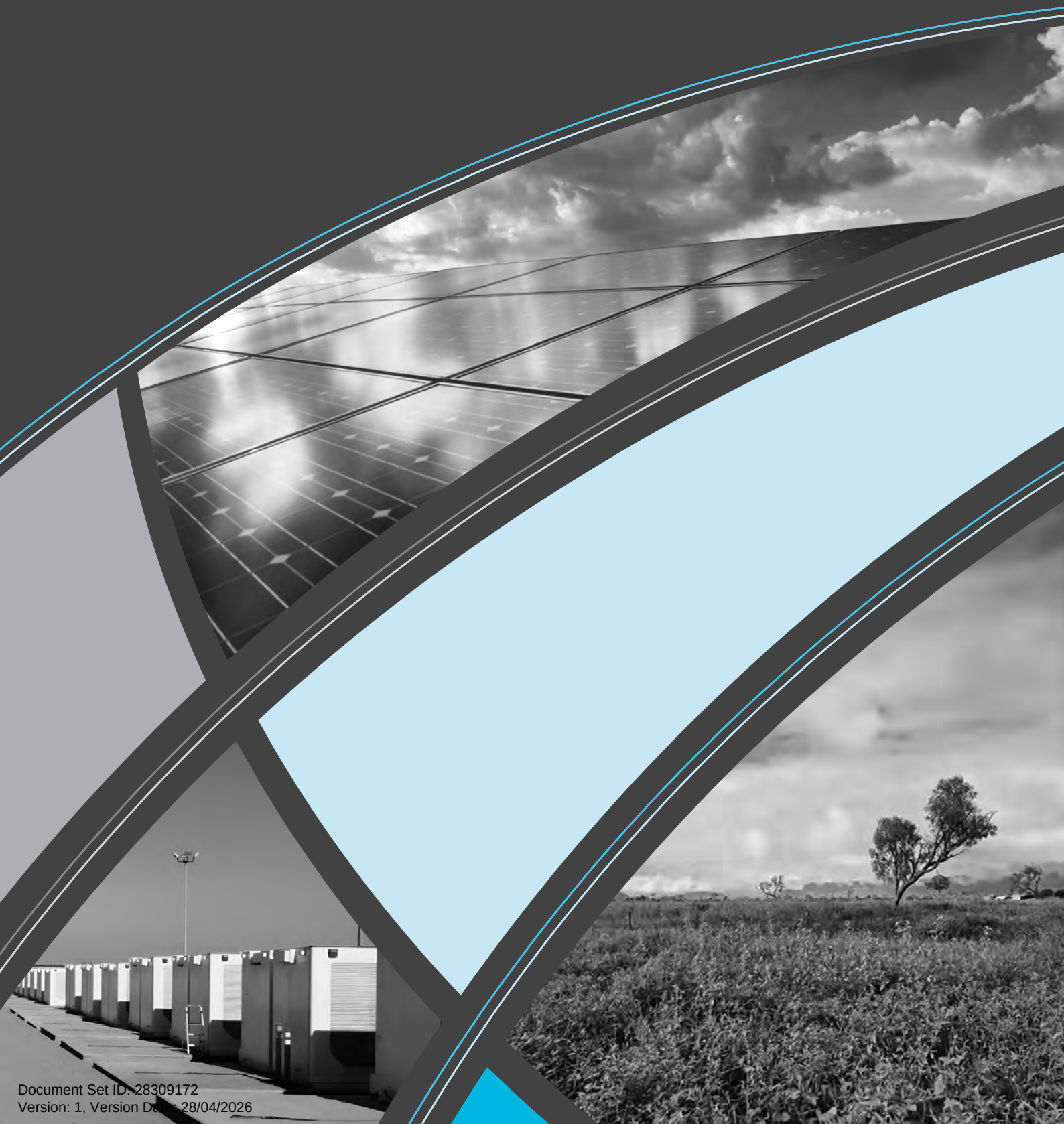
Appendix

K

Visual impact statement



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20 April 2026

Assessment Manager

Re: Development application - Integrated impact assessment context

1.1 Purpose

The intent of this letter is to outline the planning context and explain the assessment approach adopted for the technical impact assessments which were prepared to support the development application. With consideration of changes to the planning framework introduced on 12 December 2025, which have directly influenced the assessment pathway for the project.

1.2 Context

Supernode North BESS ProjectCo Pty Ltd as trustee for Supernode North BESS Project Trust is a wholly owned portfolio company of funds managed by Quinbrook Infrastructure Partners (Quinbrook). Private Energy Partners Pty Ltd (PEP) is an affiliated Quinbrook entity and is a dedicated development, delivery, and operations service provider. Together they propose to develop a Battery Energy Storage System (BESS), substation and transmission lines to facilitate electricity supply for future manufacturing facilities as part of the broader Northern Quartz Campus (NQC) Project (prescribed project).

The project was originally properly made on 12 September 2025 with Townsville City Council (TCC), as the Assessment Manager, as a combined Battery Energy Storage System (BESS), substation, and transmission line project. Following the commencement of the *Planning (Battery Storage Facilities) and Other Legislation Amendment Regulation 2025* on 12 December 2025, the original application was taken to be invalid, and a revised assessment pathway was established resulting in the separate assessment of the BESS.

As a result of the changes to assessment pathway and following detailed pre-lodgement discussions with SARA, TCC, and the Office of the Coordinator-General (OCG), it was agreed that the development components should be assessed separately based on the land-use as defined by the *Planning Regulation 2017.* As such, the development components have been separated into two development application packages. The delineation of development infrastructure within each of the application packages is as follows:

- Development application 1:
    - Development permit for Material Change of Use of a premises for a battery storage facility.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

- Development application 2:
  - Development permit for Material Change of Use for Major Electricity Infrastructure (transmission lines), and
  - Development permit for Material Change of Use for a Substation

While administratively assessed separately, these components function collectively to deliver an energised, operational BESS which is connected to the substation via overhead transmission lines. This electrical infrastructure will connect into the publicly owned Calcium Substation which is to be delivered separately by Powerlink Queensland.

1.3 Environmental impact assessment approach

The project has been designed, engineered and assessed as an integrated system. The environmental and technical assessments have been developed on a whole-of-project basis, consistent with the operational and construction realities of delivering the project.

Accordingly, all technical impact assessments have assessed the combined impacts of the integrated complete development (this including the substation, transmission line and BESS facility as a single unified development). The information provided within the technical impact assessments are provided in their completeness and include outcomes from the original application RFI period previously undertaken in an effort to provide transparency of information.

This integrated methodology also provides a more accurate representation of real-world impacts, enables more effective identification and mitigation of cumulative impacts, and supports a streamlined, practical delivery pathway for all project components.

1.4 Assessment outcomes

The technical impact assessments that have been completed to support the development applications packages have demonstrate compliance with both the requirements with *State Code 27: Battery storage facility* and the *TCC Planning scheme* codes. A summary of the model considerations and outcomes from the technical impact assessments are provided in Table 1.

Table 1 Summary of technical impact assessment outcomes

Impact assessment	Impact assessment considerations	Compliance
Noise Impact assessment	Acoustic objectives of the Environmental Protection (Noise) Policy 2019.	• State Code 27: PO20 & PO21 • TCC Planning Scheme Codes: – High Impact Industry
Bushfire	• National Construction Code 2022 (NCC) • State Planning Policy (SPP) and associated guidelines (Department of Infrastructure, Local Government and Planning (DILGP), July 2017) • Townsville City Plan 2014 (version 2024/01) • Australian Standard AS3959:2018 – Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018)	• State Code 27: – PO2 - PO7 – PO13 – PO15 • TCC Planning Scheme Codes: – Bushfire Hazard Overly Code

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Impact assessment	Impact assessment considerations	Compliance
Traffic	• Queensland Government's *Guide to Traffic Impact Assessment* (DTMR 2018) • Townsville City Plan Part 9.3.5: Transport impact, access and parking code (Townsville City Council 2020) • QLD *Transport Infrastructure Act 1994* (TI Act)	• State Code 27: PO24 – PO28 • TCC Planning Scheme Codes: – High Impact Industry – Transport Impact, Access, and Parking Code – Works Code
Visual	• *Guidelines for Landscape and Visual Impact Assessment Third Edition* (2013) (the GLVIA), Landscape Institute and Institute of Environmental Management and Assessment • Guidance Note for Landscape and Visual Assessment (2018), Australian Institute of Landscape Architects (Queensland).	• State Code 27: PO22 • TCC Planning Scheme Codes: – High Impact Industry – Telecommunications, Facilities and Utilities Code – Landscape Code
Water resource	• Australian Rainfall and Runoff: A Guide to Flood Estimation, Commonwealth of Australia. Version 4.2, August 2024. • DES 2016, Manual for assessing consequence categories and hydraulic performance of structures ESR/2016/1933 Version 5.02, Department of Environment and Science.	• State Code 27: PO16-PO19 • TCC Planning Scheme Codes: – High Impact Industry – Natural Assets Overlay Code – Healthy Water Code – Landscape Code – Flood Hazard Overlay Code
Hazard assessment report	• Work Health and Safety Regulation 2011 – Schedule 15 • AS/NZ ISO 31000:2018 Risk Management - Guidelines	• State Code 27: PO5-PO7 • TCC Planning Scheme Codes: – High Impact Industry – Works Code – Bushfire Hazard Overlay Code
Fire Safety Study	• Large-scale battery energy storage system installations v1.0, 05/02/2025 • *Queensland Fire and Emergency Services Act, 1990* • AS/NZ ISO 31000:2018 Risk Management - Guidelines • FM Global Property loss prevention data sheet 5-33 electrical energy storage systems	• State Code 27: PO5-PO7 • TCC Planning Scheme Codes: – High Impact Industry – Works Code

1.5 Closing

The aim of this letter is to assist the Assessment Manager in understanding the relationship between the project components, the legislative changes that have shaped the assessment pathway, and the rationale for the integrated approach adopted across all technical assessments which support the two development applications.

Please do not hesitate to contact us should further detail or clarification be required.

Yours sincerely

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Document Set ID: 28309172
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Northern Quartz Campus

Visual Impact Assessment - BESS, transmission line and substation

Private Energy Partners

E231133

August 2025

Version	Date	Prepared by	Reviewed by	Comments
V1-0	01 August 2025	Stephen Bertram	Tadd Andersen	Client Review
V2-0	28 August 2025	Stephen Bertram	Tadd Andersen	For use

Approved by

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Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

TABLE OF CONTENTS

1 Introduction 1

1.1 Background 1

1.2 Project terminology 1

1.3 Site location 2

1.4 Assessment requirements and approach 4

1.5 Visual study area and assessment boundaries 5

2 Project description 6

2.1 Project components 6

2.2 Project stages 9

3 Methodology 11

3.1 Visual baseline study 11

3.2 Visual impact assessment 11

4 Visual baseline study 17

4.1 Land zoning 17

4.2 Land use 17

4.3 Heritage value 17

4.4 Townships 18

4.5 Transport 18

4.6 Landform 18

4.7 Vegetation 18

5 Visual assessment 20

5.1 Viewshed mapping 20

5.2 Viewpoint selection 24

5.3 Visual impacts – construction 26

5.4 Visual impacts – operation 26

6 Mitigation measures 39

7 Conclusion 40

References 41

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Tables

Table 1.1	Terminology used in this VIA	2
Table 3.1	Viewpoint classification	12
Table 3.2	Magnitude definitions	12
Table 3.3	Viewer sensitivity level classification	13
Table 3.4	Scenic quality classification	13
Table 3.5	Visual sensitivity rating	14
Table 3.6	Visual impact rating	15
Table 3.7	Visual performance objective	15
Table 5.1	Selected receivers and rationale for selection	25
Table 5.2	Viewpoint assessment	34

Figures

Figure 1.1	Regional context	3
Figure 2.1	Project layout	8
Figure 4.1	Visual baseline map	19
Figure 5.1	Viewshed map – BESS and substation	22
Figure 5.2	Viewshed map – BESS, substation and transmission line	23
Figure 5.3	Viewpoint VP-03	27
Figure 5.4	Viewpoint VP-07	28
Figure 5.5	Viewpoint VP-08	29
Figure 5.6	Viewpoint VP-12	31

Photographs

Photograph 5.1	Typical existing vegetation in the visual study area	24

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

1 Introduction

1.1 Background

Solquartz, a wholly owned portfolio company of funds managed by Quinbrook Infrastructure Partners (Quinbrook), and Private Energy Partners Pty Ltd (PEP), an affiliate enterprise of Quinbrook and Quinbrook's dedicated development, delivery and operations service provider, are proposing to develop a BESS, substation and transmission lines to facilitate electricity supply for future Metallurgical Silicon (MG-Si) and Polysilicon (Poly-Si) manufacturing facilities as part of the broader Northern Quartz Campus (NQC) project.

The premises which form the development application is on part of Lot 19 SP321818 and part of Lot 87 on RP911426, near Woodstock in TCC local government area. The development includes the proposed overhead transmission line which traverses south along the western edge of the project premises and connect into the future Powerlink Calcium substation.

EMM Consulting Pty Ltd (EMM) has been engaged by Private Energy Partners Pty Ltd (PEP) to prepare a visual impact assessment (VIA) for the Project.

The purpose of this Visual impact assessment (VIA) is to provide an evaluation of the potential visibility of the Project from surrounding receivers and to identify potential risks to the Project that may result from visual impacts on these receivers. Preparation of this VIA has relied on photographic fieldwork undertaken by EMM's ecology team.

Visual impacts are changes to the existing landscape that can be seen by people in the surrounding dwellings and communities. Therefore, this VIA evaluates the surrounding residences, roads, and other publicly accessible places to identify locations that may be visually impacted by the Project.

1.2 Project terminology

Solquartz and PEP are proposing to develop NQC within TCC's Lansdown Eco-Industrial Precinct (LEIP), a high impact industrial area promoted as Australia's first environmentally sustainable industrial hub. NQC encompasses four major project components all of which culminate in the delivery of an industrial hub which powers and provides metallurgical silicon and polysilicon.

To support the overall program delivery, various components were defined and broken into a four-package delivery based on project schedule drivers, investor confidence, and risk profiles:

1. BESS, transmission line and NQC substation (assessed within this VIA)
2. Charcoal processing facility (Phase 1) (to be assessed within a future application to TCC)
3. A Metallurgical Silicon (MG-Si) plant and Biochar processing facility (Phase 2) (to be assessed within a future application to TCC)
4. Polysilicon plant (to be assessed within a future application to TCC).

The four project components will be sited within the *project area*, which comprises three allotments (part of Lot 19 on SP321818, Lot 34 on E124243 and part of Lot 87 on RP911426). Of this area, this application seeks to assess the *premises,* a smaller development footprint encompassing 86.93 ha. Of this area relating to the premises, the development footprint is approximately 30 ha. The premises are located in the centre of the project area. Figure 1.1 describes the relationship between the project area and premises.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Table 1.1 Terminology used in this VIA

Terminology	Description
The Project	The proposed BESS, transmission line and substation.
Project premises	Includes the BESS, transmission line and substation, as shown on Figure 1.1.
Visual study area	The landscape within 2 km of the Project premises.
ZVI	Zone of visual influence.
Viewshed	A viewshed is a theoretical assessment of visible elements from a particular viewpoint. It is created using GIS data (digital elevation model and digital surface model) to assess the Project's visibility from the selected viewpoints.
Viewpoint	Viewpoints are representative public and private viewpoints in the area surrounding the Project footprint. They provide a representative sample of the likely visual landscape changes on the different users of the surrounding areas and their visual exposure to various Project elements. Viewpoints can be representative of views from residences, public roadways or other local features (e.g. villages, other public recreation areas or scenic vistas of value to the community).
Associated residence	A residence on privately-owned land, in respect of which the owner has reached an agreement with the Applicant in relation to the development and management of impacts. Note, this includes rented residences that are owned by an associated landowner.
Non-associated residence	A residence on privately-owned land, in respect of which the owner has not reached an agreement with the Applicant in relation to the development.
mAHD	Metres elevation by Australian Height Datum.

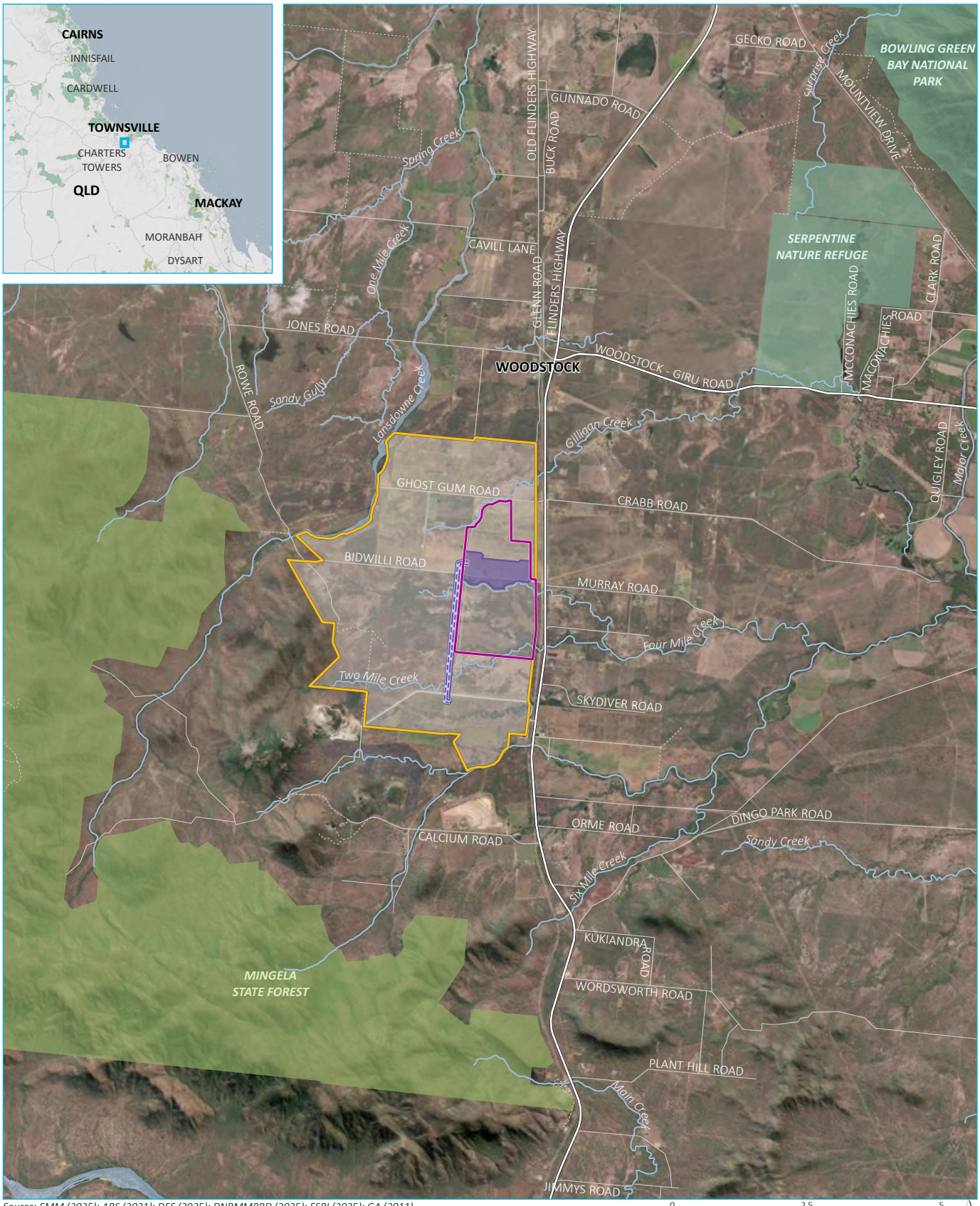
1.3 Site location

The Project is proposed to be located centrally on part of Lot 19 on SP321818 and part of Lot 87 on RP911426, as seen on Figure 2.1. The development includes the proposed overhead transmission line which traverses south along the western edge of the project premises and connect into the future Powerlink Calcium substation. The overhead transmission line interacts with the following road reserves and lot boundaries:

- Lot 19/SP321818
- Lot 87/RP911426
- Lot 30/SP321818
- Lot 55/E124248
- Lot 65/E124264
- No Name Road
- Bidwilli Road
- An unnamed road reserve
- Manton Quarry Road

Access to the premises during both construction and operation phases will be via the northern LEIP access intersection point which includes Flinders Highway via Glenn Road and Jones Road. The proposed site access on Bidwilli Road will act as a new left-in/right-out driveway as all vehicles will arrive and depart from/to the north.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026



Source: EMM (2025); ABS (2021); DES (2025); DNRMMRRD (2025); ESRI (2025); GA (2011)

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GDA2020 MGA Zone 55

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KEY

- Lansdown Eco-Industrial Precinct
- Northern Quartz Campus
- Package 1- Premises
- Package 1- Transmission line

Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- National park/nature reserve
- State forest

Regional context

Northern Quartz Campus
Package 1- BESS, transmission line and substation
Visual Impact Statement
Figure 1.1

EMM creating opportunities

1.4 Assessment requirements and approach

The purpose of a Visual Impact Assessment (VIA) is to provide an assessment of a project's potential impacts on the character of the landscape and the impacts on local visual amenity.

Because of their specificity and industry-standard status, the method of assessment used in this VIA are based on the methods outlined in:

- *Large-Scale Solar Energy Guideline* (2024) (Solar Guideline), NSW Department of Planning, Housing and Infrastructure (DPHI).
- *Large-Scale Solar Energy Guideline: Technical Supplement for Landscape and Visual Impact Assessment* (2024), NSW Department of Planning, Housing and Infrastructure 2024.

The Solar Guideline was released by DPHI in 2024 and provides the community, industry, applicants and regulators with guidance on the planning framework for the assessment and approval of large-scale solar energy development proposals. The Solar Guideline outlines a visual assessment framework for large scale solar energy development. The acceptability of visual impacts, namely impacts on landscape character and values and the amenity of landholders and communities, along with the adequacy of the measures that are proposed to avoid, reduce or otherwise manage these impacts, are identified as key assessment issues within the guideline and have been considered within this VIA.

This VIA also references techniques and methods outlined in the following publications:

- *Guidelines for Landscape and Visual Impact Assessment Third Edition* (2013) (the GLVIA), Landscape Institute and Institute of Environmental Management and Assessment
- *Guidance Note for Landscape and Visual Assessment* (2018), Australian Institute of Landscape Architects (Queensland).

1.4.1 Queensland energy planning policy

There are no specific guidelines for assessing the visual impact of a BESS in Queensland. This report is using the following documents for guidance:

- *Queensland Solar Farm Guidelines: practical guidance for communities, landowners and project proponents* (Queensland Government, Department of Natural Resources, Mines and Energy, 2018).
- *State Code 23 – Wind farm development* – this code is not directly applicable, but a wind farm development is only required under this code to consider scenic quality if it is "proposed in areas identified in a state or local government planning instrument as having high scenic or landscape amenity" (Department of Housing, Local Government, Planning and Public Works, 2024). The Project is not in a location that would require assessment under this code.
- *State Code 26 – Solar farm development* – this code is not directly applicable, but a solar development is only considered to have adverse visual impacts under this code if it is "in a locality having defined scenic amenity or landscape values" (Department of State Development, Infrastructure and Planning, 2025). These values must be articulated in a state (such as Regional Plan) or local government planning instrument (such as strategic framework and overlays/codes in a planning scheme). This locality does not meet the requirements for adverse visual amenity impacts.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

1.5 Visual study area and assessment boundaries

The visual study area defines the extent of the visual assessment undertaken for this VIA. It extends 2 km from the project premises and the transmission line and is illustrated on Figure 5.1 and Figure 5.2.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

2 Project description

The Project involves the construction and operation of a 780 MW BESS and substation facility which will be supported by enabling infrastructure including roads, parking, switchgear, transformers, site offices and onsite storage areas. The BESS will provide firming for the electricity supply provided to the MG-Si and Poly-Si manufacturing facilities as part of the larger NQC project. A 275 kV transmission line is proposed between the NQC substation and the Powerlink Calcium substation, the length of this transmission line is 2658 m and incudes 21 transmission towers. The Powerlink Calcium substation does not form part of this application though the connection of the transmission lines into it does.

2.1 Project components

The project components are shown on Figure 2.1 and described below. The layout provided is conceptual and will be subject to detailed design once the technology partner has been decided.

2.1.1 Battery energy storage system

The BESS will have a capacity of up to 780 MW, with major components comprising of:

- batteries – lithium-ion technology
- inverters – bi-directional inverters to convert direct current to alternating current when exporting electricity, and vice versa when importing electricity
- transformers – transformers will be installed adjacent to each inverter to step up the voltage to the internal reticulation voltage of the plant.

The BESS components are full encased within a battery storage container similar to a shipping container, with approximate dimensions of 2.4 m wide, 6.1 m long, and 2.9 m high. The dimensions and number of containerised batteries is subject to the choice of provider.

The BESS will be developed in a three staged approach aligned with the development timeline and energy requirements of the manufacturing facilities. Each construction stage will reflect a 260 MW staging approach which will culminate in a total of storage provision of 780 MW. Whilst an 8-hour battery is proposed, lnger or shorter durations will be contemplated based on market conditions.

The BESS pad will require filling to achieve the flood immunity requirement of a 0.2% annual exceedance probability (AEP) immunity level. Excavation of the water management area will generate a significant volume of material which will be used for the bulk fill earthworks. The design has been optimised to align with the general west to east fall of the land. The localised grading of the sites would ensure free-draining surface runoff, and that no localised ponding within the sites.

A BESS expansion area which mirrors that of the existing BESS footprint hs been accommodated within the defined premises to the north of the BESS pad. This expansion area is to cater for future requirements whereby additional area is required as a result of technology change.

2.1.2 Substation and transmission line

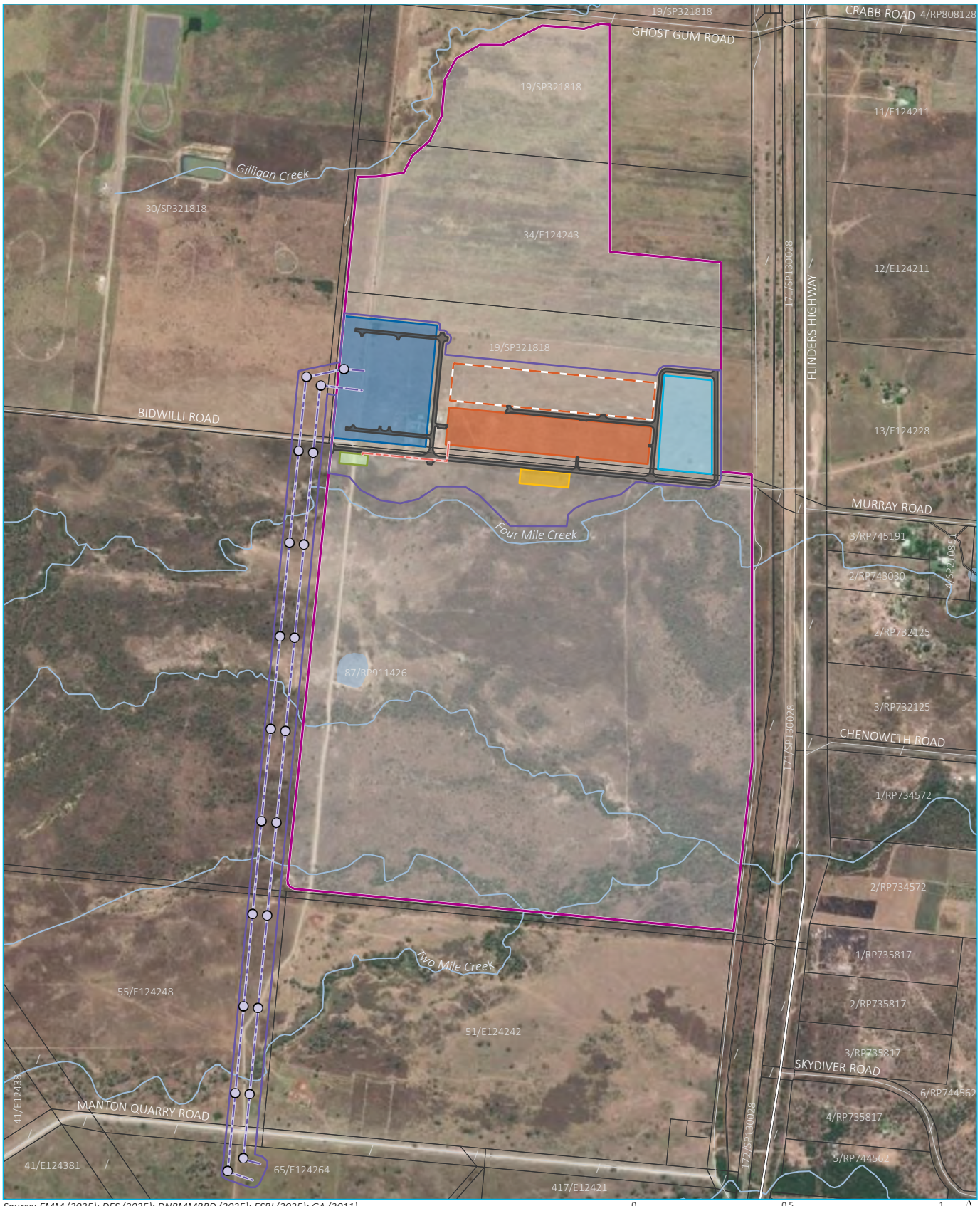
The BESS will link in with the NQC substation, which will include equipment such as switchgear and circuit breakers, protection and control systems and metering and communication systems. The Substation pad will require filling to achieve the flood immunity requirement of a 0.5% AEP immunity level.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

The proposed design includes 2 x 2.6 km 275 kV double circuit overhead transmission powerlines between the NQC substation and Calcium substation. The transmission line is proposed to be above ground within the proposed easement with a width of 100 m. The transmission line includes 21 lattice towers standing at a height of 51.1 m and a connection span length of 300 m maximum.

The Powerlink Calcium substation will be operated by Powerlink. Relevant approvals to facilitate the construction and operation of the Powerlink Calcium substation (i.e. MCU DA and EPBC referral) do not form part of this application and will be sought by separately. The Powerlink Calcium substation will facilitate the connection between the BESS and electricity grid and will include high-voltage transformers.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026



Source: EMM (2025); DES (2025); DNRMMRRD (2025); ESRI (2025); GA (2011)

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GDA2020 MGA Zone 55

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KEY

Development site

Northern Quartz Campus

Package 1- Premises

Existing environment

Major road

Minor road

Watercourse/drainage line

Waterbody

Cadastral boundary

Package 1 proposed site layout

BESS

BESS expansion area

Substation

Construction laydown area

Water management area

Fire water pad

Internal road

Fire water pipeline

Transmission line

Transmission pole

Northern Quartz Campus
Package 1- BESS, transmission line and substation
Visual Impact Statement
Figure 2.1

EMM creating opportunities

2.2 Project stages

During the initial 24 to 36-month period, the project will comprise of primarily of site establishment works and Stage 1 and Stage 2 of the BESS. This period will involve the majority of the site establishment earthworks, as well as most of the cabling works. Stages 1 and 2 of the BESS will deliver up to 520 MW of capacity. In addition, the NQC Substation will be constructed with two transformers, and transmission infrastructure will be installed to connect to the Calcium substation via a single tower double circuit, comprising approximately 12 towers.

Stage 3 of the BESS will add further capacity, up to 260 MW. This stage will also include the installation of an additional transformer and another set of transmission towers, consisting of 12 structures, to support the expanded system.

2.2.1 Construction

Pending receipt of necessary project approvals and funding, construction is anticipated to commence in Q4 2026. Works will generally be undertaken during standard construction hours. Works undertaken outside of standard hours will be limited to exceptional activities required to safely construct the Project.

During the construction phase, the workforce is anticipated to peak at approximately 93 workers. The staffing requirements for the construction phase is expected to follow a normal distribution, peaking approximately halfway through construction. Where practicable, workers will be sourced locally and where not possible, will be Drive In, Drive Out (DIDO) or Fly In, Fly Out (FIFO).

Key construction activities will be confirmed during detailed design and are expected to include:

- site access and establishment, including temporary construction facilities, security fencing and laydown areas
- excavation work, including ground preparation
- civil works, including clearing of the site, earthworks, limited grading, compaction, stormwater drainage and sediment controls
- bulk earthworks and soil movement
- establishment of sediment pond and all associated drainage including site diversions channels, ponds and release infrastructure
- concrete delivery, formwork placement and concrete pouring
- transit, craning, placement of equipment and electrical fit out the BESS, substation and ancillary infrastructure including installation of the pad drainage (swales, pit and pipe networks), underground cabling and containerised storage units
- commissioning of BESS, substation and transmission line including testing of all equipment and commissioning tests required under the electrical connection agreement. Commissioning activities to be undertaken prior to construction.

2.2.2 Operation

The Project will be in operation 24 hours a day, 7 days a week, 365 days a year. It is expected a 30 year project life commencing in Q2 2028 and with 1-2 operational workforce.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

The likely operational process for the Project involves the following activities:

- weekly and monthly inspections (electrical, civil and environmental)
- testing and replacing of faulty plant components (fuses, etc.)
- site safety and security includes CCTV and locked gate and fenced area
- vegetation management (in line with various management plans)
- waste management, quantity, disposal, sewerage consideration
- corrective actions within operations and management scope.

2.2.3 Decommissioning

At the end of the BESS infrastructure asset life (30 years), the Project will be re-evaluated to determine if the Project infrastructure is to be:

- maintained, refurbished or include the replacement of certain components to extend the life of the existing infrastructure
- renewed to repower the site
- decommissioned along with rehabilitation of the site.

If repowering is not considered feasible or desirable at the end of the Project life, the site will be decommissioned. This will involve removing all above-ground infrastructure for sale, recycling or disposal. Access tracks and hardstand areas would be remediated in order to prepare a suitable soil profile for revegetation with an appropriate groundcover, rehabilitating the land to a state where continued agricultural use can continue.

It is recommended that a Rehabilitation and Decommissioning Plan is developed and submitted to TCC for approval at least one year prior to decommissioning. The plan will provide the level of detail required to guide the restoration of the site to a standard facilitating continued agricultural use. The plan will include performance criteria and an action plan for aspects such as the timing for remedial works, structure removal and weed, pest and animal control activities.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

3 Methodology

3.1 Visual baseline study

Assessment of the visual impacts is based on comparing the proposed development to the existing environment. To do so, requires an understanding of the existing landscape and its importance to the local community. It involves recording and analysing the existing landscape features, characteristics, the way in which the landscape is experienced, and the value or importance placed on the landscape and visual resource of the site.

The baseline study will describe the physical influences of the landscape, such as geology, topography, landform, and natural drainage; the ecological characteristics, including vegetation type, structure, and land cover; and human influences like land use patterns, settlement character, and infrastructure. It will identify key natural, cultural, or agricultural features with visual significance; assess aesthetic and perceptual qualities such as scale, openness, and tranquillity; and consider Aboriginal cultural values where relevant. The study will also address the condition of built and natural elements, relevant planning and zoning designations, and the presence of existing or proposed wind energy developments to understand potential cumulative impacts.

3.2 Visual impact assessment

3.2.1 Viewpoint selection

Viewpoints are locations on the ground that are used to provide a representation of the likely changes a project will have on the landscape from a specific location. From a viewpoint, the effect a project has on the landscape can be illustrated photographically and evaluated consistently across the Project. During this stage, viewpoints are selected based on viewshed mapping.

Viewshed mapping is a method of mapping the theoretical visibility of a project across the surrounding landscape and is used to identify locations with potential views to project infrastructure. Using geographic information systems (GIS) technology, the topography of the land is combined with project infrastructure modelling to analyse the potential visibility of the Project. The results are the zone of visual influence (ZVI).

The ZVI diagram is generated using a digital elevation model (DEM) that covers the visual study area. The DEM is representative of the bare earth surface and only considers the topography of the landscape. In accordance with the current guidelines, the screening potential of vegetation and built structures is not considered in the mapping. This is important for viewpoints which are identified as having visibility of the Project but may in fact have no view, or obstructed views towards project infrastructure due to intervening vegetation or buildings. As such, the ZVI only shows where landforms obstruct views and represents a worst-case scenario in terms of project visibility.

Viewpoints are selected from locations that are indicated on the ZVI to have visibility of the Project.

i Viewpoint refinement

The selection of the viewpoints is based on the locations of residences and public areas that have line of sight to the Project infrastructure and will need to be assessed in detail. There are two types of viewpoints considered for this VIA. These are:

- private viewpoints – locations within the visual study area that are not accessible to the public (mainly residences) and have views towards the Project
- public viewpoints – locations within the visual study area that are publicly accessible (roads, parks, trails, tourist areas) and offer views towards the Project.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

ii Viewpoint classification

Viewpoints from residences undergo a classification process that determines the importance assigned to the view. Classification identifies whether a view is a primary view or a secondary view, with primary views considered more important than secondary views. Table 3.1 identifies the classification.

Table 3.1 Viewpoint classification

Primary viewpoint	Secondary viewpoint
Principal/frequented living spaces (living room, kitchen and dining area).	Less frequented living and service areas (bedrooms, laundries, bathrooms, garages and studies).
Front and rear views from a dwelling (porch, balcony, veranda, deck or patio).	Side views from a dwelling.

3.2.2 Visual magnitude

Visual magnitude refers to the degree of change the visual landscape is expected to have due to the proposed development. It measures the scale, form, and character of the development when compared to the existing landscape. It assesses items suggested in the GLVIA like distance of the viewer, extent of view affected, and scale of change.

The categories of magnitude are defined in Table 3.2.

Table 3.2 Magnitude definitions

Magnitude rating	Definitions
High	Substantial or total loss of key elements or features in the landscape. Or introduction of prominent elements that are uncharacteristic to the existing landscape character.
Moderate	Partial loss or alteration to one or more key elements or features in the landscape. Or introduction of elements that would be considered uncharacteristic of the existing landscape character.
Low	Minor loss or alteration to one or more key elements or features in the landscape. Or introduction of elements that are consistent with the existing landscape character.
Very Low	Very minor or no loss or alteration to one or more key elements or features in the landscape. Or introduction of elements that are consistent with the visual character of the existing landscape.

3.2.3 Visual sensitivity

Visual sensitivity is a measure of the quality of the existing view and how sensitive the view is to change. The current guidelines use two ratings to determine visual sensitivity:

- viewpoint sensitivity – measures the relative importance of the viewpoint and the value that the community or visitors may place on the landscape being viewed. This measure applies to private viewpoints (dwellings) and public viewpoints (public use areas, roads).
- scenic quality – the relative scenic, cultural or aesthetic value of the landscape. This is based on the presence or absence of key landscape features that the community values.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

i Viewer sensitivity

Viewer sensitivity relates to the location of the viewer and the relative importance placed on the landscape viewed from that viewpoint by the community or visitors. These viewpoints include public use areas, public travel ways, and private homes.

Visual sensitivity has been assessed based on the viewer sensitivity level classification given in the Solar Technical Supplement, presented in Table 3.3.

Table 3.3 Viewer sensitivity level classification

Viewpoint type	Very low sensitivity	Low sensitivity	Moderate sensitivity	High sensitivity
Private receiver	Private recreation areas and sporting fields.	Secondary view from dwellings in rural areas and in environmental or conservation areas.	Primary view from dwellings in rural areas and in environmental or conservation areas. Tourist and visitor accommodation and places of worship (such as bed and breakfasts, motels, hotels).	Dwellings in residential areas and rural villages. Historic rural homesteads/residences on the State or local Government Heritage List.
Public viewpoint	State highways, freeways and classified main roads. Local sealed and unsealed roads. Railways.	Tourist roads and scenic drives. Walking tracks and navigable waterways. Cemeteries, memorial parks. Significant entry ways to regional towns and cities.	Tourist uses in tourist areas. Publicly accessible green and open spaces including picnic areas, parks, public recreation areas, and lookouts. Town centres and central business districts.	N/A

ii Scenic quality

Scenic quality refers to the relative scenic or aesthetic value placed on the landscape by the community. This is based on the presence of key landscape features known to be associated with community perceptions of high, moderate or low scenic quality. The scenic quality classifications used in this assessment are identified in Table 3.4.

Table 3.4 Scenic quality classification

Scenic quality	Very low	Low	Moderate	High
Landform	Large expanses of flat or gently undulating terrain. Indistinct, dissected or unbroken landforms that provide little illusion of spatial definition or landmarks.	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. Larger areas of distinctive rock outcrops or boulders. Well defined, steep sided valley gorges.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Table 3.4 Scenic quality classification

Scenic quality	Very low	Low	Moderate	High
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. Most 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 eucalypt 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.
Waterbodies	Natural waterbody absent. Farm dams, irrigation canals or stormwater infrastructure.	Minor water forms, such as creeks and streams.	Intermittent streams, lakes, rivers, swamps, and reservoirs.	Visually prominent lakes, reservoirs, rivers, streams, and swamps. Presence of harbour, inlet, bay or open ocean.,
Social and 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, Commonwealth 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.

Source: Table 4 from Solar Technical Supplement (DPHI 2024).

The two visual sensitivity ratings above are combined to form the visual sensitivity rating using the matrix presented in Table 3.5. This combined rating is the visual sensitivity rating.

Table 3.5 Visual sensitivity rating

Viewpoint sensitivity	Scenic quality			
	High	Moderate	Low	Very low
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

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

3.2.4 Assessing visual impact

The amount of visual impact is a function of the magnitude of change when considered against the sensitivity of the view. Table 3.6 provides a matrix that combines the magnitude rating with the visual sensitivity rating to determine the visual impact rating. This rating is applied to each viewpoint to measure the visual impacts of a development from specific locations.

Table 3.6 Visual impact rating

Magnitude of change	Visual sensitivity			
	High	Moderate	Low	Very low
High	High	Moderate	Moderate	Low
Moderate	Moderate	Moderate	Low	Low
Low	Moderate	Low	Low	Very low
Very low	Low	Low	Very low	Very low

3.2.5 Performance objectives and mitigation

Performance objectives are provided in the Solar Guideline to indicate the level of action needed to avoid or mitigate the visual impacts identified in this VIA. Table 3.7 outlines the relevant performance objective for each level of visual impact rating. Each viewpoint assessed must address the relevant performance objective.

Table 3.7 Visual performance objective

Visual impact rating	Visual performance objective
High	This level of 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 mitigation is required in consultation with the affected landowner and should be proportionate to the scale of impact. There is no expectation this mitigation should eliminate the view of the development entirely but must reduce the impact to an acceptable level. Appropriate mitigation options include vegetation screening or project landscaping to reduce impacts. If the available mitigation options would not be effective in reducing impacts or are unsuitable due to the nature of the impact (e.g. screening would result in the obstruction of views), then project redesign and/or impact agreements should be considered.
Low	No mitigation is required.
Very low	No mitigation is required.

The final step in the assessment process is to determine additional measures that could be incorporated into the design of the Project to ameliorate, or, where possible, eliminate the visual impact of the Project.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Mitigation measures can be in several forms including:

- design of project infrastructure to reduce the contrast with the surrounding environment by:
  - moving project elements to less visible locations
  - removing some project elements
  - re-sizing the Project elements
  - use finishes and products that minimise or eliminate surface glare
  - select finishes and colours that are appropriate to the location and context to blend the development into surroundings. Neutral colours that blend in with the surrounding landscape will be used where possible, such as khaki, green, beige, or similar.
- use of visual buffers and screening by planting vegetation
- designing infrastructure to screen operations and lighting.

Mitigation measures that have been incorporated into the design of the Project are discussed in Chapter 6 of this report.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

4 Visual baseline study

The visual baseline establishes the existing and, where applicable, the anticipated future landscape character of the area surrounding the project. Potential future landscape character is indicated by zoning and planning regulations that will allow future development that is of a different character to the existing. The visuall baseline map is provided as

4.1 Land zoning

The Project is located approximately 40 km south of Townsville within the Townsville City Council local government area. Land within the visual study area is zoned:

- Industry / high impact industry.
- Recreation and open space / Sport and recreation
- Rural / Rural

Land zoned for High impact industry is associated with the Lansdown Eco-Industrial Precinct. The purpose of the high impact industry zone code is to provide safe and efficient use of land for a range of higher impacting industrial activities. This will lead to significant changes in the visual characteristics of the area.

The current landscape character of the visual study area reflects the area's previous rural land zoning, with wide agricultural uses characterised by large areas of cleared land used for pasture with interspersed areas of remnant native vegetation.

4.2 Land use

The land in the premises and wider visual study area is currently used for fodder crops and cattle grazing. There are also rural-residential dwellings located throughout the local landscape.

The visual study area is transected by linear elements such as road and railway corridors, and electricity transmission easements.

The western portion of the study area contains the privately owned DriveIT NQ driving and racing circuit facility.

4.3 Heritage value

A search was undertaken of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register. No Aboriginal or Torres Strait Islander cultural heritage site points are within the subject site. The cultural heritage party for the area is the Bindal People. The Cultural Heritage Body for the area is the Gudjuda Reference Group Aboriginal Corporation.

A search of Commonwealth, State and local heritage registers did not identify any recorded sites within or adjacent to the subject site.

Within close proximity of the subject site are several historic heritage sites protected under the Townsville City Plan 2024 v.1:

- Lansdown Station Homestead Site (former) and Unmarked Grave - Lot 500 on E12466 (located 3.3 km West from the Project premises and outside the visual study area)
- Manton Cemetery - Lot 2 on EP1107 (located 2.2 km South from the Project premises)

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

- Woodstock CWA Hall - Lot 24 on EP352 (located 3.7 km North from the Project premises and outside the visual study area).

4.4 Townships

There are no towns or population centres in the visual study area. The nearest town is Woodstock, located approximately 3.7 km north of the project premises.

4.5 Transport

The main transport route runs north-south along the eastern boundary of the Project. This is made up of Flinders Highway and the regional Brisbane to Cairns railway line. The rail is located between the Project and the Flinders Highway.

Local roads service the surrounding rural areas, including Murrays Road, Crabb Road and Skydiver Road.

4.6 Landform

The terrain in the visual study area falls approximately 30 m from high points in the west of approximately 90 mAHD to approximately 60 m in the east of the visual study area along Murrays Road. Although not level, the landscape is generally flat, with low undulations of generally less than 3 m.

Within the project premises the ground surface consists of grass pastures sloping gradually towards the east. Surface elevations range from approximately 80 mAHD in the west to approximately 74 mAHD in the east across 600 m.

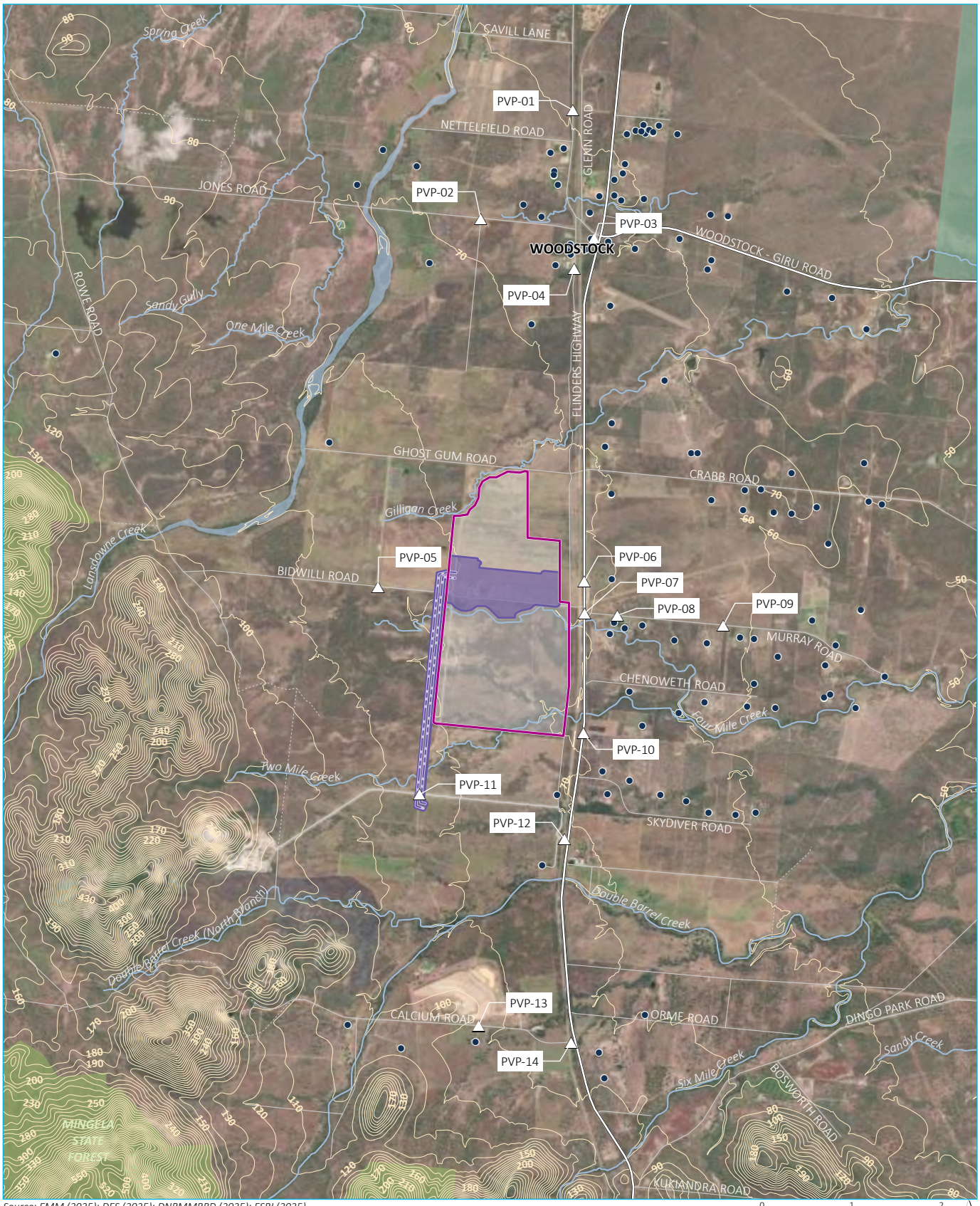
There are no waterways within the premises. Four Mile Creek is located approximately 200 m south of the premises, with high-value regrowth classified as Regional Ecosystem (RE) 11.3.30 along its corridor; this ecosystem is ground-truthed and identified as "least concern – remnant" under the *Vegetation Management Act 1999* (VM Act) status.

4.7 Vegetation

The area surrounding the Project site has historically been used for agricultural and mining purposes. And as such, it is largely cleared of native vegetation and is predominantly covered by crops and grasslands for use as pasture. Windbreaks are present along pastural fence lines and surrounding rural properties with remnant vegetation confined along creek lines and in isolated pockets on properties.

The existing vegetation of the premises comprises open paddocks dominated by grasses, grazed grassy land, and non-remnant vegetation in the northern section, featuring a predominantly dead groundcover of exotic species.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026



Source: EMM (2025); DES (2025); DNRMMRRD (2025); ESRI (2025)

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KEY

- Northern Quartz Campus
- Package 1- Premises
- Package 1- Transmission line
- Sensitive receptor
- Public view point

Existing environment

- Major road
- Minor road
- Vehicular track
- Topographic contour (10 m interval)
- Named watercourse
- Named waterbody
- National park/nature reserve
- State forest

Visual baseline map

Northern Quartz Campus
Package 1- BESS, transmission line and substation
Visual Impact Statement
Figure 4.1

EMM creating opportunities

5 Visual assessment

5.1 Viewshed mapping

Viewshed mapping is a method of mapping the theoretical visibility of the Project across the surrounding landscape and is used to identify the locations with potential views to project infrastructure. Using geographic information systems (GIS) technology, the topography of the land is combined with project infrastructure modelling to analyse the potential visibility of the Project. The results are the zone of visual influence (ZVI).

Best practice requires that vegetation (trees) and built structures not be included in the mapping. The resulting maps can therefore only show where landform obstructs views. This can be important for viewpoints that are behind vegetation or buildings and have no or obstructed views of the proposed development yet are shown on the ZVI as having a potential visual impact. As such, the ZVI represents a worst-case scenario in terms of project visibility.

The ZVI assists in determining where potential visual impacts will occur, and to what extent. This will be used to eliminate the need to assess viewpoints that do not have line of sight to the Project elements.

The following is noted regarding the ZVI diagram:

- The ZVI does not account for the diminishing size of project elements as the viewer moves further away. It only indicates where project elements will be visible.
- The ZVI uses colour to indicate high visibility and low visibility. Highly visible areas show locations on the ground from which all or most project elements would be visible. Low levels of visibility are locations where small numbers of project elements are visible. No colour within the study area would indicate locations where no project elements predicted to be visible.

Two viewshed maps have been produced for this VIA, the first showing the ZVI for the BESSs and substation (excluding the transmission line), and the second showing the ZVI for all parts of the Project, including the transmission line. Two maps were produced to help differentiate between the visibility of the BESS and substation versus the visibility of the transmission towers.

The ZVI for the BESS and substation (Figure 5.1) illustrates the following:

- The Project is predicted to be partially to highly visible from all but a few small, scattered locations throughout the visual study area. This is due to the generally flat terrain as described in section 4.6.
- The areas of highest potential visibility are locations with no private receivers. These are locations within approximately 1 km north and south of the project premises, and to the south-west of the substation out to the edge of the visual study area.
- Visibility for travellers on the Flinders Highway and the Brisbane Cairns Railway will be variable, and generally low to moderate.

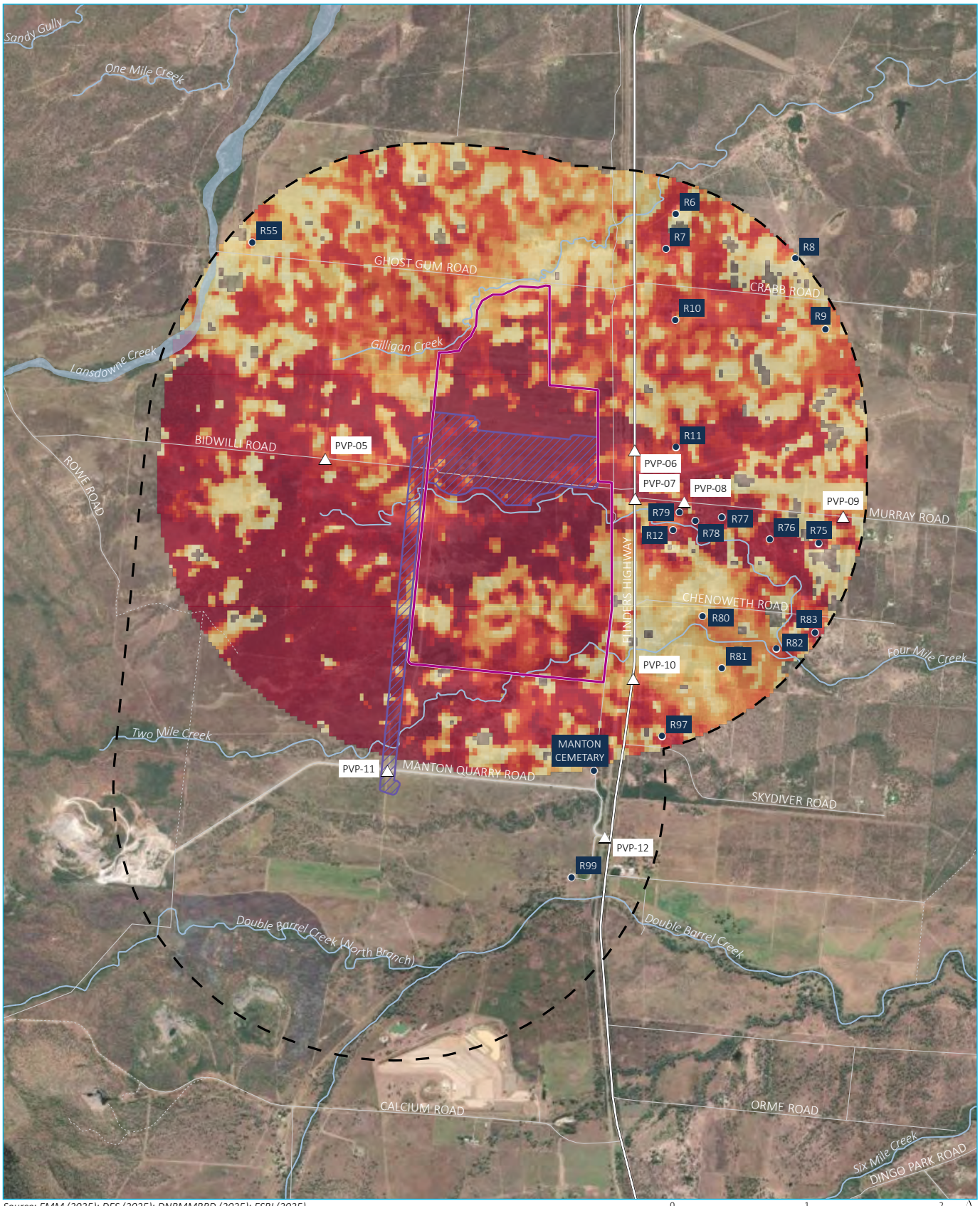
The ZVI for the BESS, substation and transmission line (Figure 5.2) illustrates the following:

- The pattern of potential visibility changes only slightly for locations to the north and east of the premises, including the Flinders Highway and the non-associated private receivers. The ZVI indicates slightly more visibility of the project infrastructure due to the addition of the transmission towers.
- Locations south and west of the premises indicate a slightly higher visibility with the transmission towers than without the towers.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

- The areas of highest potential visibility are locations with no private receivers. These are locations within approximately 1 km north and south of the project premises, and to the south-west of the substation out to the edge of the visual study area.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026



Source: EMM (2025); DES (2025); DNRMMRRD (2025); ESRI (2025)

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KEY

- Northern Quartz Campus
- Package 1- Premises
- Visual study area
- Sensitive receptor
- Public view point

Visibility of development

- Highly visible
- Not very visible

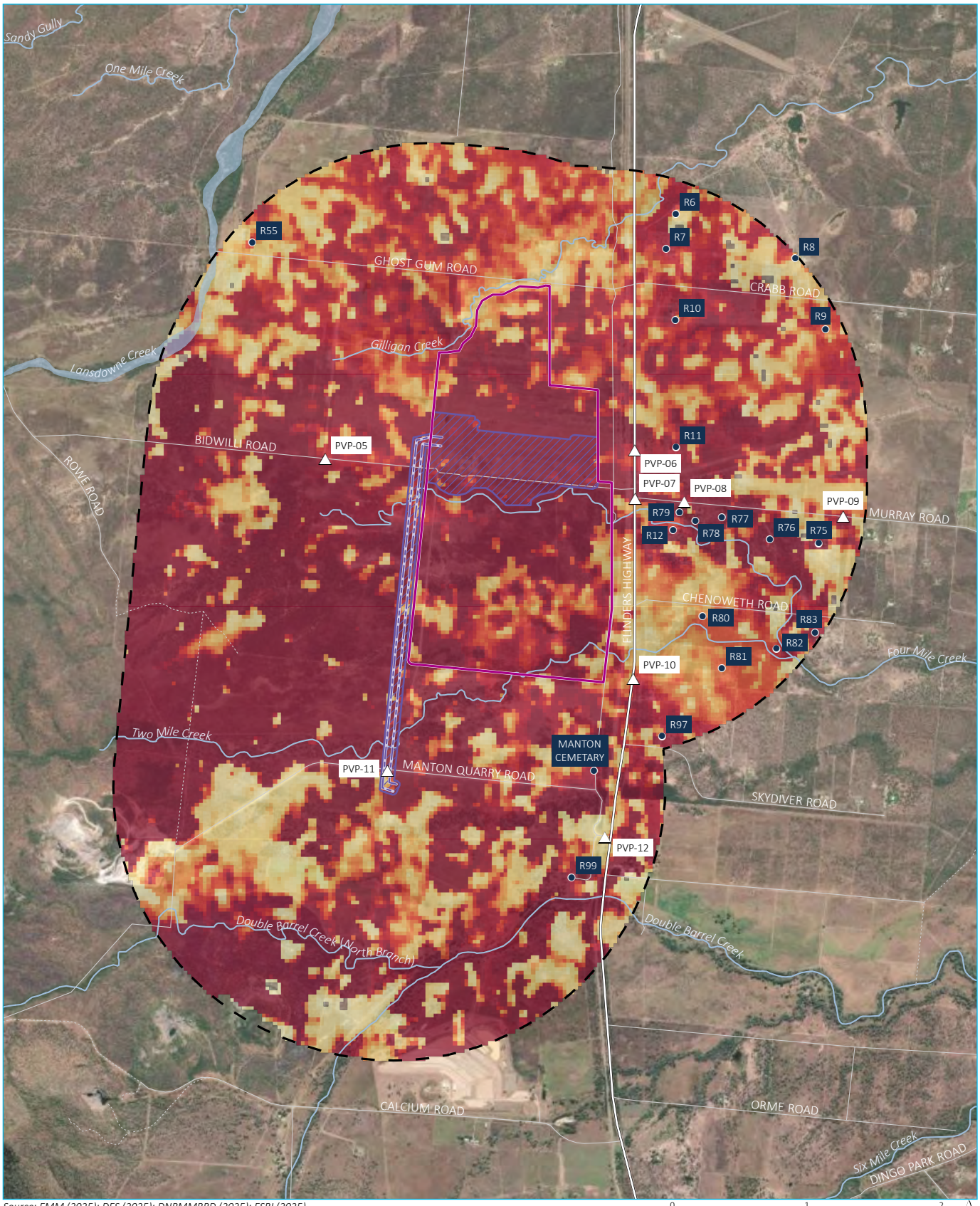
Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody

Viewshed map
BESS and substation

Northern Quartz Campus
Package 1- BESS, transmission line and substation
Visual Impact Statement
Figure 5.1

EMM creating opportunities



Source: EMM (2025); DES (2025); DNRMMRRD (2025); ESRI (2025)

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KEY

- Northern Quartz Campus
- Package 1- Premises
- Package 1- Transmission line
- Visual study area
- Sensitive receptor
- Public view point

Visibility of development

- Highly visible
- Not very visible

Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody

Viewshed map
BESS, substation and transmission line

Northern Quartz Campus
Package 1- BESS, transmission line and substation
Visual Impact Statement
Figure 5.2

EMM
creating opportunities

5.2 Viewpoint selection

The ZVI's shown in Figure 5.1 and Figure 5.2 indicate a worst-case potential visibility of the Project based on terrain only with no vegetation or structures. The assessment below allows for views being obstructed by existing vegetation and structures. This assessment is based on recent ecological surveys and analysis of recent site photographs and aerial photographs in combination with terrain data.

A review of aerial photographs, ecological mapping and recent photographs, indicates extensive woodland vegetation surrounding the Project site. This vegetation is comprised of trees with canopies providing effective visual screening from 3–15+ m above ground level. Shrubs and immature trees provide effective screening beneath the tree canopy. Photograph 5.1 below shows vegetation typical of the area surrounding the visual study area.

The assessment below allows for the screening effect of existing vegetation and structures when considering potential visual impacts.

Photograph 5.1 Typical existing vegetation in the visual study area

5.2.1 Public viewpoints

Public viewpoints represent various types of locations. The types of locations include public gathering areas like parks, sporting fields and walking trails in the surrounding community. They also include roads, trails, scenic viewpoints and campsites that are located within regional, state and national parks, reserves and forests. Tourist attractions, heritage sites and public buildings can also be included in this category.

Key public areas located within the visual study area include:

- Brisbane to Cairns Railway
- Flinders Highway
- Bidwilli Road
- Murrays Road
- Ghost Gum Road
- Crabb Road
- Chenoweth Road

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

- Skydiver Road
- Manton Cemetery
- DriveIT NQ.

The public viewpoints used for this LVIA are selected from the public areas and roads identified above.

Only locations within the visual study area are selected, and therefore not all the public areas will be represented by viewpoints.

The selected public viewpoints are shown on Figure 5.1 and Figure 5.2.

5.2.2 Heritage sites

There is one historic heritage site in the visual study area which is protected under the Townsville City Plan 2024 v.1, the Manton Cemetery - Lot 2 on EP1107 (located 2,050 m south of the Project premises). Visual impacts at this location are assessed by PVP-15 in Table 5.2.

5.2.3 Private receivers

There are 18 non-associated private receivers in the surrounding landscape within 2 km of the Project as shown on the viewshed maps (Figure 5.1 and Figure 5.2).

5.2.4 Viewpoints selected for detailed assessment

From the private receivers and public viewpoints identified above four have been selected for detailed assessment with photomontages. These four are predicted to experience typical visual impacts.

Table 5.1 provides the rationale for selecting each viewpoint location. The viewpoints were selected based on the following criteria:

- proximity to project elements
- level of visibility indicated by the ZVI
- the location of dwellings and other local features and important sites
- the positioning of regional and local roads and potential impacts on passing motorists
- local topography
- presence of remnant vegetation and wind breaks with potential to provide screening.

Photographs from these selected viewpoints were captured and a selection of these photographs has been provided in Figure 5.3 – Figure 5.6 as part of the viewpoint analysis. The photographs are used to represent and assess the visual changes that may occur from the development.

Table 5.1 Selected receivers and rationale for selection

Receiver	Distance to modification area (m)	Rationale for selection
PVP-03	3,720	Although outside the visual study area, this viewpoint represents views from Woodstock and from the Flinders Highway and Brisbane Cairns Railway from the north.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Receiver	Distance to modification area (m)	Rationale for selection
PVP-07	280	This viewpoint represents views for travellers from the closest point of the Flinders Highway and Brisbane Cairns Railway to the Project.
PVP-08	580	Located approximately 300 m east of PVP-07 on Murrays Road, this viewpoint is representative of potential impacts on nearby residences.
PVP-12	2,530	This viewpoint represents views from the Flinders Highway and Brisbane Cairns Railway for travellers headed north and views from the scattered residences to the south-east of the Project.

5.3 Visual impacts – construction

The construction of the BESS is anticipated to last approximately 24 months. Visible activity caused by construction may include:

- additional traffic along Flinders Highway that may be visible to local residences
- machinery, including cranes, for installation of the BESS, substation and transmission infrastructure
- laydown areas
- dust from construction activities.

Visual impacts from these activities will be local and temporary. During this time no visual impacts caused by construction of the BESS are anticipated to be significant. No mitigation measures are required for visual impacts caused by construction of the Project.

5.4 Visual impacts – operation

The visual impacts during operation are those visual impacts that occur after the construction phase of the Project throughout its operational life. Visual impacts from operation of the Project will be caused mainly by:

- BESS, substation and transmission infrastructure and supporting facilities on the project premises
- infrequent and limited vehicle and traffic movements for maintenance activities.

5.4.1 Detailed viewpoint assessment

Four viewpoints (PVP-03, 07, 08 and 12) have been selected for detailed assessment with photomontages (refer Figure 5.3 to Figure 5.6). These viewpoints were selected to represent potential visual impacts for motorists and residents surrounding the Project. The locations of these viewpoints are shown on Figure 5.1 and Figure 5.2.

Photographs from the selected viewpoints were captured and have been provided as part of the viewpoint analysis. The photographs are used to represent and examine the human experience of the visual changes that may occur from the Project.

For each of the selected viewpoints, the following have been prepared:

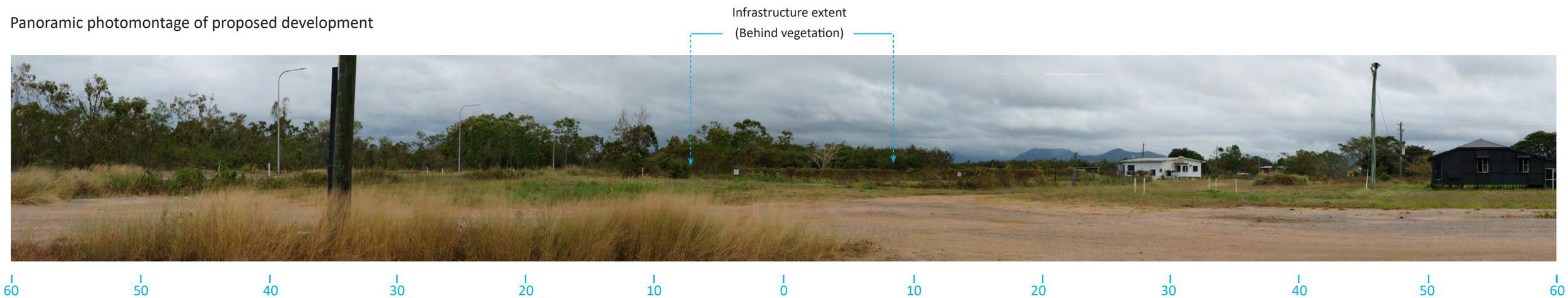
- a panoramic photograph showing the current view with a horizontal field of view of 120°
- a photomontage showing the visual impact of the operational elements of the Project.

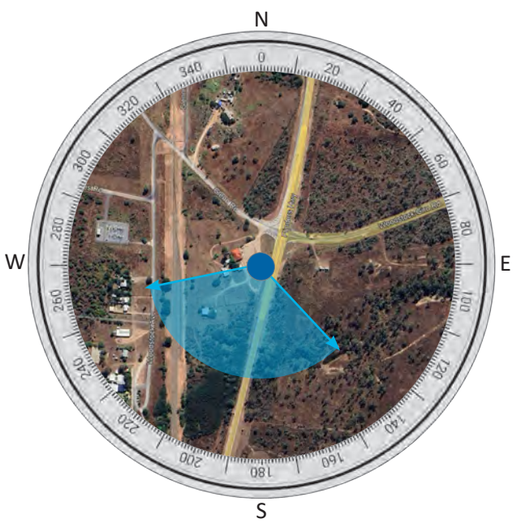
Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Viewpoint 03 - Intersection of Glenn Road & Flinders Highway, Woodstock

Panoramic view of existing site

Panoramic photomontage of proposed development





Coordinates (Long, Lat)	146.837722, -19.595391
Distance to premises	3,720m
Viewpoint type	Public
Viewpoint sensitivity	Very low
Scenic quality	Very low
Visual sensitivity	Very low
Magnitude rating	Very low
Visual impact rating	Very low

Visual impact discussion

This view is taken from the intersection of Glenn Road and the Flinders Highway.

Scenic quality is very low based on the generally flat terrain with extensive rural development.

Magnitude rated as very low due to the prevention of views by existing vegetation.

The photomontage shows the location of the Project in relation to the existing vegetation.

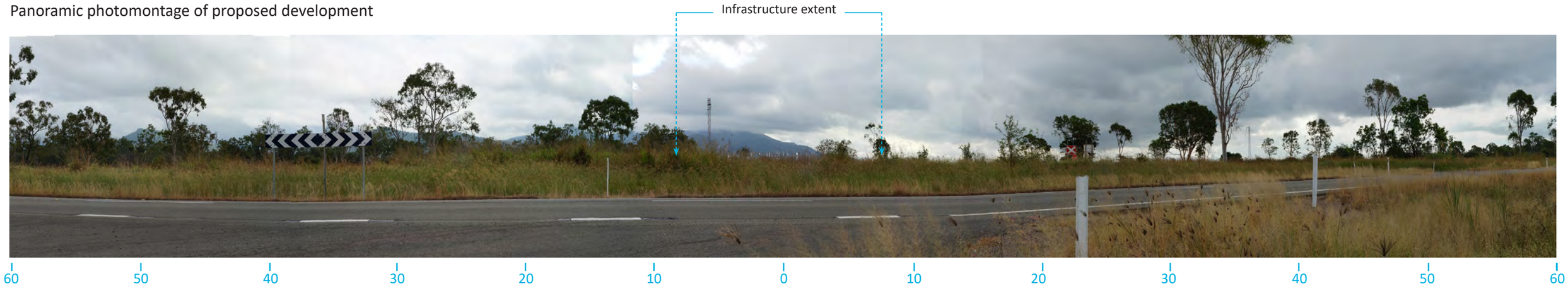
No mitigation is required due to the very low visual impact rating.

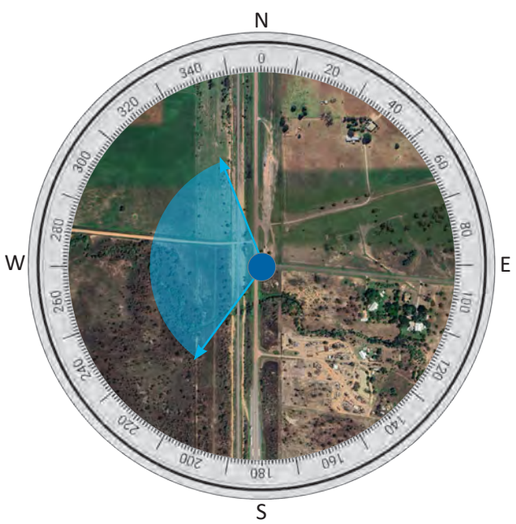
Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Viewpoint 07 - Intersection of Murrays Road & Flinders Highway, Woodstock

Panoramic view of existing site

Panoramic photomontage of proposed development





Coordinates (Long, Lat)	146.836605, -19.632675
Distance to premises	280m
Viewpoint type	Public
Viewpoint sensitivity	Very low
Scenic quality	Very low
Visual sensitivity	Very low
Magnitude rating	Low
Visual impact rating	Very low

Visual impact discussion

This view is taken from the intersection of Murrays Road and the Flinders Highway.

Scenic quality is very low based on the generally flat terrain with extensive rural development.

The photomontage shows that partial views of the higher parts of the Project infrastructure will be possible.

Magnitude is rated as low.

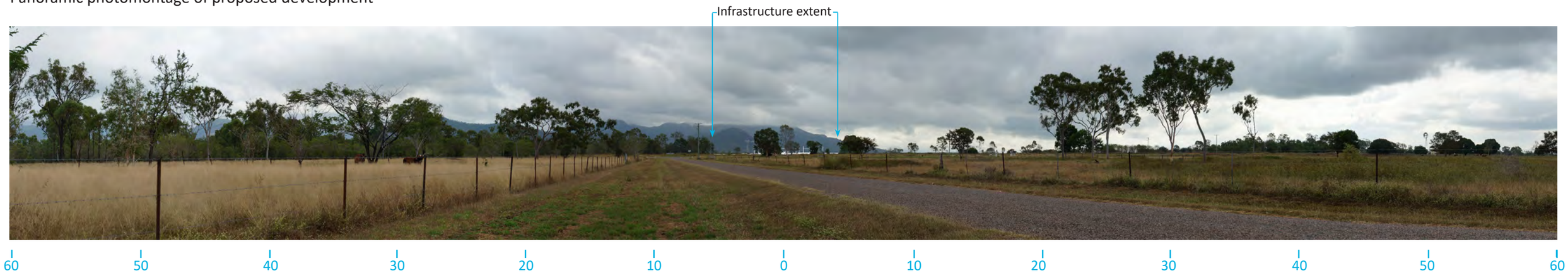
No mitigation is required due to the very low visual impact rating.

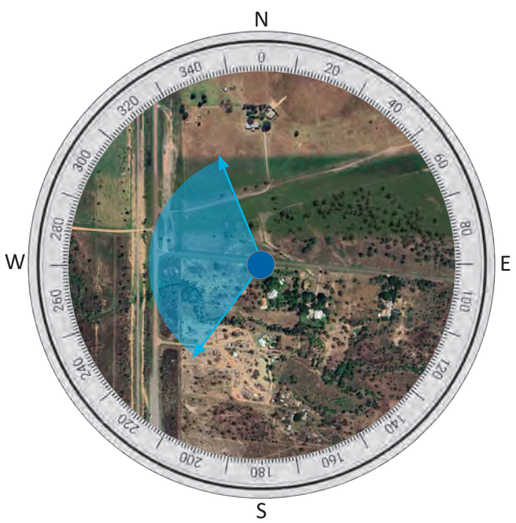
Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Viewpoint 08 - Murrays Road, Woodstock (traveling west)

Panoramic view of existing site

Panoramic photomontage of proposed development





Coordinates (Long, Lat)	146.839377, -19.633053
Distance to premises	850m
Viewpoint type	Public
Viewpoint sensitivity	Very low
Scenic quality	Very low
Visual sensitivity	Very low
Magnitude rating	Low
Visual impact rating	Very low

Visual impact discussion

This view is taken from Murrays Road approximately 300 m east of the Flinders Highway.

Scenic quality is very low based on the generally flat terrain with extensive rural development.

Photomontages of the project are presented on this and the following page with an enlargement of the area with greatest impact.

The photomontage shows that partial views of the higher parts of the Project infrastructure will be possible.

Magnitude is rated as low.

No mitigation is required due to the very low visual impact rating.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Viewpoint 08 - Murrays Road, Woodstock (traveling west)

Panoramic photomontage of the proposed development

60 50 40 30 20 10 0 10 20 30 40 50 60

Angle (degrees) of horizontal view

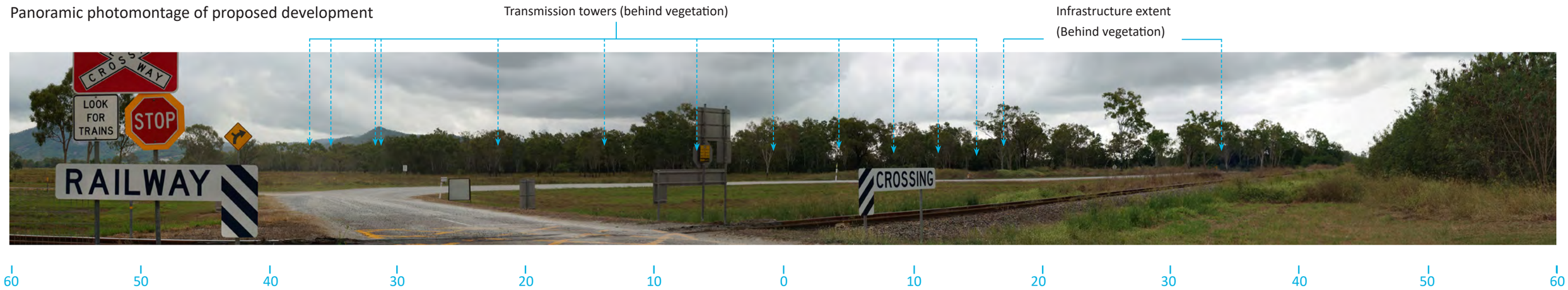
Inset - detail at 50mm lens equivalent

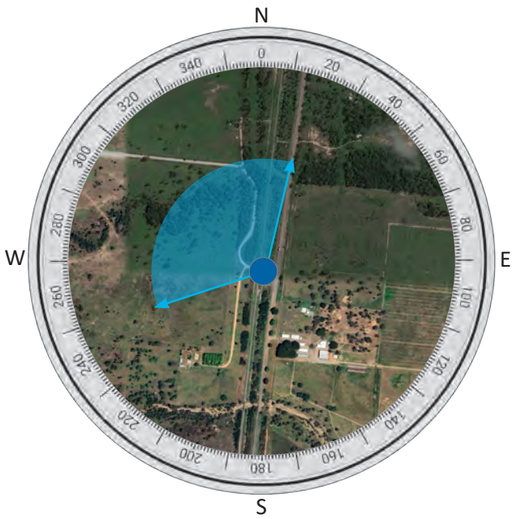
Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Viewpoint 12 - Intersection of Manton Quarry Road & Flinders Highway, Woodstock

Panoramic view of existing site

Panoramic photomontage of proposed development





Coordinates (Long, Lat)	146.834534, -19.655501
Distance to premises	2,689m
Viewpoint type	Public
Viewpoint sensitivity	Very low
Scenic quality	Very low
Visual sensitivity	Very low
Magnitude rating	Very low
Visual impact rating	Very low

Visual impact discussion

This view is taken from the intersection of Manton Quarry Road and the Flinders Highway.

Scenic quality is very low based on the generally flat terrain with extensive rural development.

The photomontage shows the location of the Project in relation to the existing vegetation. Views of the BESS and substation will be prevented by vegetation. A small part of some transmission pylons may be visible above existing trees.

Magnitude is rated as very low.

No mitigation is required due to the very low visual impact rating.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

5.4.2 Viewpoint assessment

Visual impacts of the Project have been assessed for all public viewpoints and for all private receivers in the visual study area. The assessment is based on the photomontages and detailed assessments in section 5.4.1, in combination with analysis of aerial photographs and topographic information.

This assessment is shown in Section 5 with the following results:

- Scenic quality:
  - The landscape of the visual study area is generally flat and highly developed for rural, mining or industrial uses. Scenic quality of all viewpoints has been assessed as very low.
- Viewpoint sensitivity:
  - Private receivers were assessed as secondary views from rural dwellings, giving a viewpoint sensitivity of low
  - One public viewpoint (PVP-15 at Manton Cemetery) has a viewpoint sensitivity of low. The remaining public viewpoints have a rating of very low.
- Magnitude of change
  - The highest magnitude of change measured from the Project will be experienced by public and private receivers close to and east of the Project. This includes travellers on Flinders Highway and the Brisbane to Cairns Railway, and residences near the western of Murrays Road.
  - Photomontages prepared for PVP-07 and PVP-08 indicate a low magnitude for these locations.
  - Based on their proximity to PVP-08 four private receivers (PVP-11, 12, 78 and 79) were assessed as having a similar magnitude of low. Based on aerial photos the actual magnitude at these locations will likely be very low due to the screening effect of existing vegetation and structures.
  - All other private receivers are more distant from the Project than PVP-11, 12, 78 and 79 and will have low or very low magnitude.
  - Only two public viewpoints have a magnitude rating higher than low:
    - PVP-05 will have largely unfiltered views from west of the Project and has been rated as moderate.
    - PVP-11 will be adjacent to the southern end of the transmission line and has rated as high.
  - The magnitude of visual impact is rated as low or very low for all viewpoints (excluding PVP-05 and 11) based on a combination of factors including:
    - Greater distance from the Project reduces the viewer's horizontal angle of view of the Project.
    - The low height of the BESS infrastructure and flat terrain increase the screening effect of existing trees along roads or as planted windbreaks.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

- All private residences within the visual study area are on large blocks with established vegetation. Established trees will provide screening that will reduce the magnitude of visual impact for these receivers.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Table 5.2 Viewpoint assessment

Location	Viewpoint type(s)	Distance (m) to project premises	Viewpoint sensitivity	Scenic quality	Visual sensitivity	Magnitude rating	Visual impact rating	Mitigation required	Notes
PVP 03	Public – roads and highways	3,720	Very low	Very low	**Very low**	**Very low**	**Very low**	No	The photomontage for this location (Figure 5.3) indicates views of the Project will be prevented by existing vegetation.
PVP-05	Private – recreation	750	Very low	Very low	**Very low**	**Moderate**	**Low**	No	This location approximately 1 km north-west of the substation, and with little intervening vegetation will have views of the BESS, substation and a number of pylons.
PVP-06	Public – roads and highways	260	Very low	Very low	**Very low**	**Low**	**Very low**	No	Located approximately 350 m north of PVP-07 similar elevation and surrounding vegetation, this viewpoint will experience similar visual impact to PVP-07.
PVP 07	Public – roads and highways	280	Very low	Very low	**Very low**	**Low**	**Very low**	No	The photomontage for this viewpoint (Figure 5.4) indicates a low magnitude and a very low visual impact.
PVP 08	Public – roads and highways	580	Very low	Very low	**Very low**	**Low**	**Very low**	No	The photomontage for this viewpoint Figure 5.5) indicates a low magnitude and a very low visual impact.
PVP-09	Public – roads and highways	1,850	Very low	Very low	**Very low**	**Very low**	**Very low**	No	Located approximately 1.2 km further east of the Project than PVP-09, this viewpoint may have distant views of some Project infrastructure.
PVP-10	Public – roads and highways	1,400	Very low	Very low	**Very low**	**Very low**	**Very low**	No	From this location it is anticipated vegetation will prevent views of the BESS and substation. Patial views of some pylons may be possible.
PVP-11	Public – roads and highways	2,100	Very low	Very low	**Very low**	**High**	**Low**	No	From this location it is anticipated vegetation will prevent views of the BESS and substation. This viewpoint is located adjacent to the southern end of the transmission line and will experience significant visual impact from the nearest pylons.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Location	Viewpoint type(s)	Distance (m) to project premises	Viewpoint sensitivity	Scenic quality	Visual sensitivity	Magnitude rating	Visual impact rating	Mitigation required	Notes
PVP 12	Public – cemetery	2,530	Very low	Very low	**Very low**	**Very low**	**Very low**	No	The photomontage for this location (Figure 5.6 indicates views of the Project will be prevented by existing vegetation.
PVP 15	Public – cemetery	2,050	Low	Very low	**Very low**	**Very low**	**Very low**	No	Based on PVP-12 and recent photos from the site, s
R-06	Private – secondary	1,750	Low	Very low	**Very low**	**Very low**	**Very low**	No	Existing vegetation both near the house and on surrounding land will significantly or completely screen views of the Project. The magnitude of visual impact at this location will be less than for PVP-07 due mainly to screening provided by existing vegetation.
R-07	Private – secondary	1,480	Low	Very low	**Very low**	**Very low**	**Very low**	No	Existing vegetation and structures both near the house and on surrounding land will significantly or completely screen views of the Project. The magnitude of visual impact at this location will be less than for PVP-07 due mainly to screening provided by existing vegetation and greater distance.
R-08	Private – secondary	1,980	Low	Very low	**Very low**	**Very low**	**Very low**	No	Existing vegetation and structures both near the house and on surrounding land will significantly or completely screen views of the Project. The magnitude of visual impact at this location will be less than for PVP-07 due mainly to screening provided by existing vegetation and greater distance.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Location	Viewpoint type(s)	Distance (m) to project premises	Viewpoint sensitivity	Scenic quality	Visual sensitivity	Magnitude rating	Visual impact rating	Mitigation required	Notes
R-09	Private – secondary	1,870	Low	Very low	**Very low**	**Very low**	**Very low**	No	Existing vegetation and structures both near the house and on surrounding land will significantly or completely screen views of the Project. The magnitude of visual impact at this location will be less than for PVP-07 due mainly to screening provided by existing vegetation and greater distance.
R-10	Private – secondary	1,040	Low	Very low	**Very low**	**Very low**	**Very low**	No	Existing vegetation and structures both near the house and on surrounding land will significantly or completely screen views of the Project. The magnitude of visual impact at this location will be less than for PVP-07 due mainly to screening provided by existing vegetation and greater distance.
R-11	Private – secondary	580	Low	Very low	**Very low**	**Low**	**Very low**	No	This receiver lies at a similar distance from the project premises as PVP-08. The magnitude rating is low but will likely be less than for PVP-08 due to vegetation and structures near the house that will filter or prevent views of the Project.
R-12	Private – secondary	640	Low	Very low	**Very low**	**Low**	**Very low**	No	This receiver lies at a similar distance from the project premises as PVP-08. The magnitude rating is low but will likely be less than for PVP-08 due to vegetation and structures near the house that will filter or prevent views of the Project. Existing vegetation along Four Mile Creek will provide additional screening.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Location	Viewpoint type(s)	Distance (m) to project premises	Viewpoint sensitivity	Scenic quality	Visual sensitivity	Magnitude rating	Visual impact rating	Mitigation required	Notes
R-75	Private – secondary	1,690	Low	Very low	**Very low**	**Very low**	**Very low**	No	This receiver lies at a greater distance from the project premises than PVP-08. The magnitude of visual impact at this location will be less than for PVP-08 due to vegetation and structures near the house and on intervening land that will filter or prevent views of the Project.
R-76	Private – secondary	1,340	Low	Very low	**Very low**	**Very low**	**Very low**	No	This receiver lies at a greater distance from the project premises than PVP-08. The magnitude of visual impact at this location will be less than for PVP-08 due to vegetation and structures near the house and on intervening land that will filter or prevent views of the Project.
R-77	Private – secondary	950	Low	Very low	**Very low**	**Very low**	**Very low**	No	This receiver lies at a similar distance from the project premises as PVP-08. The magnitude of visual impact at this location will be less than for PVP-08 due to vegetation and structures near the house that will filter or prevent views of the Project. Existing vegetation along Four Mile Creek will provide additional screening.
R-78	Private – secondary	770	Low	Very low	**Very low**	**Low**	**Very low**	No	This receiver lies at a similar distance from the project premises as PVP-08. The magnitude rating is low but will likely be less than for PVP-08 due to vegetation and structures near the house that will filter or prevent views of the Project. Existing vegetation along Four Mile Creek will provide additional screening.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

Location	Viewpoint type(s)	Distance (m) to project premises	Viewpoint sensitivity	Scenic quality	Visual sensitivity	Magnitude rating	Visual impact rating	Mitigation required	Notes
R-79	Private – secondary	630	Low	Very low	**Very low**	**Low**	**Very low**	No	This receiver lies at a similar distance from the project premises as PVP-08. The magnitude rating is low but will likely be less than for PVP-08 due to vegetation and structures near the house that will filter or prevent views of the Project. Existing vegetation along Four Mile Creek will provide additional screening.
R-80	Private – secondary	1,230	Low	Very low	**Very low**	**Very low**	**Very low**	No	It is anticipated that views from this location will be insignificant due to screening by existing vegetation and structures.
R-81	Private – secondary	1,630	Low	Very low	**Very low**	**Very low**	**Very low**	No	It is anticipated that views from this location will be insignificant due to screening by existing vegetation and structures.
R-82	Private – secondary	1,790	Low	Very low	**Very low**	**Very low**	**Very low**	No	It is anticipated that views from this location will be insignificant due to screening by existing vegetation and structures.
R-83	Private – secondary	1,940	Low	Very low	**Very low**	**Very low**	**Very low**	No	It is anticipated that views from this location will be insignificant due to screening by existing vegetation and structures.
R-97	Private – secondary	1,900	Low	Very low	**Very low**	**Very low**	**Very low**	No	It is anticipated that views from this location will be insignificant due to screening by existing vegetation and structures.
R-99	Private – secondary	2,780	Low	Very low	**Very low**	**Very low**	**Very low**	No	It is anticipated that views from this location will be insignificant due to screening by existing vegetation and structures.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

6 Mitigation measures

Additional mitigation is not required for the Project because no viewpoints have been assessed as potentially experiencing a visual impact higher than low.

Although not required, visual impacts resulting from the BESS and substation will be further mitigated by proposed buffer planting east of the Project that is associated with the Lansdown Eco-Industrial Precinct and is not part of the Project.

The following general guidelines may further reduce even the anticipated very low visual impact of the Project:

- Use of finishes and products that minimise or eliminate surface glare.
- Select finishes and colours that are appropriate to the location and context to blend the development into surroundings. The visual impact of the BESS and associated structures can be minimised by careful selection of materials and colours. Neutral colours that blend in with the surrounding landscape will be used where possible, such as khaki, green, beige, or similar.
- Existing vegetation should be retained where possible to maintain existing levels of screening.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

7 Conclusion

The visual baseline study found that the landscape of the premises and wider visual study area are characterised by vegetation and development associated with the current use predominant use of land for fodder crops and cattle grazing. A number of rural-residential dwellings are located throughout the local landscape The visual study area is transected by linear elements such as road and railway corridors, and electricity transmission easements.

Based on viewshed mapping a number of public viewpoints and private receivers were identified for assessment. The visual impact for all assessed public viewpoints and private receivers has been rated as very low. This visual assessment has found that:

- There will be no significant visual impacts caused by construction of the Project.
- Ten public viewpoints were assessed:
  - two (PVP-05 and 11) receiving a low visual impact rating
  - eight public viewpoints received a very low visual impact rating.
- 18 private receivers in the visual study area were assessed as having very low visual impact

Additional mitigation is not required for the Project because no viewpoints have been assessed as potentially experiencing a visual impact higher than low.

Although not required, visual impacts resulting from the BESS and substation will be further mitigated by proposed buffer planting east of the Project that is associated with the Lansdown Eco-Industrial Precinct and is not part of the Project.

Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

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Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026

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Document Set ID: 28309172
Version: 1, Version Date: 28/04/2026