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Bunyip North BESS

Landscape and Visual Impact Assessment

February 2026



Bunyip North BESS

Landscape and Visual Impact Assessment

Bunyip Pty Ltd

FINAL

February 2026

PJ0094

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1. Introduction

The Bunyip North BESS (The Project) is proposed to deliver a Battery Energy Storage System (BESS) for large-scale electricity storage and dispatch capability, supporting Victoria’s transition toward a more renewable and reliable energy network. The BESS is anticipated to have a storage capacity of up to 400 MW / 2,400 MWh, with a connection to the existing 220 kV transmission network via a new transmission terminal station, the Bunyip North Terminal Station (BNTS).

The Project is wholly located within the Cardinia Shire local government area (LGA), approximately 80 kilometres (km) southeast of central Melbourne in Victoria’s Gippsland region and approximately 2.5km north of the Bunyip town centre.

The Project requires the construction of a new terminal station at Bunyip to connect the Project to the existing 220kV high-voltage transmission line. Detailed design and layout of the new Bunyip North Terminal Station (BNTS) will be confirmed following approvals for this Project and connection approval from the Australian Energy Market Operator (AEMO).

The layout allows for space for both the cut-in arrangement design and the Bunyip North Terminal Station, which is proposed to be constructed and operated by the Declared Transmission System Operator (DTSO). To be conservative, this assessment includes an indicative layout for a similar-sized terminal station, shown in the location space set aside for this use.

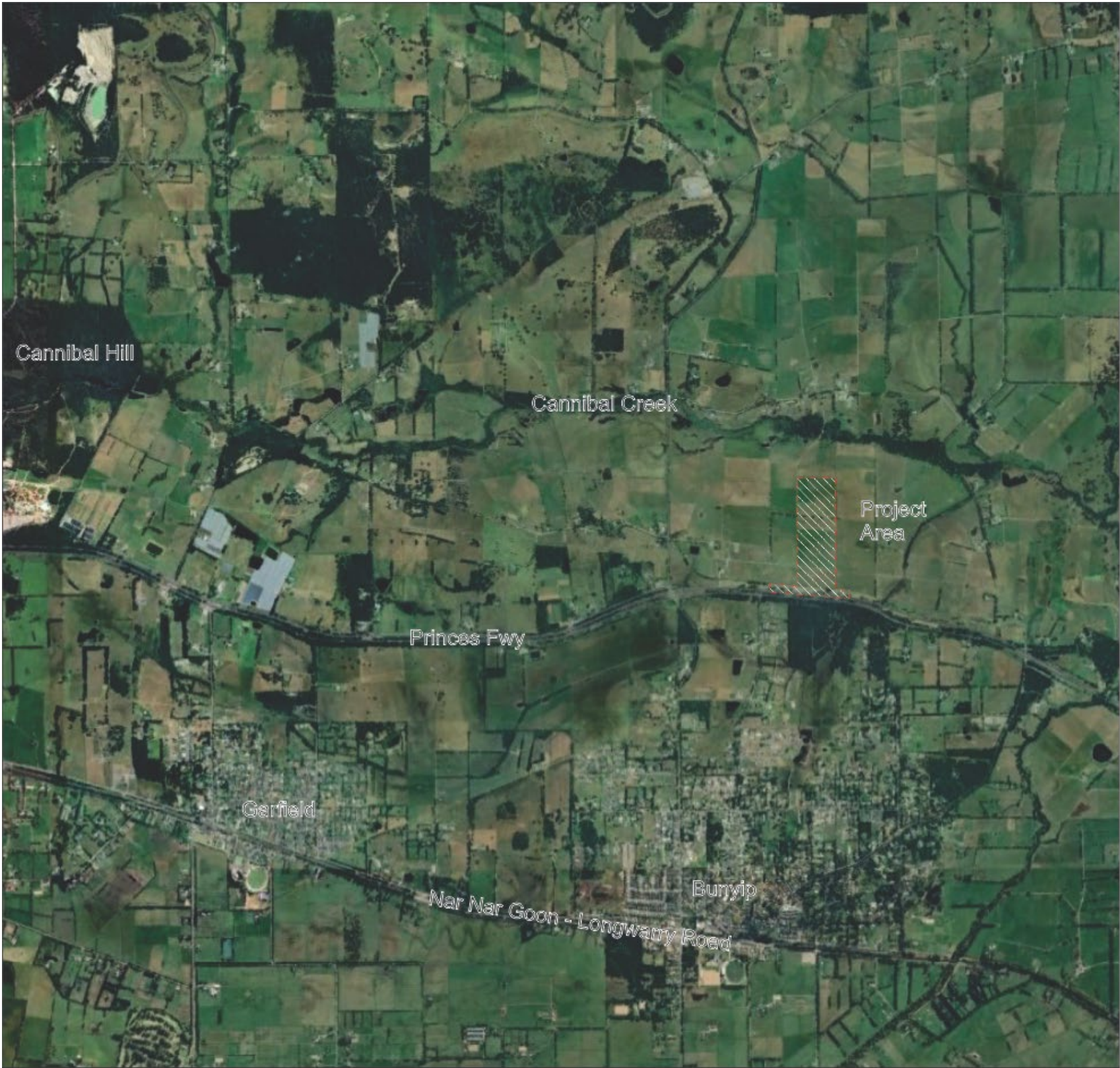
Figure 1-1 shows the Project Area relative to the surrounding area.

1.1 Purpose of this report

Landform Architects has been engaged by Environmental Resources Management (ERM) on behalf of RES Australia Pty Ltd to assess the potential Visual Impacts arising from the Project and to prepare this report, which will accompany the planning permit application for the Project.

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Site Location
NTS
Source: VicPLAN

Figure 1-1 Project Area

2. Report Structure

The approach used within this LVIA and the structure of this report is described below, and shown in Figure 2-1, opposite.

- Identify and describe the height, scale and footprint of the Project.
- Set-out an appropriate methodology based on the Project description.
- Define the extent of the assessment area based on the height of the tallest and therefore most conspicuous feature of the Project.
- Review Planning Controls and Guidelines that apply to land within the assessment area.
- Impact assessment through viewpoints and photomontages.
- If required, identify any further measures that may assist in minimising the Projects' visual impacts.

This report has assessed the Projects visual impact from locations in the Public Domain. The assessment has also sought to identify nearby dwellings where the Project might be visible.

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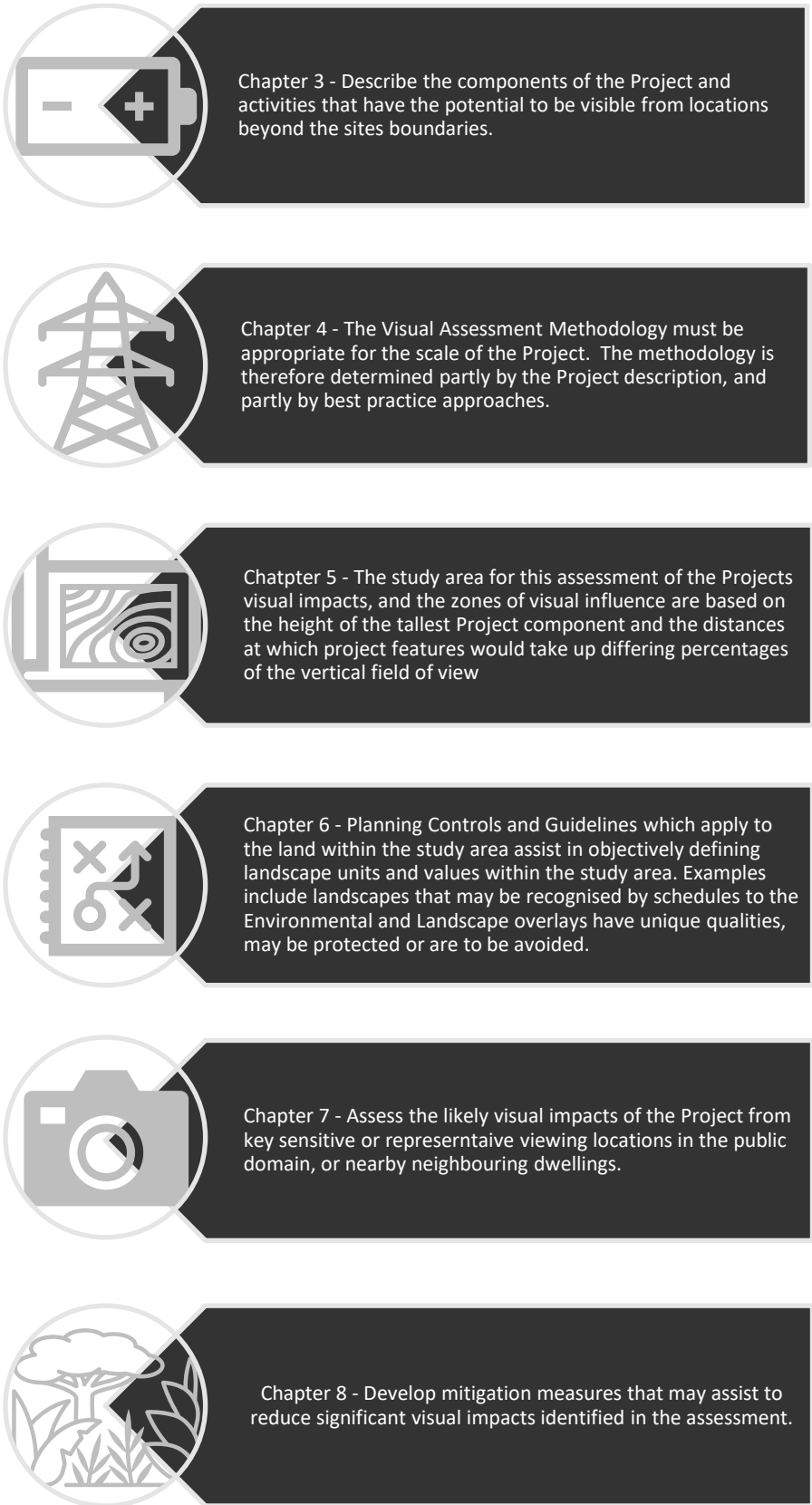


Figure 2-1 VIA Methodology

3. Project Description

This chapter describes the key components of the Project that may contribute to a change in views and amenity from the surrounding area.

The project features will define the methodology for assessing the Project's landscape and visual impacts.

The final location of the infrastructure will be determined through the detailed design, once a BESS supplier has been selected, and will generally be in accordance with commitments made in the planning permit application.

Key project infrastructure and changes required to construct the BESS that are relevant to this assessment is summarised below:

- BESS units, inverters and transformers;
- Power Conversion System (PCS)
- Internal access roads and access (and egress) points;
- On-site Substation— including 33/220kV step-up transformer(s), switchgear, busbars, earthing, protection and metering equipment, reactive power plant and connection points to the terminal station.
- Underground cabling between the battery units, inverters (PCS) and on-site substation;
- Control Building and Switch room;
- Water storage (including firefighting water supply and fire water runoff containment);
- Security fencing;
- Car parking;

Temporary features and enabling works will include:

- Civil and structural works, including laying of crushed rock;
- Construction of internal access roads and egress points;

The Project Area and general arrangement of features are shown in Figure 3-1, opposite. Detail relevant to this assessment is in the following sections.

Access is proposed from the Princes Freeway along the Project Area's southern boundary. The entrance will support construction and operational vehicle movements.

The final design, location, and configuration of the access will be determined in consultation with, and subject to approval by, the Department of Transport and Planning (DTP) as the relevant road authority.

Internal access roads (gravel or sealed) – to support access for construction, operations and emergency vehicles.

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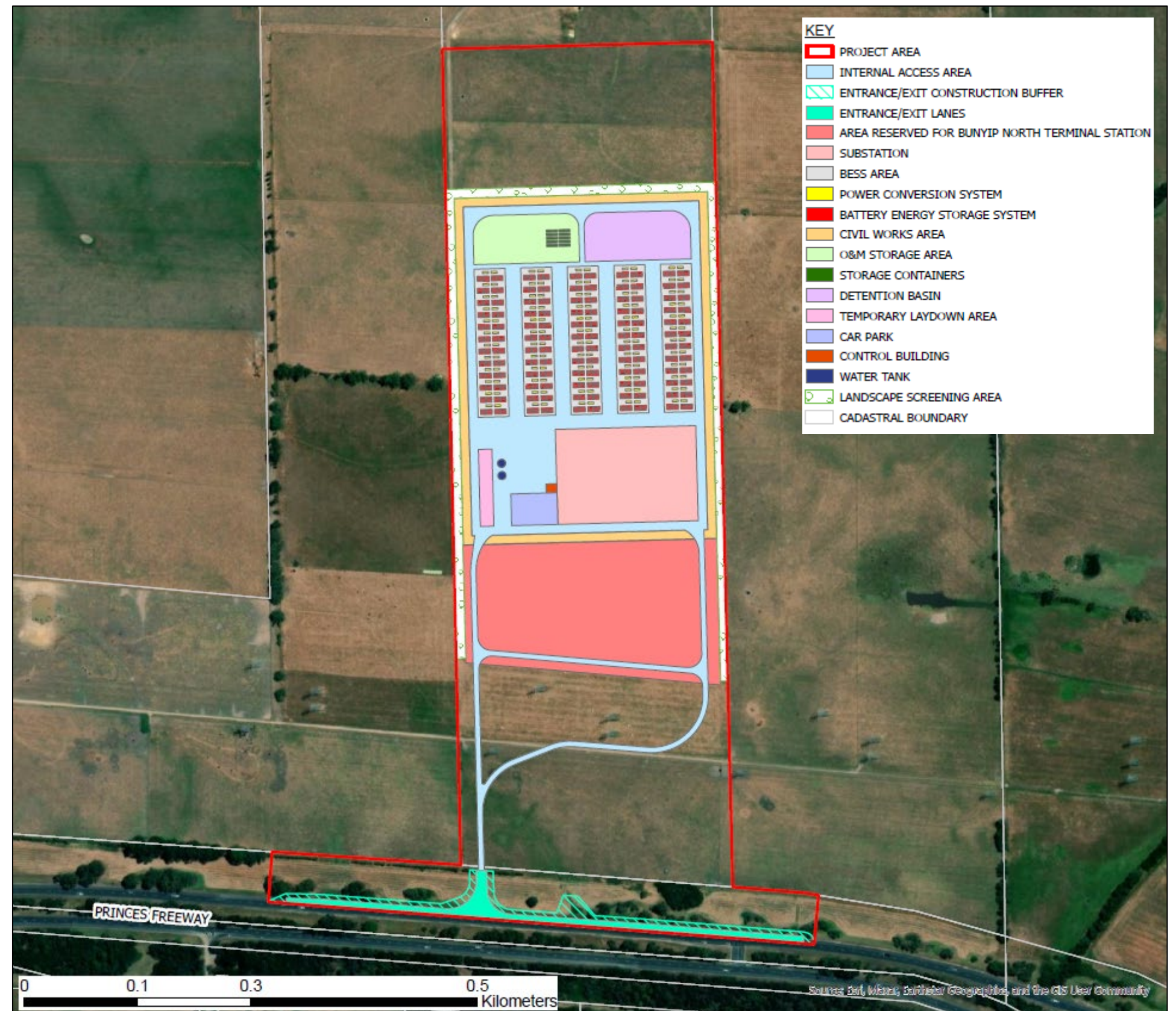


Figure 3-1 Project Area and layout (Source RES: DWG No: 04973-RES-LAY-DR-TE-004)

3.1 BESS footprint

The BESS footprint is proposed on farmland, roughly centrally located within the Project Area. Construction and operation of the BESS will include the following:

- Chainwire perimeter fence approximately 3.0 m in height;
- A fire break/access tracks (including perimeter access around BESS);
- Containerised battery units and inverters, 33kV transformers, approximately 3.0m in height. The final number of units will depend on the selected battery supplier and the system's final size and duration.
- Lighting, mounted on poles approximately 6.0m in height; and
- Operations and Maintenance facility approximately 20m L x 8.0 m W x 6m H.

Figure 3-2 Typical BESS layout shows a typical BESS layout and including fencing, BESS and PCS units. This assessment has modelled an indicative 480-unit layout.



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Figure 3-2 Typical BESS layout

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3.2 On-site substation footprint

An on-site substation footprint is proposed south of the proposed BESS and north of the existing 220kV transmission lines, and future BNTS. The on-site substation will connect the BESS to the future BNTS and the existing 220kV transmission lines. Key features of the on-site substation will include:

- 220kV/33 kV substation, including infrastructure (e.g., transformers, blast walls, switch rooms, control rooms, reactive plant equipment, circuit breakers, etc.). The transformers and/or the blast walls will be approximately 11m in height.
- Lighting, mounted on poles approximately 6.0m in height;
- Lightning Rods and on-demand security lighting up to 20 meters in height; and
- A fire break/access tracks;

Figure 3-4 opposite shows the indicative layout and key features of the proposed on-site substation proposed by the Project. Figure 3-3 below shows an example of a similar sized on-site substation.



Figure 3-3 On-site substation example

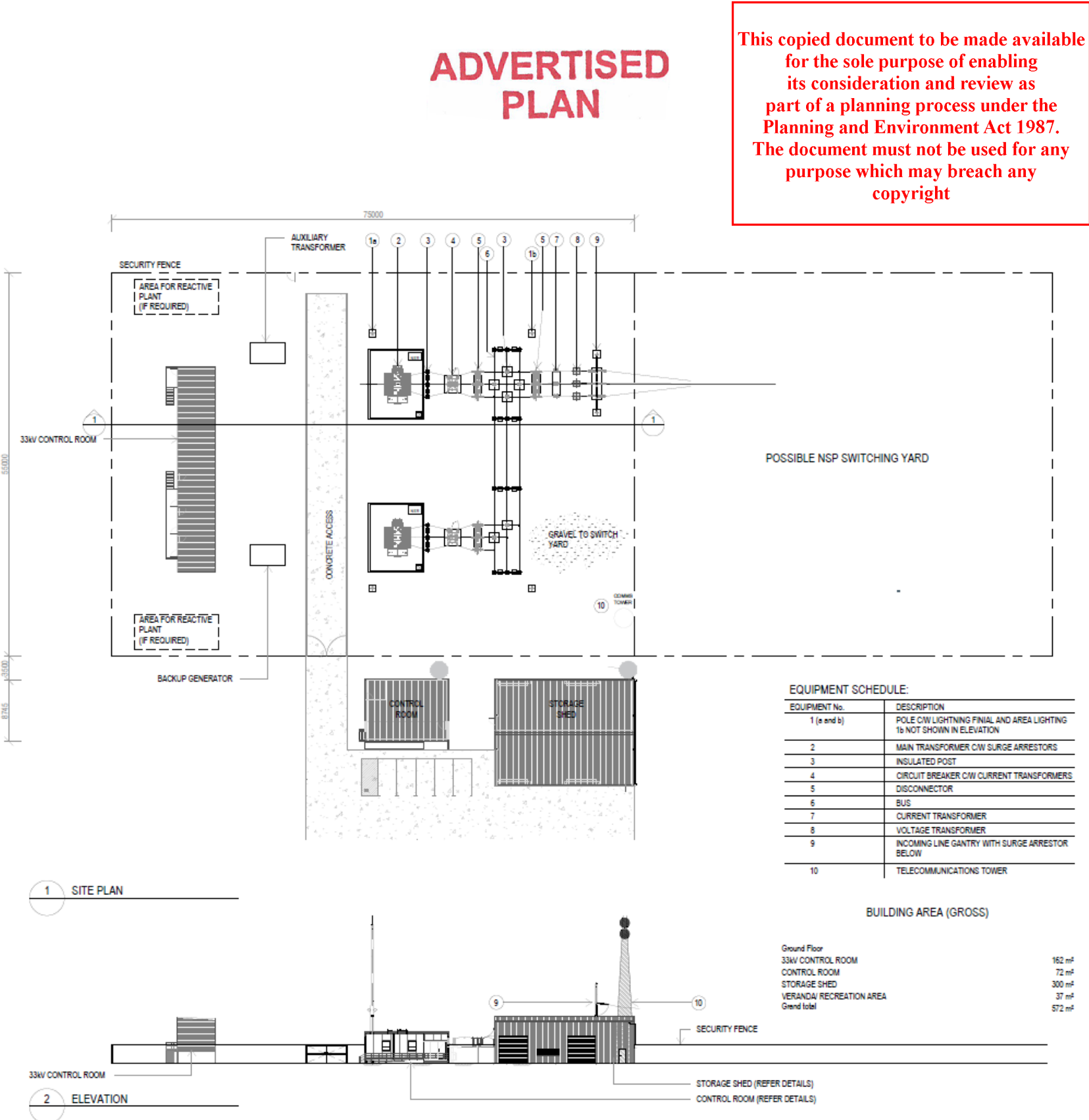


Figure 3-4 On-site substation general arrangement (Source: RES Dwg No: 03707D4002-01)

3.3 Terminal Station Works

A new terminal station will be required to allow connection of the Project to the existing 220kV transmission lines. Although this aspect is subject to a future design, typical features will include:

- high-voltage electrical equipment;
- permanent and temporary buildings; and
- Temporary modifications to existing fencing and access.

Underground cabling will connect the BESS footprint, on-site substation, and the Project to the BNTS.

To be conservative, and for the purposes of this assessment, an indicative terminal station for a similar-scale BESS has been shown in the photomontages. These are included in the impact assessment undertaken in Section 8 of this assessment, and in appended to this report.

The final design and layout of the terminal station will be subject to requirements that are established between RES and AusNet should the Project be approved.

3.4 Construction and Laydown

Temporary construction and laydown areas will be established within the Project Area, and this will include Civil and structural works, including laying of crushed rock and the construction of internal access roads and egress points. Access will be via a new entrance and internal access tracks from the Princes Freeway to the south.

The greatest potential visual impact during construction will occur within the laydown areas, where plant, equipment, and temporary structures will be concentrated. These facilities are short-term and will remain in place only for the duration of the construction phase.

Given this limited timeframe, the impacts while locally noticeable will be temporary, and landscape screening is not a practical mitigation measure due to the time required for any plantings to establish landscaping

Landscape screening can assist in managing visual impacts by filtering views from fixed vantage points. This observation is supported by views examined in Section 7 of this review, and accompanying photomontages which show the effectiveness of the proposed landscaping at screening the Project's features, but also the screening effect of existing vegetation on the larger towers located along the existing 220kV transmission line that runs along the southern edge of this Project.

3.5 Provision for landscape screening

A 10m wide buffer has been provisioned along the Project Areas western, northern and eastern boundaries should it be required. This area is Figure 3-1 above.

Species selection is cognisant of the flora and fauna values of the area, local examples that have proven to be successful, and from species selected from the relevant local Ecological Vegetation Classes (EVC's). Species selected from relevant EVC's are listed below.

Upper Canopy (>5m mature height)

- *Acacia Melanoxylon* (Blackwood) 8m h x 4m w
- *Eucalyptus Obliqua* (Messmate Stringybark) 12m h x 8m w
- *Eucalyptus Radiata* (Narrow-leaf Peppermint) 12m h x 8m w

Middle Storey (2-4m mature height)

- *Acacia Verticillata* (Prickly Moses) 4m h x 4m w
- *Kunzea Ericoides* (Burgan) 3m h x 3m w
- *Leptospermum Continentale* (Prickly Tea-tree) 3m h x 2m w

It is recognised that the council may have a preferred species list based on the local area and rehabilitation undertaken elsewhere in the municipality. Council's preference should take precedence over those provided opposite. Figure 3-6 opposite shows the proposed areas and extent of landscape screening to be installed as part of the Project. Figure 3-5 below shows the proposed set-out and widths of screening vegetation.

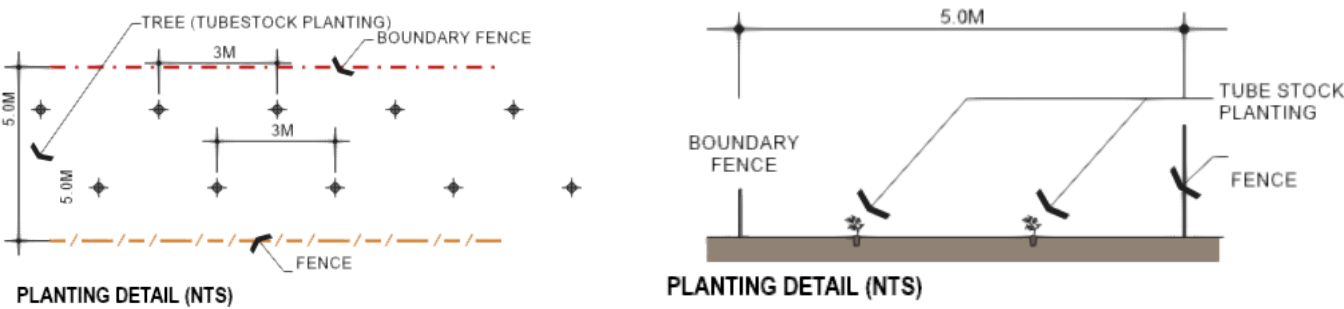


Figure 3-5 Landscape set-out

The requirement for screening will be explored in Section 8 of this report.

3.6 Relevance to this assessment

The assessment methodology must be relevant to the Project's scale. The tallest feature will be the lightning rods surrounding the on-site substation, up to 20.0 m in height. Although these are narrow features and not overly conspicuous, for the reasons set out in Section 4.1 and Chapter 5, the extent of the assessment area and the Zones of visual influence have been set at the height of these structures to be conservative.

The methodology adopted to assess the landscape and visual impacts of the Project is set out below. The methodology must be appropriate to Project's key features and scale, which are described above.

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4. Assessment Methodology

No Australian or Victorian government legislation, methodology or policies are specifically relevant to landscape and visual impacts. However, planning, environmental, and some heritage policies refer to landscape sensitivity and managing views.

The methodology used within the LVIA for this Project is set out below has been adapted based on previous Landscape and Visual Assessment reports for similar projects and guidelines prepared in Australia and overseas, which included:

- *Guidance Note for Landscape and Visual Assessment, AILA Queensland, June 2018* recognises that the "Landscape and Visual Assessment (LVA) should be scoped to reflect the project scale".
- *The Guidelines for Landscape and Visual Impact Assessment, Third Edition*, Landscape Institute and Institute of Environmental Management and Assessment (2013) (UK Guidelines). The UK Guidelines, widely referred to internationally, combine scale, duration and reversibility to evaluate magnitude. Viewer sensitivity and landscape character inform sensitivity. These factors are *combined* to assess the overall visual impact. The UK guidelines also discuss the benefit of theoretical mapping visibility or the area from which projects may be visible. These are referred to as the Zone of Theoretical Visibility (ZTV). The UK guidelines do not consider visual scale or prominence over distance. The UK Guidelines prefer professional judgement be employed in preference to the use of matrices.
- *New Zealand Institute of Landscape Architects, NZ (2010) Best Practice Note: Landscape Assessment and Sustainable Management 10.1*. Landscape characterisation is a process of interpreting how attributes such as geomorphology, natural ecosystems, vegetation cover and land-use history come together to distinguish landscapes. The NZ Guidelines recognise that landscapes are dynamic and *continually* changing and that landscape assessment should reflect project scale. Further, the NZ Guidelines seek to manage the direction and consequences of change, and how to sustain landscape values and attributes over time instead of 'freezing' a landscape in a particular state.
- *Environmental impact assessment practice note EIA-NO4, Roads and Maritime Services, NSW, December 2018* is an established guideline for determining landscape character and visual impact assessment for road projects in NSW. This Guideline assesses visual *sensitivity*, derived from an area's qualities, and the magnitude of the change derived from the scale or prominence of the Project, in a matrix framework to assess the level of impact.

The methodologies of all these Guidelines share overlapping features. However, one point of divergence is using matrices as the basis for assessment. Matrices are still referred to in the NSW RMS Guidelines, but are not recommended in the more widely applied UK guidelines. The reasoning for this is set out in Section 3.34 of the UK guidelines.

4.1 Assessment area

The assessment area is the area that may be visually affected by Project features and is the area within which the proposed development could create a recognisable impact. The vertical field of view provides a basis for

calculating the extent of the viewshed. Figure 4-1 shows the principles of the vertical field of view and Parameters of the Human Vision relative to the features of this Project.

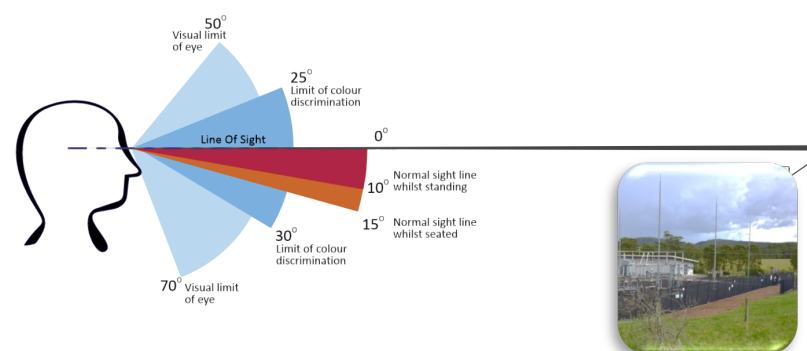


Figure 4-1 Vertical Field of View

The central field of view in human vision is approximately 10° while standing and 15° while seated. An object that takes up less than 5 per cent of this 10° cone of view may still be discernible but will not be a prominent feature in views.

To be conservative, distance calculations for the assessment areas are based on the 20.0m high lighting rods. These are the tallest features within the Project. Any other lighting rods are taller, they are limited to the on-site substation, and are not considered as prominent features.

The extent of the assessment area is established at a distance where the 20.0m high lighting rods will occupy less than five per cent of the "Normal" vertical field of view or 0.5°. This anthropometric data will form the basis for determining the assessment area and zones of visual influence for the Project.

A 20 m high lightning rod, when viewed from a distance of 2.5 km, will take up five per cent of the vertical field of view. Therefore, the assessment area for landscape and visual impact is established at 2.5 km from the Project features. It may be possible to see Project features from beyond the defined assessment area. However, if they were visible, they would be a background element in views, occupying less than 0.5° of vertical field of view and thus inconspicuous.

4.2 Landscape character and viewer sensitivity

Landscape Character Units are based on physical and natural attributes within the assessment area. Characteristics that assist in defining landscape units include geology, topography, vegetation, and drainage patterns, as well as modifications to areas from natural settings, land use, and policy considerations.

Policy and guidelines within the assessment area provide guidance on landscape character and objectives that are sought to be encouraged or protected.

4.3 Policy Review

Government policies were reviewed to identify key objectives and considerations for the Project's landscape and visual impact assessment. A focus of this review was to objectively *Characterise the landscape, features, and values of the project area of interest and its environs.*

The review examined relevant legislation and policy to identify landscape features, sensitive areas or locations such as key roads, tourist attractions, residential areas and communities that policy may protect.

4.4 Visual impact assessment

The potential visual impacts of the Project was assessed through views selected from locations within the public domain.

4.5 Publicly accessible locations

Viewpoints have been from locations that are either representative of key views from roadways or intersections, and where it was apparent that the Project have the potential to be visible. From each location, the assessment of the overall visual impact is based on several criteria. Their relevance to the assessment of the overall visual impact from the public domain is set out below:

- **Landscape Change:** The physical change or alteration to a landscape will depend on the nature of the Project. For example, a development such as a residential subdivision, industrial estate or mining Project may alter features such as topography, vegetation and use of an area, causing a transformational change to the landscape. In comparison, a development such as a wind farm or transmission line may be inserted into a landscape without fundamentally altering underlying features, such as topography, vegetation, land use, or policy, all of which define landscape character.
- **Visibility:** If a project is not visible, there cannot be a visual impact. All viewpoints included in the assessment have been selected based on the results of the Zones of Theoretical Visibility study, and during the site inspection.
- **Distance:** Infrastructure visibility and dominance will decrease with distance. The Zones of Visual Influence (ZVI) indicates visual dominance and potential impact based on distance.
- **Duration:** The duration of a view is also relevant and must be considered in assessing the overall visual impact. Duration is not necessarily time-bound i.e. 10 mins for short or 2 hours for long, rather it is associated with the location or use where people may see the Project. Public locations with longer-duration views include reserves, roadside stops o, Examples in the private domain may include patios, living rooms, or other private open spaces. These types of views are given greater weight than transient or fleeting views along roadways or in occasional views in the public domain, and service or working areas in the private domain.
- **Landscape character and sensitivity:** The landscape character of an area, which is based upon visual features such as topography, vegetation and the use of the land, the naturalness of the area and planning provisions. Sensitivity may also be influenced by specific landscape studies and assessments within the assessment area. Typically, a modified landscape prevalent within the assessment area or the region is less sensitive than one that is ostensibly natural.
- **Viewer numbers:** The overall visual impact will decrease as the number of people who can view the Project decreases. Conversely, the level of visual impact may increase where the viewing location is

a recognised key vantage point or tourist route, where a greater number of people may view the change.

Viewer sensitivity is based on the nature or purpose of the viewing location. For example, the sensitivity of a person viewing a project from a recreation reserve, public lookout or trail will be higher than the same viewer travelling the local road network or from a town.

The overall visual impact is not assessed numerically or through a matrix, rather, it is the examination of the qualitative aspects observed at each selected viewpoint, which is supported by the criteria listed above. This method is supported by the *UK Guidelines for Landscape and Visual Impact Assessment, Third Edition published by the Landscape Institute, Institute of Environmental Management and Assessment 2013 (GLVIA3)*. Each of the Criteria, and their relationship to the overall visual impact are shown in Figure 4-2.

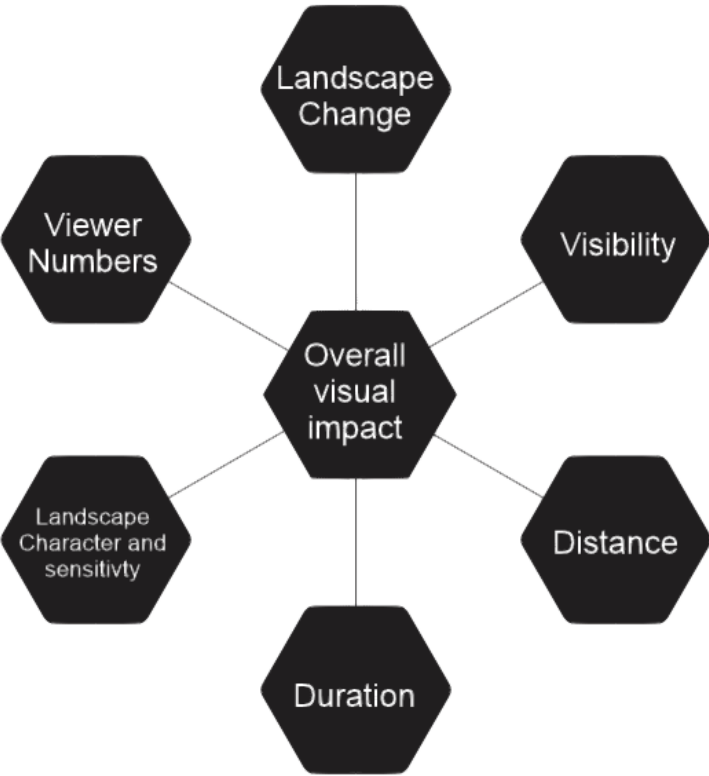


Figure 4-2 Visual impact – public realm

The overall visual impact at each viewpoint will range from Nil to High. The definition for each scale is discussed in Section 4.6 below.

4.6 Scale of effects

The following table outlines the scale of effects used to assess the overall visual impact for each viewpoint, from Nil, where the Project is not visible, to High.

Table 1 Scale of effects

Overall visual impact	Definition
Nil visual impact	An overall assessment of Nil will be arrived at where the Project will be screened by topography, vegetation, buildings and other structures or project features are at such a distance that they will no longer be a readily discernible feature in views.
Negligible visual impact	An overall assessment of Negligible is a minute effect barely discernible over ordinary day-to-day views. A 'negligible' level of visual impact would typically occur where the Project will be at a distance that it would be a minute element in views, or will be filtered by vegetation or partially screened by features such as topography or buildings. An overall assessment of negligible may also be where the Project is added to views that already include many similar features.
Low visual impact	An overall assessment of Low will be arrived at where the Project is noticeable but will not cause significant adverse impacts. For example, a "low" level of visual impact will be assessed if the rating of several, but not all, assessment criteria (visibility, distance, viewer numbers and landscape sensitivity) is assessed as low. Examples of a low level of visual impact are where the Project is visible in a highly modified landscape, few people will see the Project, if views are transient rather than stationary.
Moderate visual impact	An overall assessment of Moderate may occur where several criteria are higher than "low", or the visual effects would be mitigated/remedied from an initial rating of High.
High visual impact	An overall assessment of High will be arrived at where significant adverse effects cannot be avoided, remedied, or mitigated. For example, a highly sensitive landscape, viewed by many people, with the Project in close proximity and largely visible, will lead to an assessment of a high level of visual impact.

4.7 Mitigation options

Mitigation measures can reduce high visual impact at sensitive locations and visual receptors. The primary mitigation measure for visual impacts of is landscape screening. The requirement for mitigation, and its efficacy is examined in the viewpoint assessment undertaken in Section 8 of this report.

4.8 Photomontages

Photomontages are used within the report to show the anticipated change to the existing landscape created by the Project.

4.8.1 Photographs

A 60mm lens on a Nikon Z9 digital camera has a picture angle of 33° and a horizontal angle of view of approximately 22°.1 This is important in the perceptual accuracy of imagery for use in the preparation and reproduction of photomontages.

4.8.2 Lens size and photos used within the photomontages

Photomontages typically show the changes in a 60° horizontal field of view. The 60° horizontal field of view represents the central cone of view in which symbol recognition and colour discrimination can occur. When defining a vertical field of view, either 10° or 15° can represent the central field of view of human vision as shown in Figure 4-3.

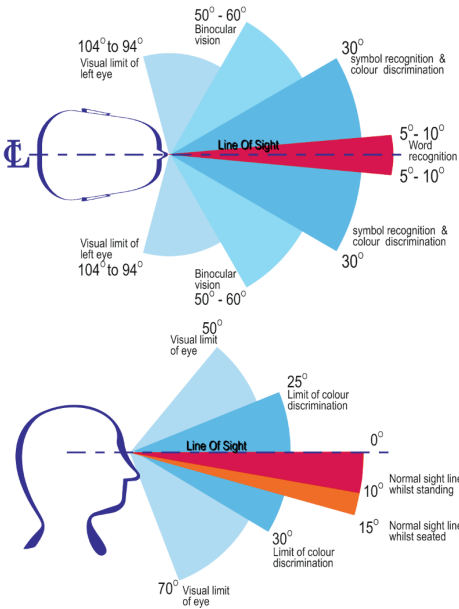


Figure 4-3: Horizontal and Vertical field of view (Human Dimension and Interior Space, Julius Panero & Martin Zellnik, Witney Library of Design, 1979)

Similar data can be found in the recent publication, 'The Measure of Man and Woman, Revised Edition', Henry Dreyfuss Associates, John Wiley & Sons, 2012.

The 60° horizontal field of view is important if the photomontage images represent the change in the landscape. The A3 photomontages, which are appended to this report in Appendix C, include a 60° horizontal field of view. One of the sheets within the photomontage set shows a wireframe view of the computer model to illustrate how the photomontages were derived. Vertical 'poles' within this wireframe are merely points on the landscape, such as a group of trees or a corner of an existing building or structure, that allow the computer model (prepared in 3D Studio Max) and the photograph to be accurately aligned. This ensures that the Project is accurately located within the photograph. The model is then removed, and the Project is rendered into the image.

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1 <https://shotkit.com/field-of-view>.

5. Assessment area

The assessment area is established at a distance of 2.5km from the indicative development footprint that include the BESS and new BNTS. This is the distance at which a 20.0 m high structure (lightning rod) would occupy 0.5° in the vertical field of view.

Features and uses within this area include Bunyip Township to the south, the Princes Freeway, which runs along the Project Area’s southern boundary, the existing 220kV high-voltage transmission line, which bisects the Project Area, and cleared farming land.

Cannibal Hill Reserve is approximately 3.5km to the northwest, and is the only nearby public open space to the Project. Although the reserve is beyond the study area, the reserve is elevated, with views from walking tracks and lookouts framed by native vegetation and bushland. For this reason, Viewpoint 1 considers views from a lookout roughly central to the reserve, facing southeast towards the Project.

5.1 Zones of visual influence

The prominence or visual scale of Project features will decrease with increasing distance. This assessment refers to Zones of Visual Influence (ZVI), and one of several criteria considered when evaluating the overall visual impact from selected viewing locations.

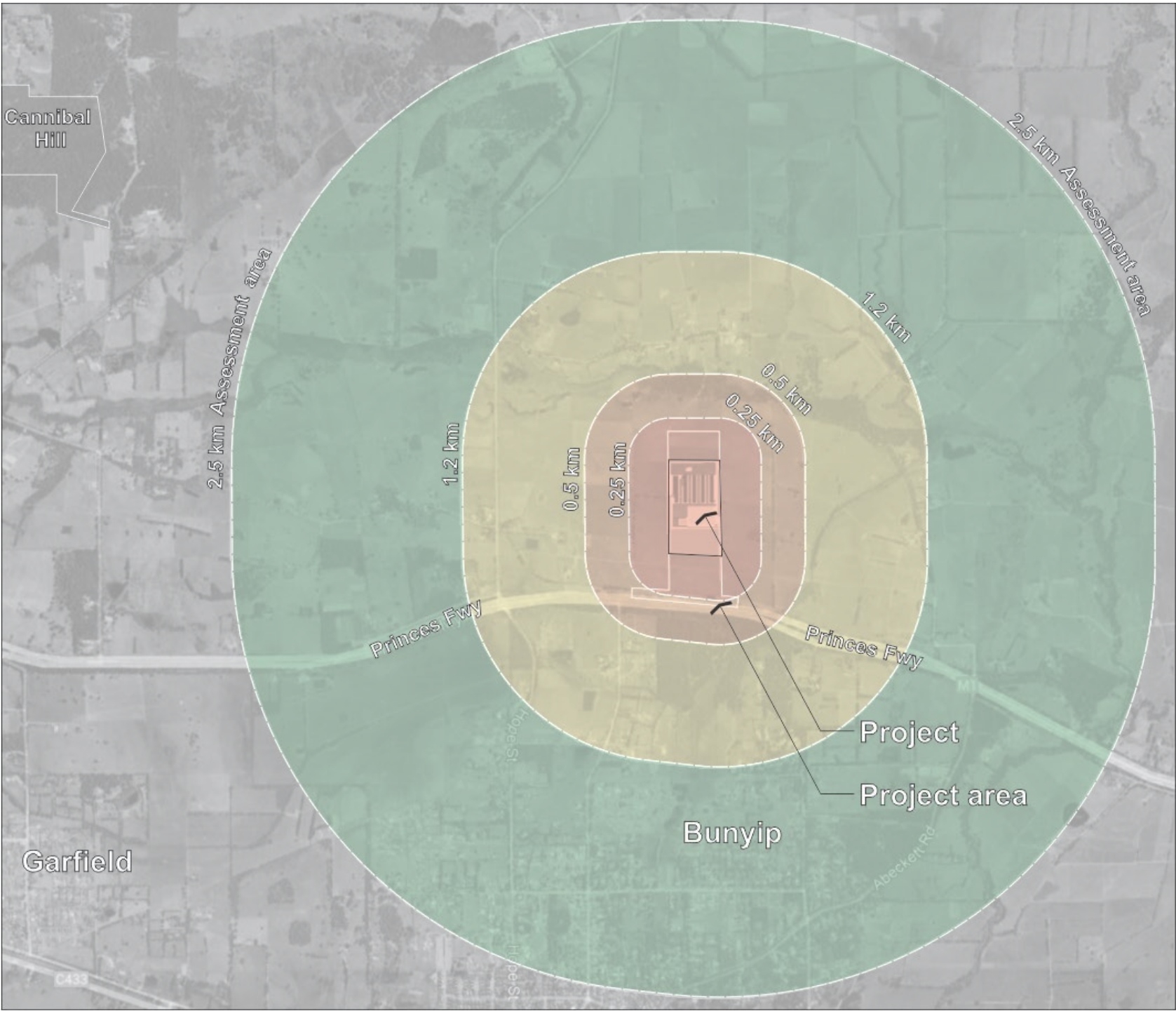
The ZVIs, which will form part of the visual impact assessment, are set out in Table 2. Distances have been rounded to the next (greater) 50m.

Table 2 Assessment area and Zones of Visual Influence based on a 20.0m lightening rod

Vertical View angle	Distance to Project	Zones of Visual Influence
<0.5	>2.5km (Actual 2.291km)	Visually insignificant – Extent of the project assessment area The Project will be a small element in views, difficult to discern, and invisible in some lighting or weather circumstances.
0.5-1.0	1.2km to 2.5km	Discernible, but will not be dominant in views The Project will be visible, however, it will not be a dominant feature in views or the landscape.
1.0-2.5	500m to 1.2km	Potentially noticeable and can dominate the landscape Where visible, the Project has the potential to be noticeable in view.
2.5-5.0	250m to 500m	Highly visible and will usually dominate the landscape The Project has the potential to be a dominant visual element in views. The degree of visual intrusion will depend on the placement of structures in the landscape and the ameliorating effects of screening provided by existing features in views.
>5.0	<250m	Will be visually dominant in the landscape – Where visible Dominates the landscape in the Projects features are sited and are visible in full.

Figure 5-1 shows the extent of the assessment area for visual impact and the Zones of Visual Influence established in Table 2.

It is recognised that the apparent visual scale will not change dramatically when a viewer moves from one distance band to another, for example, from 450m to 500m. For this reason, the Zones of Visual Influence is considered a guide only and is one of several criteria considered in assessing each viewpoint.



Study Area + ZVI
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Source: VicPLAN

Figure 5-1 Assessment area and ZVI

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6. Policy review

Land-use zones and overlays provide assists in understanding the existing and intended landscape settings and their sensitivity to change. They do not determine the magnitude or acceptability of landscape or visual impacts; rather, they provide an objective basis for landscape function, anticipated land-use patterns, and the degree of change contemplated within the planning framework.

A review of land-use zones supports landscape values and the susceptibility of landscapes to accommodate change.

The Project site and the majority of the assessment area are located within the Cardinia Planning Scheme. A narrow portion of the eastern extent of the assessment area lies within the Baw Baw Planning Scheme. Given the location of the Project and the distribution of assessed viewpoints, this assessment focuses on the relevant provisions of the Cardinia Planning Scheme.

6.1 Land Use Zones

Figure 6-1 shows the land-use zones within the assessment area. An overview of the land-use zones relevant to assessing landscape and visual impact is set out below.

6.1.1 Green Wedge Zone

The Project Area is located within the Green Wedge Zone – Schedule 1 (GWZ1), which forms part of Cardinia Shire's designated non-urban buffer between metropolitan growth areas and the region's agricultural and environmental landscapes. The zone's stated purposes emphasise:

- Protection of non-urban land for agriculture, landscape and environmental values;
- Retention of rural character and avoidance of urban encroachment; and
- Ensuring that development is of a scale, siting and form that does not detract from the landscape qualities of the green wedge.

Included in this area is the high-voltage transmission line corridor bisecting the Project Area.

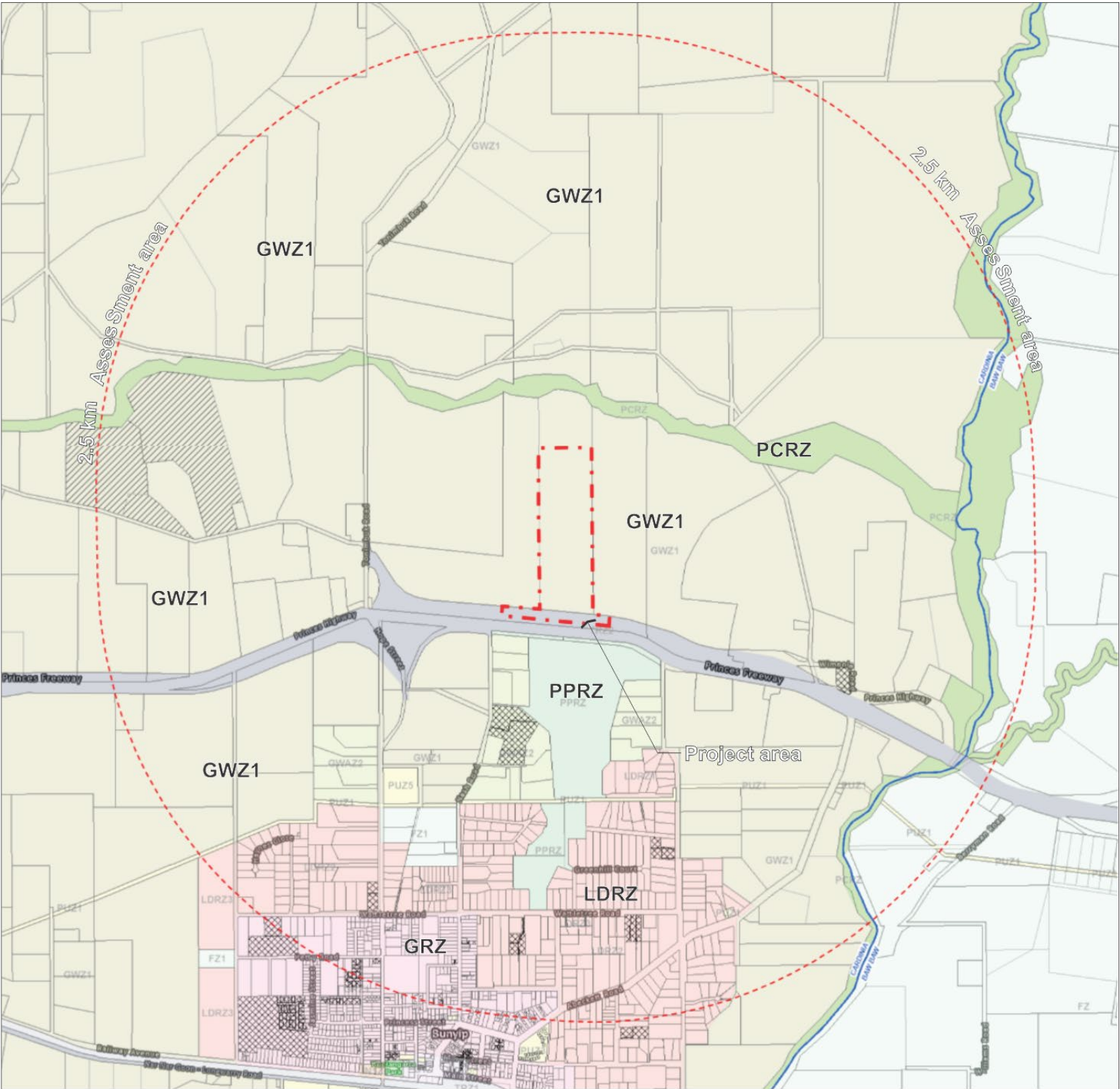
6.1.2 Public Conservation and Resource Zone

The Public Conservation and Resource Zone (PCRZ) applies to Cannibal Creek to the north and the Bunyip River to the east.

The PCRZ recognises environmental and landscape values of waterway corridors, bushland reserves and areas managed for conservation and passive recreation. The primary objectives relate to protecting ecological values and maintaining a natural, visually recessive character.

6.1.3 Other Zones

Transport Zone (TRZ) applies to the Princes Freeway along the Project Area's southern boundary. The roadway and vegetation within the roadway's easements provide a strong visual barrier limiting any views from areas further to the south, including the Public Park and Recreation Zone (PPRZ), settled areas within Bunyip in the Low Density Residential Zone (LDRZ) and the General Residential Zone (GRZ).



Land use zones
NTS
Source: VicPLAN

Figure 6-1 Zoning (Map source – Planning Maps Victoria)

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6.2 Overlays

Figure 6-2 shows the schedules to the Environment and Landscape overlays within the assessment area.

6.2.1 Environmental Significance Overlay

Schedule 1 to Clause 42.01 Environmental Significance Overlay (ESO1) applies to the majority of the land in the Green Wedge Zone.

The Statement of environmental significance recognises *The hills to the northern part of the municipality (generally to the north of the Princes Highway) are an area with significant landscape and environmental values. The area is characterised by a geology of Devonian Granitic and Sulrian Sediment origin, moderate to steep slopes, and areas of remnant vegetation. These characteristics contribute to environmental values including landscape quality, water quality, and habitat of botanical and zoological significance. These characteristics are also a significant factor in terms of environmental hazards including erosion and fire risk.*

The vegetation supports the ecological processes and biodiversity of this area by forming core habitat areas within a complex network of biolink wildlife corridors. Sites containing threatened flora and fauna are defined as being of botanical and zoological significance. Development within and around these sites need to be appropriately managed to ensure the long term protection, enhancement and sustainability of these ecological processes and the maintenance of biodiversity.

The stated Environmental objective to be achieved seek to:

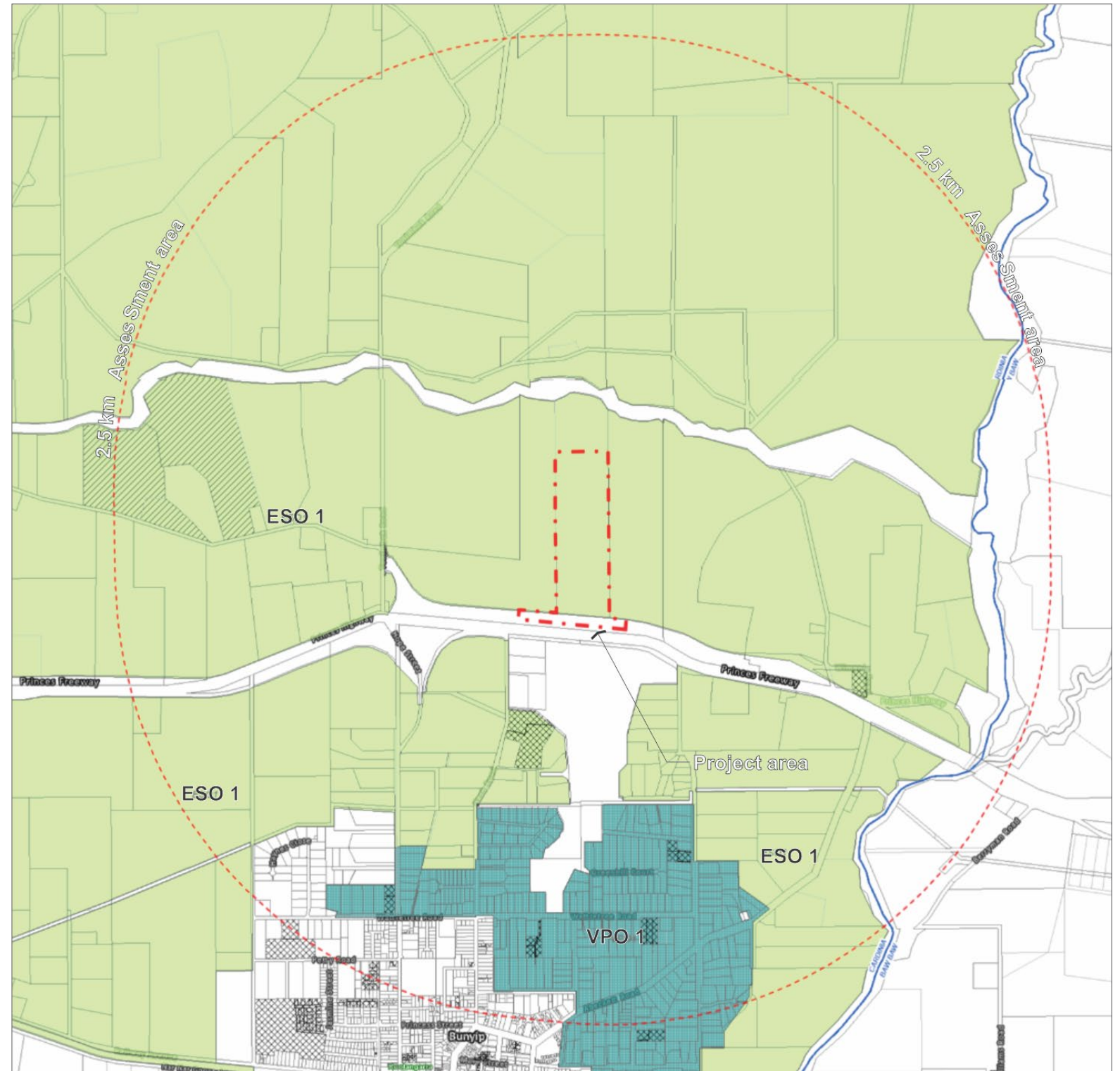
- To protect and enhance the significant environmental and landscape values in the northern hills area including the retention and enhancement of indigenous vegetation.
- To ensure that the siting and design of buildings and works does not adversely impact on environmental values including the diverse and interesting landscape, areas of remnant vegetation, hollow bearing trees, habitat of botanical and zoological significance and water quality and quantity.
- To ensure that the siting and design of buildings and works addresses environmental hazards including slope, erosion and fire risk, the protection of view lines and maintenance of vegetation as the predominant feature of the landscape.
- To protect and enhance biolinks across the landscape and ensure that vegetation is suitable for maintaining the health of species, communities and ecological processes, including the prevention of the incremental loss of vegetation.

6.2.2 Vegetation Protection Overlay

Schedule 1 to clause 42.02 Vegetation Protection Overlay (VPO1) applies the land in the low density residential zone south of the Princes Freeway and north of Bunyip township and will not be affected by the Project.

6.2.3 Relevance to this assessment

The proposed Project (except for access) is located within land affected by ESO1; however, the Project Area comprises low-lying, cleared farmland adjacent to an existing high-voltage transmission corridor and does not exhibit the environmental or landscape qualities that the overlay seeks to protect.



Overlays
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Source: VicPLAN

Figure 6-2 Overlays (Map source – Planning Maps Victoria)

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7. Theoretical visibility

Zones of Theoretical Visibility (ZTV) mapping identifies locations that have the potential to view the Project. The ZTV is a theoretical model based solely on topography and the key Project features. The ZTV does not consider ameliorating features, such as vegetation in farming areas, along roadsides, or dwellings and associated structures, such as sheds, or other development that might screen or filter views in the Project's direction.

The ZTV establishes patterns of visibility to guide site inspections and viewpoint selection, which are assessed in the following Section.

The areas shown in green in Figure 7-1 (Opposite areas that have theoretical visibility of a 20.0m high lightning rod located within the on-site substation.

The towers connecting the BNTS to the existing transmission line would be taller than the 20m-high lightning rods; however, they would be adjacent to the existing transmission line and visually similar to existing transmission structures, and a less conspicuous change in views.

Figure 7-1 also shows the proximity of dwellings relative to the Project Area and the areas of theoretical visibility. The majority of dwellings are south of the Princess Freeway. Dwellings north of the Princes Freeway are in farming that is low-lying to gently undulating. The closest dwelling is the host landholders residence, approximately 650m to the west of the Project Area. This dwelling is shown in yellow. All other dwellings are west of Tonimbuk Road, north of Cannibal Creek. Viewpoints 3 and 5 shows views from these areas.

There are approximately four dwellings along Wimpole Road to the east of the Project Area. These dwellings are approximately 1.0km distance or greater to the Project Area. Two dwellings are situated east of Wimpole Road. Vegetation in the road reserve and surrounding these dwellings screen views to the west. For the dwellings west of Wimpole Road, one is slightly elevated, and south of the existing high voltage transmission lines. The dwelling is set within established gardens that screen views in the direction of the Project Area. There was only one dwelling west of Wimpole Road, in an area where visibility was predicted. The dwelling is approximately 1.0 km to the east of the Project Area and Tea Creek. Viewpoint 4 is selected from a located near to the dwelling where a break in roadside vegetation permits views to the west.

7.1 Relevance of this analysis to visual assessment

Views from most locations beyond 1.2 km to the north, northeast, east, and west are screened by topography. Although modelled visibility extends to sections of the Princes Freeway south of the Project Area, it was observed during the site visit that a combination of local topography and vegetation along the road corridor prevents meaningful views towards the Project when travelling this Section of the freeway. These same features limit views from Bunyip to further the south.

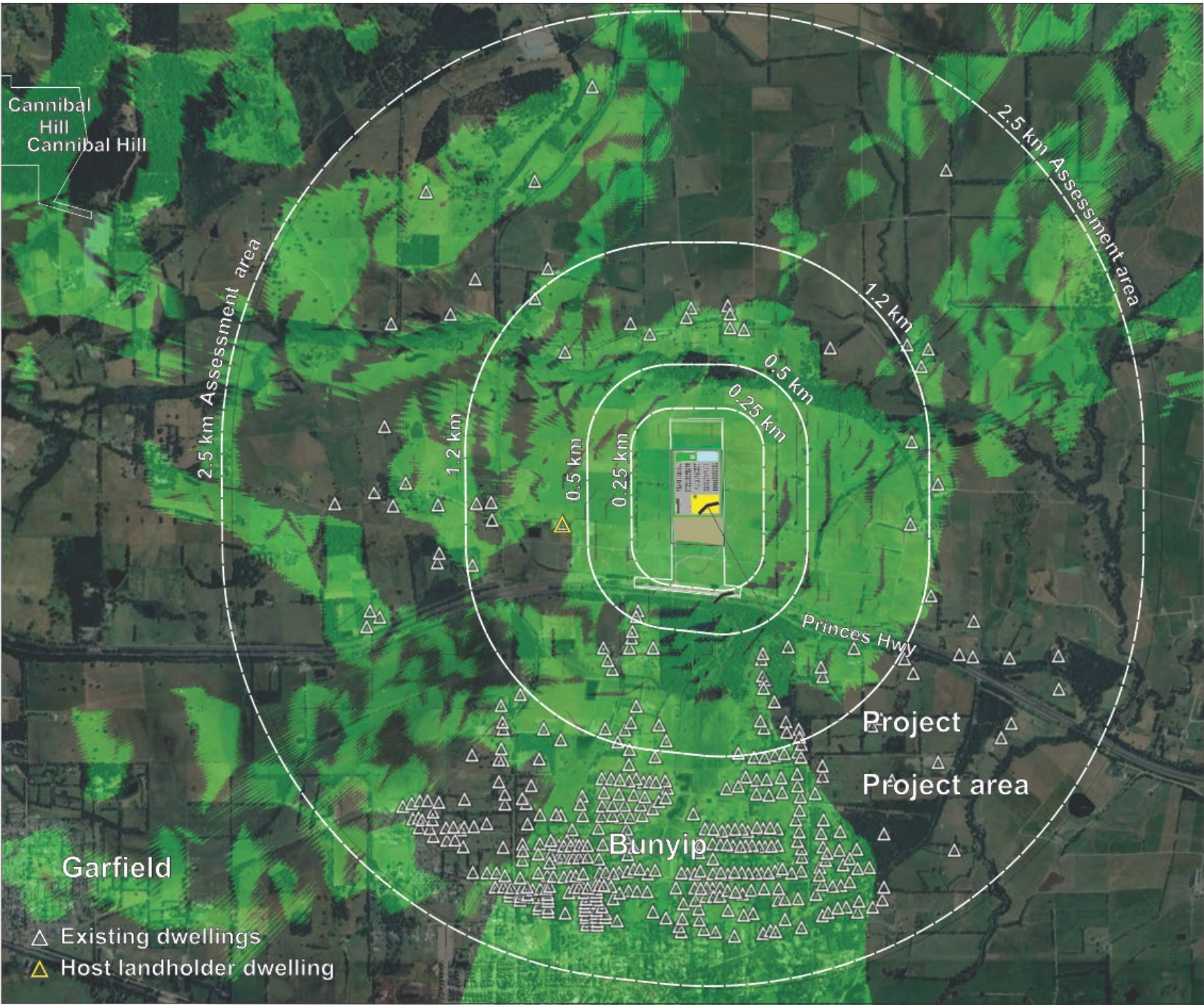
There are no elevated lookouts, public reserves, or formal public vantage points proximal to the Project Area or north of the Princes Freeway.

As a result, public realm viewing locations are confined to a short section of the Princes Freeway south of the Project Area, and the local roads of Tomnibuk Road to the west, Wimpole Road to the east, and McConnell Road to the north.

While Cannibal Reserve lies outside the defined assessment area, a view from its southern lookout has been included to illustrate broader contextual visibility.

There are no nearby or neighbouring dwellings to the Project. Most are west of Tomnibuck Road, or north of the vegetated banks of Cannibal Creek.

For the above reasons, the focus of the following assessment is on locations near the Project and in areas where the ZTV has demonstrated theoretical visibility of the Project.



Theoretical visibility
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Source: VicPLAN

Figure 7-1 Patterns of theoretical visibility

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8. Assessment

This chapter assesses the visual impacts of the Project, as summarised in Chapter 3, from the following public locations:

- Cannibal Hill Reserve Southern Lookout (northwest)
- Princes Freeway (south)
- Tomnibuk Road (west)
- Wimpole Road (east)
- McConnell Lane (north)

Viewpoint selection was informed by the Zone of Theoretical Visibility (ZTV), which identifies areas where Project elements may be seen, and by field inspections to confirm views from public locations where breaks in vegetation or landform allow visibility. The existing transmission line corridor, which bisects the Project Area and contains structures taller than any proposed Project feature, also assisted in identifying realistic viewing opportunities.

The visual impact from each viewpoint has been assessed using the criteria outlined in Section 4.5: visibility, distance, duration of viewing, viewer numbers and the qualitative characteristics of the view. A summary table covering visibility, degree of landscape change, duration, distance, viewer numbers and landscape sensitivity accompanies each assessment. As noted in Chapter 4, the summary table is to be read alongside the qualitative analysis to account for factors such as localised screening by topography, vegetation or buildings, which cannot be meaningfully captured through metrics alone.

Impact levels have been assigned using the scale of visual effects defined in Section 4.5 and reproduced below in Figure 8-1.

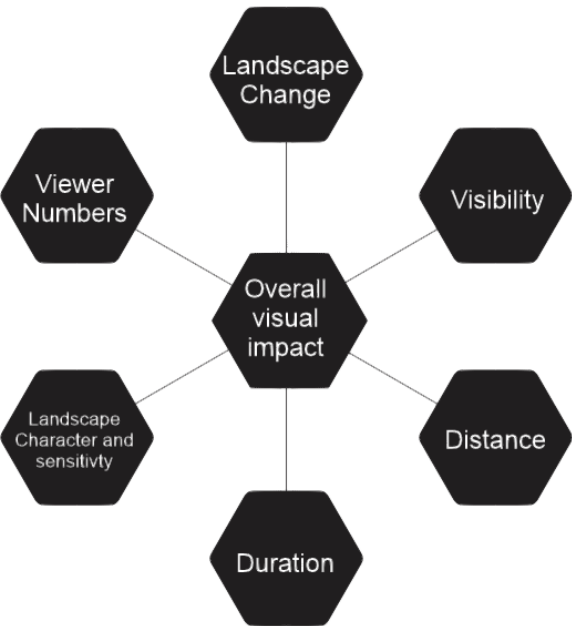
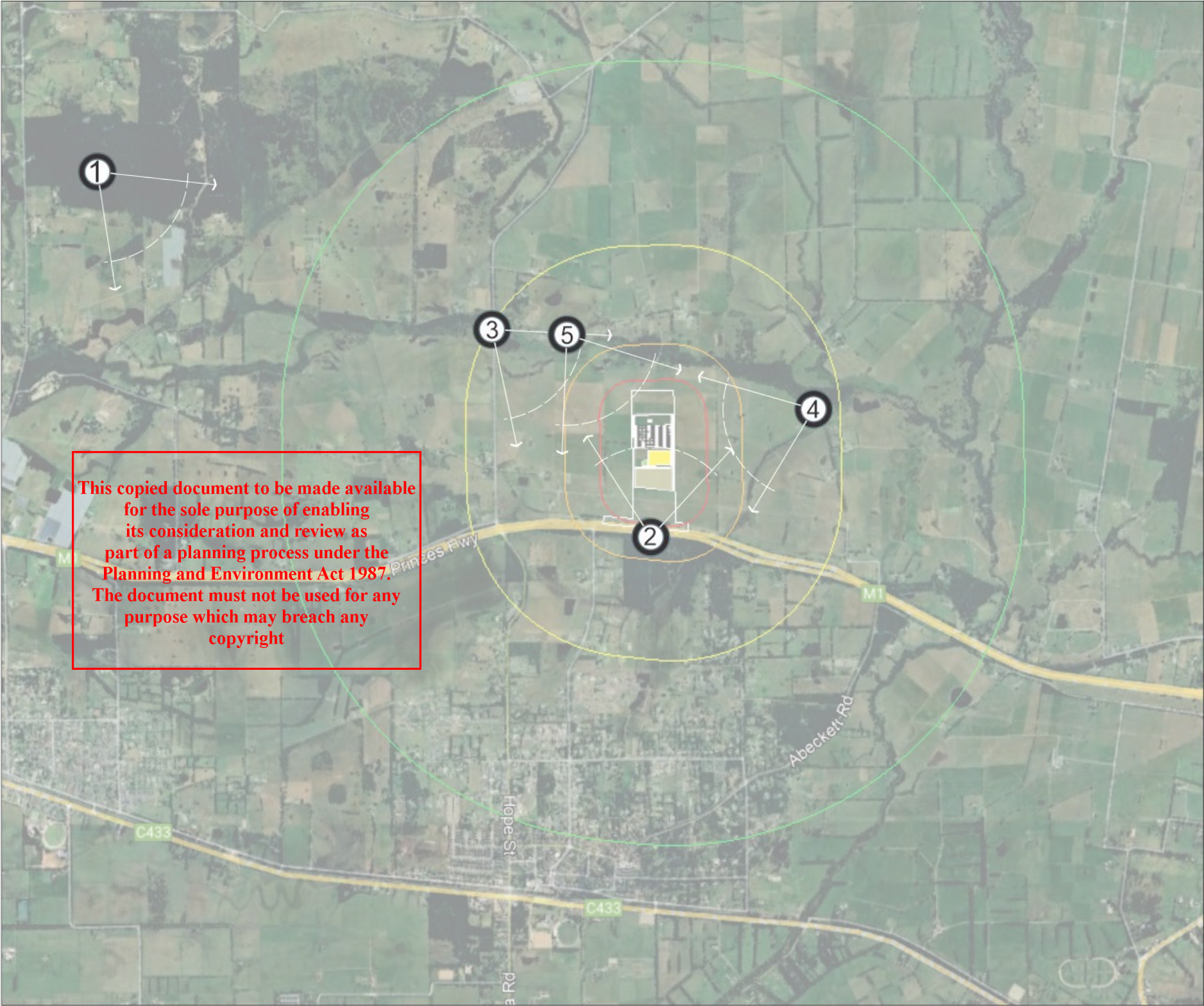


Figure 8-1 Visual impact – public realm



Viewpoints
NTS
Source: VicPLAN

Figure 8-2 Viewpoint Locations

8.1 Viewpoint 1 – Cannibal Hill Reserve Southern Lookout



Figure 8-3 Cannibal Hill Reserve Southern Lookout – Existing View



Summary of "Scale of Effects" Criteria		Location and Setting / LVIA
Coordinates	38° 3'10.16"S 145°40'58.18"E	Viewpoint 1 is located at an elevated lookout within Cannibal Hill Reserve, approximately 4.1 km northwest of the nearest project boundary. Although this location is beyond the formal assessment area, it is one of the few publicly accessible elevated vantage points from which the Project would be visible and is therefore included for completeness.
Distance to Project Area boundary	4.1 km SE	
Viewer Sensitivity / Use	High	The lookout provides expansive, panoramic views from the southeast through to the west. Figure 8-3 shows the existing view looking southeast towards the Project. Views in this direction comprise broad, cleared farmland and scattered dwellings within the lower-lying Cannibal and Bunyip Creek areas, together with existing high-voltage transmission towers and various horticultural structures.
Landscape Sensitivity	Low / Modified Farmland	
Duration	Short / Medium	Figure 8-4 (below) shows the same view with the Project features superimposed. At a distance of approximately 4.1 km, the Project's features would be <i>noticeable on a clear day</i> but would read as minor additions to an already modified landscape that includes visible structures, covered horticultural areas and existing transmission infrastructure. The overall visual impact from this location would be Negligible.
Viewer numbers	Moderate	
Overall Visual Impact	Negligible	



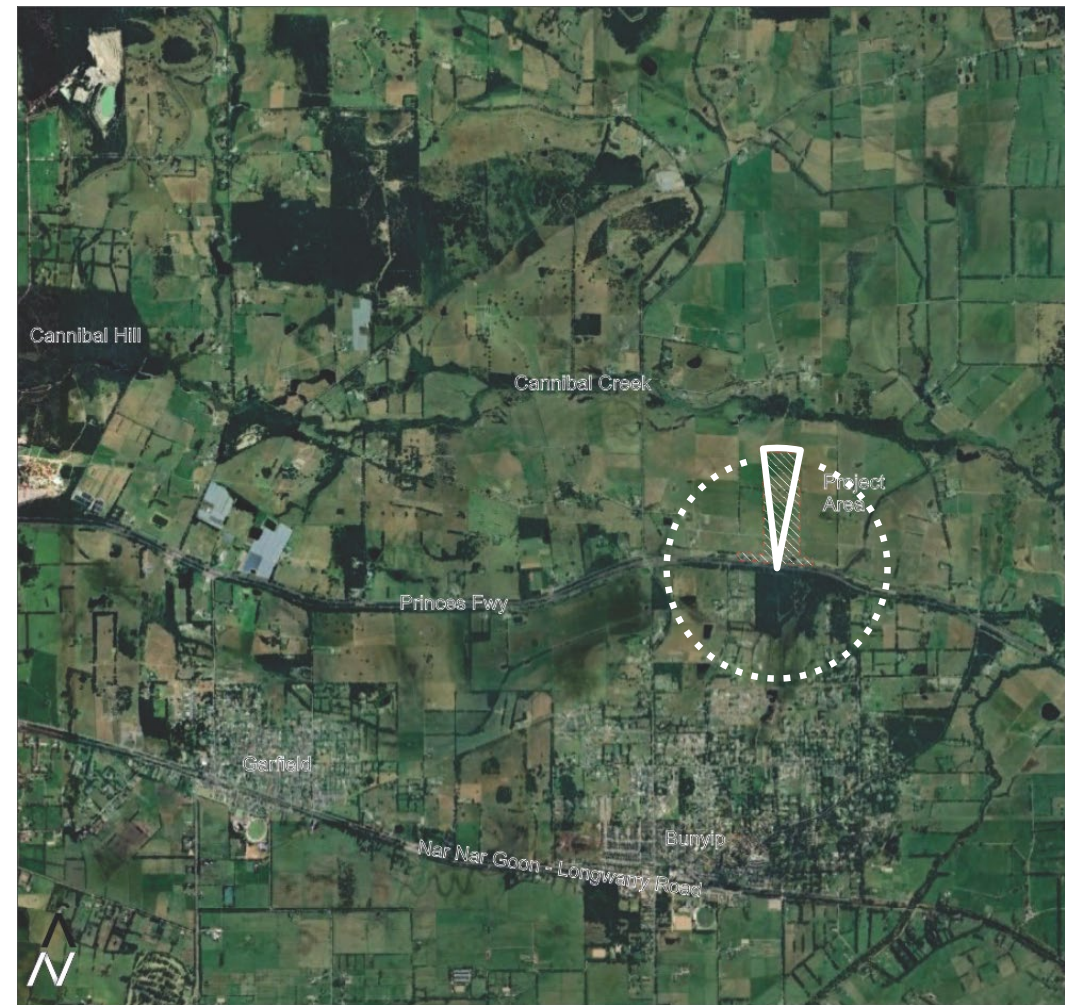
Figure 8-4 Cannibal Hill Reserve Southern Lookout – Photomontage

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8.2 Viewpoint 2 – Princes Freeway



Figure 8-5 Princes Freeway – Existing View



Summary of "Scale of Effects" Criteria		Location and Setting / LVIA
Coordinates	38° 4'31.37"S 145°43'36.51"E	Viewpoint 2 is taken from the Princes Freeway immediately south of the Project Area. This is not a designated viewing area but an opportunistic glimpse available only where breaks in roadside vegetation and local topography allow north-facing views. Figure 8-6 (Above) shows the existing view towards the Project.
Distance to the nearest Project Area boundary	45m S	
Viewer Sensitivity / Use	Low	Views to the north extend across flat, cleared farmland. Towers associated with multiple high-voltage transmission lines within the easement that bisects the southern part of the Project Area are clearly visible. On clear days, the vegetated foothills of Bunyip State Park and the more distant ranges within Yarra Ranges National Park form the background. All Project components, including the future BNTS, would be located north of the existing transmission line corridor.
Landscape Sensitivity	Low / Modified Farmland	
Duration	Short / 100kmh	Figure 8-7 (below) shows an enlargement of the view with the Project features superimposed. From this location, the overall visual impact would be Low to Negligible . Although the Project's features will be visible, there are no roadside stops or fixed vantage points where views of the Project would be extended in duration. All views would therefore be oblique to the direction of travel, through a narrow break in roadside vegetation, and set within cleared farmland, beyond existing transmission infrastructure.
Viewer numbers	Moderate/High	
Overall Visual Impact	Low - Negligible	

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Figure 8-6 Princes Freeway – Photomontage

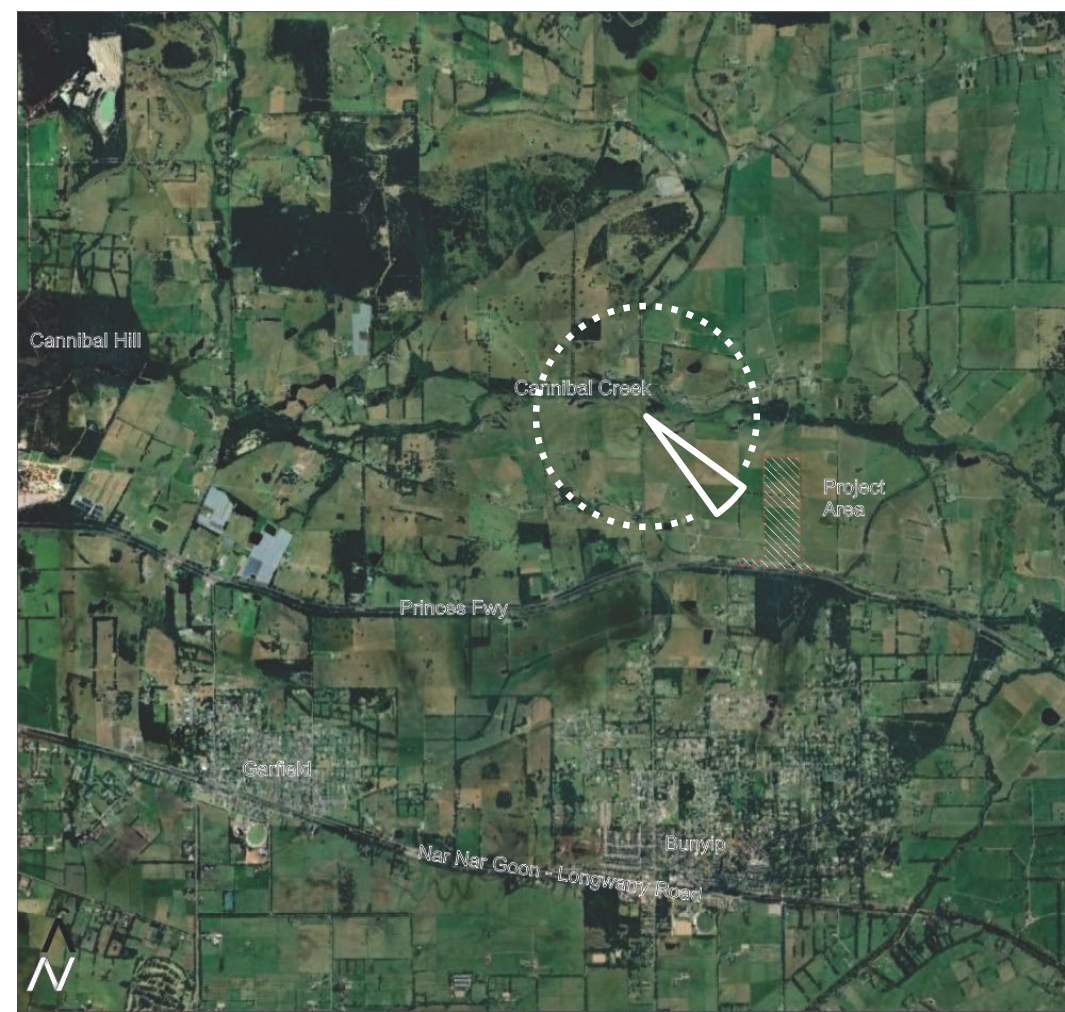
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8.3 Viewpoint 3 – Tomnibuk Road



Figure 8-7 Tomnibuk Road – Existing View



Summary of "Scale of Effects" Criteria		Location and Setting / LVIA
Coordinates	38° 3'45.82"S 145°42'51.82"E	Viewpoint 3 is located along Tomnibuk Road, just south of its intersection with McConnell Road. Figure 8-9 (above) shows the existing view, where intermittent vegetation along the roadside and Cannibal Creek corridor allows views to the southeast towards the Project. These views extend across cleared, flat farmland with existing transmission towers visible within the easement that traverses the locality. Figure 8-10 (below) shows an enlargement of the view with the Project features superimposed. From this location, the overall visual impact would be Low to Negligible. At approximately 1.0 km to the southeast and east, the Project's features would be low in elevation, oblique to the direction of travel and viewed over an open, agricultural foreground. Existing vegetation along fence lines and property boundaries in the intervening landscape would further filter or partially screen views. Although screening within the provisional landscape may further reduce visibility of the Project, the low level of impacts does not require its inclusion. This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
Distance to the nearest Project Area boundary	1.0km SE	
Viewer Sensitivity / Use	Low	
Landscape Sensitivity	Low / Farmland Modified	
Duration	Short	
Viewer numbers	Low	
Overall Visual Impact	Low - Negligible	



Figure 8-8 Tomnibuk Road – Photomontage

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8.4 Viewpoint 4 – Wimpole Road



Figure 8-9 Wimpole Road– Existing View

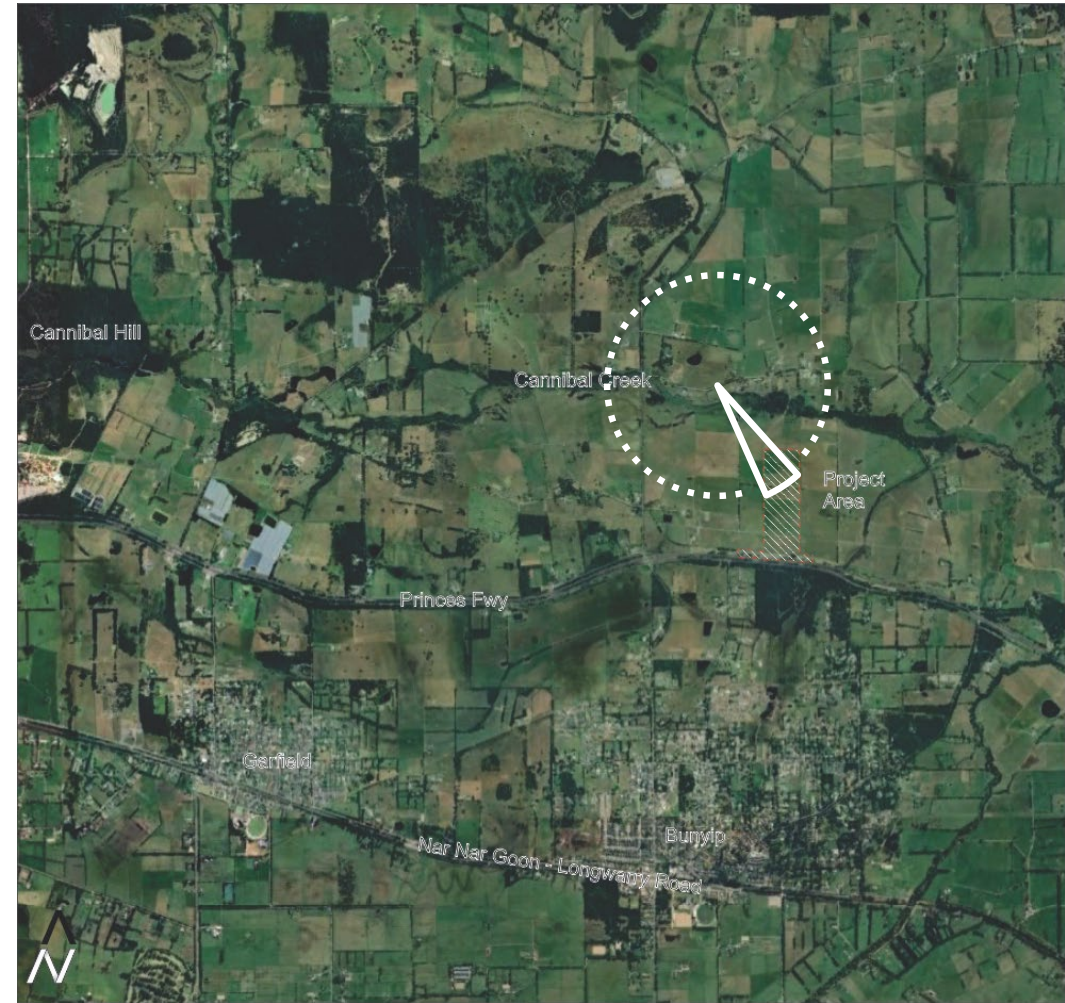


Summary of "Scale of Effects" Criteria		Location and Setting / LVIA
Coordinates	38° 4'4.24"S 145°44'24.49"E	Viewpoint 4 is from Wimpole just south Cannibal Creek. Wimpole Road is a local gravel road, with local traffic and few road users. Views from locations further north along the roadway are screened by vegetation within the road reserve, and within the reserve established along the waterway. Figure 8-12 (above) shows the existing view looking west. This view was taken across a farm gate, where a break in roadside vegetation and intervening farming land permits views in the direction of the Project. Views extend across cleared, flat farmland. The existing transmission towers within the easement that traverses the locality are not visible from this location. From this location, the overall visual impact would be Low to Negligible. At approximately 900m to the west, the Project’s features would be low in elevation, viewed over an open, agricultural foreground and seen by few people. Existing vegetation along fence lines and property boundaries in the intervening landscape would further filter or partially screen views. Although screening within the provisional landscape may further reduce visibility of the Project, the low level of impacts does not require its inclusion. This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright
Distance to the nearest Project Area boundary	980m W	
Viewer Sensitivity / Use	Low	
Landscape Sensitivity	Low / Modified Farmland	
Duration	Short / Long	
Viewer numbers	Low	
Overall Visual Impact	Low - Negligible	

8.5 Viewpoint 5 – McConnell Road



Figure 8-10 McConnell Road– Existing View



Summary of "Scale of Effects" Criteria		Location and Setting / LVIA
Coordinates	38° 3'47.16"S 145°43'13.46"E	Viewpoint 4 is from McConnel Road east of its intersection with Tomnibuk Road and north of Cannibal Creek. McConnel Road is a local gravel road and is truncated at farming land at its eastern end. Views from locations further east and west are screened by vegetation within the road reserve and within the reserve. Figure 8-13 (above) shows the existing view looking south. This view was taken across a break in roadside vegetation and intervening farming land, which permits views in the direction of the Project. Vegetation along the Cannibal Creek limits views to farmland further to the south and in the direction of the Project. The existing transmission towers within the easement that traverses the locality are visible, albeit partially screened by vegetation along the creek line from this location. From this location, the overall visual impact would be Negligible . At approximately 600m, the Project's features would be low in elevation, and filtered by existing vegetation along Cannibal Creek. Screening planting in the provisional landscape areas would not alter the assessed levels of impact.
Distance to the nearest Project Area boundary	600m SE	
Viewer Sensitivity / Use	Low	
Landscape Sensitivity	Low / Modified Farmland	
Duration	Short	
Viewer numbers	Low	
Overall Visual Impact	Negligible	

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9. Conclusion

The Project is not a prohibited use in Green Wedge Zone and does not conflict with the objectives of ESO1.

The preceding analysis shows that the Bunyip North BESS will contribute to a change in views, however the Project is proposed in an area that accommodate the levels of visual change that would be brought about by the construction and operation of the Project.

The Project Area is directly adjacent to an existing 220 kV transmission corridor. The broader assessment area, comprises cleared, low-lying farming land.

Most view towards the Project Area are limited by local topography, and vegetation along roadsides and riparian corridors.

Where views are available, they are typically fleeting and short in duration, oblique to the direction of travel, or at distances where Project components present as low-scale elements within the broader landscape.

There were no locations identified where visual impacts would be greater than Low, most being Low to Negligible.

The closest dwelling is approximately 650 m to the west and is associated with the Project Area. All other dwellings are separated by public roads, vegetation along creek lines, or are located at distances where existing vegetation partially screens or filters views towards the Project.

Given that no sensitive receptors have been identified where visual impacts would be greater than Low, there appears to be no visual reasons requiring landscape screening in the provisional landscape areas shown along the Project Areas western, northern and eastern boundaries.

Should screening be required, existing vegetation found elsewhere in the surrounding landscape show that vegetation established within the provisional landscaping areas would assist in further filtering of views.

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Appendix A Photomontages

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