwelling	NA	NA
NAD12	DRSP	Dwelling	Low	Aerial imagery shows that the curtilage of the dwelling includes vegetation and buildings that contribute to screening the nearby projects, views toward DRSP will also be screened by the proposed screen planting as outlined in the approved DRSP plans. Furthermore, aerial imagery and ground truthing identified existing vegetation along the northern boundary of the Project, further filtering views to the Project. Therefore, the Project is unlikely to contribute to cumulative visual impacts from this receptor. In addition, this dwelling was rated as Low visual impact in the Intermediate Assessment.
NAD14	ESP, DRSP	Dwelling	Low	As identified in the Intermediate Assessment, views toward the Project are negligible due to intervening topography. Therefore, the Project does not contribute to cumulative impacts at this receptor.
NAD16	ESP	Dwelling	Low	As identified in the Intermediate Assessment, majority of the Project is screened by intervening topography, resulting in a Low visual impact. However, combined with the view toward ESP, the visual impact rating is Moderate (refer to **Appendix B**). Due to the cumulative visual impact, mitigation is recommended at the receptor site (refer to **Section 14.0**).
NAD16a	ESP	Dwelling (identified as dual occupancy to NAD16)		As identified in the Intermediate Assessment, majority of the Project is screened by intervening topography, resulting in a Low visual impact. However, combined with the view toward ESP, the visual impact rating is Moderate (refer to **Appendix B**). Due to the cumulative visual impact, mitigation is recommended at the receptor site (refer to **Section 14.0**).
NAD17	DRSP	Dwelling	NA	NA
NAD18	DRSP	Dwelling	NA	NA
NAD19	ESP, DRSP	Dwelling	NA	NA
NAD20	ESP, DRSP	Dwelling	NA	NA
NAD21	ESP, DRSP	Dwelling	NA	NA
NAD22	ESP, DRSP	Dwelling	NA	NA
NAD23	ESP	Dwelling	NA	NA
NAD24	ESP, DRSP	Dwelling	NA	NA
NAD25	ESP, DRSP	Dwelling	NA	NA
NAD26	ESP	Dwelling	NA	NA

Table 19 Cumulative Visual Impacts on Surrounding Receptors

Summary of Cumulative Impact				
Receptor ID	**Other Visible Projects within 4.0 km***	**Viewpoint Type**	**Results of Intermediate Assessment**	**Potential Cumulative Impacts**
NAD27	ESP	Dwelling	NA	NA
NAD28	ESP	Dwelling	NA	NA
NAD29	ESP	Dwelling	NA	NA
NAD30	ESP	Dwelling	NA	NA
NAD31	ESP	Dwelling	NA	NA
NAD32	ESP	Dwelling	NA	NA
NAD33	ESP	Dwelling	NA	NA
NAD37	ESP	Dwelling	NA	NA
NAD38	ESP	Dwelling	NA	NA
NAD39	ESP	Dwelling	NA	NA
NAD4	DRSP	Dwelling	NA	NA
NAD46	ESP	Dwelling	NA	NA
NAD49	ESP	Dwelling	NA	NA
NAD5	DRSP	Dwelling	NA	NA
NAD50	ESP	Dwelling	NA	NA
NAD51	ESP	Dwelling	Low	As identified in the Intermediate Assessment, a large portion of the Project is screened by intervening topography, resulting in a Low visual impact. Vegetation in the immediate curtilage of the dwelling is likely to fragment or screen views toward ESP, and views toward are likely to be minimal due to the position behind the Project. Therefore the cumulative impacts are likely to be Low at this receptor.
NAD55	DRSP	Dwelling	NA	NA

Table 19 continued. Cumulative Visual Impacts on Surrounding Receptors

Summary of Cumulative Impact				
Receptor ID	**Other Visible Projects within 4.0 km***	**Viewpoint Type**	**Results of Intermediate Assessment**	**Potential Cumulative Impacts**
NAD56	DRSP	Dwelling	Low	As identified in the Intermediate Assessment, views toward the Project have a very low visual magnitude due to intervening topography. Therefore, the Project does not contribute to cumulative impacts at this receptor.
NAD57	DRSP	Dwelling	Low	As identified in the Intermediate Assessment, views toward the Project have a very low visual magnitude due to intervening topography. Furthermore, the Project will be viewed behind DRSP. Therefore, any visibility to the Project will likely be screened by panels associated with DRSP, and further screened by surrounding vegetation in the immediate curtilage of the dwelling.
NAD58	DRSP	Dwelling	Low	As identified in the Intermediate Assessment, views toward the Project have a very low visual magnitude due to intervening topography. Furthermore, aerial imagery and ground truthing identified existing vegetation surrounding the curtilage of the dwelling, further filtering views to the Project. Therefore, the Project is unlikely to contribute to cumulative visual impacts from this receptor.
NAD60	DRSP	Dwelling	NA	NA
NAD61	DRSP	Dwelling	NA	NA

Table 19 continued. Cumulative Visual Impacts on Surrounding Receptors

12 Nightlighting

12.0 Nightlighting

12.1 Overview of Potential Nightlighting Sources

The SEARs issued for the Project outline the following assessment requirements for the LCVIA: "a detailed assessment of the likely visual impacts (including night lighting) of all components of the project on surrounding residences (including approved developments, lodged development applications and dwelling entitlements) (...)."

Due to the relatively rural location of the Project, minimal existing sources of lighting are present in the night-time landscape of the Study Area. Existing lighting associated with rural dwellings and motor vehicles are dispersed around the Study Area. Lighting impacts resulting from the Project are unlikely to be experienced inside a dwelling as internal lights reflect on windows and limit views to the exterior at night. Isolated receptors within the Study Area experience a night sky with minimal light sources.

The requirements for nightlighting of ancillary infrastructure for this Project are generally limited to security lighting to the substation and within the operations & maintenance facility. The light sources are limited to low-level lighting for security, night-time maintenance and emergency purposes. No permanently illuminated lighting would be installed. The proposed ancillary infrastructure has been sited to minimise visibility from existing receptors and publicly accessible viewpoints. It is unlikely the proposed nightlighting associated with the ancillary infrastructure would create a noticeable impact on the existing night-time landscape.

12.2 Design Principles

The following recommendations have been developed considering the principles outlined in relevant best practice guidelines for lighting design. The Dark Sky Planning Guidelines (hereafter referred to as the Dark Sky Guidelines) (DPHI, 2023) provide lighting practices that support the maintenance of a dark sky and improve lighting practices. The Dark Sky Guidelines are related to developments within 200 km of the Siding Spring Observatory.

Half of the Project is located within this zone, the closest point of the Project is approximately 198 km from the Observatory. Due to the distance from the observatory, there is not likely to be impact from a lighting perspective. The Project is located outside the zone where either lighting measures or LEP requirements apply; however, these guidelines provide relevant guidance to reduce potential light pollution that can be used for lighting design for the ancillary infrastructure associated with the Project.

The National Light Pollution Guidelines for Wildlife (DCCEEW, 2023) may also be considered during the detailed design phase for nightlighting considerations.

Control the Level of Lighting

- Only use lighting for areas that require lighting, i.e. paths and building entry points.
- Reduce the duration of lighting.
- Switch off lighting when not required.
- Consider using sensors to activate lighting and timers to switch off lighting.

Lighting Design

- Use the lowest intensity required for the job.
- Use energy-efficient bulbs and warm colours.
- Direct light downwards to eliminate.
- Ensure lights are not directed at reflective surfaces.
- Use non-reflective dark-coloured surfaces to reduce the reflection of lighting (**Figure 27**).
- Keep lights close to the ground and directed downwards (**Figure 28**).
- Use light shield fittings to avoid light spills (**Figure 29**).

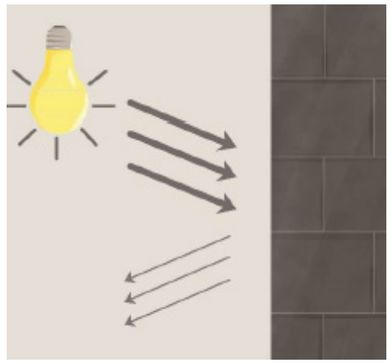


Figure 27 Surface Reflectivity

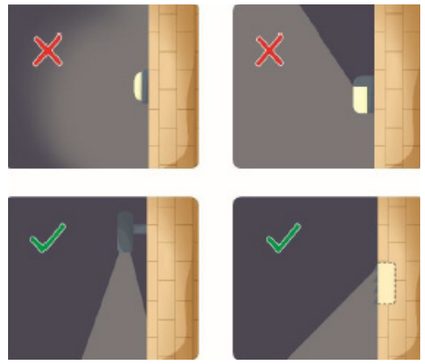


Figure 28 Downward Lighting

Figure 29 Light Shielding
Source - Department of Environment and Energy National Light Pollution Guidelines for Wildlife 2020

13 Glint & Glare Assessment

13.0 Glint & Glare Assessment

13.1 Glint & Glare Principles & Requirements

The fundamental principles for ensuring the Project can be undertaken whilst maintaining an acceptable level of amenity are outlined in the Guidelines as follows:

- *Solar panels should be sited to reduce the likely impacts of glint and glare.*
- *Solar panels and other infrastructure should be constructed of materials and treated to minimise glint and glare.*
- *If large-scale solar energy development is likely to exceed the relevant criteria for glare and standards for glint, mitigation strategies must be adopted to reduce the impacts.*

The Glint and Glare Assessment has been prepared in accordance with the DPHI guideline. The objective of the assessment, as stated in the Guideline, is to *"demonstrate that glint and glare would not pose a significant risk to motorists or pilots and that nuisance from glare is minimised for residential locations in accordance with the objectives outlined in [the Guideline]"* (DPHI, 2024).

In accordance with the requirements outlined in the Guideline and the Technical Supplement, a Glint and Glare Assessment has been undertaken and is included in **Appendix C** of this report.

Residential Viewpoints

Assess all residential dwellings within 3 km of the development footprint that have a line of sight.

Road and Rail Viewpoints

Assess all roads and rail lines within 1 km of the development footprint.

Aviation Viewpoints

Assess all air traffic control towers and take off / landing approaches to any runway or landing strip within 5 km of the development footprint.

Performance Objectives

Summary of the assessment with reference to performance objectives.

Mitigation Recommendations

Overview of proposed strategies to either avoid or mitigate impacts.

13.2 Summary of Assessment Results

The purpose of the Glint and Glare assessment is to identify potential glint and glare impacts from the Project on the surrounding residential receptors (within 3 km of development footprint), road and rail receptors (within 1 km of the development footprint) and aviation receptors (within 5 km of the development footprint).

The following summarises the key findings based on the assumptions and parameters above.

13.2.1 Private Receptors

A total of 32 Observation Points (OP), i.e. non-associated dwellings, were identified within 3 km of the PV Array Areas. None of the receptors experience potential 'yellow' glare. Eight (8) of the receptors may experience low levels of potential 'green' glare (less than 10 per year), and do not require mitigation.

13.2.2 Road and Rail Receptors

No rail receptors were identified within 1 km of the PV Array Areas. One (1) road receptor, Denman Road, was identified within 1 km of the PV Array Areas. The road receptor does not experience potential 'yellow' glare from the Project. Denman Road may experience low levels of potential 'green' glare (2.5 hours per year), and does not require mitigation.

13.2.3 Aviation Receptors

No aviation receptors were identified within 5 km of the PV Array Areas.

13.3 Mitigation Measures

As there are no or low glare impacts, no mitigation is required in accordance with the Performance Objectives in the Guideline.

14 Performance Objectives & Mitigation

14.0 Performance Objectives & Mitigation

14.1 Mitigation Requirements

As a result of the Simple and Intermediate Assessment, all non-associated dwellings and public viewpoints were identified as Very Low or Low visual impact. In accordance with the Visual Performance Objectives in the Technical Supplement (refer to **Table 20**), no mitigation is required. However the cumulative visual impact assessment identified two (2) non-associated dwellings with a Moderate visual impact, and require mitigation to reduce the visual impact at these locations.

14.2 Mitigation Recommendations

Considering the Moderate visual impact occurs in a small, localised area, off-site screen planting is proposed to assist in mitigating the visual impact of the Project from these specific locations. It should be noted that the screen planting will mitigate the visual impacts of the Project, not the total cumulative impact identified from ESP.

In order to achieve visual screening between the Project and the dwelling, tree planting should be undertaken. This should be in consultation with the relevant landowners to ensure that desirable views are not inadvertently lost in an effort to mitigate views of the Project. Examples of how screen planting could be used to mitigate potential views toward the Project from Dwellings NAD16 and NAD16a are shown in **Figure 30** and **Figure 31**. Note that this is an example only and a detailed analysis will be required to determine the extent of visibility, existing screening elements and the orientation of the dwelling and its primary views.

14.2.1 Landscaping Principles

The existing character of the landscape allows for landscape and visual screening which will integrate with the existing landscape character. General guidelines to adhere to when planning for landscaping and visual screening include:

- Planting is recommended post construction in consultation with the landowner.
- Species selection is to be typical of the area.
- Planting layout should avoid screening views of the broader landscape.
- Avoid the clearing of existing vegetation. Where appropriate reinstate any lost vegetation.
- 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.

VISUAL SENSITIVITY MATRIX	
HIGH VISUAL IMPACT	This level of visual impact should be avoided unless the applicant can justify that: • All reasonable efforts have been made to avoid the impact and alternative project designs are not feasible or would be unlikely to materially reduce the impact. • All reasonable mitigation options have been considered. • The proposed mitigation measures would effectively mitigate the impact and would not result in a significant obstruction of views. • The project site is strategically important because of its location. • The project is in the public interest.
MODERATE VISUAL IMPACT	For public road viewpoints: • The applicant should seek to reduce moderate visual impacts where feasible and reasonable. • Mitigation could include vegetation or other screening. • Mitigation should only be considered if it would not obstruct important views and sightlines. • Mitigation can be confined to a relatively small area (i.e. vegetation screening would not be required for several hundred meters along a transport corridor).
LOW & VERY LOW VISUAL IMPACT	No mitigation is required.

Table 20 Visual Performance Objectives

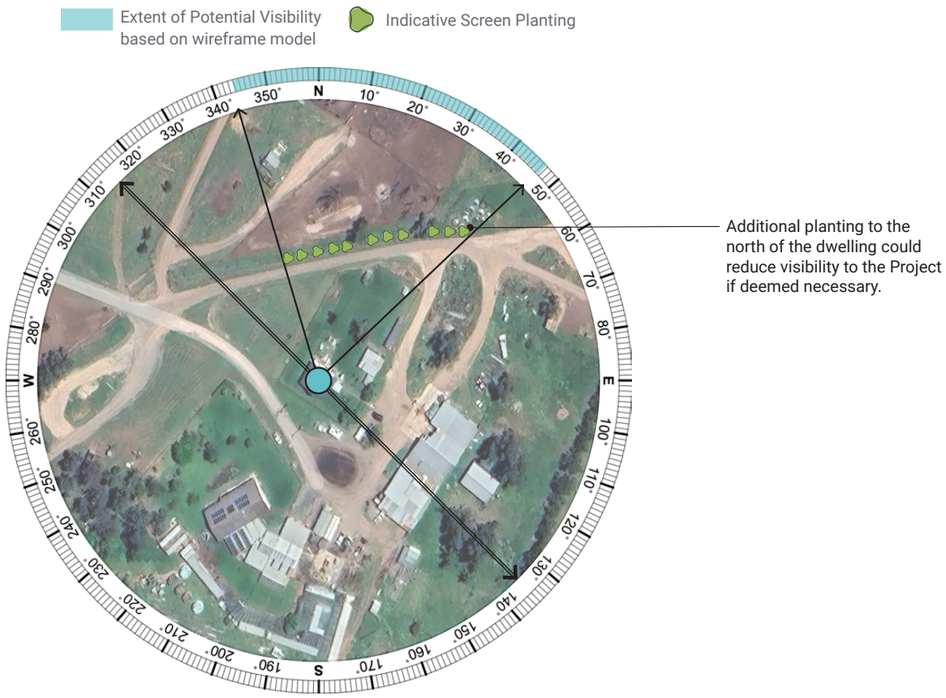


Figure 30 Example of on-site screen planting at NAD16
Basemap Source - ESRI, 2025

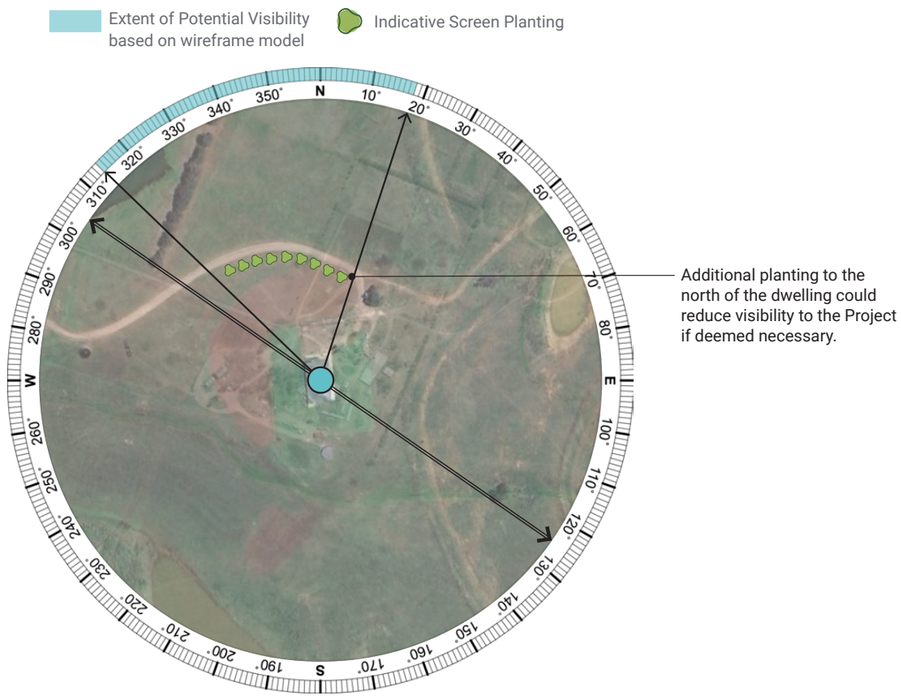


Figure 31 Example of on-site screen planting at NAD16a
Basemap Source - ESRI, 2025

15 Conclusion

15.0 Conclusion

15.1 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 October 2024 to determine the existing landscape character against which the Project has been assessed. The assessment determined the regional landscape character is typical of the Hunter Subregion and is a largely modified landscape featuring agricultural pastures and electrical and mining infrastructure .

The landscape was categorised into four (4) 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 landscape features and viewpoints within the Study Area. The Study Area is defined as 5.0 km from the Development Footprint of the Project.

Due to the undulating topography of the Project site, the Project is often partially screened by topography, and due to the lack of vertical scale of the Project, key visual features and characteristics can be maintained.

A Simple Assessment was undertaken for a total of 37 non-associated dwelling viewpoints and seven (7) public viewpoints within the Study Area. The assessment identified:

- 30 non-associated dwellings resulted in a Low visual impact and did not require further assessment.
- Five (5) non-associated dwellings resulted in a Moderate visual impact and required Intermediate Assessment.
- Two (2) non-associated dwellings resulted in a High visual impact and required Intermediate Assessment.
- Three (3) public viewpoints resulted in a Very Low visual impact and did not require further assessment.
- Four (4) public viewpoints resulted in a Low visual impact and did not require further assessment.

An Intermediate Assessment was conducted for the seven (7) non-associated dwellings identified as Moderate or High visual impact in the Simple Assessment. An additional dwelling was also identified on the same lot as NAD16, and was also assessed in the Intermediate Assessment. The assessment identified:

- All eight (8) non-associated dwellings resulted in a Low visual impact and did not require further assessment.

A cumulative visual impact assessment was conducted for the non-associated dwellings identified in the Study Area with a line of sight to the Project. Non-associated dwellings identified as Low visual impact in the Simple Assessment were not examined, as the worst-case visual impact of the Project has already been identified as Lowe and can be assumed will not significant;y contribute to cumulative impacts. Of the remaining eight (8) non-associated dwellings, the assessment identified:

- Six (6) non-associated dwellings were assessed as having Low cumulative visual impacts from the Project.
- Two (2) non-associated dwellings were assessed as having a Moderate cumulative visual impact from the Project. The dwellings impacted (NAD16 and NAD16a) were already facing Moderate impacts from Edderton Solar Park (ESP), and the visual magnitude impact from the Project is Very Low. However, the Moderate rating required further Detailed Assessment.

A Detailed Assessment was unable to be undertaken due to lack of permission to visit the property, so the worst-case impact has been assumed and mitigation is required. Off-site screen planting is recommended at the affected dwellings to reduce the visual impacts of the Project to an acceptable level.

A Glint and Glare Assessment was prepared in accordance with the Guideline and Technical Supplement. No 'yellow' glare impacts were assessed for the private receptors or the public road receptor identified within the nominated Study Areas for the assessment. No rail or aviation receptors were identified within the Study Areas. A low level of 'green' glare was identified at some of the residential receptors and the road receptor, however a low level of 'green' glare does not require mitigation in accordance with the glint and glare Performance Objectives in the Guideline.

Overall, the existing landscape within the Study Area has the ability to absorb the Project with a low degree of visual impact. In this regard, the Project satisfies the objectives as outlined in the Guideline.

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Appendix A

Simple Assessment Results

Results of Simple Assessment

SUMMARY OF SIMPLE ASSESSMENT										
Receptor ID	Viewpoint Type	Scenic Quality	Viewpoint Sensitivity	Potential Visual Sensitivity	Vertical FOV	Horizontal FOV	Maximum Occupied Cells	Potential Magnitude	Potential Visual Impact Rating	Assessment Requirements
NAD10	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	58º (5.8 cells)	11.6	**Low**	Low	No Assessment Required
NAD11	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	61º (6.1 cells)	12.2	**Low**	Low	No Assessment Required
NAD12	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	100º (10 cells)	40	**Very High**	**High**	**Intermediate Assessment Required**
NAD14	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	90º (9 cells)	36	**High**	**Moderate**	**Intermediate Assessment Required**
NAD16	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	100º (10 cells)	40	**Very High**	**High**	**Intermediate Assessment Required**
NAD17	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	52º (5.2 cells)	5.2	**Very Low**	Low	No Assessment Required
NAD18	Rural Dwelling	Low	Moderate	**Moderate**	2º (1 cells)	51º (5.1 cells)	10.2	**Low**	Low	No Assessment Required
NAD19	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	47º (4.7 cells)	9.4	**Low**	Low	No Assessment Required
NAD20	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	48º (4.8 cells)	9.6	**Low**	Low	No Assessment Required
NAD21	Rural Dwelling	Low	Moderate	**Moderate**	3º (3 cells)	47º (4.7 cells)	14.1	**Low**	Low	No Assessment Required
NAD22	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	40º (4 cells)	12	**Low**	Low	No Assessment Required
NAD23	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	26º (2.6 cells)	5.2	**Very Low**	Low	No Assessment Required
NAD24	Rural Dwelling	Low	Moderate	**Moderate**	3º (3 cells)	36º (3.6 cells)	10.8	**Low**	Low	No Assessment Required
NAD25	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	24º (2.4 cells)	4.8	**Very Low**	Low	No Assessment Required
NAD26	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	22º (2.2 cells)	4.4	**Very Low**	Low	No Assessment Required
NAD27	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	20º (2 cells)	4	**Very Low**	Low	No Assessment Required
NAD28	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	17º (1.7 cells)	2.4	**Very Low**	Low	No Assessment Required
NAD29	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	23º (2.3 cells)	4.6	**Very Low**	Low	No Assessment Required
NAD30	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	23º (2.3 cells)	2.3	**Very Low**	Low	No Assessment Required
NAD31	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	23º (2.3 cells)	2.3	**Very Low**	Low	No Assessment Required
NAD32	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	23º (2.3 cells)	2.3	**Very Low**	Low	No Assessment Required
NAD33	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	24º (2.4 cells)	2.4	**Very Low**	Low	No Assessment Required
NAD37	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	27º (2.7 cells)	2.7	**Very Low**	Low	No Assessment Required
NAD38	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	28º (2.7 cells)	2.8	**Very Low**	Low	No Assessment Required
NAD39	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	30º (3 cells)	3	**Very Low**	Low	No Assessment Required
NAD4	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	48º (4.8 cells)	9.6	**Low**	Low	No Assessment Required
NAD46	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	10º (1 cells)	1	**Very Low**	Low	No Assessment Required
NAD49	Rural Dwelling	Low	Moderate	**Moderate**	3º (3 cells)	38º (3.8 cells)	11.4	**Low**	Low	No Assessment Required
NAD5	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	43º (4.3 cells)	4.3	**Very Low**	Low	No Assessment Required
NAD50	Rural Dwelling	Low	Moderate	**Moderate**	3º (3 cells)	42º (4.2 cells)	12.6	**Low**	Low	No Assessment Required
NAD51	Rural Dwelling	Low	Moderate	**Moderate**	4º (4 cells)	48º (4.8 cells)	19.2	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD56	Rural Dwelling	Low	Moderate	**Moderate**	3º (3 cells)	67º (6.7 cells)	20.1	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD57	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	77º (7.7 cells)	15.4	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD58	Rural Dwelling	Low	Moderate	**Moderate**	2º (2 cells)	80º (8 cells)	16	**Moderate**	**Moderate**	**Intermediate Assessment Required**
NAD60	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	51º (5.1 cells)	5.1	**Very Low**	Low	No Assessment Required
NAD61	Rural Dwelling	Low	Moderate	**Moderate**	1º (1 cells)	47º (4.7 cells)	4.7	**Very Low**	Low	No Assessment Required

Table 21 Simple Assessment Results - Private Receptors

SUMMARY OF SIMPLE ASSESSMENT										
Receptor ID	Viewpoint Type	Scenic Quality	Viewpoint Sensitivity	Potential Visual Sensitivity	Vertical FOV	Horizontal FOV	Maximum Occupied Cells	Potential Magnitude	Potential Visual Impact Rating	Assessment Requirements
PVP01	Local Road	Low	Very Low	**Very Low**	4º (4 cells)	65º (6.5 cells)	26	**High**	Low	No Assessment Required
PVP02	Local Road	Low	Very Low	**Very Low**	4º (4 cells)	48º (4.8 cells)	19.2	**Moderate**	Low	No Assessment Required
PVP03	Local Road	Low	Very Low	**Very Low**	2º (2 cells)	38º (3.8 cells)	7.6	**Low**	Very Low	No Assessment Required
PVP04	Local Road	Low	Very Low	**Very Low**	2º (2 cells)	13º (1.3 cells)	2.6	**Very Low**	Very Low	No Assessment Required
PVP05	Local Road	Low	Very Low	**Very Low**	3º (3 cells)	92º (9.2 cells)	27.6	**High**	Low	No Assessment Required
PVP06	Local Road	Low	Very Low	**Very Low**	2º (2 cells)	83º (8.3 cells)	16.6	**Moderate**	Low	No Assessment Required
PVP07	Local Road	Low	Very Low	**Very Low**	2º (2 cells)	67º (6.7 cells)	13.4	**Low**	Very Low	No Assessment Required

Table 22 Simple Assessment Results - Public Receptors

Appendix B

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 37+	High	High	Moderate	Moderate
High 26 - 36	High	Moderate	Moderate	Low
Moderate 15 - 25	Moderate	Moderate	Low	Low
Low 8 - 14	Moderate	Low	Low	Very Low
Very Low 1 - 7	Low	Low	Very Low	Very Low

Detailed Assessment Required:

Yes/No

Any dwellings with a moderate or high visual impact will require a detailed assessment.

(including a site visit and photomontage)

Results of Intermediate Assessment

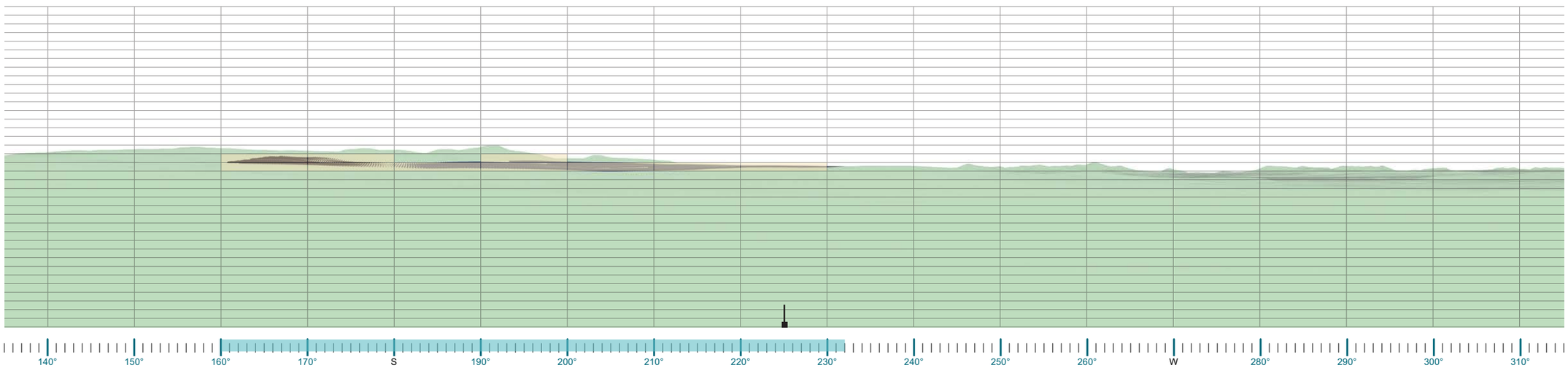
SUMMARY OF SIMPLE ASSESSMENT								
Receptor ID	Viewpoint Type	Scenic Quality	Viewpoint Sensitivity	Visual Sensitivity	Occupied Cells (Wireframe)	Visual Magnitude	Visual Impact Rating	Assessment Requirements
NAD12	Rural Dwelling	Low	Moderate	**Moderate**	10	**Low**	**Low**	No Further Assessment Required
NAD14	Rural Dwelling	Low	Moderate	**Moderate**	0	**Very Low**	**Low**	No Further Assessment Required
NAD16	Rural Dwelling	Low	Moderate	**Moderate**	7	**Very Low**	**Low**	No Further Assessment Required
NAD16a	Rural Dwelling	Low	Moderate	**Moderate**	7	**Very Low**	**Low**	No Further Assessment Required
NAD51	Rural Dwelling	Low	Moderate	**Moderate**	7	**Very Low**	**Low**	No Further Assessment Required
NAD56	Rural Dwelling	Low	Moderate	**Moderate**	2	**Very Low**	**Low**	No Further Assessment Required
NAD57	Rural Dwelling	Low	Moderate	**Moderate**	3	**Very Low**	**Low**	No Further Assessment Required
NAD58	Rural Dwelling	Low	Moderate	**Moderate**	2	**Very Low**	**Low**	No Further Assessment Required

Table 23 Results of Intermediate Assessment

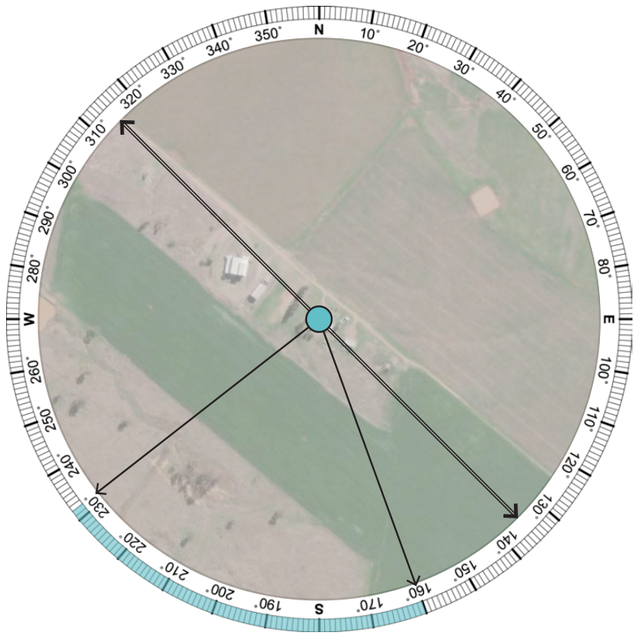
Appendix B

Dwelling ID:

NAD12



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

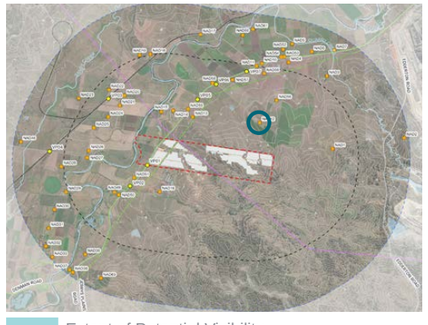
Magnitude:

Number of Occupied Cells: **10**

Magnitude Rating: **Low**

Visual Impact Rating:

Impact Rating: **Low**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 179 m

Distance to Project: 0.865 km

Aerial Source: ESRI, 2024

Detailed Assessment Required:

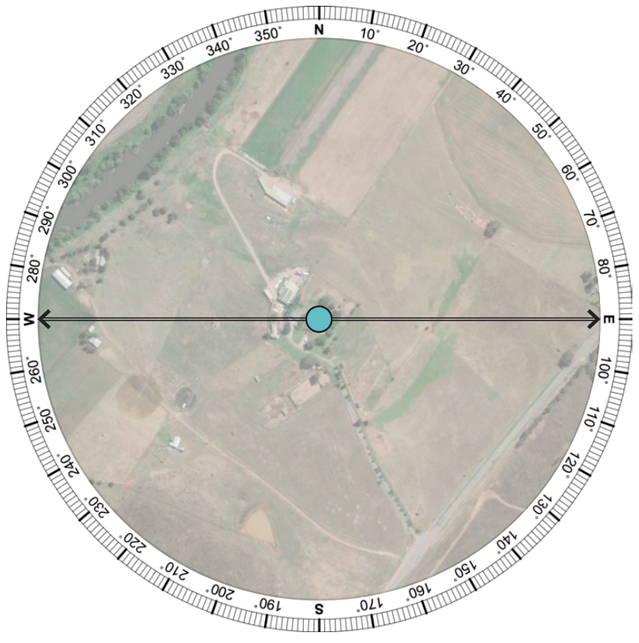
No

Appendix B

Dwelling ID:

NAD14

Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

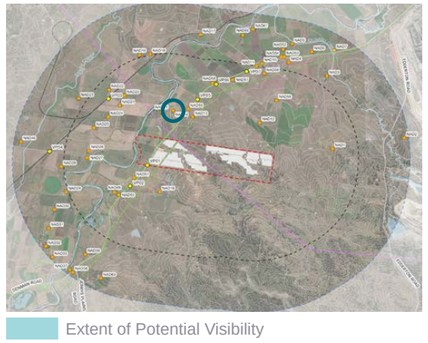
Magnitude:

Number of Occupied Cells: **0**

Magnitude Rating: **Very Low**

Visual Impact Rating:

Impact Rating: **Low**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 150 m

Distance to Project: 0.841 km

Aerial Source: ESRI, 2024

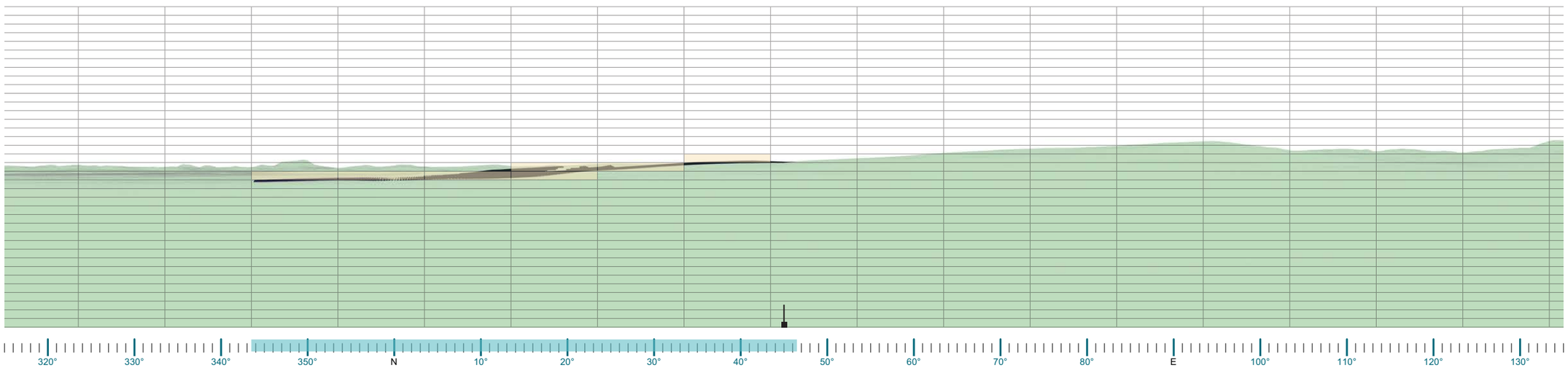
Detailed Assessment Required:

No

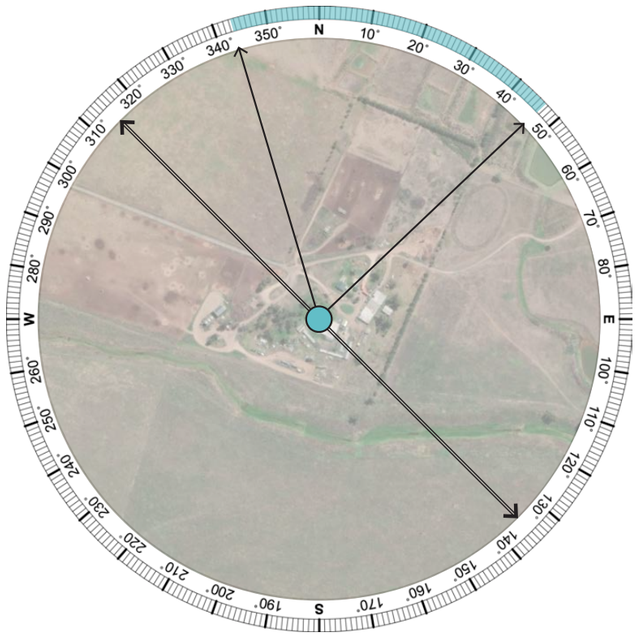
Appendix B

Dwelling ID:

NAD16



Viewpoint Location

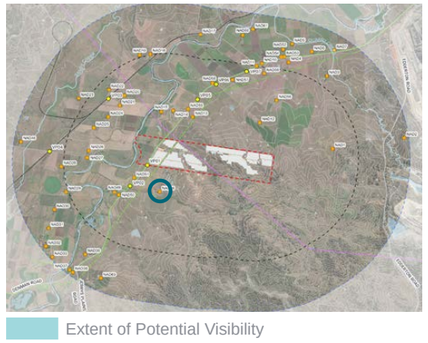


Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**



Extent of Potential Visibility

Elevation: 139 m

Distance to Project: 0.735 km

Aerial Source: ESRI, 2024

Magnitude:

Number of Occupied Cells: **7**

With ESP: 30

Magnitude Rating: **Very Low**

Magnitude Rating with ESP: **High**

OCCUPIED CELL COUNT

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.

Visual Impact Rating:

Impact Rating: **Low**

Impact Rating with ESP: **Moderate**

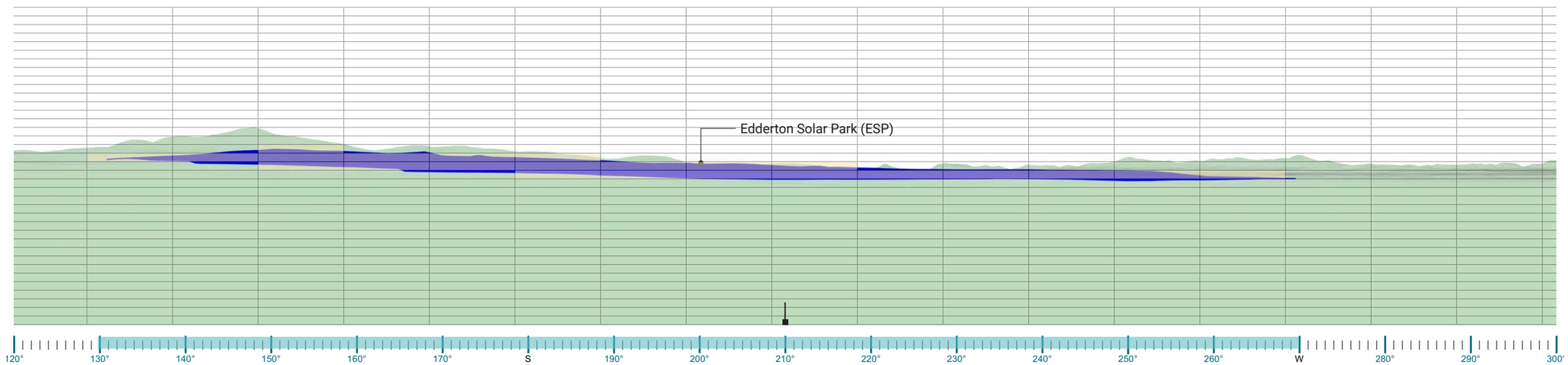
Detailed Assessment Required:

No

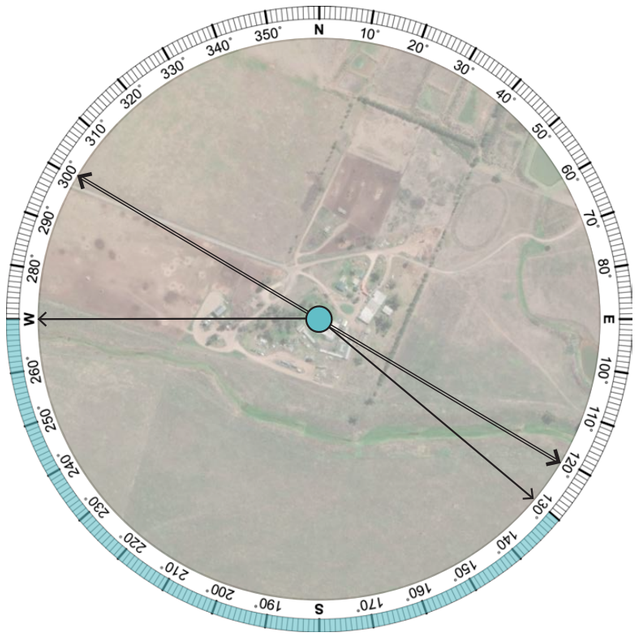
Appendix B

Dwelling ID:

NAD16 - Cumulative



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

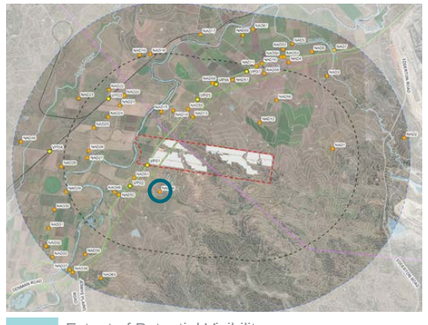
Magnitude:

Number of Occupied Cells: **23**

Magnitude Rating: **Moderate**

Visual Impact Rating:

Impact Rating: **Moderate**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 139 m

Distance to Project: 0.735 km

Aerial Source: ESRI, 2024

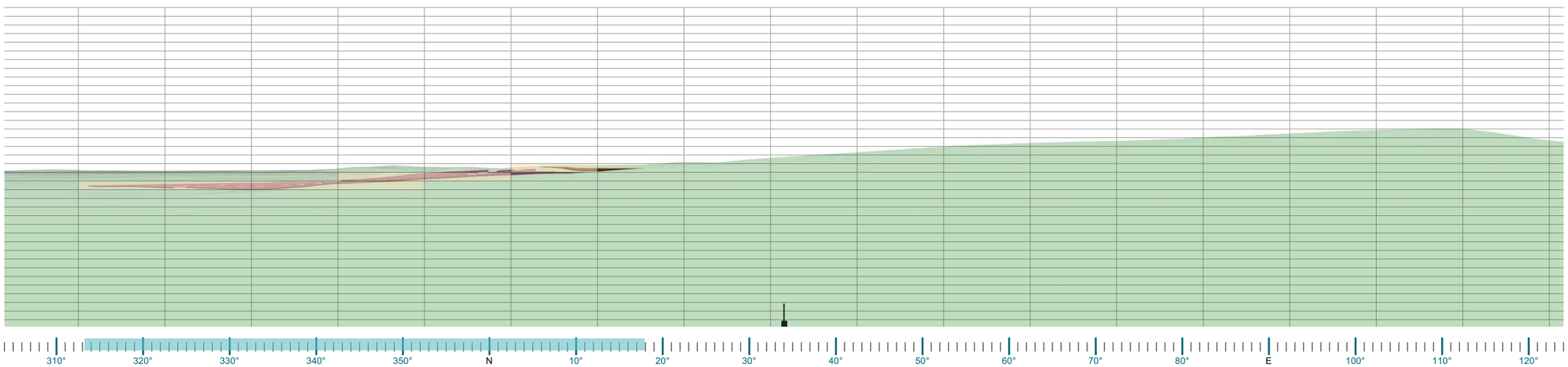
Detailed Assessment Required:

Yes

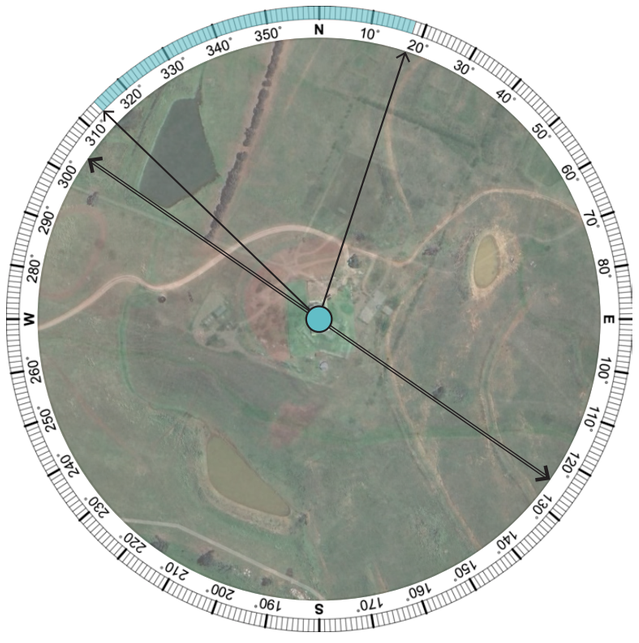
Appendix B

Dwelling ID:

NAD16a



Viewpoint Location

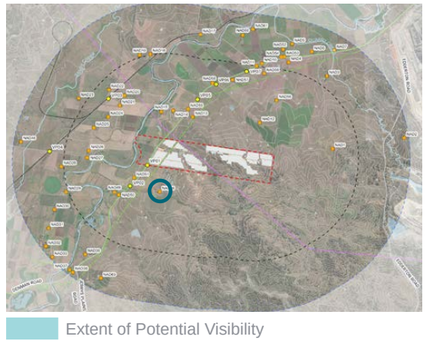


Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**



Extent of Potential Visibility

Elevation: 162 m

Distance to Project: 0.570 km

Aerial Source: ESRI, 2024

Magnitude:

Number of Occupied Cells: **7**

With ESP: 30

Magnitude Rating: **Very Low**

Magnitude Rating with ESP: **High**

OCCUPIED CELL COUNT

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.

Visual Impact Rating:

Impact Rating: **Low**

Impact Rating with ESP: **Moderate**

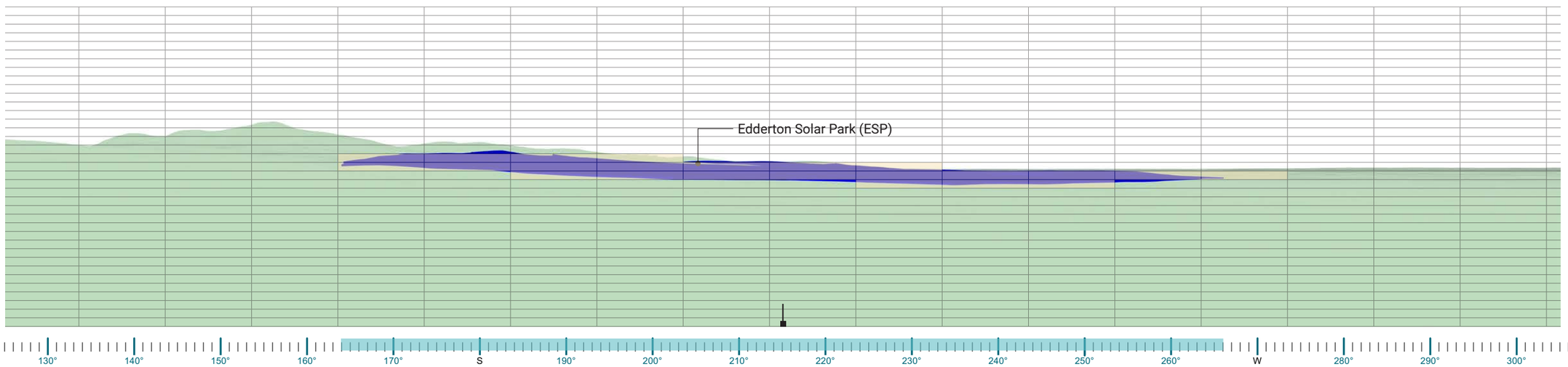
Detailed Assessment Required:

No

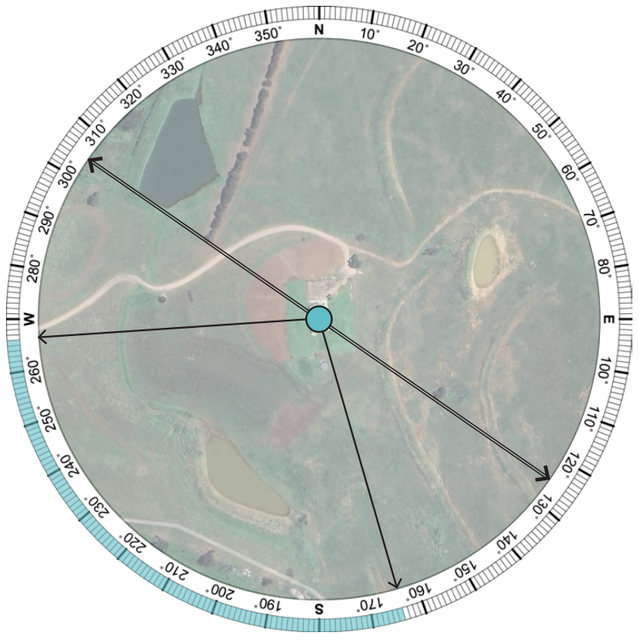
Appendix B

Dwelling ID:

NAD16a - Cumulative



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

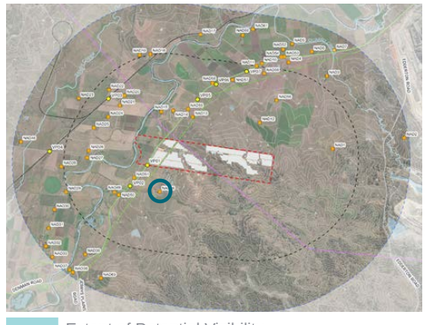
Magnitude:

Number of Occupied Cells: **23**

Magnitude Rating: **Moderate**

Visual Impact Rating:

Impact Rating: **Moderate**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 162 m

Distance to Project: 0.570 km

Aerial Source: ESRI, 2024

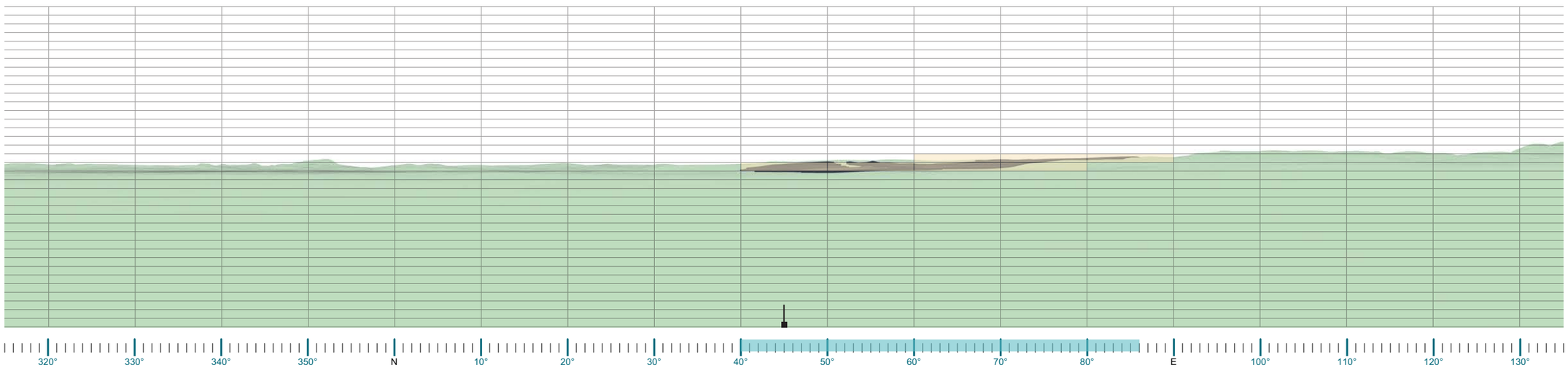
Detailed Assessment Required:

Yes

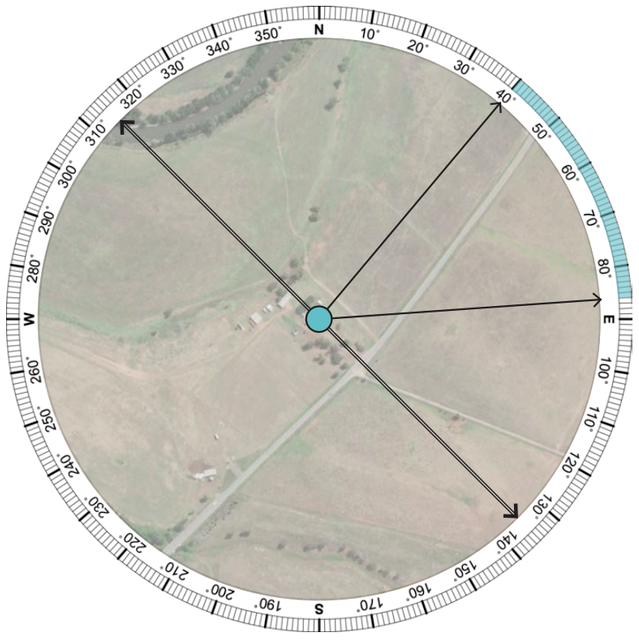
Appendix B

Dwelling ID:

NAD51



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

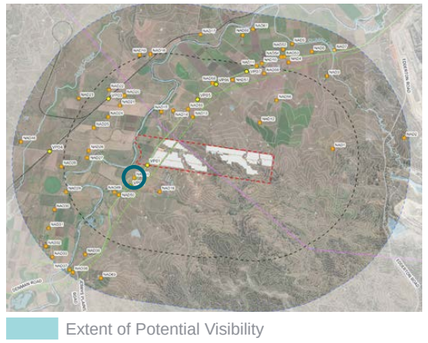
Magnitude:

Number of Occupied Cells: **7**

Magnitude Rating: **Very Low**

Visual Impact Rating:

Impact Rating: **Low**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 123 m

Distance to Project: 0.554 km

Aerial Source: ESRI, 2024

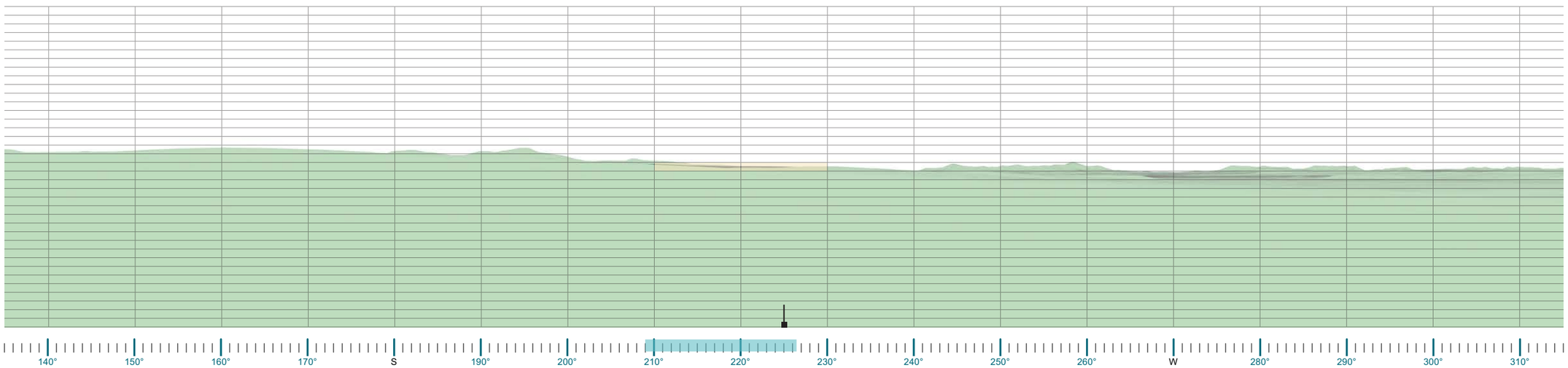
Detailed Assessment Required:

No

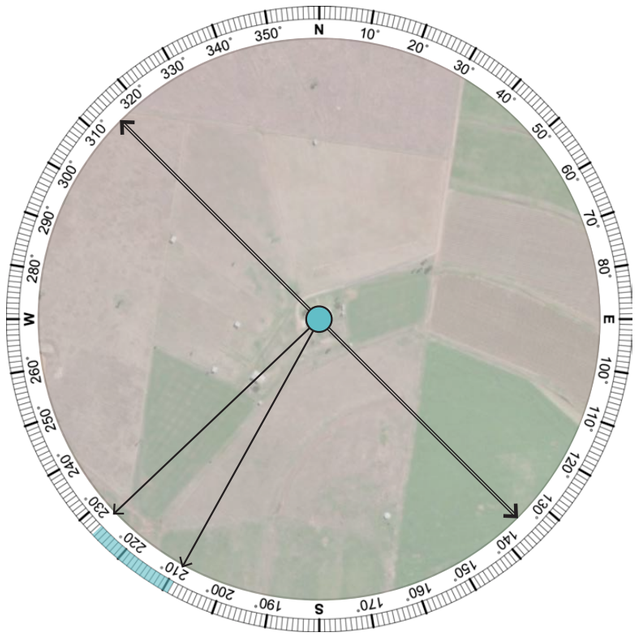
Appendix B

Dwelling ID:

NAD56



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

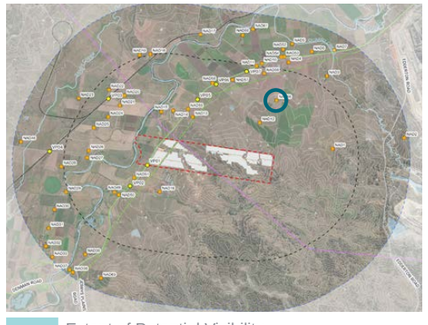
Magnitude:

Number of Occupied Cells: **2**

Magnitude Rating: **Very Low**

Visual Impact Rating:

Impact Rating: **Low**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 173 m

Distance to Project: 1.577 km

Aerial Source: ESRI, 2024

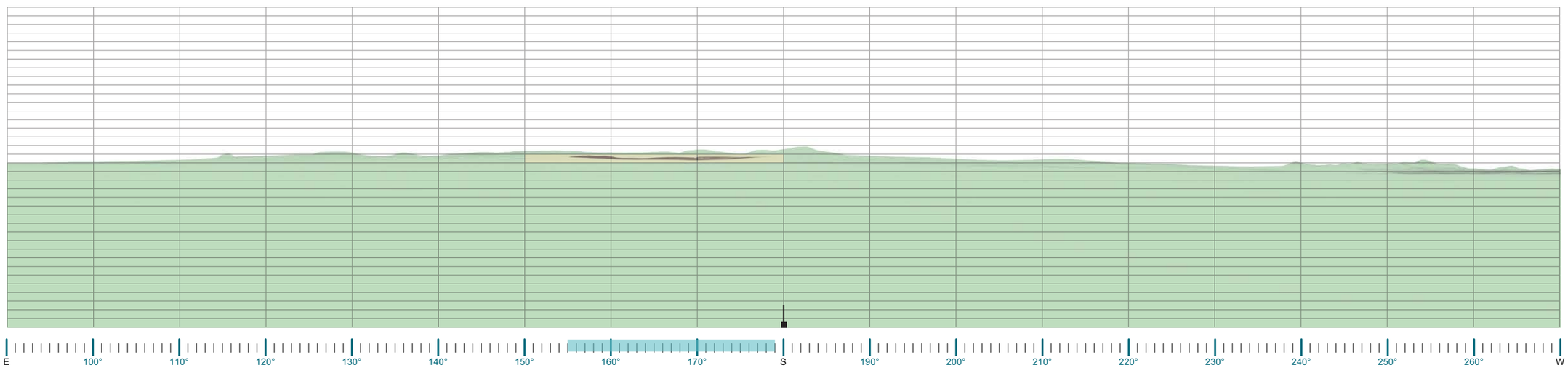
Detailed Assessment Required:

No

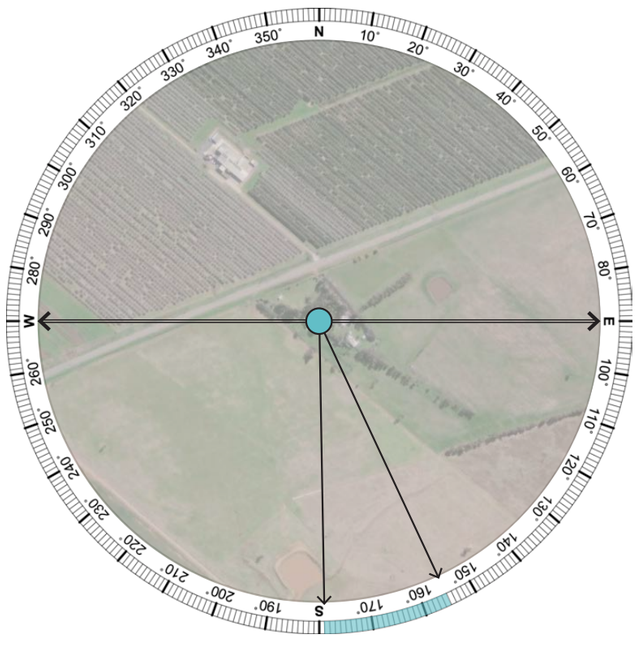
Appendix B

Dwelling ID:

NAD57



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

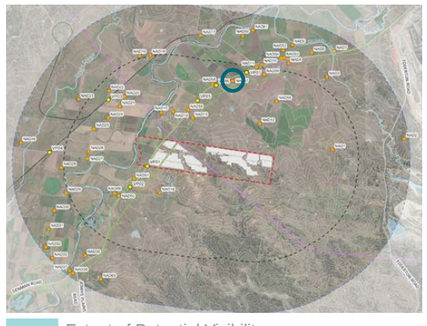
Magnitude:

Number of Occupied Cells: **3**

Magnitude Rating: **Very Low**

Visual Impact Rating:

Impact Rating: **Low**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 129 m

Distance to Project: 1.981 km

Aerial Source: ESRI, 2024

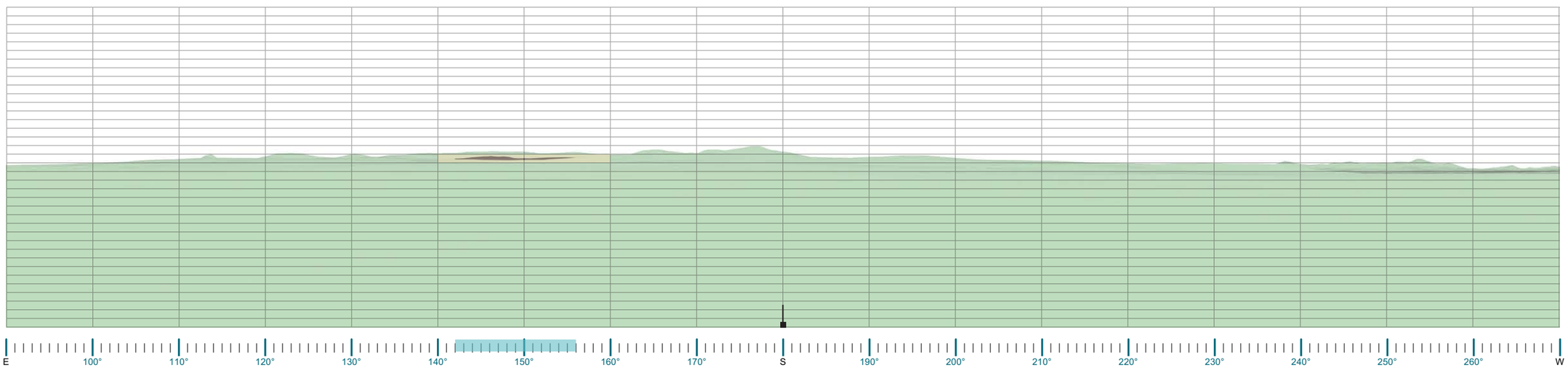
Detailed Assessment Required:

No

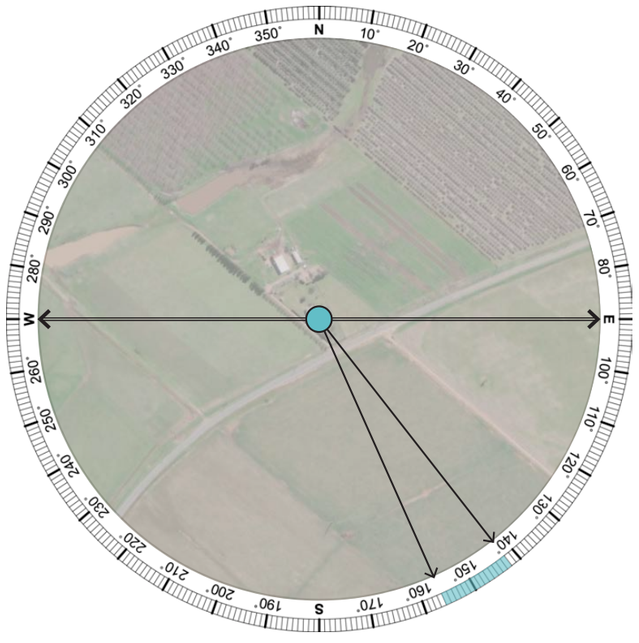
Appendix B

Dwelling ID:

NAD58



Viewpoint Location



Sensitivity:

Viewpoint Type: Dwelling (**Moderate**)

Scenic Quality: **Low**

Overall Potential Sensitivity: **Moderate**

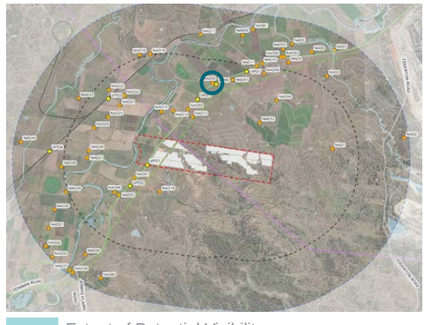
Magnitude:

Number of Occupied Cells: **2**

Magnitude Rating: **Very Low**

Visual Impact Rating:

Impact Rating: **Low**



Extent of Potential Visibility

OCCUPIED CELL COUNT

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.

Elevation: 127 m

Distance to Project: 1.799 km

Aerial Source: ESRI, 2024

Detailed Assessment Required:

No

6.3 Muswellbrook Solar Farm – Traffic Management Plan

Responsible Officer:	Director - Planning & Environment
Author:	Environmental Planning Officer
Community Strategic Plan:	*2 - Regional Centre* Our community has access to regional services, infrastructure and facilities.
Delivery Program Goal:	2.1.1 - Provide and maintain safe, cost effective and fit for purpose transport infrastructure. 2.3.1 - Participate in planning and decision making to leverage investment and ensure our communities needs are prioritised.
Operational Plan Action:	3.4.1.3 - Advocate on behalf of the community on matters related to State Significant Development and the renewable energy roll-out.
Attachments:	1. Attachment A - Muswellbrook Solar Farm Muswellbrook Shire Council comments [**6.3.1** - 4 pages]

PURPOSE

To provide information in relation to the Muswellbrook Solar Farm Traffic Management Plan.

OFFICER'S RECOMMENDATION

The Committee ENDORSES the draft comments on the Muswellbrook Solar Farm Traffic Management Plan for submission to the Proponent for the Project, Ox2.

Moved: _____ **Seconded:** _____

CONSULTATION

Consultation has occurred with Council's Roads & Drainage unit.

REPORT

Muswellbrook Solar Farm (SSD-465432209) (Project) is an approved large-scale solar photovoltaic generation facility located on and adjacent the former Muswellbrook Coal Mine site. The Proponent for the Project is ESCO Solar Farm 9 Pty Ltd (Ox2).

SSD-465432209 for the Project was granted by the Independent Planning Commission in May 2025, subject to conditions of development consent.

A Traffic Management Plan (TMP) has been prepared to address the requirements of SSD-465432209 Condition B9, which must be prepared in consultation with Muswellbrook Shire Council.

The project is expected to be delivered in stages. Accordingly, this TMP relates only to the use of Muscle Creek Road and the construction of the southern section of the solar array (stage 1). Another TMP will be required when construction of the northern section (stage 2) of the array, with access from Sandy Creek Road, is proposed.

Staff have prepared comments on the TMP which are provided in Attachment A.

Enquiries
Please ask for Tracy Ward
Direct 02 6549 3778
Our reference CM 25/87091

XX December 2025

Ms Carla Evans
Senior Development Manager
Ox2

Dear Ms Evans

Muswellbrook Solar Farm – Muswellbrook Shire Council comments on the Traffic Management Plan (TMP)

Reference is made to your Request for Advice - Traffic Management Plan (TMP) (Post Approval via the Major Projects Portal for SSD-46543209-PA-4.) Consultation with Muswellbrook Shire Council on the TMP is required under Condition B9 of SSD 46543209.

The Proponent is ESCO Solar Farm 9 Pty Ltd as trustee for the ESCO Solar Farm 9 Trust.

Staff appreciate the opportunity to comment on the TMP, and comments are provided below.

Dilapidation Surveys and Maintenance

Sandy Creek Road

1. As stated in Section 1.4 of the TMP, the use of Sandy Creek Road will form part of Stage 4, which will trigger an update of the TMP. For this reason, Staff have not reviewed information relating to the dilapidation assessment, maintenance methodologies, background information, or the traffic management protocol for heavy vehicles at the New England Highway / Sandy Creek Road intersection as it relates to Sandy Creek Road. With multiple projects proposed with access from Sandy Creek Road, and the construction of the Muswellbrook Bypass expected to commence in 2027/28, the TMP needs to be prepared as close to start of construction as possible to be reflective of road & traffic conditions.

2. Staff recommend the abovementioned information be removed from this version of the TMP and incorporated into a subsequent revision for Staff review and comment.

Muscle Creek Road

3. As stated in Section 7.2 of the TMP, a visual inspection is proposed on Muscle Creek Road, and no further pavement testing is proposed because 'historically, the road has been utilised for coal haulage by heavy vehicles'.

   Although the road was originally constructed by Muswellbrook Coal Company (MCC), subsequent dilapidation reports indicated that the pavement was "consumed" to a large degree by caol haulage movements. MCC has since undertaken works to restore the road to a Condition 3 rural road standard, which may not be suitable for heavy-vehicle traffic associated with the solar project. MCC will be required to undertake a works-as-executed assessment of the completed upgrades, and the results of this assessment are not yet known. It is therefore recommended that a baseline condition dilapidation survey be undertaken rather than a visual inspection to determine the road's current structural capability, reduce the likelihood of future damage, and provide clarity around expected

usage. This approach will also minimise risk to the Proponent in circumstances where Council may require repairs for pre-existing issues not attributable to the Proponent.

4. The Proponent is required to obtain an Activity Permit under Section 138 of the *Roads Act 1993* for dilapidation surveys, maintenance and occupation of Muscle Creek Road during construction. While the TMP includes some preliminary details regarding dilapidation surveys and maintenance, these matters can be finalised through the Section 138 permit process. This approach will help expedite the TMP approval by DPHI while ensuring that the detailed requirements are resolved with Council. The s138 permit should be submitted as soon as possible as it can take up to three months to process.

   We confirm that "TfNSW QA Specifications M3 Routine Services" maintenance document needs to remain complete in its entirety with the sections that are not applicable (in consultation with Council) being "struck through". The development of this maintenance document is generally undertaken through a workshop with key Council Staff, and Council would be happy to facilitate this meeting when required.

   In relation to dilapidation and maintenance:
   - Ox2 should also consult with UGL Regional Link, as the Bridge Maintainer, to clarity maintenance responsibilities; and
   - The culvert on Muscle Creek Road forms part of the road and will need to be included in any dilapidation and maintenance methodologies.

5. In relation to Table 4-2 of the TMP, staff do not agree that Muscle Creek Road "carries regional traffic." Rather, it carries local traffic and is classified as a "Rural Collector Road (RC1m)" under Council's Road Asset Hierarchy.

Traffic management for heavy vehicles at New England Highway / Sandy Creek Road intersection

6. It is understood that the Proponent liaised with TfNSW during preparation of the EIS to address safety concerns relating to movements at the intersection of the New England Highway / Sandy Creek Road. Evidence is required that TfNSW is satisfied that these concerns have been addressed.

7. It should be noted that the proposed Muswellbrook Bypass (Sandy Creek end) will have a 5.4-metre height restriction.

Road Upgrade

8. Staff note the following from Section 5.1.1 of the TMP:

   During Stages 1 to 3 of the development, there will be no vehicular activity via the northern site access (Sandy Creek Road). Hence, the proposed site access on Sandy Creek Road will be constructed as part of Stage 4 (northern solar farm construction). ... prior to any construction activities, the site access on Sandy Creek Road will be designed and constructed to Muswellbrook Shire Council's satisfaction.
   During the construction of this site access, temporary traffic control, signage and Traffic Guidance System (TGS) for the temporary traffic control/detour on Sandy Creek Road will be approved by council in due course as part of the s138 application.

School Bus Service

9. Section 6.7 of the TMP states the following (emphasis added):

   To minimise any impacts to the school buses, there will not be any construction related traffic along Sandy Creek Road during the time periods stipulate under Condition B1 (b) which states "no construction traffic will access Sandy Creek Road between 7.30 am to 8.30 am and 3.45 pm to 4.45 pm during NSW school terms;". ***No such restriction applies to Muscle Creek Road as construction vehicle movements are not expected to impact the school bus operations. The Driver's Code of Conduct requires all personnel to be aware of school bus operations within the area.***

   The s138 permit will expressly prohibit interactions between construction-related traffic and school bus operations. These restrictions will be embedded as enforceable conditions of the permit, ensuring that construction vehicle movements do not occur during school bus pick-up and drop-off periods and that appropriate traffic management measures are in place to maintain the safety of school children and road users.

Heavy vehicles requiring escort

10. Section 6.14 of the TMP states 'during Stage 1b, the TMP would be updated to include deliveries by high-risk heavy vehicles requiring an escort. These would be included within an OSOM TMO, included as an appendix to the TMP'.

    Please note that these movements will be subject to the NHVR permit.

Shuttle Buses

11. As stated in Section 6.15 of the TMP, 'shuttle buses may be used during Stages 1-3', however will be dependent on accommodation options'. The TMP should include pick up and drop off locations and parking arrangements (this is also a requirement of SSD 46543209 Condition B9ix).

    Poorly selected or unmanaged pick-up locations can create traffic impacts at off-site areas, particularly where workers congregate on local roads, park informally, or where shuttle buses stop in locations that impede traffic flow. These issues can lead to congestion, reduced road safety, and complaints from nearby residents or businesses.

Complaints, Community & Stakeholder Engagement, Reporting

12. Staff can only find reference to a Complaint Management System in the Social Impact Assessment (SIA) within the Environmental Impact Statement (EIS) and request this information is also included in the TMP.

13. In relation to community notifications and complaints, Section 6.18 of the TMP mentions a Community and Stakeholder Engagement Strategy. A copy of this strategy is requested and confirmation that the Proponent will keep records of all complaints.

14. The inclusion of a monitoring and reporting process for the TMP within the SIA is acknowledged. While the reporting frequency has been specified, the recipients of these reports also be identified

Cumulative Impacts

15. In a meeting with the Proponent on 22 September 2025, Staff noted that the TMP should reference the Roads Maintenance Contributions Plan (Contributions Plan) that forms part of the Planning Agreement between Muswellbrook Shire Council and ESCO Solar 9 Pty Ltd. However, the Contributions Plan has not been referenced in the TMP.

    It is recommended that the TMP explicitly reference the Contributions Plan and confirm that road maintenance obligations, dilapidation requirements, and repair responsibilities under the Planning Agreement will be integrated into the project's traffic management framework once the Contributions Plan is finalised.

    It should be noted that the Contributions Plan will apply during construction, operation and decommissioning phases of the Project. Accordingly, there may be requirements imposed throughout the life of the Project.

16. As stated in Section 6.19 of the TMP:

    > *OX2 will regularly communicate with the proponents of other projects in the area and if feasible, amend the construction scheduling to minimise cumulative traffic impact in the area. However, it should be noted that the EIS Traffic Report has considered the cumulative traffic impact for concurrent project (worst case scenario).*

    To support this coordination, the Proponent is requested to provide accurate traffic generation numbers and construction timing (these do not need to be included in the TMP and can be provided directly to Staff). This information will enable Staff to assist proponents in managing traffic movements on both Muscle Creek Road and Sandy Creek Road and to minimise cumulative impacts across concurrent projects.

Other

17. Muscle Creek Road must be correctly identified as such. It is currently incorrectly referred to as *Muswell Creek Road*.

18. The Drivers Code of Conduct is supported.

19. The Flood Emergency Response Plan should show the location of relevant flood levels on Figure A.1.

Council appreciates the opportunity to comment and would be pleased to provide additional information if requested. Should you need to discuss the above, please contact Theresa Folpp, Environmental Planning Officer on 02 6549 3700 or email council@muswellbrook.nsw.gov.au.

Yours faithfully

Sharon Pope
Director Environment and Planning

6.4 Activities Summary for State Significant Development and Energy Generation Projects

Responsible Officer: Director - Planning & Environment

Author: Environmental Planning Officer

Community Strategic Plan: *5 - Working Together*

Delivery Program Goal: Our community is involved in decision making and resources are managed to align with the values and priorities.

Not Applicable

Operational Plan Action: Not applicable

Attachments: Nil

PURPOSE

To advise on recent activities of Council Officers and Councillors in relation to State Significant Development including Energy Generation projects.

OFFICER'S RECOMMENDATION

The information contained in this report be noted.

Moved: _____ **Seconded:** _____

REPORT

Project Name	Update
AGL	• Liddell BESS targeted for first operations in early 2026.
Bengalla	• A Modification Report is being prepared by Bengalla for MOD8, to amend the location and design of Bengalla Link Road. This is expected to be lodged in December but will be reported to the February meeting of the SSD Committee.
Dartbrook	• Staff submitted residual comments on Dartbrook MOD8 and are awaiting determination of the modification by Department of Planning, Housing and Infrastructure (DPHI).
Muswellbrook Coal	• Muswellbrook Coal held its last meeting of the Community Consultative Committee (CCC) in November. • Staff are in the process of reviewing the Mine Closure Plan provided for comment.

Project Name	Update
Mount Arthur	• The Closure Social Impact Management Plan (Closure SIMP) is expected to be provided to Staff in December for internal review and the updated Closure SIMP will be reported to Council in April. • Staff and Councillors attended the CCC in November - ○ MAC will be establishing an onsite nursery in FY26 to assist with tube stock supply and support local seed collection activities. ○ A workforce characteristics graph showing the projected workforce wind-down will be available in early 2026. Based on the current mine plan, no reduction in workforce numbers is expected for at least 18–24 months. ○ EL 5965 and ML 1593 are in the process of being transferred to Malabar. The approval for Mount Arthur Underground (MP06_0091) was not included in the sale to Malabar, and therefore a new approval for underground mining will be required.
Mount Pleasant	• A Modification Report to vary DA1997-92 is expected to be lodged with DPHI in December. The modification seeks to allow mining to continue until 2032 and increase coal extraction to 12.5 million tonnes per annum. This will provide MACH Energy with flexibility to resolve the legal issues associated with SSD-10418.
Mangoola	• Staff and Councillors attended the CCC in November – ○ Closure planning is expected to commence in early 2026, beginning with a closure plan risk assessment. ○ Glencore has indicated that they will prepare a Closure SIMP. ○ Glencore confirmed that the mine is scheduled to close in 2030 i.e. there will not be an extension to 2031. • Staff intend to draft a formal letter to confirm the closure planning timeline and to ensure Council is appropriately engaged in the process.
Maxwell	• Staff and Councillors attended a site tour and the CCC in November – ○ Installation of the underground support structure is underway. ○ Works are progressing on the overland conveyor. ○ The exact commencement date for longwall mining remains unknown.
Liddell Coal	• A Modification Report is being prepared to allow for the sealing of underground workings and is expected to be lodged in December.
Other	• Staff met with a proponent for a proposed Battery Energy Storage System project on Thomas Mitchell Drive within the industrial area. The project is in the very early stages, and a Scoping Report is not yet available. • Several Councillors and staff met with Dubbo Regional Council to discuss the impacts arising from construction of renewable energy projects and possible solutions being explored by both councils.

7 Adjournment into Closed Committee

8 Closed Committee

Nil

9 Resumption of Open Committee

10 Date of Next Meeting

10 February, 2025

11 Closure