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Tragowel BESS

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Landscape and Visual
Impact and Visual
Assessment Report

21 April 2026

THIS REPORT HAS BEEN PREPARED FOR COGENCY ON
BEHALF OF GREEN SWITCH AUSTRALIA & POTENTIA ENERGY

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1 INTRODUCTION

The Proponents, Green Switch Australia and Potentia Energy, intend to submit a Development Application (DA) for the development of a utility-scale Battery Energy Storage System (BESS), the Tragowel BESS (the Project), at Tragowel in north central Victoria.

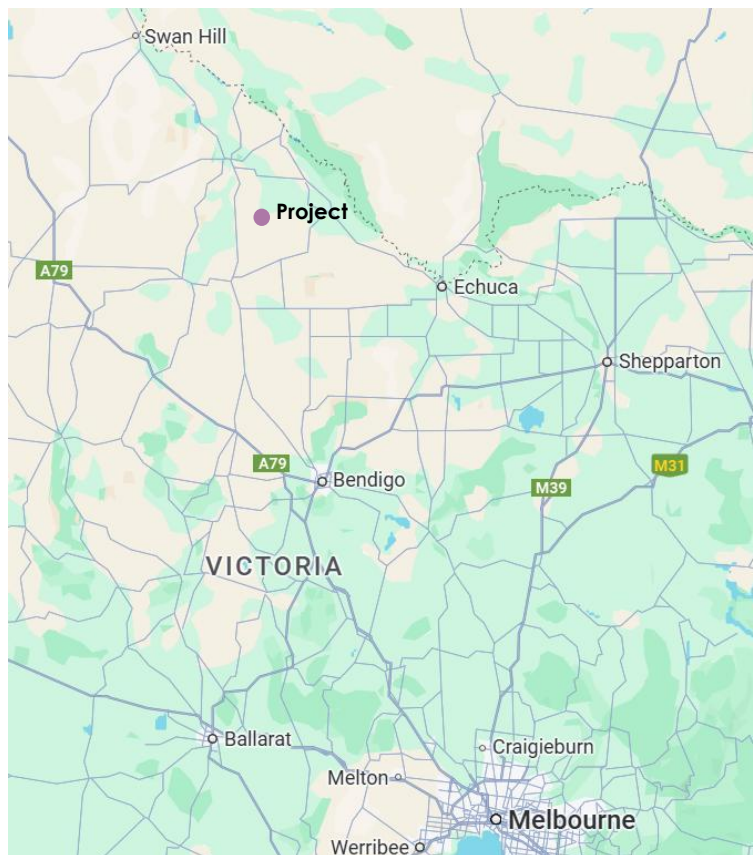
The Project is located approximately 240 kilometres (km) north-northwest of Melbourne and approximately 5.5km south-southeast of the Kerang town centre (refer to **Figure 1**).

The primary parcel for the Project area, approximately 23 hectares (ha), is located on the Loddon Valley Highway, which defines its western frontage, and extends east to the Melbourne to Swan Hill railway line, which defines its eastern frontage.

The Project area is located on agricultural land with the recently constructed Kerang Solar Plant abutting the Project to the north. An existing substation, the Kerang Terminal Station, is located approximately 2.1km to the north. Agricultural land extends to the south, east and west of the Project area.

The Project area comprises approximately 15ha, with 7ha allocated for the BESS Development Area and 8ha for the underground transmission line and will involve the construction of BESS compounds, associated electrical infrastructure and an underground power connection to the terminal station to the north.

This report has been prepared by Peter Haack Consulting to provide a landscape and visual impact assessment (LVIA) for inclusion in the Development Application.



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Figure 1 - Project location (Source: Google Maps).

2 METHODOLOGY

2.1 Approach

While there are no specific legislative requirements for the methodology of an assessment such as this in Victoria, the profession typically refers to the guidance offered by:

- Guidance for Landscape and Visual Impact Assessment (GLVIA), Third Edition, Landscape Institute and Institute of Environmental Management & Assessment (2013).
- Guidance Note for Landscape and Visual Assessment, Australian Institute of Landscape Architects (AILA) (2018).
- Solar Energy Facilities Design and Development Guideline (October 2022).

The methodology used for this Project, described below, conforms generally to the direction offered by the above guidelines as well as other proven assessment methodologies.

This assessment report assesses the landscape and visual impact of the Project, which is the day-to-day visual effects on people's views.

The method to measure visual impacts is based on the combination of the sensitivity of viewers to the proposed change and the magnitude of the Project on that visual setting or view.

The following study components were included as part of this assessment:

- Review the Project with regard to potential visual impacts.
- Characterisation of the existing landscape and visual setting.
- Qualitatively assess:
 - Visual modification at key viewpoints – How would the Project contrast with the landscape character of the surrounding setting?
 - Visual sensitivity at key viewpoints – How sensitive would viewers be to the Project?
 - Potential night-lighting impacts.
- Propose visual impact mitigation and management measures.

2.2 Assessment of landscape and visual impacts

The landscape and visual impact assessment is based on a detailed analysis of the landscape and visual setting and an assessment of the potential impacts of the Project on its viewshed.

The critical issues considered for this LVIA were:

- The number and location of sensitive viewing locations;
- The duration of the view – either static (generally long term - > 1 hour) and mobile (generally short term continually moving and static for no longer than 5 minutes);
- The degree to which the proposed works would be visible;

- The quality of the landscape setting; and
- The degree to which the Project contrasts or is compatible with the visual character of the setting – the visual modification level.

The assessment method assumed that if the Project would not be seen, there is no impact (refer to **Table 1**).

VISUAL IMPACT		Visual/Viewer Sensitivity		
		High	Moderate	Low
Level of Visual Modification to the Setting	High	High	High	Moderate
	Moderate	High	Moderate	Low
	Low	Moderate	Low	Low
	Very Low	Low	Very Low	Very Low
	Not Visible	No Impact	No Impact	No Impact

Table 1 - Visual impact determination matrix.

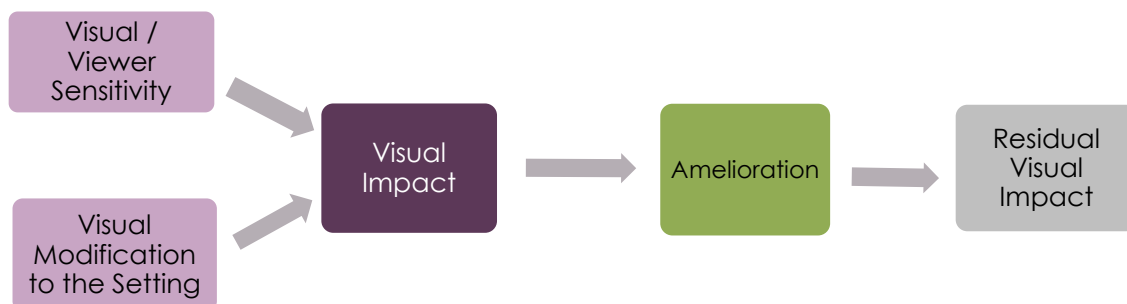


Diagram 1 - Visual impact assessment process.

2.2.1 Visual sensitivity

In this report, the approach to the visual sensitivity is consistent with the USDAFS visual management system¹.

The visual sensitivity of development depends on a range of viewer characteristics. The primary characteristics used in this report include:

- Land use;
- Distance of the development from viewers; and

¹ Landscape Aesthetics – A Handbook for Scenery Management, Agricultural Handbook No. 701. United States Department of Agriculture Forest Service (1995).

- Visibility from sensitive land use areas.

Visual sensitivity is a measure of how critically a change to the existing environment would be viewed from various land uses (refer to **Table 2**). Different activities have different sensitivity levels. For example, tourists on holiday would generally view changes to a landscape more critically than industrial workers in the same area. Similarly, individuals would view changes to the visual setting of their homes more critically than changes to the broader area in which they travel or work.

The next critical component to rating the visual sensitivity is the distance of the development from the identified visual use area. There are three viewing situations to consider:

- foreground (0 - 1 km);
- midground (1 km – 4 km); and
- background (> 4 km).

As the distance increases from a proposed development to a sensitive land use area, the level of viewer sensitivity decreases based on a perceptual dis-association based on a reduction in relative proximity.

Visual Use Area	Foreground		Midground		Background
	Local Setting		Sub-Regional Setting		Regional Setting
	0 – 0.5 km	0.5 – 1 km	1 – 2 km	2 – 4 km	> 4 km
Residences	H	H	H	M	L
Tourism & Accommodation	H	H	H	M	L
"B" Category Roads (Loddon Valley Highway)	M	L	L	L	VL
Conservation Reserve	M	L	L	L	VL
Local Roads	L	L	L	VL	VL
Agricultural Areas	L	L	L	VL	VL
Industrial Area	VL	VL	VL	VL	VL

Legend - H = High, M = Moderate, L = Low, VL = Very Low

Table 2 - Typical Viewer (visual) Sensitivity.

Another consideration in defining the level of sensitivity in situations where a development is proposed adjacent to an existing development of a similar form and scale, is that of de-sensitisation. In this scenario, those residing adjacent to the existing development may have become accustomed to its presence and may be less sensitive to an extension with a similar character.

Conversely, the additional development may result in a cumulative impact, with some becoming hyper-sensitised. Given the potential for varying reactions, the methodology takes a cautionary approach and defines all uses at the same sensitivity level as a "greenfields" site.

2.2.2 Visual modification to the existing setting

The level of visual modification resulting to a setting from a proposed development, or the degree to which the setting is modified, can be best measured as an expression of

the visual interaction, or the level of visual contrast between the project and the existing visual environment.

A high level of magnitude, or a high degree of visual modification, will result if the major components of the project contrast strongly with the existing landscape.

A low level of magnitude, or a low degree of visual modification, will occur if there is little or minimal visual contrast and a high level of integration of form, line, shape, pattern, colour or texture values between the proposed development and the environment in which it sits. In this situation, the proposed development may be noticeable, but does not markedly contrast with the existing, already modified landscape (refer to **Table 3**).

The degree of magnitude or modification would generally decrease as the distance from the Project to various viewing locations increases.

The presence of the existing power related infrastructure, including the terminal station and surrounding powerlines, provides the Project with a significant degree of visual fit within the already modified landscape setting.

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

Table 3 - Typical scenarios for determining the visual modification level.

2.2.3 Occupied field of view – Visual prominence

To assist with the assessment of visual prominence, this report defines several viewsheds which are based on distance from the project. The methodology is based on the reduction of impact with an increase in distance between a given viewpoint and the project. The potential visual impact of the project will also, to a large extent, depend on how much of the central field of vision it occupies (refer to **Table 4**, **Table 5** and **Figure 2**).

Throughout the visual catchment, the degree of visual prominence will generally decrease as the distance from the development site to various viewing locations increases.

The quantitative assessment of visual prominence, i.e., how much is potentially visible, is intertwined with the distribution, height and density of vegetation as well as topography throughout the visual catchment, elements which can screen views of a development from a particular viewpoint. Visual prominence helps inform the process of determining the visual modification level as previously outlined in the above section.

Degrees of Field of View Occupied	Potential Visual Prominence – Horizontal Field of View
Less than 5°	Insignificant – Low Visual Prominence The development may not be highly visible in the view unless it contrasts strongly with the background.
5° – 30°	Potentially Noticeable – Moderate Visual Prominence The development may be noticeable. The degree that it intrudes on the view will be dependent on how well it integrates with the landscape setting.
Greater than 30°	Potentially Dominant – High Visual Prominence The development will be highly noticeable.

Table 4 - Horizontal line of sight – Visual impact / visual prominence.

Degrees of Field of View Occupied	Potential Visual Prominence – Vertical Field of View
0° - 0.25°	Barely Discernible – Very Low Visual Prominence A very thin line in the landscape.
0.25° - 0.5°	Insignificant - Low Visual Prominence A thin line in the landscape.
0.5° – 2.5°	Potentially Noticeable – Moderate Visual Prominence The development may be noticeable. The degree that it intrudes on the view will be dependent on how well it integrates with the landscape setting.
Greater than 2.5°	Potentially Dominant – High Visual Prominence The development will be highly noticeable, although the degree of visual intrusion will depend on the landscape setting and the width/spread of the object.

Table 5 - Vertical line of sight – Visual impact / visual prominence.

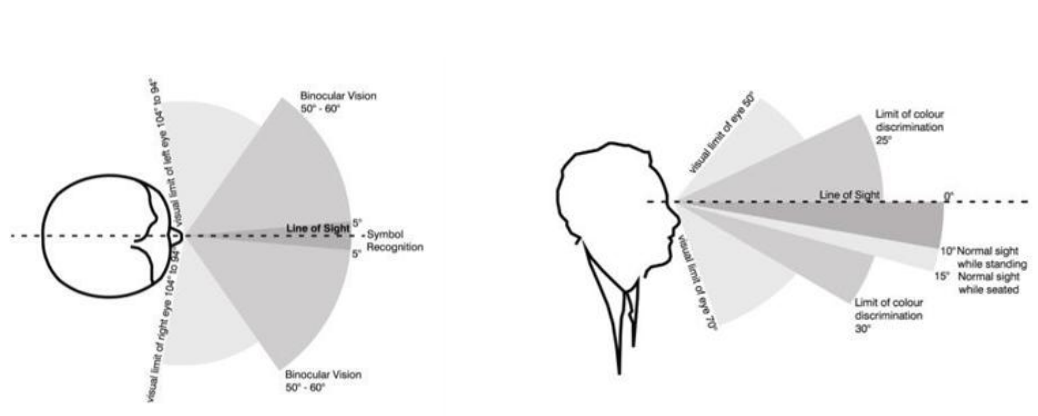


Figure 2 – Horizontal and vertical field of view.

2.2.4 Residual impacts

The effectiveness of the measures proposed in mitigating the landscape and visual impacts resulting from the Project is demonstrated by comparing the visual impact during initial operation with the residual impact when the proposed landscape measures have mostly matured, which is typically ten (10) years following initial establishment.

Generally, residual impacts would be reduced by at least one level where landscape measures have been proposed and have matured, as a result of the filtering of, or inhibiting views to the Project.

2.2.5 Cumulative impact

2.2.5.1 *Simultaneous cumulative impact*

Simultaneous cumulative impact refers to occurrences where an impact may result from several potential visual intrusions being visible from an individual location at the one time.

2.2.5.2 *Sequential cumulative impact*

Sequential cumulative impact refers to occurrences when the viewer must move to another viewpoint to see different developments. Sequential cumulative impacts most typically apply to road users as they traverse the landscape along major roads.

2.3 Lighting impacts

AS-NZS-4282-2023 Control of the obtrusive effects of outdoor lighting provides standards for the assessment and limitation of lighting impacts. The standard identifies four environmental zones for exterior lighting which are categorised by the degree of artificial lighting within an area. For example, national parks would be categorised as an intrinsically dark landscape (Category A1), whereas a city centre with high levels of night-time activity would be categorised as a high district brightness area (Category A4).

The standard is aimed at the minimisation of light spill. Regardless of the existing brightness of a particular setting, it is a widely accepted principle that light spill, particularly upward light spill, be minimised wherever possible.

2.3.1 Lighting impact scenarios

Glow

Light glow is typically an upward projection of light that results in illumination of the night sky above a lighting source. It is intensified, or more visually apparent when foggy or cloudy as the light reflects or disperses of water droplets in the atmosphere. Glow is visible over significant distances.

Spill

Spill is light that falls on adjacent sensitive surfaces, both vertical and horizontal, and is most intrusive where it illuminates private open spaces or spills through windows.

Hot spots

Hot spots relate to concentrated areas of bright light in an otherwise less well illuminated setting. Hot spots will be most visible where are elevated.

Kinetic / movement

Lights that change colour or flash can draw the attention of a viewer. As the speed of the colour change or blink increases in speed, so too will its prominence of ability to draw attention.

2.4 Limitations of the assessment

There are these following limitations associated with this assessment:

- The LVIA process aims to be objective and, as such, seeks to describe any changes factually. Potential changes resulting from the project have been defined. However, the significance of these changes requires qualitative (subjective) judgements to be made. Therefore, the conclusions to this assessment combine both objective measurement and subjective professional interpretation. This assessment has attempted to be objective, however, it is recognised that visual assessment can be highly subjective, and individuals are likely to associate different visual experiences to the study area;
- The impact assessment is focused on the current land uses and zoning; and
- Methodology of the construction works are currently unknown and dependent upon planning approvals. However, we have assumed that the impacts during construction would result in a similar degree of visual impact to that of the operational phase assessment findings, pre-amelioration.

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3 COMPONENTS OF THE PROJECT

3.1 Landholdings

The Project comprises the following areas of land:

- The primary landholding of 23ha comprises four paddocks.
- The BESS Development Area, including substation, is located on the largest of the four paddocks, which is 12.3ha.
- The Project area of 15ha, includes the BESS Development Area at 7ha, and the underground transmission line corridor at 8ha. The transmission line corridor is primarily located to the north of the 12.3ha parcel.

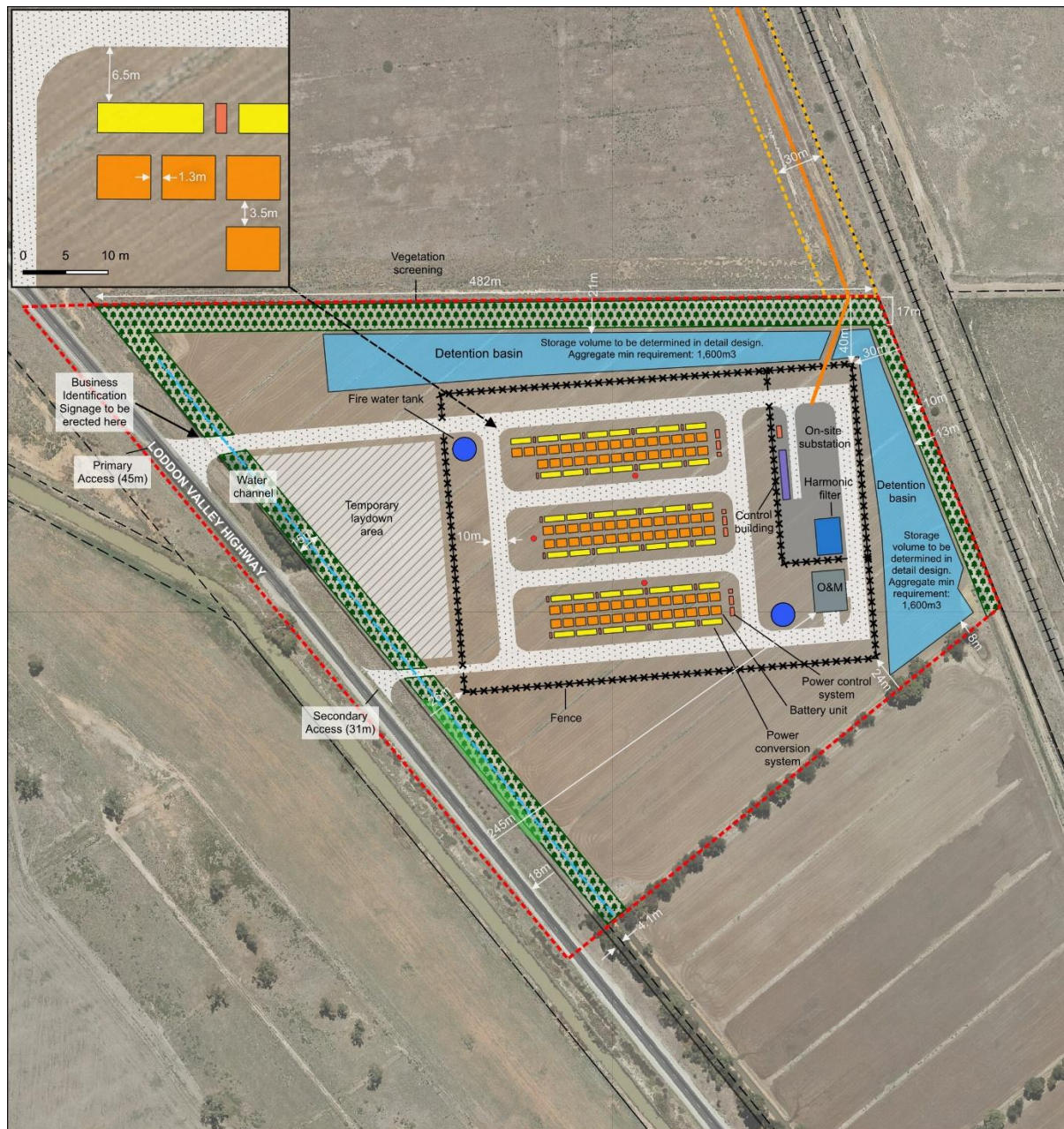
3.2 Key features

As illustrated in **Figure 3** and **Figure 4** the Project involves the development of an 7ha BESS facility on the approximately 12.3ha Project area.

The works and components associated with the Project include:

- Approximately 172 x BESS blocks.
- Approximately 43 x Power control units.
- An on-site substation associated electrical infrastructure.
- 2 x 220kV transformer.
- A harmonic filter.
- An underground transmission line to the Kerang Terminal Station (refer to **Figure 4**).
- Auxiliary power supplies.
- Protection and control equipment.
- A control building.
- Site office.
- Operations and maintenance building.
- An access point on the Loddon Valley Highway, internal maintenance tracks and carparking.
- Water storage tank and fire-fighting infrastructure.
- Security fencing and monitoring systems.
- Earthworks/benching to 1.3m to 1.5m in height.
- Landscaping / screening of a minimum 5m wide strip, located within the 10m to 17m "Vegetation screening" areas.
- Security lighting is required around the substation.

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BESS Concept Layout Plan

2405 - Tragowel BESS

0 50 100 m

LEGEND

Project Site

- BESS Development Area
- Transmission Development Area

Proposed Infrastructure

- Underground transmission line
- Battery unit
- Power conversion system
- Power control systems
- Harmonic filter
- Control building
- Operations and maintenance
- On site substation
- Water tanks
- Vegetation screening
- Fire Hydrants
- Fence
- Temporary laydown area
- Access roads

Existing Features

- Impacted native vegetation
- Roads
- Rail line
- Water channel
- Surveyor title boundary
- VicPlan title boundary

Version: 1.3

Date: 15/04/2026

Disclaimer: This plan is preliminary and subject to detailed studies and approval.

cogency

Figure 3 – Site plan of the BESS Development Area (Source: Cogency).



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Figure 4 – Alignment of proposed connecting underground transmission line route (Source: Google Earth).

3.3 Detail of project components

The most visible components of the Project that may result in visual impacts to surrounding sensitive receptors are outlined below.

3.3.1 Substation earthworks/benching

Given the flood prone nature of the Project area, fill material will be used to create a platform for the substation site. The benched area will be elevated approximately 1.3m-1.5m above existing ground level.

3.3.2 BESS blocks

Installation of batteries housed inside 172 BESS containers constructed of steel, with indicative dimensions of 6.1 metre (m) (length) x 1.7m (width) x 2.9m (height) (refer to **Figure 5**). The BESS blocks will sit on piles / pillars, and the underside of the BESS units will be 1.3 - 1.5 above existing ground level.

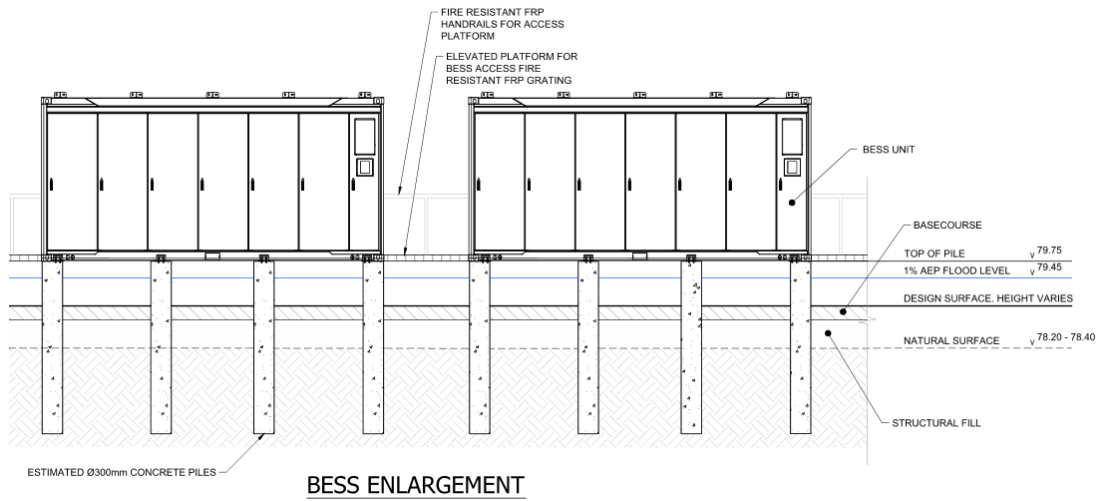


Figure 5 – Proposed BESS module elevated on piles.

3.3.3 Substation

Typical substation and associated hardstand areas with a footprint of approximately 100m x 40m with an average height of 8m (refer to **Figure 6**). The 220kV transformer will be 8m in height, set on a 1.4m high bench (refer to **Figure 7**).



Figure 6 – Typical substation.

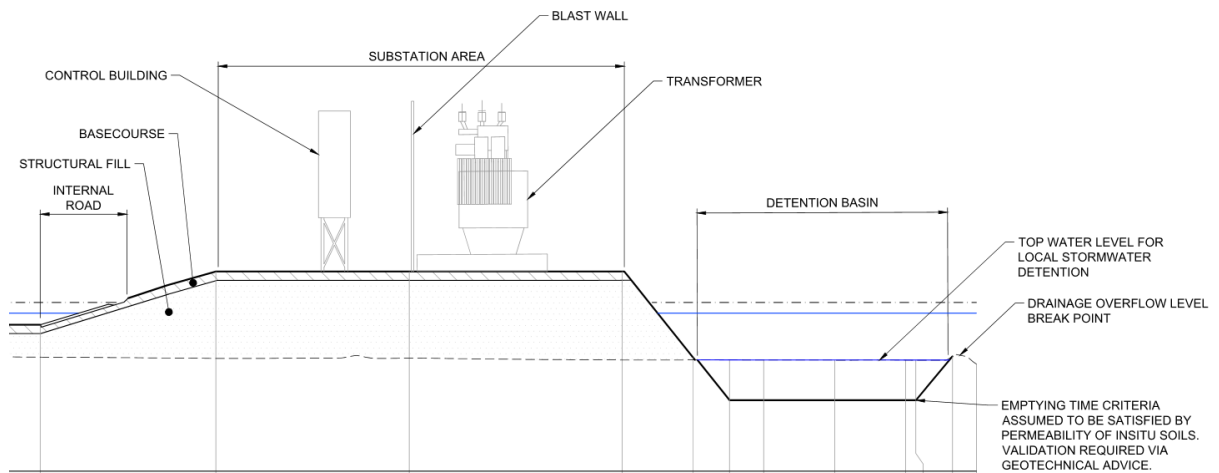


Figure 7 – Section through substation set on elevated bench.

3.3.4 Control room/switch room

The control room/switch room will have a footprint of approximately 31m x 5.5m and a maximum height of 5.6m, including 1.4m of benching (refer to **Figure 8**).



Figure 8 – Typical control building.

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3.3.5 Connecting powerline

An approximately 2.5km section of underground transmission line is required to connect the substation at the Project to the main grid at the Kerang Terminal Station. Following construction, the surface soil will be levelled and a grass cover crop established.

3.3.6 Power conversion system

A power conversion system converts electrical power characteristics, such as AC to DC or changes in voltage and frequency, to meet a load's requirements.

The converter is housed in a cabin-like structure mounted on a concrete base, and is approximately 6m long, 2.4m wide and 3m high (refer to **Figure 9**).

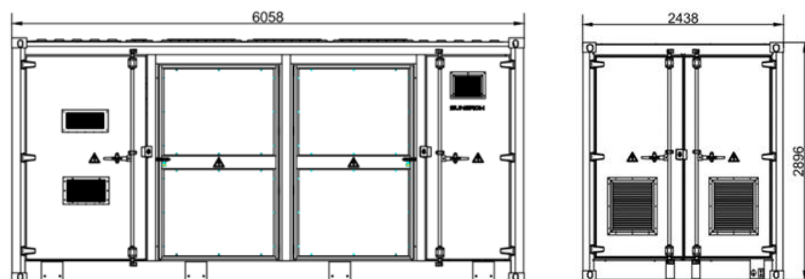


Figure 9 – Typical power conversion unit.

3.3.7 Harmonic filter

A harmonic filter reduces or removes harmonic components from voltage or current waveforms so the power system more closely approximates a pure sine wave.



It is part of the substation infrastructure and will measure approximately 6m long x 3m wide x 3m high.



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Figure 10 - Typical harmonic filter.

3.3.8 Operations and maintenance building

The operations and maintenance building will be a relatively simple, low-profile structure, approximately 12m long, 10m wide and 3.6m high (refer to **Figure 11**).

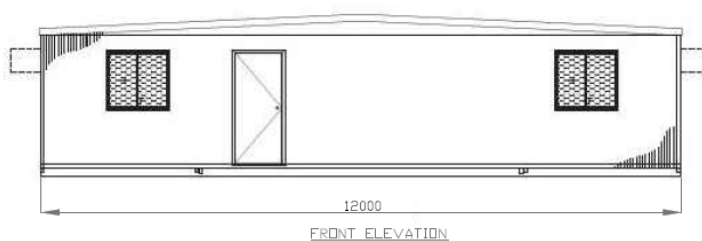


Figure 11 – Typical operations and maintenance building.

3.3.9 Perimeter Fence

An approximately 2 m high security fence will be installed around the Project (refer to **Figure 12**). The purpose of the fence is to deter theft or vandalism and prevent unauthorised access to equipment.

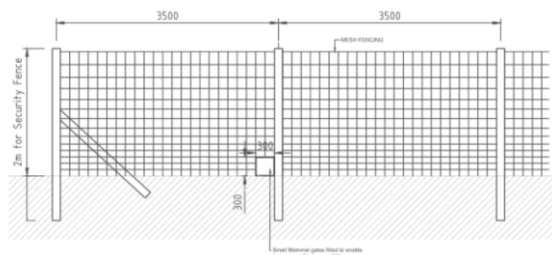


Figure 12 – Typical security fence detail.

3.3.10 Security Cameras

In order to monitor the site and detect any unauthorised access, motion sensor CCTV cameras will be erected on a pole of approximately 4.5 m in height (refer to **Figure 13**). The cameras are directed into the Project area, avoiding impinging on the privacy of nearby properties, and employ infrared technology so no lighting is required.



Figure 13 – Typical post mounted security camera.

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4 PROJECT CONTEXT AND SETTING APPRAISAL

4.1 Project context

The approximately 15ha Project area is situated centrally within a wedge-shaped landholding approximately 23ha in area, which is located between the Loddon Valley Highway in the west, and the Melbourne to Swan Hill Railway line in the east, and referred to as Lot 1, Title Plan 601295P (refer to **Figure 14**).

The Project area occupies part of a 12.3ha rural landholding, plus an additional 8ha for the underground transmission line, which is approximately 2.5km in length and 30m in width. Within the 12.3ha landholding, only approximately 7ha will be utilised for the BESS Development Area.



Figure 14 - Project context (Source: Google Earth).

4.2 Land use and zoning

4.2.1 Land use

The Kerang Solar Plant is located approximately 750m to the north of the Project area and the Kerang Power Station and Terminal Station approximately 2.1km to the north.

The edge of the industrial area to Kerang's south is located approximately 3.7km to the north.

The land use of Project area and surrounding area is comprised of agricultural land, which also separates the town of Kerang from the terminal station to its south (refer to **Figure 15** and **Figure 16**).

Other electrical infrastructure elements in the setting include the HV lines that extend south from the substation (refer to **Figure 17** and **Figure 18**) and smaller above-ground electrical distribution lines running along many of the roads in the surrounding area, including the Loddon Valley Highway (refer to **Figure 19**).

The southern edge of Kerang is comprised lower density residential uses and other non-residential uses, including an industrial area that extends south from the town along the Loddon Valley Highway (refer to **Figure 21**).

Other land uses of note within 4km of the Project area include:

- Tragowel Swamp Nature Conservation Reserve (~770m southwest.)
- Kerang Holiday Park (~3.4km north) (refer to **Figure 22**).
- Kerang Airfield (~3.8km north).

The most significant roads within the viewshed of the Project area are the Loddon Valley Highway, immediately to the west, and the Murray Valley Highway, 3km to the north, which are both designated "B" category highways.



Figure 15 – Land use and existing infrastructure (Source: Google Earth).



Figure 16 – Typical agricultural land use in the study area.



Figure 17 – The Kerang Power Station and Terminal Station, as viewed from the Loddon Valley Highway.



Figure 18 – The Kerang Solar Plant as viewed from the Loddon Valley Highway.



Figure 19 - HV Powerlines connecting to the Kerang Terminal Station traverse the landscape to the west of the Project area.

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Figure 20 - Existing power lines adjacent to the Loddon Valley Highway at the western edge of the Project area.



Figure 21 - View of the industrial area at the southern edge of Kerang.



Figure 22 – Kerang Holiday Park on the southern edge of the town.

4.2.2 Zoning

The Project is located within the Gannawarra Shire Council area. The entirety of the Project area is zoned Farming Zone (FZ) (refer to **Figure 23**).

There are no specific landscape and visual related objectives for the zone, however, siting and design issues for consideration include:

- *The impact of the siting, design, height, bulk, colours and materials to be used, on the natural environment, major roads, vistas and water features and the measures to be undertaken to minimise any adverse impacts.*
- *The impact on the character and appearance of the area or features of architectural, historic or scientific significance or of natural scenic beauty or importance.*

Environmental Significance Overlay Schedule 4 (ESO4) extends over the entire site and relates to areas of poor drainage or areas potentially subject to inundation (refer to **Figure 24**).

The purpose of the zone is:

- *To identify areas where the development of land may be affected by environmental constraints.*
- *To ensure that development is compatible with identified environmental values.*

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Figure 23 - Zoning Map (Source: Vicplan).

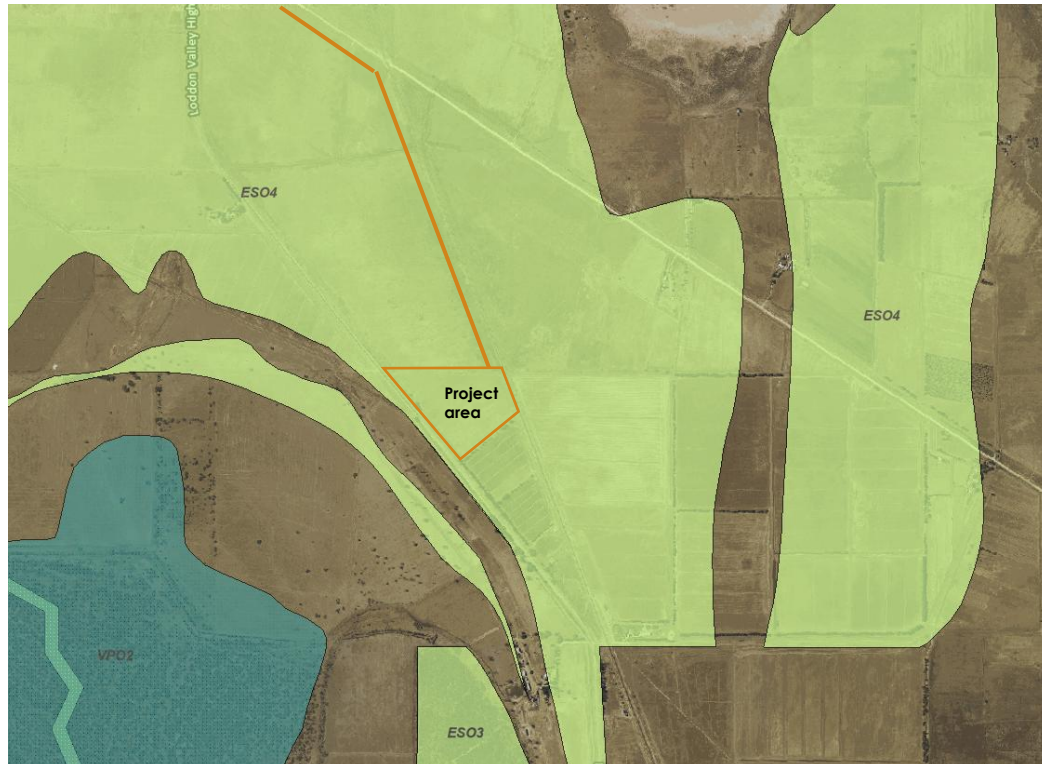


Figure 24 – Overlay zoning map (Source: Vicplan).

4.3 Vegetation and landscape form

4.3.1 Vegetation

The Project area and the surrounding area is a flat landscape comprised of open pasture or cropping land, occasionally visually compartmentalised by rows of trees and tall shrubs along roadways and paddock boundaries, particularly in the area to the southeast (refer to **Figure 25**). Vegetation is primarily comprised of native species, predominantly Eucalyptus species.

To the north of the Project area, canopy vegetation is mostly lacking (refer to **Figure 26**).

To the southwest of the Project area, the Tragowel Swamp Nature Conservation Reserve contains an expansive area of dense, mostly low, shrubs and trees (refer to **Figure 27**).

Rural residences in the area surrounding the Project area are typically set within a well treed setting, that often contains shrubs in the “home yard” adjacent to the residence itself (refer to **Figure 28** and **Section 5.1.2**).

The Project area is mostly cleared, but the main parcel has a band of dense, primarily native canopy species to approximately 10m to 15m in height along its western boundary with the Loddon Valley Highway as well as southern boundary. This vegetation is located both inside and outside of the site (refer to **Figure 29**, **Figure 30** and **Figure 31**).



Figure 25 – Vegetation patterns of the Project area and broader surrounds (Source: Google Earth [2024]).



Figure 26 – Typically sparse vegetation to the north of the Project area.



Figure 27 – The Tragowel Swamp Nature Conservation Reserve with dense vegetation in the distance lining the Loddon River.



Figure 28 – Typical vegetation surrounding a residence.



Figure 29 - Vegetation on and immediately adjacent to the main parcel of the Project area (Source: Google Earth).



Figure 30 – Dense vegetation along the Loddon Valley Highway to the south of the Project area.



Figure 31 – Vegetation along the southern boundary of the main parcel of the Project area.

4.3.2 Landscape form

The Project area is located on the Murray Plains, the broader valley of the Murray River and its tributaries, which includes the Loddon River which is located approximately 2.5km to the west (refer to **Figure 32** and **Figure 33**).

The topography of the region is very flat with waterways and rivers being lightly incised and swamps being in broad, shallow depressions. Elevation range is minimal, from approximately 75m AHD along the waterways and deeper swamps, to approximately 82m AHD.

The town of Kerang is located on the Loddon River near its confluence with Pyramid Creek, reaching a maximum elevation of approximately 83m AHD.

The elevation of the main parcel of the Project area has minimal variation, ranging from approximately 82m AHD at its eastern boundary, to approximately 81m AHD on the western boundary and approximately 81m AHD on the southern boundary to 80m AHD on the northern boundary (refer to **Figure 34**). Average gradients across the Project area are less than 1.5 percent.



Figure 32 - Topographical elevation of broader surrounds of the Project area (Source: ESRI).

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Figure 33 - Topographical elevation of the Project area and immediate surrounds (Source: ESRI).



Figure 34 – Detail site levels and features survey for the main parcel of the Project area.

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4.4 Landscape character type

Within the regional setting of the Project the landscape character type has been identified using the classification system devised by Leonard and Hammond (1984)². The landscape character type is described below:

Murray Basin Plains (type a) – Northern District Plains Subtype

The landscape type extends about 320 kilometres from Wodonga to the Avoca River. It sits to the north of “West Central Hills” and “Foothills” landscape types and to the west of “Wimmera” landscape type. The Murray River border with New South Wales creates the northern edge of this landscape type (refer to **Figure 35**).

To the east of this sub type the land surface is virtually flat with the flood plains of a complex stream network that experience seasonal volume variations flowing into the Murray River. To the west the topography remains flat, and the streams are less complex.

The mostly agricultural landscape contains very small pockets of remnant native grassland and woodland in roadside reserves and on steeper slopes. The agricultural areas of fruit and vegetable growing are under irrigation and there are few retained trees (red gum and grey box eucalypts).

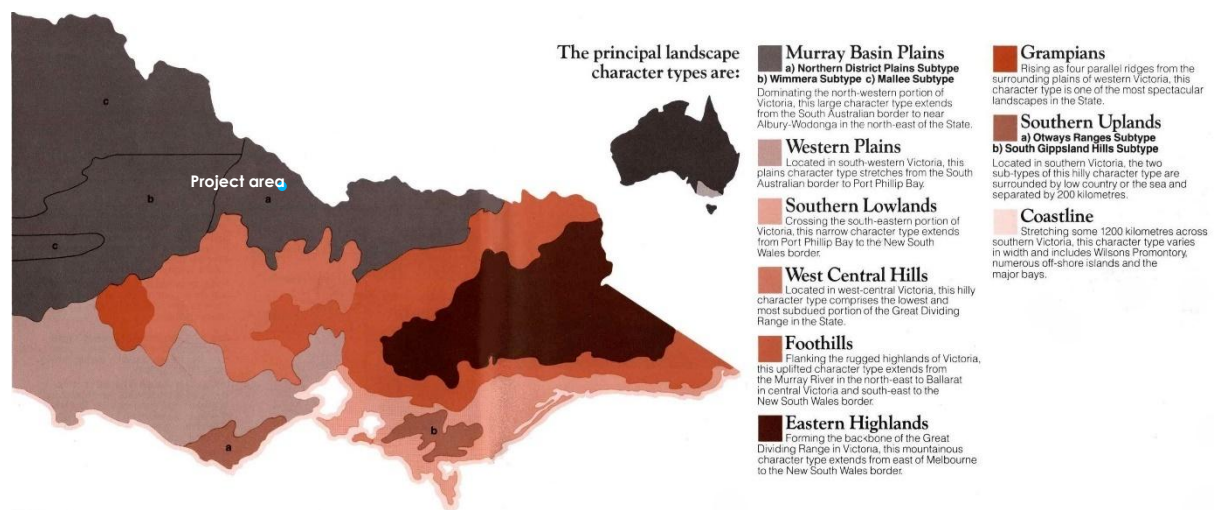


Figure 35 – Landscape Character Types of Victoria Map (Leonard and Hammond, 1984, pgs. 6 and 7).

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² Leonard, M., Hammond, R., (1984). Landscape Character Types of Victoria.



Figure 36 - Landscape character of Project area as viewed from the Loddon Valley Highway to the northwest.



Figure 37 – Landscape character of agricultural landscape to the east of the Project area.



Figure 38 – Irrigation channels traverse the landscape and often lined with indigenous and exotic deciduous vegetation.

4.5 Scenic Quality

Scenic quality is somewhat subjective but typically is a combination of a range of factors that have been found to contribute to the human appreciation of landscape. These factors are:

- Topographic variation and ruggedness;
- Strong patterning of vegetation; and
- The presence of water.

Agricultural landscapes are particularly subject to divergent opinions as to what constitutes scenic values. However, basic principles relating to diversity of topography, patterning of vegetation and the presence of water remain contributing factors to a higher level of scenic quality.

Leonard and Hammond describe the scenic quality of the Murray Basin Plains (type a) – Northern District Plains Subtype landscape character type, as found on the Project area and its immediate surrounds, as outlined below in **Table 6**.

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Description	Low Scenic Quality
Landforms	Vast expanses of indistinctly dissected landforms that provide little illusion of spatial definition or landmarks with which to orient.
Vegetation	Extensive areas of similar vegetation. Few, if any trees. Very limited variation in colour and texture.
Waterforms	Waterforms mostly absent

Table 6 – Scenic quality of the Project area and surrounds (Source: Leonard and Hammond).

Due to the presence of dense and strongly patterned vegetation, and particularly water, the scenic quality of the landscapes to the west of the Project area, which include the Tragowel Swamp Nature Conservation Reserve and the Loddon River, are rated of moderate to high.

4.6 Absorptive Capability

The definition of landscape absorptive quality is closely related to that of visual modification levels. It is generally applied at a broader scale than visual modification and is an assessment of how well a landscape setting can accommodate change or a development.

The key factors considered in determining absorptive capability are topography and vegetation. In areas of flatter topography, overlooking is not possible and even a low and thin band of vegetation is able to screen views to a development from a given viewpoint. In areas of undulating or elevated topography, overlooking can occur and vegetation needs to be higher and denser to achieve effective screening. Intervening undulating topography also has the potential to block views in certain landscapes.

The landscape setting of the Project and surrounds is very flat and, apart from the wetland and riparian landscape to west, comprised of sparse vegetation confined to a rectilinear pattern reflecting property boundaries and roads. Within this landscape, overlooking is generally not possible from most sensitive viewpoints, and even relatively low vegetation (up to eye-height) is effective at screening views.

Topography – High capability due to flat to slightly undulating topography, with minimal potential for overlooking.

Existing Vegetation – Generally low for highly cleared agricultural areas. Moderate to high capability where vegetation exists, particularly roadside plantings.

The overall absorptive capability is moderate given the limited vertical scale of the Project.

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5 VISUAL IMPACT ASSESSMENT

5.1 Visibility of the Project

5.1.1 Theoretical zone of visual influence (TZVI)

Typically, a viewshed or TZVI analysis to identify locations within 5km from where the Project may be seen, based on the potential screening effects of topography, would be undertaken. In this instance, given the very flat topography, with many forms in the landscape being subtle and human-made, such as the railway formation and channel banks, it is clear that the Project components, even at a relatively short 5-8m in height, will be visible up to 5km distant.

Therefore, the assessment process assumes that there will be theoretical visibility based on topography and focuses on the screening effects of landscape for higher sensitivity viewpoints within 2.5km.

5.1.2 The effect of rural residential vegetation on visual screening

In order to provide protection from the influences of the environment, particularly sun and wind, Australian rural residential gardens have traditionally developed a dense band of vegetation to surround an intimate and protected home yard. The effect of this in many instances has been to effectively contain the viewshed from the house and surrounding yard itself, screening distant views. The presence of foreground vegetation has a direct impact on the visibility of the Project and the context in which it will be viewed.

Vegetation within the landscape more distant from the residence that may provide additional screening of views is not considered at this time. However, it is considered as part of the detailed viewpoint assessment.

5.1.2.1 Rural residential viewpoint landscape setting typologies

Throughout the visual catchment, the majority of residences sit within a landscape that is comprised of medium to tall vegetation, with varying levels of density depending on either the extent of clearing or extent of planting.

The height and density of vegetation have a direct relationship to the visual exposure of the residence to the proposed development.

The following three setting typologies have been developed to assist the understanding of the influence of vegetation on the screening of views from residences.

The assessment has considered the overall screening effect of vegetation as it relates to the direction of views towards the Project. For example, if the vegetation at the perimeter of the residence is sparse on the side away from the direction of views to the Project and dense on the side where there may be potential views, the effect of screening vegetation reflects the side with views. The same applies for the converse situation.

5.1.2.1.1 Typology 1 – Minimally screened

Views to external areas are minimally to partially filtered by scattered vegetation.



Influence on visibility and potential impact

Partial to open views of the proposed development will be possible over open pasture or below and between tall, scattered trees. The potential exists for visual impact (refer to **Figure 39**).

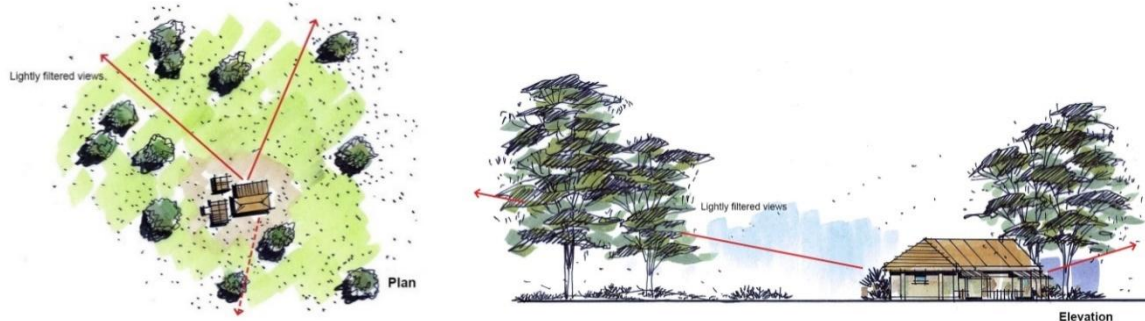


Figure 39 - Typology 1 – Minimally screened. Typical plan and elevation.

5.1.2.1.2 Typology 2 – Partially screened

Views to external areas are partially to heavily screened by vegetation.

Influence on visibility and potential impact

Partial to fully screened views of the proposed development will only be possible where limited breaks in vegetation occur. The potential for visual impact is significantly reduced (refer to **Figure 40**).

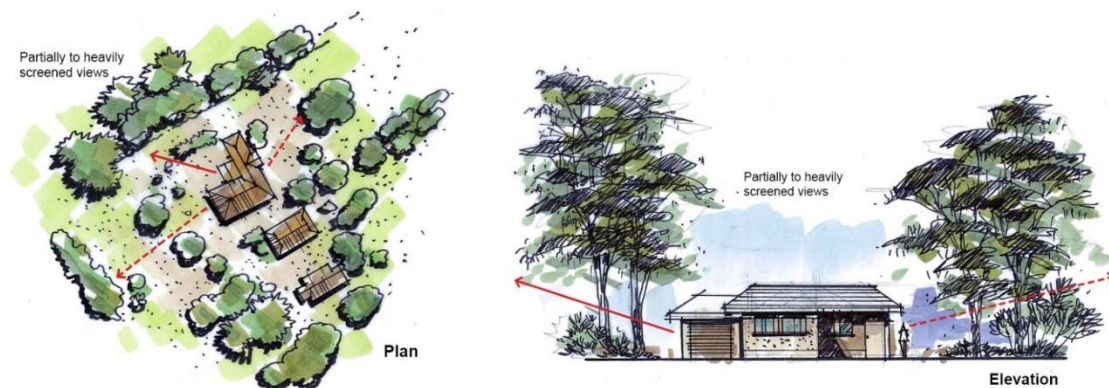


Figure 40 - Typology 2 – Partially screened. Typical plan and elevation.

5.1.2.1.3 Typology 3 – Heavily screened

Views to external areas heavily to fully screened by dense vegetation.

Influence on visibility and potential impact

Views of the proposed development will not be possible and therefore any impacts are highly unlikely (refer to **Figure 41**).

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Figure 41 - Typology 3 – Heavily screened. Typical plan and elevation.

5.1.2.2 Overview assessment of the effects of vegetation screening on views from residences

A desktop assessment was undertaken based on aerial photography and Google Streetview imagery (2024 data) as well as a field survey, of the potential degree of visibility from residences surrounding the Project, considering the following factors:

- Proximity to the Project:
 - Within 0-2 km of the Project boundary.
- Degree of vegetation present around the residence, either:
 - Heavily screened,
 - Partially screened, or
 - Minimally screening.

The effect of vegetation screening is shown in **Figure 42** and is considered in the detailed viewpoint assessments in **Section 5.3.1**.

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Figure 42 – Screening effect of vegetation on views from residences with assessed viewpoints shown numbered (Source: Google Earth).

5.1.3 Visual prominence

In areas of flat topography, the vertical field of view of a 3m high BESS unit located on approximately 2m of fill, with an overall height of 5m, will be less than 2.5 degrees, or of moderate visual prominence in viewing distances beyond 115m, less than 0.5 degrees, or of low visual prominence in distances beyond approximately 640m, and less than 0.25 degrees, or of very low visual prominence in distances beyond 1.1 km.

The vertical field of view of the typical components of the substation, with a height of 10m, will be less than 2.5 degrees, or of moderate visual prominence in distances beyond 230m, will be less than 0.5 degrees, or of low visual prominence in distances beyond 1.1km, and less than 0.25 degrees, or of very low visual prominence in distances beyond 2.2km

The horizontal field of view is not considered relevant given the relatively small footprint of the Project, and the distance from sensitive viewpoints, resulting in an angle of less than 30 degrees, or no greater than a moderate level of visual prominence.

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5.2 Sensitive viewpoints

The viewpoint (VP) locations that are included in this assessment are from uses considered to be of higher sensitivity (refer to **Table 2** and **Figure 43**). Due to the relatively low-profile form of the Project, the detailed assessment of viewpoints has been confined to sensitive locations that are within 2 km of the Project and also fall within the TZVI, the area within which the Project will be most visible.

The locations selected for photography and assessment are within the public realm and proximate to the sensitive, privately owned visual use area. The underground powerline connection has been assessed separately in **Section 5.4**.

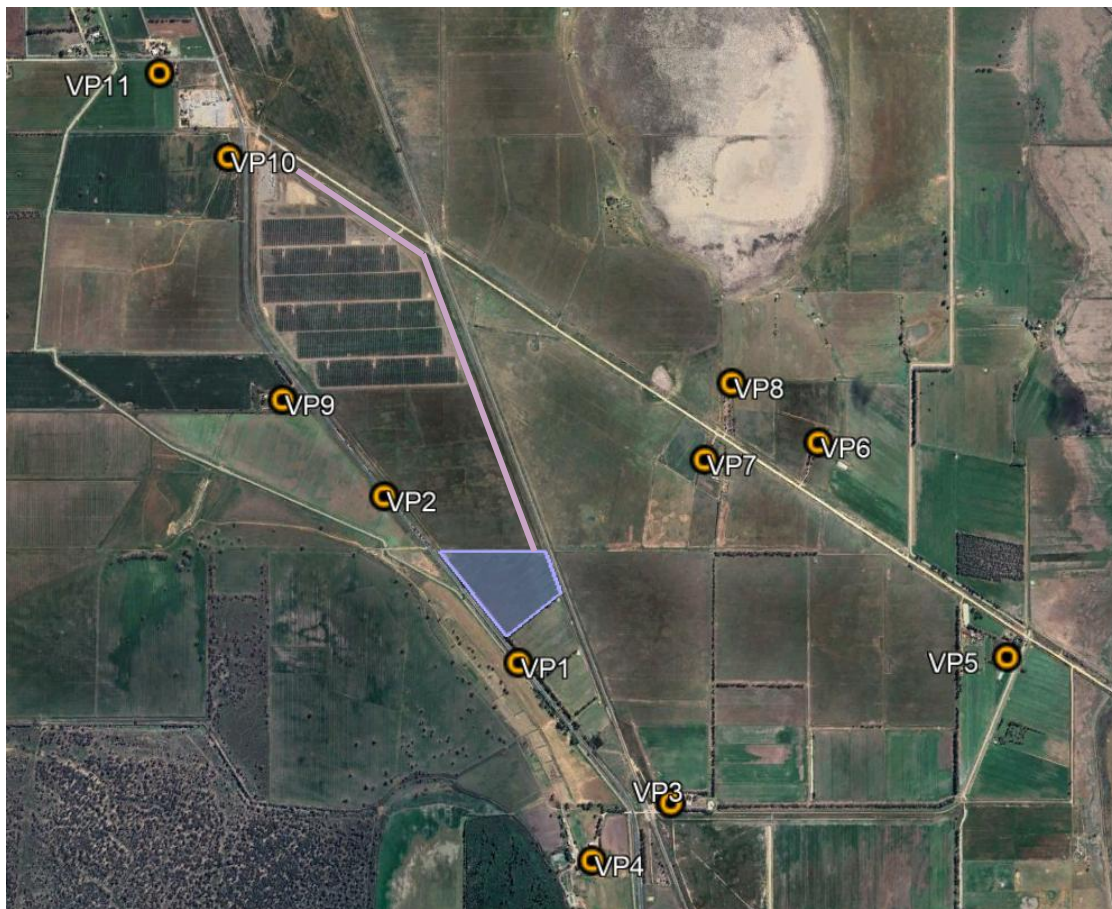


Figure 43 – Assessed viewpoint (VP) locations (Source: Google Earth).

5.3 Visual impact assessment

This section includes a detailed assessment of the Project from the selected, highest sensitivity viewpoints, with a rating given for the level of visual modification and sensitivity which, when combined, result in a determination of the degree of overall visual impact for each viewing location.

Given the reduction in visual sensitivity in distances beyond 2km, as well as the visual prominence based on the vertical of view occupied reducing to very low in distances beyond 600m, the assessment only considers the most sensitive viewpoints within 2km of the Project.

5.3.1 Detailed assessment of representative sensitive viewpoints

VIEWPOINT 1 – LODDON VALLEY HIGHWAY - NORTHBOUND	
Photo Location	Eastern roadway verge (refer to Figure 44 -left).
Viewing Distance	280m to the Project (BESS) from the viewpoint.
Duration of View and Frequency of View	Duration: Dynamic. Frequency: Moderate.
Visual Use Area	"B" Category Road – heavily screened setting (refer to Figure 44 – right and Figure 45).
Visual Sensitivity	MODERATE - Sensitivity of users is high based on the use.
Visual Modification	VERY LOW to LOW – From this viewpoint and locations south, the Project will be fully or almost fully screened by dense, existing planting along the southern boundary of the Project area as well as the eastern edge of the highway which extends southwards. As the viewpoint moves further to the north, views of the Project will abruptly open (refer to Figure 45).
Visual Impact	VERY LOW to LOW – The moderate level of visual sensitivity combined with a very low to low level of visual modification results in a very low level of visual impact.
Proposed Amelioration	None Required – Amelioration is not required to mitigate views from this viewpoint. However, infill planting along the southern boundary would fully screen glimpses of the Project that may be possible underneath and between existing vegetation. Dense planting along the western boundary would screen views from further to the north.
Residual Impact	VERY LOW – Proposed amelioration would significantly screen views of the Project, reducing the residual impact to very low.

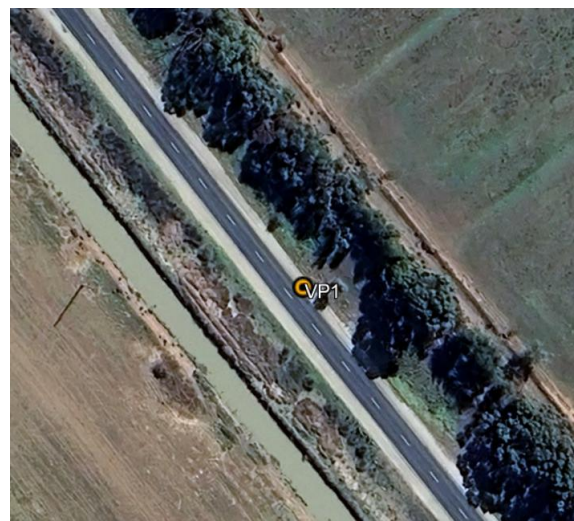
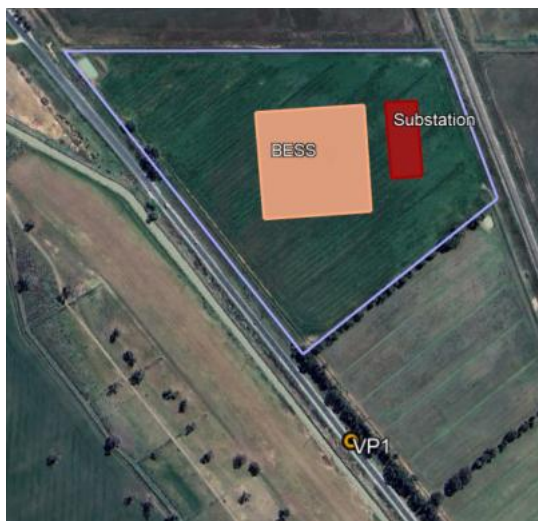


Figure 44 – Location of roadway viewpoint (VP1) and photo in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).



Figure 45 – VP1 – View northeast from the Loddon Valley Highway to the Project area.

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VIEWPOINT 2 – LODDON VALLEY HIGHWAY - SOUTHBOUND	
Photo Location	Eastern roadway verge (refer to Figure 46 -left).
Viewing Distance	585m to the Project (BESS).
Duration of View and Frequency of View	Duration: Dynamic. Frequency: Moderate.
Visual Use Area	"B" Category Road – minimally screened setting (refer to Figure 46 -right).
Visual Sensitivity	MODERATE - Sensitivity of users is moderate.
Visual Modification	MODERATE to HIGH – From this viewpoint, the Project will be almost directly in the line of view of the direction of travel and only partially screened by intervening vegetation along the eastern side of the highway (refer to Figure 47 and Figure 48). Although highly visible within the setting, there is visual compatibility with the almost adjacent solar plant and terminal station.
Visual Impact	MODERATE to HIGH – The moderate level of visual sensitivity combined with a moderate to high level of visual modification results in a moderate to high level of visual impact
Proposed Amelioration	Perimeter Planting - Around the northern and western boundaries of the Project area would effectively screen views of the Project.
Residual Impact	VERY LOW to LOW – Amelioration planting would progressively screen views of the Project, reducing the residual impact to very low to low (refer to Figure 49).

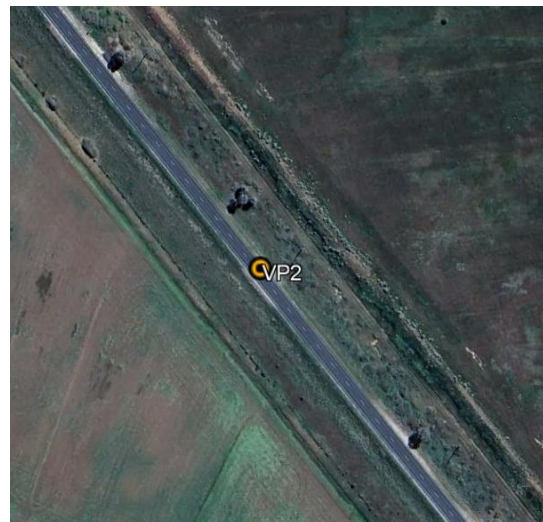
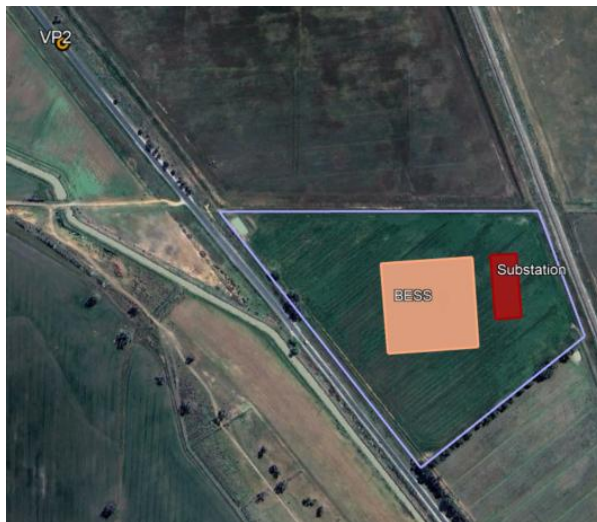


Figure 46 – Location of VP2 in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 47 – VP2 – Existing view to the Project from Loddon Valley Highway to the northeast.



Figure 48 – VP2 – Photomontage - View southeast from the Loddon Valley Highway to the Project – at completion of construction.



Figure 49 – VP2 – Photomontage -View southwest from the Loddon Valley Highway to the to the Project – with mature landscape amelioration.

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VIEWPOINT 3 – RESIDENCE AT 13 MCPHAIL ROAD	
Photo Location	McPhail Road near the driveway to the property, approx. 55m south of the residence (refer to Figure 50-left)
Viewing Distance	1.1km to the Project (BESS) from the residence and the 1.05km from photo location B.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Rural Residential – partially screened setting (refer to Figure 50-right and Figure 51).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	Not Visible – From this viewpoint, all of the elements of the Project will be screened by vegetation immediately to north of the residence, as well intervening vegetation to the south of the Project area as well as lining the southern boundary of the Project area (refer to Figure 52).
Visual Impact	No Impact – The Project will not be visible from this viewpoint. As a result, there is no visual impact.
Proposed Amelioration	None Required – Amelioration not required for this viewpoint.
Residual Impact	No Impact – As there is no visual impact, amelioration will not have any influence on the level of residual impact.



Figure 50 – Location of residence (VP3) and photos in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 51 – VP3 - View of the landscape setting of the residence from McPhail Road (Photo VP3A).



Figure 52 – VP3 – View north to the Project from an informal track, 70m to the west northwest of the residence (Photo VP3B).

VIEWPOINT 4 – RESIDENCE AT 3739 LODDON VALLEY HIGHWAY	
Photo Location	Loddon Valley Highway approx. 250m northeast of the residence (refer to Figure 53 -left).
Viewing Distance	1.2km to the Project (BESS) from the residence and 1.07km from the photo location.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Rural Residential – partially screened setting (refer to Figure 53 – right and Figure 54).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	Not Visible – From this viewpoint, all of the elements of the Project will be screened by vegetation immediately to north of the residence, as well intervening vegetation to the south of the Project area as well as lining the southern boundary of the Project area (refer to Figure 53 -left and Figure 55).
Visual Impact	No Impact – The Project will not be visible from this viewpoint. As a result, there is no visual impact.
Proposed Amelioration	None Required – Although amelioration is proposed for perimeter of the Project, it is not required for this viewpoint.
Residual Impact	No Impact – As there is no visual impact, amelioration will not have any influence on the level of residual impact.



Figure 53 – Location of residence (V4P) and photo in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 54 – VP4 – View of the landscape setting of the residence from the Loddon Valley Highway, which is located to the east (Photo VP4A).



Figure 55 – VP4 – View north to the Project from the driveway entry on the Loddon Valley Highway, to the east of the residence (Photo VP4A).

VIEWPOINT 5 – RESIDENCE AT 426 OLD ECHUCA ROAD	
Photo Location	Old Echuca Road, approx. 135m to the north northwest of the residence (refer to Figure 56 -left).
Viewing Distance	2.1km to the Project (substation) from the residence and the photo location.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Rural Residential – heavily screened setting (refer to Figure 56 –right and Figure 57).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	VERY LOW – From this viewpoint, the Project will be mostly screened by the existing planting surrounding the residence, as well as bands of intervening vegetation throughout the landscape. Where visible, it will appear as a thin and distant horizontal thread in the landscape (refer to Figure 58).
Visual Impact	LOW – The high level of visual sensitivity combined with a very low level of visual modification results in a low level of visual impact.
Proposed Amelioration	Perimeter Planting - around the southeastern and eastern boundaries of the Project area would effectively screen views of the Project.
Residual Impact	No Impact to VERY LOW – As amelioration planting establishes, the residual visual impact level will progressively reduce to very low.



Figure 56 – Location of residence (VP5) and photo (VP5A) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 57 – VP5 - View of the landscape setting of the residence from Old Echuca Road (Photo VP5A).



Figure 58 – VP5 – View west northwest to the Project from Old Echuca Road, north of the residence (Photo VP5A).

VIEWPOINT 6 – RESIDENCE AT 303 OLD ECHUCA ROAD	
Photo Location	Old Echuca Road, 240m to the southwest the residence (refer to Figure 59 -left).
Viewing Distance	1.4km to the Project (substation) from the residence and 1.2km from the photo location.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Rural Residential – partially screened setting (refer to Figure 59 -right and Figure 60).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	VERY LOW to LOW – From this viewpoint, the Project will be mostly screened by the existing planting between the Project and the residence, as well as a band of intervening vegetation located roughly mid-way between the residence and the Project area that will provide screening of the northeastern part of the Project. Where visible, the Project will appear as a relatively thin horizontal thread in the landscape (refer to Figure 58).
Visual Impact	LOW to MODERATE – The high level of visual sensitivity combined with a very low to low level of visual modification results in a low to moderate level of visual impact.
Proposed Amelioration	Perimeter Planting - around the eastern and northern boundaries of the Project area would effectively screen views of the Project.
Residual Impact	VERY LOW – As amelioration planting establishes, the residual visual impact level will progressively reduce to very low.

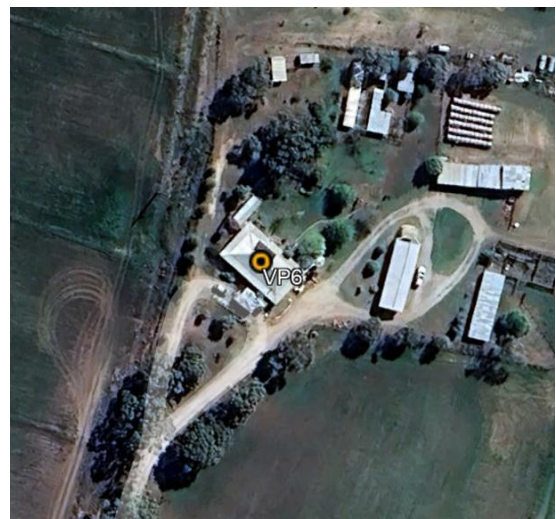


Figure 59 – Location of residence (VP6) and photo (VP6A) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).



Figure 60 – VP6 - View of the landscape setting of the residence (Photo VP6A).



Figure 61 – VP6 - View west southwest to the Project from Old Echuca Road (Photo VP6A).

VIEWPOINT 7 – RESIDENCE AT 261 OLD ECHUCA ROAD	
Photo Location	Old Echuca Road, 190m northwest of the residence (refer to Figure 62 -left)
Viewing Distance	900m to the Project (substation) from the residence and 960km from the photo location.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Residential – partially screened setting (refer to Figure 62 –right and Figure 63).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	LOW – From this viewpoint, the Project will be mostly screened by the existing vegetation located immediately around the residence. There is limited to no intervening vegetation that might further screen views (refer to Figure 64). Where visible in breaks in the vegetation surrounding the residence, it will appear as a relatively thin horizontal thread in the landscape (refer to Figure 65). The Project will be viewed in the context of the solar plant that will also be partially visible to the north.
Visual Impact	MODERATE – The high level of visual sensitivity combined with a low level of visual modification results in a moderate level of visual impact. There is the potential for this viewpoint to be subject to a simultaneous cumulative impact as the Project increases the amount of infrastructure visible in western views from the residence.
Proposed Amelioration	Perimeter Planting - around the northern and eastern boundaries of the Project area would effectively screen views of the Project.
Residual Impact	VERY LOW to LOW – As amelioration planting establishes, the residual visual impact level will progressively reduce to very low to low (refer to Figure 66).



Figure 62 – Location of residence (VP7) and photo (VP7A) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).



Figure 63 – VP7 - View southeast from Old Echuca Road of the landscape setting of the residence (Photo VP7A).



Figure 64 – VP7 – Existing view southwest to the Project area from Old Echuca Road (Photo VP7A)



Figure 65 – VP7 – Photomontage - View southwest to the Project from Old Echuca Road – at completion of construction (Photo VP7A).



Figure 66 – VP7 - Photomontage - View southwest to the Project from Old Echuca Road – with mature landscape amelioration (Photo VP7A).

VIEWPOINT 8 – RESIDENCE AT 258 OLD ECHUCA ROAD	
Photo Location	Old Echuca Road, approx. 195m southwest of the residence (refer to Figure 67-left)
Viewing Distance	1.2km to the Project (substation) from the residence and 950m from the photo location.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Rural Residential – partially screened setting (refer to Figure 67-right and Figure 68).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	LOW - From this viewpoint, the Project will be partially screened by the existing vegetation around the residence. As for VP7, there is limited to no intervening vegetation that might further screen views. Where visible in breaks in the vegetation surrounding the residence, it will appear as a relatively thin horizontal thread in the landscape (refer to Figure 69). The Project will be viewed in the context of the solar plant that will also be partially visible to the north.
Visual Impact	MODERATE – The high level of visual sensitivity combined with a low level of visual modification results in a moderate level of visual impact. There is the potential for this viewpoint to be subject to a simultaneous cumulative impact as the Project increases the amount of infrastructure visible in western views from the residence.
Proposed Amelioration	Perimeter Planting - around the northern and eastern boundaries of the Project area would effectively screen views of the Project.
Residual Impact	VERY LOW to LOW – As amelioration planting establishes, the residual visual impact level will progressively reduce to very low to low.

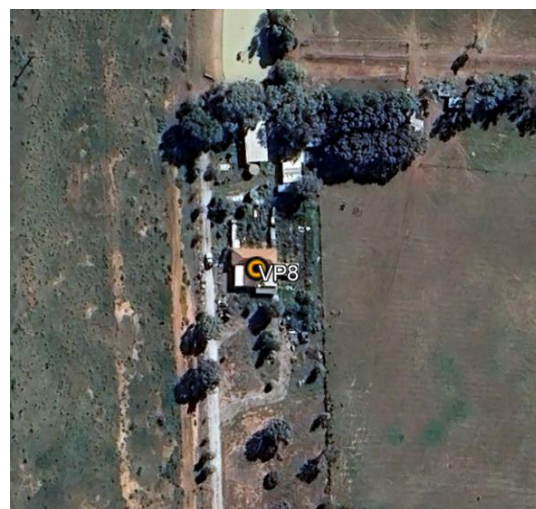
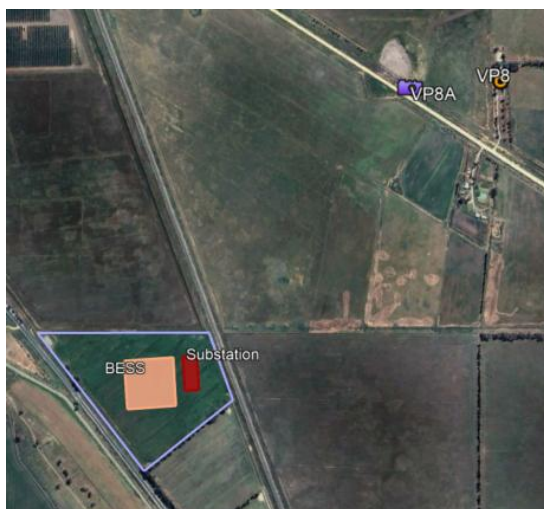


Figure 67 – Location of residence (VP8) and photo (VP8A) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).



Figure 68 – VP8 - View northeast from Old Echuca Road of the landscape setting of the residence (Photo VP8A).



Figure 69 – VP8 – View southwest from Old Echuca Road to the Project (Photo VP8A).

VIEWPOINT 9 – RESIDENCE AT 3987 LODDON VALLEY HIGHWAY	
Photo Location	Eastern verge of the Loddon Valley Highway, opposite the driveway to the property, 90m northeast of the residence (refer to Figure 70 - left)
Viewing Distance	1.2km to the Project (BESS) from the residence and the photo location.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Rural Residential – heavily screened setting (refer to Figure 70 –right and Figure 71).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the use.
Visual Modification	VERY LOW – From this viewpoint, the Project will be almost entirely screened by dense vegetation surrounding the residence (refer to Figure 71 and Figure 72).
Visual Impact	LOW – The high level of visual sensitivity combined with a very low level of visual modification results in a low level of visual impact
Proposed Amelioration	None Required – Amelioration is not required to mitigate views from this viewpoint. However, infill planting along the northern and western boundaries would fully screen glimpses of the Project that may be possible underneath and between existing vegetation.
Residual Impact	VERY LOW – Proposed amelioration would significantly screen views of the Project, reducing the residual impact to very low.



Figure 70 – Location of residence (VP9) and photo (VP9A) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 71 – VP9 – View southwest from The Loddon Valley Highway of the character of the residence (Photo VP9A).



Figure 72 – VP9 – View south to the Project from the Loddon Valley Highway to the east of the residence (Photo VP9A).

VIEWPOINT 10 – RESIDENCE AT 4101 LODDON VALLEY HIGHWAY	
Photo Location	Eastern verge of the Loddon Valley Highway, 100m east of the residence (refer to Figure 73 -left)
Viewing Distance	2.2km to the Project (BESS) from viewpoint and photo location.
Duration of View and Frequency of View	Duration: Static Frequency: Low.
Visual Use Area	Rural Residence – heavily screened setting (refer to Figure 73 -right and Figure 74).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the use.
Visual Modification	Not Visible - From this viewpoint, the Project will be fully blocked from view by the solar plant that is located directly between the Project and the viewpoint (refer to Figure 75).
Visual Impact	No Impact – The Project will not be visible from this viewpoint. As a result, there is no visual impact.
Proposed Amelioration	None Required
Residual Impact	No Impact – As there is no visual impact, amelioration will not have any influence on the level of residual impact.

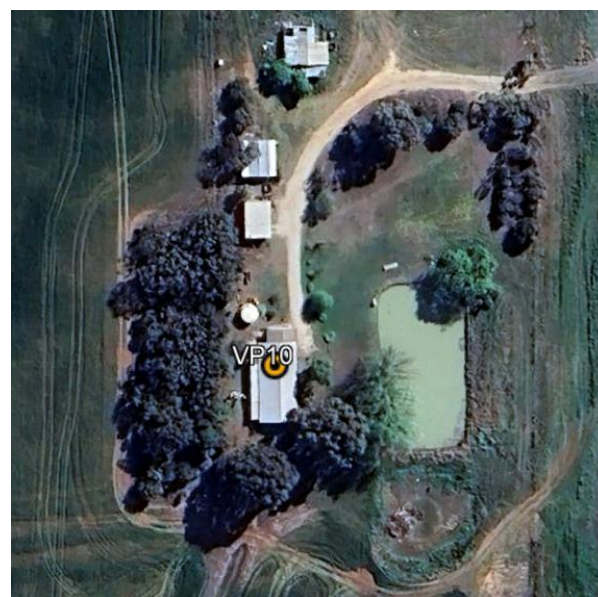


Figure 73 – Location of VP10 and photo location (VP10A) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 74 – VP10 – View west from The Loddon Valley Highway of the landscape setting of the residence (Photo VP10A).



Figure 75 – VP10 – View south from the Loddon Valley Highway to the Project (Photo VP10A).

VIEWPOINT 11 – RESIDENCE AT 26 OLD KERANG ROAD	
Photo Location	Old Kerang Road, opposite the driveway to the property, 40m north (photo VP11A) and 80m northeast (photo VP11B) of the residence (refer to Figure 76 -left).
Viewing Distance	2.7km to the Project (BESS), from the residence and photo locations.
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Residential – heavily screened setting (refer to Figure 76 -right and Figure 77).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	Not Visible - From this viewpoint, the Project will be fully blocked from view by the terminal station and the solar plant that are located directly between the Project and the viewpoint (refer to Figure 78).
Visual Impact	No Impact – The Project will not be visible from this viewpoint. As a result, there is no visual impact.
Proposed Amelioration	None Required
Residual Impact	No Impact – As there is no visual impact, amelioration will not have any influence on the level of residual impact.

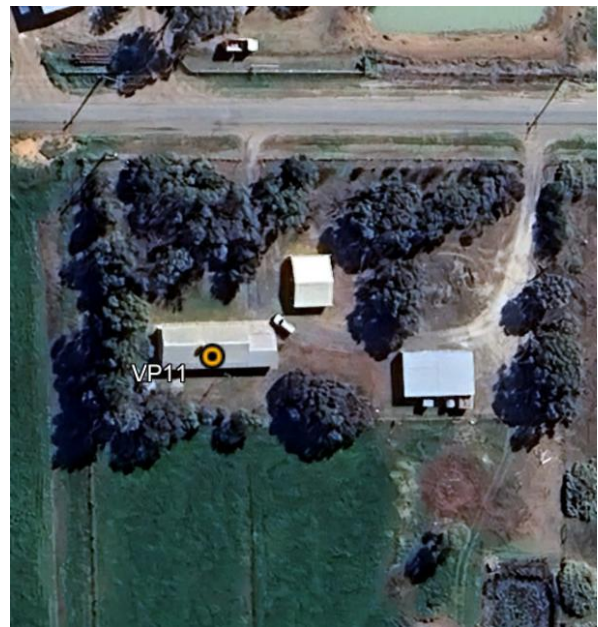


Figure 76 – Location of residences (VP11) and photos (11A and 11B) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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Figure 77 – VP11 - View from Old Kerang Road of the typical landscape setting of the residence (Photo VP11A).



Figure 78 – V11 - View south southeast to the Project from Old Kerang Road (Photo VP11B).

5.4 Connecting powerline/grid connection

An underground powerline is proposed to connect the Project to the main grid at the Kerang Terminal Station. The powerline will be installed in a trench approximately 1.5m wide, which will be backfilled with the ground surface level reinstated to match the existing condition.

The powerline would follow the western edge of the railway line formation and then the southern road verge of Old Echuca Road, extending from the substation at the Project, approximately 2.5km in a north westerly direction to the Kerang Terminal Station (refer to **Figure 79**).



Figure 79 - Location of connecting underground powerline and sensitive viewpoints (Source: Google Earth).

The underground powerline would be located along a corridor comprising grasses and other low planting, immediately to the west of the elevated formation of the railway line.

It is located roughly midway between the closest sensitive viewpoints to the east and west. For viewpoints to the east, the elevated rail formation will screen views of the disturbed ground surface.

Views of the construction process and initial ground remediation works will be possible from VP10 but would be viewed in the context of the existing solar plant maintenance compound. The northern part of the route would be screened from views from the west by the existing solar plant.

Where visible, the works will occur over a very short period of time and would be viewed as no more visually intrusive than typical road works.

Following the establishment of a grass surface colour, the works will be visually consistent with the pre-construction condition. As a result, landscape and visual impacts are expected to be low, and very short term.

5.5 Lighting impacts

The applicable environmental lighting zone for the Project area based on AS-NZS-4282-2023 is Category A2, which is a low district lighting area, which applies to rural residential areas and areas with secondary and local roads.

The environmental lighting zone of the existing terminal station ranges between Category A2 and Category A3, medium district lighting area.

Kerang is also a Category A3, medium district lighting area.

It is likely that the batteries and substation will require security lighting. However, typically this will be shielded and directional. As a result, hot spots and light spill are likely to be minimised.

Within the Category A2 area the Project will result in a localised area of increased light intensity, but this will not result in adverse impacts to surrounding residential viewpoints.

The establishment of perimeter landscaping will further ameliorate views to already low levels of lighting.

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6 AMELIORATION STRATEGIES

Actions exist to potentially ameliorate the landscape and visual impacts of the Project. These are outlined in the following sections.

6.1 On-Site Actions

On-site actions relate to initiatives which can be undertaken within the boundaries of the Project area.

6.1.1 Project layout

Arranging the components of the Project so that they respond to sensitive, visually exposed interfaces, is a proactive measure to reduce visual impacts from the outset and lessen the reliance on amelioration measures.

The siting has made effective use of existing vegetation to the south and southwest of the Project area to ensure that initial, pre-amelioration impacts are reduced for some viewpoints.

6.1.2 Perimeter screen planting

The most effective way to ameliorate views from high sensitivity viewpoints is to establish screen planting around the perimeter of the Project where existing vegetation is lacking. The proposed screen planting will be a minimum of 5m in width and comprise perimeters of varying densities, utilising a mixture of:

- shrubs to 2m in height;
- tall shrubs to 4m in height; and
- trees ranging in height from 6m-20m in height.

The Project has its most exposed boundaries to the Loddon Valley Highway, particularly the approach from the north (VP2) where perimeter planting to the northern and western boundaries would be beneficial. Additionally, although more distant views, VP7 and VP8 on Old Echuca Road to the east would benefit from planting along the northern and eastern boundaries. Planting to the southern boundary is not considered necessary.

The relatively low-profile form of the BESS component of the Project will ensure that planting will be able to provide screening within a relatively short period of time.

Being a taller element, it will take longer for planting to ameliorate the impacts of the substation.

6.1.2.1 Batter slopes

Given the requirement for benching, batter slopes have been set away from Project boundaries to allow for perimeter planting to occur at the original natural ground level. This will provide the best opportunity to achieve reliable plant growth.

6.1.3 Material selection

The BESS units and buildings that result in an aggregated visual mass should be ameliorated through the use of a non-reflective finish of a natural or neutral colour, as found in the landscape of the setting.

The more slender and articulated form of the components of the switching substation do not require amelioration through the use of non-standard colours, as the standard “grey”

finish is visually recessive against sky backdrops and is readily integrated through the use of only tall, sparse planting (refer to **Figure 80**).



Figure 80 - Example of canopy vegetation providing visual integration of substation infrastructure.

6.2 Off-Site Actions

These actions relate to initiatives which can be undertaken outside of the Project area and would require the consent of relevant landowners, utilities or authorities. However, given the relatively low levels of impact, and the extensive size of the Project area, it is apparent that all required amelioration can be achieved on-site, and that no off-site actions will be required.

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7 CONCLUSION

7.1 Landscape character impacts

The existing agricultural landscape character of the Project area and surrounding areas is of relatively low scenic quality and currently contains a number of electrical infrastructure elements such as the terminal station, solar plant and transmission lines and towers.

The development of the Project would not constitute a large change to the existing character and in fact its proposed "co-location" near existing infrastructure is in accordance with best practice, constraining the cumulative visual impact of the infrastructure to a reasonably limited area.

The landscape of the Project setting has a generally moderate landscape absorptive capacity, with flat topography and vegetation that is scattered and occasionally arranged in dense bands. Within this landscape, overlooking is generally not possible from most sensitive viewpoints, and even relatively low vegetation (up to eye-height) is effective at screening views.

7.2 Visual impacts

Visual prominence

In areas of flat topography, the vertical field of view of the 3m high BESS units on an 1.8m high bench, with a total height of approximately 5m, will be less than 2.5 degrees, or of moderate visual prominence in viewing distances beyond 120m, less than 0.5 degrees, or of low visual prominence in distances beyond approximately 500m, and less than 0.25 degrees, or of very low visual prominence in distances beyond 1,100m.

The vertical field of view of the typical components of the switching station, with an average height of 8 to 10m, will be less than 2.5 degrees, or of moderate visual prominence in distances beyond 230m, will be less than 0.5 degrees, or of low visual prominence in distances beyond 1.1km, and less than 0.25 degrees, or of very low visual prominence in distances beyond 2.2km

The horizontal field of view is not considered relevant given the relatively small footprint of the Project, and the distance from closest sensitive residential viewpoints, resulting in an angle of less than 30 degrees, or no greater than a moderate level of visual prominence.

Consideration of visual fit within the setting

The presence of the existing energy infrastructure and powerlines provide the Project a significant degree of visual fit within the landscape setting.

Initial visual impact

Prior to amelioration, only a limited number of sensitive uses proximate to the Project will result in a high or moderate initial level of impact. These are:

- Viewpoint 2 – Loddon Valley Highway north and southbound with a moderate to high visual impact;
- Viewpoint 7 – Residence at 261 Old Echuca Road with a moderate visual impact; and
- Viewpoint 8 - Residence at 258 Old Echuca Road with a moderate visual impact.

While the Project will be visible from these viewpoints, the flat topography means that amelioration planting is likely to be highly effective in visually screening the Project.

Apart from the above, overall, the Project is assessed as having a relatively low level of visual impact or not being visible at all due to being well screened by existing vegetation, particularly that located around the rural residences.

Residual impact

The residual visual impact for all viewpoints will typically reduce to a very low impact after the establishment of amelioration measures.

Cumulative impact

VP6, VP7 and VP8 may experience a degree of simultaneous cumulative impact through the increase in the extent of the western viewshed occupied by infrastructure. However, the Project occupies less of the vertical field of view than the solar plant.

7.3 Lighting impacts

Within the Category A2 area the Project will result in a localised area of slightly increased light intensity. However, this will not result in adverse impacts to surrounding residential viewpoints as it will be of a lower level of intensity than the lighting at the existing terminal station and power station to the north (Category A3).

The establishment of perimeter landscaping will further ameliorate views to already low levels of lighting.

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7.4 Amelioration

The analysis indicates that amelioration is only required for viewpoints with an assessed moderate to high level of impact. Strategic perimeter planting around the Project's northern, western and eastern boundaries would provide this amelioration. The proximity to Kerang and the location of the Project adjacent to the main approach from the south further justifies the landscape amelioration of the northern and western boundaries.

Additionally, the BESS units and buildings that result in an aggregated visual mass, should be ameliorated through the use of an appropriate choice of recessive surface colour.

The more slender and articulated form of the components of the switching substation do not require amelioration through the use of non-standard colours.

APPENDIX A – Photomontages

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VP2 - Photosimulation view southeast from the Loddon Valley Highway to the Project – at completion of construction.

Tragowel BESS



VP2 – Photomontage -View southwest from the Loddon Valley Highway to the to the Project – with mature landscape amelioration.

Tragowel BESS



VP7 – Photomontage - View southwest to the Project from Old Echuca Road – at completion of construction.

Tragowel BESS



VP7 - Photomontage - View southwest to the Project from Old Echuca Road – with mature landscape amelioration.

Tragowel BESS

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