



PETER HAACK
CONSULTING

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Bendigo BESS

Visual Impact & Urban Context Analysis

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4 June 2026

THIS REPORT HAS BEEN PREPARED FOR COGENCY ON BEHALF OF
PACIFIC HYDRO AUSTRALIA DEVELOPMENTS PTY LTD

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CONTENTS

Contents.....	1
1 INTRODUCTION	8
2 VISUAL ASSESSMENT METHODOLOGY.....	9
2.1 Approach.....	9
2.2 Assessment of landscape and visual impacts.....	9
2.2.1 Visual sensitivity.....	10
2.2.2 Visual modification to the existing setting.....	11
2.2.3 Occupied field of view – Visual prominence.....	12
2.2.4 Residual impacts	14
2.2.5 Cumulative impact	14
2.3 Lighting impacts	14
2.3.1 Lighting impacts.....	14
2.4 Limitations of the assessment.....	15
3 COMPONENTS OF THE PROJECT.....	16
3.1 Key features.....	16
3.2 Detail of project components.....	17
3.2.1 BESS Blocks.....	17
3.2.2 Switchyard.....	17
3.2.3 HV switching substation.....	17
3.2.4 Connecting underground powerline.....	17
3.2.5 Operations/office building	18
3.2.6 Storage Shed	18
3.2.7 Acoustic Wall.....	18
3.2.8 Perimeter Fence.....	19
4 URBAN CONTEXT AND SETTING APPRAISAL	20
4.1 Project context	20
4.2 Land use and zoning	21
4.2.1 Land use	21
4.2.2 Zoning.....	29
4.2.3 Overlays.....	29
4.3 Urban form.....	33

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4.3.1	Topography	33
4.3.2	Built form	36
4.3.3	Vegetation.....	40
5	VISUAL IMPACT ASSESSMENT	44
5.1	Visibility of the Project	44
5.1.1	Theoretical zone of visual influence (TZVI)	44
5.1.2	Visual prominence	45
5.2	Sensitive viewpoints.....	46
5.3	Viewpoint assessment	46
5.3.1	Detailed assessment of representative sensitive viewpoints.....	47
5.4	Assessment of TZVI not visible - high sensitivity viewpoints	59
5.5	Connecting powerline/grid connection.....	59
5.6	Lighting impacts.....	59
5.7	Cumulative impact	60
6	AMELIORATION STRATEGIES	61
6.1	On-Site Actions	61
6.1.1	Project layout.....	61
6.1.2	Perimeter screening	61
6.1.3	Material selection	61
6.2	Off-Site Actions	61
7	COMPLIANCE WITH THE INDUSTRIAL DEVELOPMENT GUIDELINES	62
7.1	Compliance assessment.....	62
7.1.1	Section 1 - Site Layout.....	62
7.1.2	Section 3 – Built Form	64
7.1.3	Section 4 - Landscaping.....	67
7.1.4	Section 6 – Interface Treatments.....	70
8	CONCLUSION	73
8.1	Landscape character impacts.....	73
8.2	Visual impacts.....	73
8.2.1	Visual prominence	73
8.2.2	Consideration of visual fit within the setting.....	73
8.2.3	Initial visual impact	73
8.2.4	Residual impact.....	74
8.2.5	Cumulative impact	74

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8.2.6	Impact of connecting underground powerline	74
8.3	Lighting impacts	74
8.4	Amelioration	74
Appendix A - Massing model views		76

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Table of Figures

Figure 1 - Project location (Source: Google Maps).	8
Figure 2 – Horizontal and vertical field of view.	13
Figure 3 – Site plan of the Project (Source: GHD).	16
Figure 4 – Typical BESS module – front and rear elevation.	17
Figure 5 – Switchyard – general arrangement elevation.	17
Figure 6 – Indicative HV switching substation.	17
Figure 7 – Concept for onsite maintenance building.	18
Figure 8 – Indicative storage shed – front elevation.	18
Figure 9 - Example of acoustic wall.	19
Figure 10 – Typical security fence.	19
Figure 11 - Project context (Source: Cogency).	20
Figure 12 – Land use and existing infrastructure (Source: Cogency).	22
Figure 13 – Typical land use of the Project area and immediate surrounds, south of Hattam Street.	23
Figure 14 – The Bendigo Terminal Station, as viewed from Allingham Street.	23
Figure 15 – An existing HV Powerline traverses the landscape to the southwest of the Project area.	24
Figure 16 - Powerlines run along both sides of Allingham Street.	24
Figure 17 – Normal density residential development is located to the northwest of the Project area on Hattam Street.	25
Figure 18 – A residential aged care community is located to the north of the Project area, on Hattam Street.	25
Figure 19 - Industrial facility to the northwest of the Project area at the corner of Hattam Street and Allingham Street.	26
Figure 20 – Industrial uses to the northeast of the Project area.	26
Figure 21 – Industrial facilities are located to the west of the Project area, north of Gray Street and between Coonoor Street and Allingham Street.	27
Figure 22 - Underutilised industrial land abuts the southern boundary of the Project area.	27
Figure 23 – A section of Bendigo Regional Park is located immediately to the east of the Project area.	28
Figure 24 – The Melbourne to Bendigo railway line is located to the west of the Project area.	28
Figure 25 - Zoning Map.	30
Figure 26 – ESO/VPO Overlay Map.	31
Figure 27 – BMO Overlay Map.	32
Figure 28 – Plan of proposed subdivision with hypothetical building footprints.	33
Figure 29 - Elevation of broader surrounds of the Project area (Source: OpenStreetMap).	34
Figure 30 - Elevation of the Project area (Source: OpenStreetMap).	34

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Figure 31 - The slopes across the Project area are gentle, with a fall generally from the southeast to the northwest.	35
Figure 32 - The topography falls to the east along Hattam Street, to the northeast of the Project area.	35
Figure 33 - The topography rises to a localised highpoint, north of Hattam Street, and to the northwest of the Project area.....	36
Figure 34 – Industrial building immediately to the northeast of the Project site adjoining Hattam Street.....	37
Figure 35 - Industrial building to the northwest of the Project site at the corner of Hattam Street and Allingham Street.	37
Figure 36 – The residences to the northwest of the Project area are mostly single storey and free-standing.....	38
Figure 37 - The buildings within the aged care community are modest, single storey structures well dispersed over the site.....	38
Figure 38 - The Bendigo Heath clinic is located to the southeast of the aged care community, and to the northeast of the Project area.	39
Figure 39 - Relatively undeveloped industrial area immediately adjoining the south of the Project area.	39
Figure 40 – Vegetation patterns of the Project area and immediate surrounds.....	40
Figure 41 – The Project area is mostly cleared vegetation, apart from a stand of trees in its southeast corner.	41
Figure 42 – Typical roadside vegetation on the north side of Hattam Street to the north of the Project area.....	41
Figure 43 – Residences to the northwest of the Project area fronting Hattam Street have scattered street tree planting within the road reserve.	42
Figure 44 – Typical vegetation surrounding a normal density residential area to the northwest of the Project area.....	42
Figure 45 – Tall and dense vegetation to the east of the Project area in the Bendigo Regional Park. 43	
Figure 46 – Surface model-based single point TZVI of the proposed BESS units, at 4m in height (Source: Google Earth Pro – 2022).....	44
Figure 47 - Surface model-based single point TZVI of the proposed switching station at 15m maximum height (Source: Google Earth Pro – 2022).	45
Figure 48 – Assessed higher sensitivity viewpoint (VP) locations (Source: Google Earth Pro - 2022)..46	
Figure 49 – Location of residence (VP1) and photo in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).	48
Figure 50 – VP1 – Landscape character of setting.	48
Figure 51 – VP1 –Existing view southwest towards the Project area from Hattam Road.	49
Figure 52 – Location of VP2 in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).....	51
Figure 53 – VP2 – Landscape character of the setting.....	51

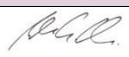
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Figure 54 – Existing view south towards the Project area.....	52
Figure 55 – Location of residence (VP3) and photo in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).	54
Figure 56 – VP3 - Landscape character of the Project setting as viewed from Hattam Street.....	54
Figure 57 – VP3 – Existing view south to the Project area from Hattam Street.	55
Figure 58 – Location of residence (V4P) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).	57
Figure 59 – VP4 – View of the landscape setting of the residence.....	57
Figure 60 – VP4 – Existing view south southeast to the Project area.....	58
Figure 62 – VP1 – 3D massing model - View southwest from Hattam Street to the Project – at completion of construction.	76
Figure 63 – VP1 – 3D massing model - - View southwest from Hattam Street to the Project – with completed industrial subdivision.	76
Figure 64- VP2 - 3D massing model - View southwest to the Project – at completion of construction.	77
Figure 65 – VP2 – 3D massing model - - View southwest to the Project – with completed industrial subdivision.	77
Figure 66 – VP3 – 3D massing model - View south from Hattam Street to the Project – at completion of construction.....	78
Figure 67 – VP3 – 3D massing model - View south from Hattam Street to the Project – with completed industrial subdivision.....	78
Figure 68 - VP4 – 3D massing model - View south southeast from Hattam Street to the Project – at completion of construction.	79
Figure 69 - VP4 – 3D massing model - View south southeast from Hattam Street to the Project – with completed industrial subdivision.....	79

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Contact Details

Peter Haack

Director

Peter Haack Consulting

2/10 Waltham Place, Richmond 3121

Telephone No: 0409 946 938

Email: peter@peterhaack.com.au

Web: www.peterhaack.com.au

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1 INTRODUCTION

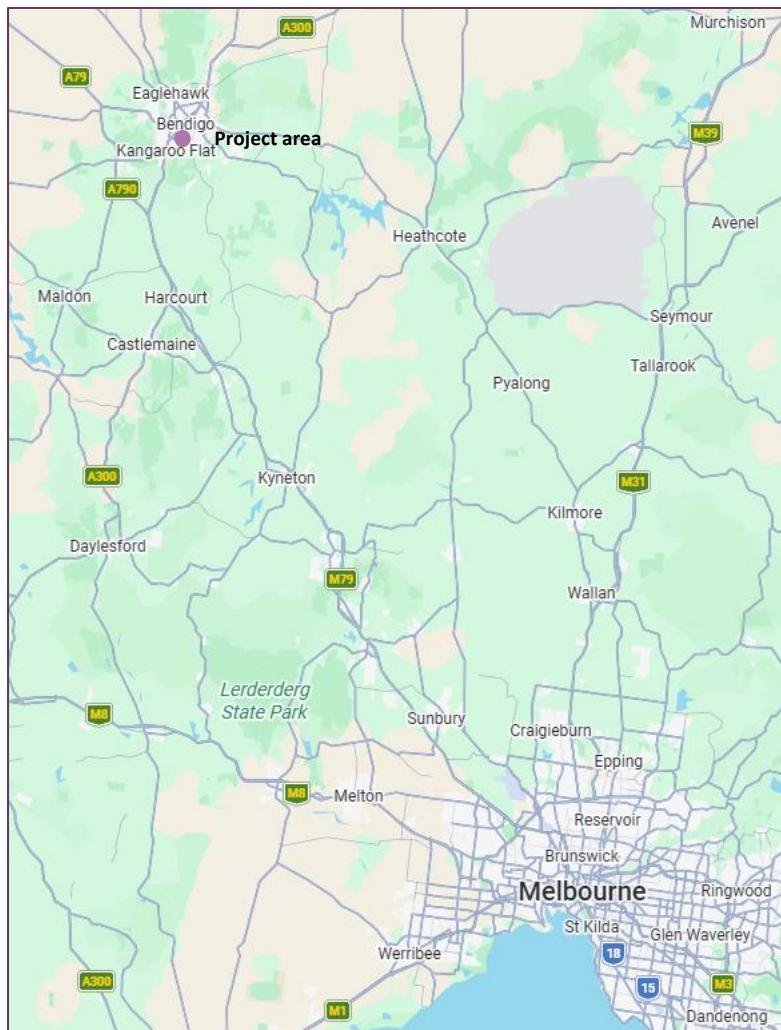
Pacific Hydro Australia Developments Pty Ltd (Pacific Blue) (the Proponent) proposes to develop the Bendigo BESS (the Project), a utility-scale battery energy storage system (BESS), in an existing, mostly undeveloped industrial area at Golden Square, approximately 3.6km southwest of the Bendigo CBD (refer to **Figure 1**).

The Project is located at 20 Hattam Street, Golden Square, immediately adjacent to the Bendigo Terminal Station. The industrial subdivision in which the Project is located will be developed in accordance with a proposed subdivision (DS/448/2024) of the northern portion of the site. The subdivision proposes to create 8 lots, including where the Project will be situated, as well as a drainage reserve and internal access road.

The Project area is 8.7 hectares (ha) and the Development footprint approximately 5ha. The Project will connect to the Bendigo Terminal Station via an underground transmission line

The study area for technical assessments covers the wider surrounding area, including residential and other uses.

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 VISUAL ASSESSMENT 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).

This preliminary assessment report assesses the landscape and visual impact of the Project, that 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.

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2.2 Assessment of landscape and visual impacts

The landscape and visual impact assessment is based on a detailed analysis of the urban 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 urban 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

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

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

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
Residential Areas	H	H	H	M	L
Tourism Uses	H	H	H	M	L
Open Space - Recreation	H	H	H	M	L
Community Facilities	M	M	M	L	VL
Collector or "C" Category Roads	M	L	L	L	VL
Local Roads	L	L	L	VL	VL
Industrial Areas	VL	VL	VL	VL	VL

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

Table 2 - Typical Viewer (visual) Sensitivity.

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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 and approved 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 potential for the proposal to stand out as a high level of integration of form, line, shape, pattern, colour or texture value 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 occupies² (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.

² Human Dimension and Interior Space, Julius Panero & Martin Zellnik, Witney Library of Design, 1979, and The Measure of Man and Woman Human Factors in Design by Alvin R Tilley and Henry Dreyfuss Associates (2001).

In areas of flat topography, the vertical field of view of a BESS unit with a height of 3m will be less than 0.5 degrees, or of low visual prominence in distances beyond approximately 350m, and less than 0.25 degrees, or of very low visual prominence in distances beyond 700m.

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 The development may not be highly visible in the view unless it contrasts strongly with the background.
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.

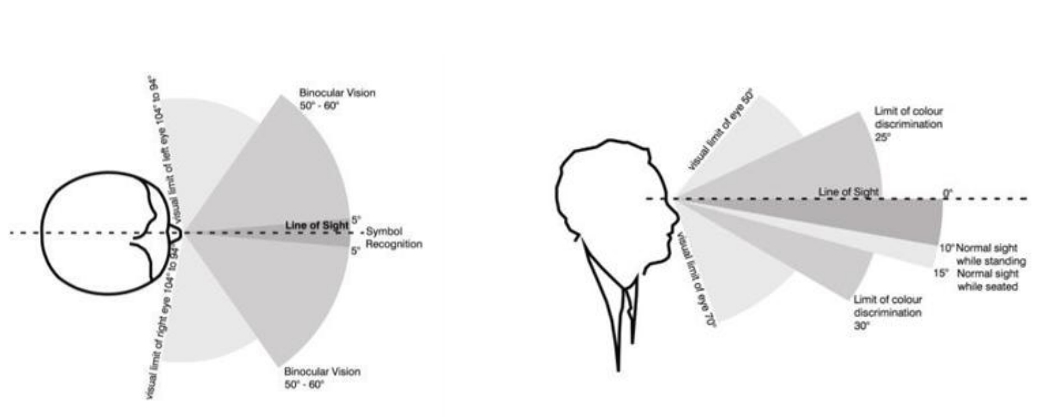


Figure 2 – Horizontal and vertical field of view.

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.

In the case of this Project, the residual impact is based on the point in time where the development of the proposed industrial area to the north has been completed.

2.2.5 Cumulative impact

The landscape and visual impact of the project cannot be considered in isolation, as the site is located within a regional setting that includes a number of projects currently operating and approved or lodged projects that may commence construction in the near future.

In the definition of what projects are included in a cumulative impact assessment, the question of 'reasonable foreseeable future actions' should be considered in defining which projects are included in the cumulative impact assessment. That is, some approved projects could be shown to have little or no prospect of being developed and could be excluded from the assessment process.

In the case of this Project, where it is located in an area that is set aside for industrial uses with a similar character to that proposed by the Project, the assessment of cumulative impact is not relevant.

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 (Projective) judgements to be made. Therefore, the conclusions to this assessment combine both objective measurement and Projective 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 Key features

As illustrated in **Figure 3** the Project involves the development of a 5ha BESS facility on the approximately 8.7ha Project area and the construction of an underground transmission connection to the Bendigo Terminal Station.

The works and components associated with the Project include:

- BESS containers and inverter skids.
- Switching/substation, switchyard and associated electrical infrastructure.
- Underground transmission connection to the Bendigo Terminal Station.
- Operations and maintenance building.
- Storage shed.
- Acoustic walling.
- Access points and internal tracks.
- Water storage systems and fire-fighting infrastructure.
- Security fencing, around the 5ha Project component area, and security monitoring systems.
- Earthworks.
- Stormwater detention.
- Landscaping / screening consistent with the Industrial Design Guidelines.
- Security lighting to BESS, inverter and Houseroom.



Figure 3 – Site plan of the Project (Source: GHD).

3.2 Detail of project components

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

3.2.1 BESS Blocks

Installation of batteries housed inside 168 BESS containers and 56 inverter skids, constructed of steel, with indicative dimensions of 6m (length) x 1.7m (width) x 3m (height) (refer to **Figure 4**).

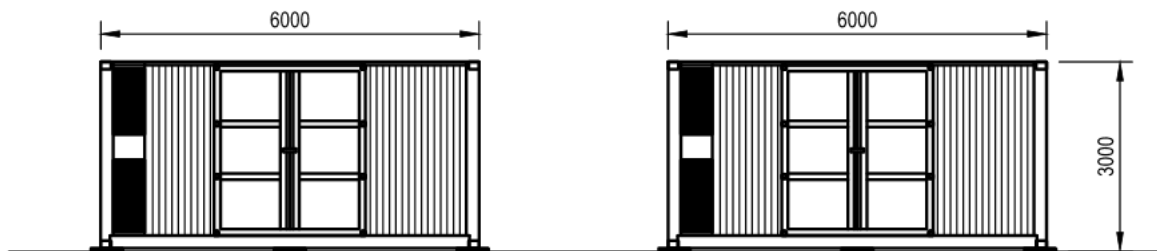


Figure 4 – Typical BESS module – front and rear elevation.

3.2.2 Switchyard

The equipment for the switchyard and associated hardstand areas will have a footprint of approximately 60m x 60m, an average height of approximately 8m (refer to **Figure 5**).

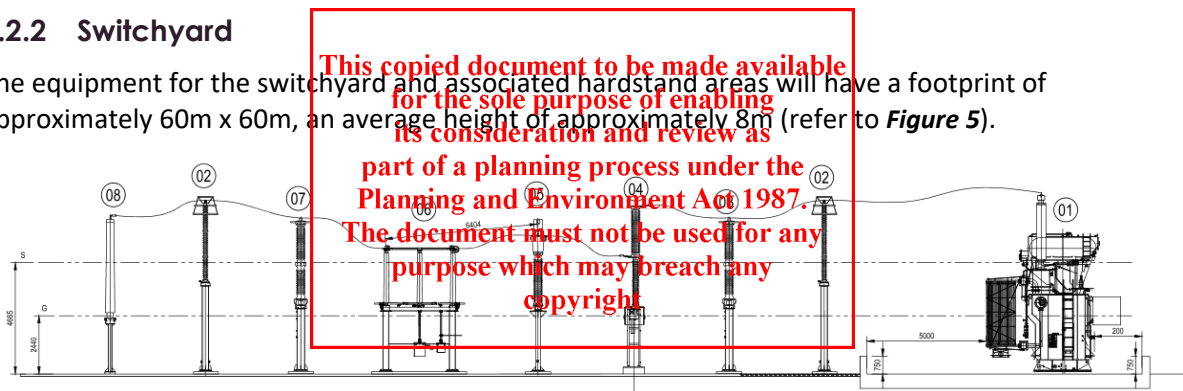


Figure 5 – Switchyard – general arrangement elevation.

3.2.3 HV switching substation

The HV switching substation will have a footprint of approximately 40m x 4.7m x 5.8m high (refer to **Figure 6**).

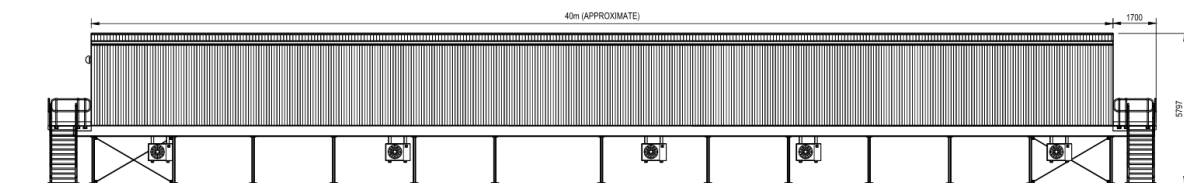


Figure 6 – Indicative HV switching substation.

3.2.4 Connecting underground powerline

An approximately 270m section of underground powerline is required to connect the switching substation at the Project to the main grid at the Bendigo Terminal Station.

3.2.5 Operations/office building

The operations/office building will be a relatively simple, low-profile structure, approximately 12m long, 10m wide and 3.5m high (refer to **Figure 7**).

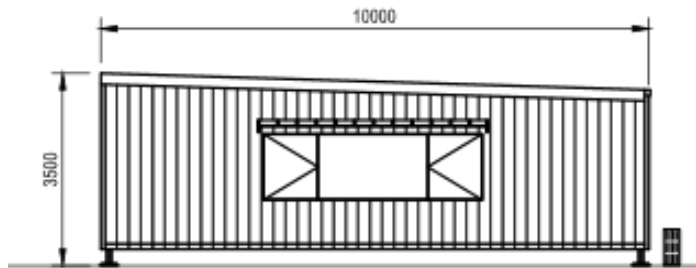


Figure 7 – Concept for onsite maintenance building.

3.2.6 Storage Shed

An approximately 22m wide, by 13m long and 8m high Storage Shed will be located to the northwest of the Project area (refer to **Figure 8**).

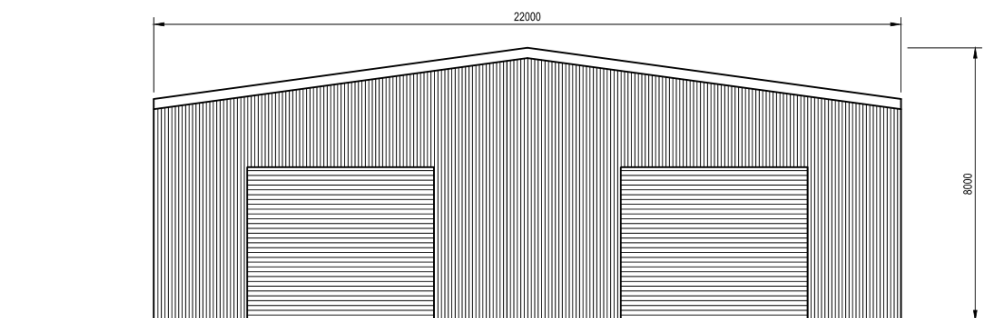


Figure 8 – Indicative storage shed – front elevation.

3.2.7 Acoustic Wall

Sections of acoustic walling may be required along the northern part of the substation and the BESS area. The walls will vary in height from 5.5m to 8m and will be constructed of durable sheeting, coloured/patterned on the outer façade in colours compatible with the adjacent natural setting of Bendigo Regional Park, in order to break up its visual mass (refer to **Figure 9**).

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Figure 9 - Example of acoustic wall.

3.2.8 Perimeter Fence

A 2.35 m high chainmesh fence will be installed around the 5ha area containing the Project components (refer to **Figure 10**). The purpose of the fence is to deter theft or vandalism and prevent unauthorised access to equipment. It will be located inside the earth berm along the southern frontage.



Figure 10 – Typical security fence.

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4.2 Land use and zoning

4.2.1 Land use

The land use of Project area is comprised of undeveloped industrial zoned land (refer to **Figure 12**).

Existing energy infrastructure is highly prominent within the landscape, with the largest elements being the existing Bendigo Terminal Station and the associated transmission lines connecting to it (refer to **Figure 13**, **Figure 14** and **Figure 15**). There are also above-ground electrical distribution lines running along many of the roads in the surrounding area, including both sides of Allingham Street and the south side of Hattam Street (refer to **Figure 16**).

The closest residential area is located to the north of Hattam Street and includes normal residential density development to the northwest and a residential aged care community to the north and northeast, comprised of both individual dispersed units and a higher density facility further to the north (refer to **Figure 17** and **Figure 18**).

The closest residences to the west are located approximately 240m from the Project area and separated from it by the existing terminal station and industrial uses.

Industrial uses are located to the west, northeast and south of the Project area (refer to **Figure 19**, **Figure 20** and **Figure 21**). Areas of underutilised industrial land also abut the southern boundary (refer to **Figure 22**).

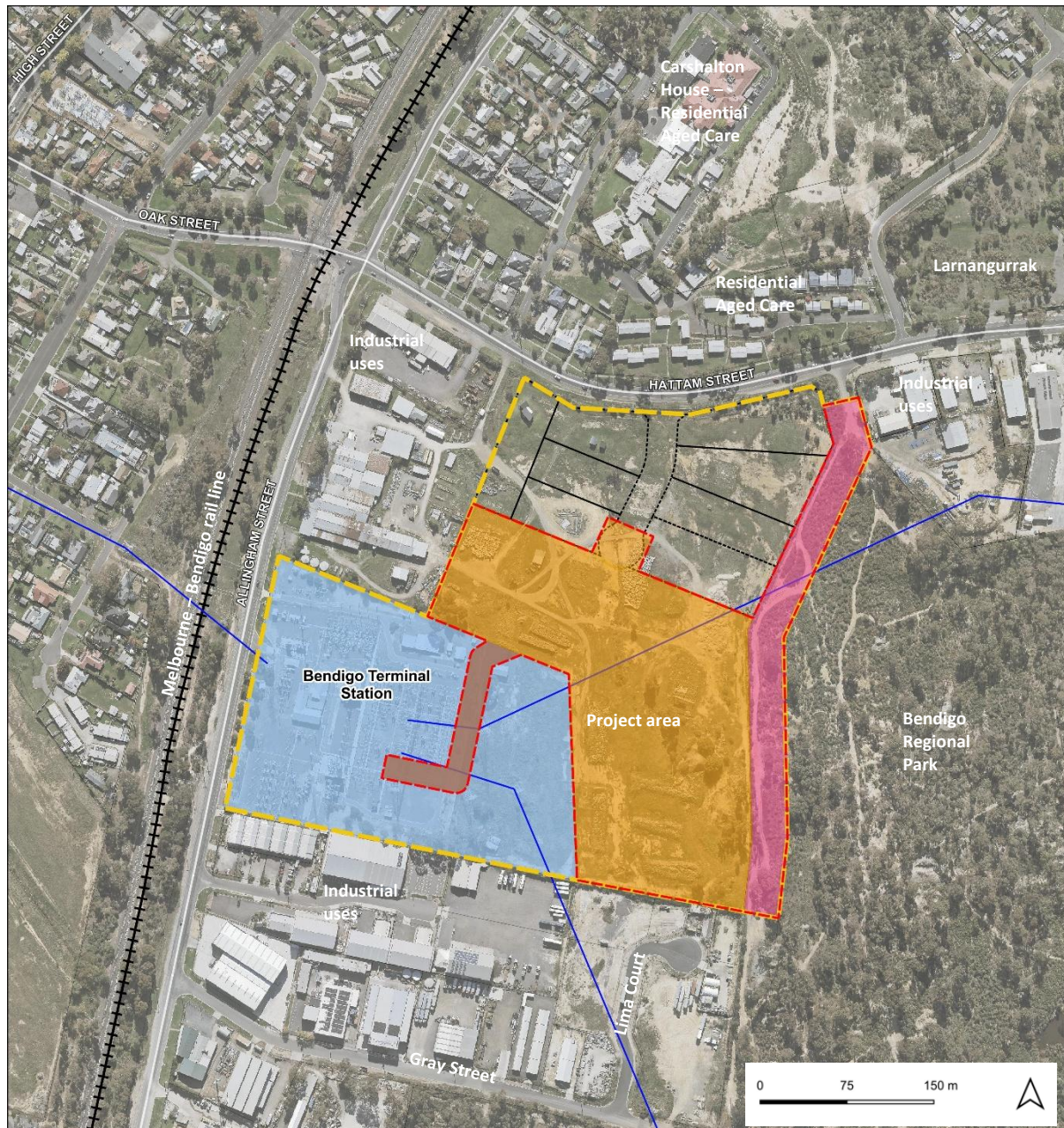
The most significant roads within the potential viewshed of the Project area is Hattam Street, designated as a “C” category road.

A section of Bendigo Regional Park, utilised for both recreational and conservation purposes, is located immediately to the east of the Project area (refer **Figure 23**).

The Melbourne to Bendigo railway line is located to the west of Allingham Street, approximately 195m from the Project area (refer to **Figure 24**).

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LEGEND

Proposal

- Site
- Project Area
- BESS Area
- Grid Connection Land
- Secondary Access

Existing Features

- Bendigo Terminal Station
- 220 kV Transmission Line
- Roads
- Rail Line
- Cadastre
- Proposed Subdivision Parcels

Figure 12 – Land use and existing infrastructure (Source: Cogency).

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Figure 13 – Typical land use of the Project area and immediate surrounds, south of Hattam Street.



Figure 14 – The Bendigo Terminal Station, as viewed from Allingham Street.



Figure 15 – An existing HV Powerline traverses the landscape to the southwest of the Project area.

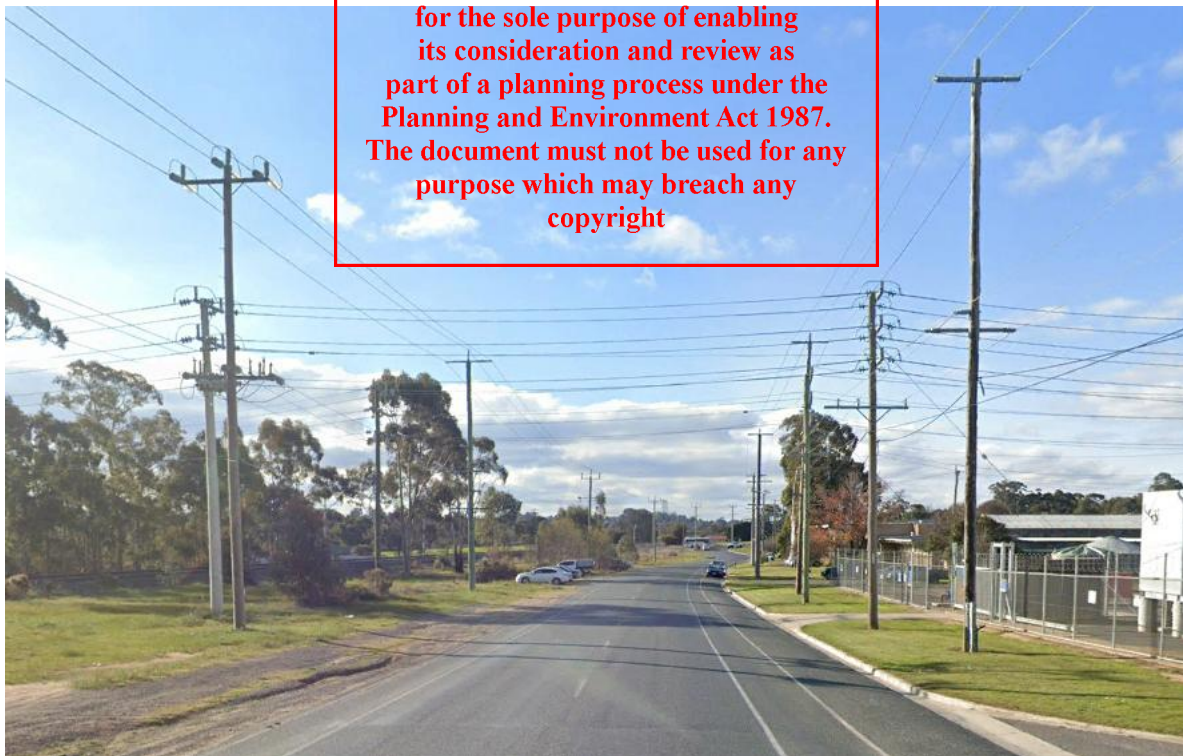


Figure 16 - Powerlines run along both sides of Allingham Street.

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Figure 17 – Normal density residential development is located to the northwest of the Project area on Hattam Street.



Figure 18 – A residential aged care community is located to the north of the Project area, on Hattam Street.



Figure 19 - Industrial facility to the northwest of the Project area at the corner of Hattam Street and Allingham Street.



Figure 20 – Industrial uses to the northeast of the Project area.



Figure 21 – Industrial facilities are located to the west of the Project area, north of Gray Street and between Coonooer Street and Allingham Street.



Figure 22 - Underutilised industrial land abuts the southern boundary of the Project area.



Figure 23 – A section of Bendigo Regional Park is located immediately to the east of the Project area.

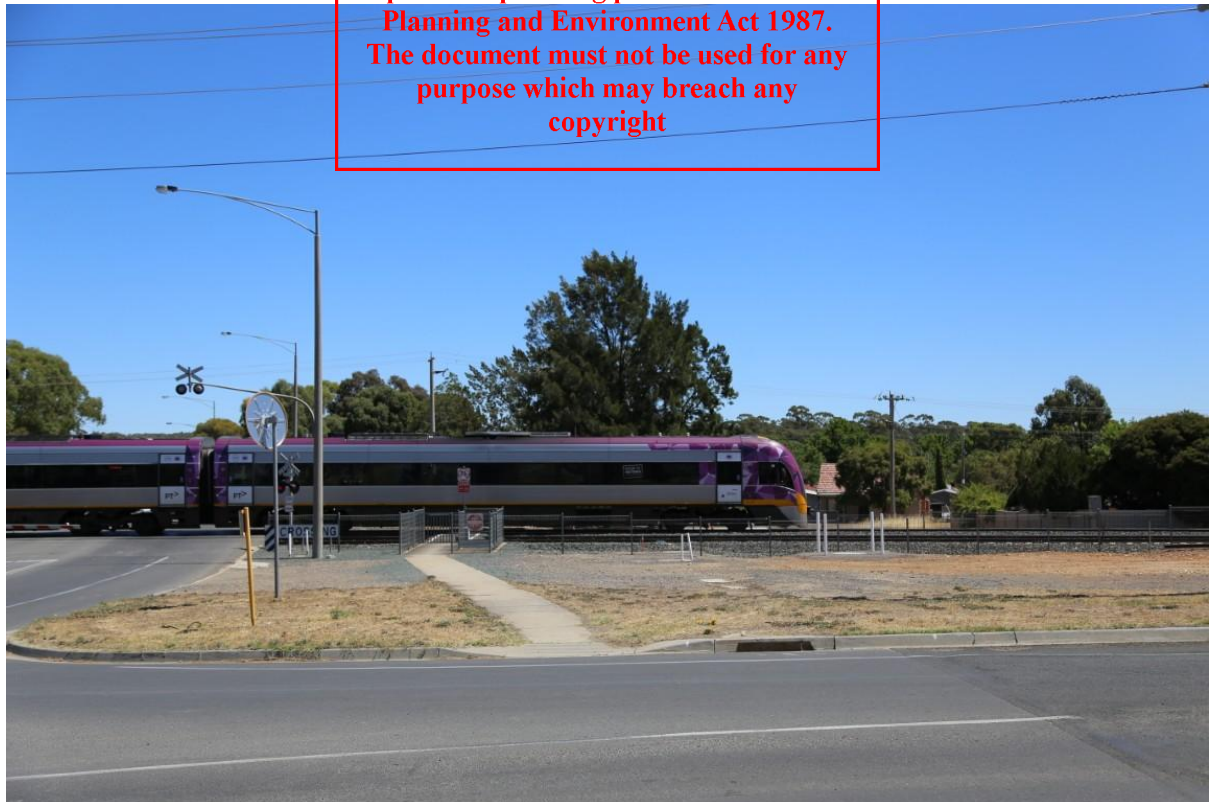


Figure 24 – The Melbourne to Bendigo railway line is located to the west of the Project area.

4.2.2 Zoning

The Project is located within the Greater Bendigo City Council area and subject to its Planning Scheme. The entirety of the Project area is zoned Industrial Zone Schedule 1 (IN1Z) (refer to **Figure 25**).

The purpose of the zone is to facilitate industrial development, manufacturing, and storage while protecting the amenity of surrounding areas. Landscape and visual related decision guidelines for the zone include consideration of:

- Any natural or cultural values on or near the land.
- Streetscape character.
- Built form.
- Landscape treatment.
- Interface with non-industrial areas.
- Outdoor storage.
- Lighting.

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To the northwest of the Project area and north of Hattan Street, the land is zoned General Residential (GRZ). An area of Public Use – Schedule 7 (PUZ7) land is located to the northeast of the Project area. This land contains a residential aged care community and its purpose is:

- To facilitate the use of public land for utility, education, transport, and other public services.

To the east of the Project area is a portion of the Bendigo Regional Park, zoned Public Park and Recreation Zone (PPRZ). The zone's purpose is:

- To recognise areas for public recreation and open space.
- To protect and conserve areas of significance where appropriate.

4.2.3 Overlays

A Bushfire Management Overlay (BMO) applies to the eastern part of the site, and the land immediately adjacent to the east is subject to an Environmental Significance Overlay (ESO2), as well as Vegetation Protection Overlay (VPO2) associated with its use as part of Bendigo Regional Park (refer to **Figure 26** and **Figure 27**).

While The BMO is not of relevance to landscape and visual values, it is relevant to any landscape amelioration measures proposed for the Project.

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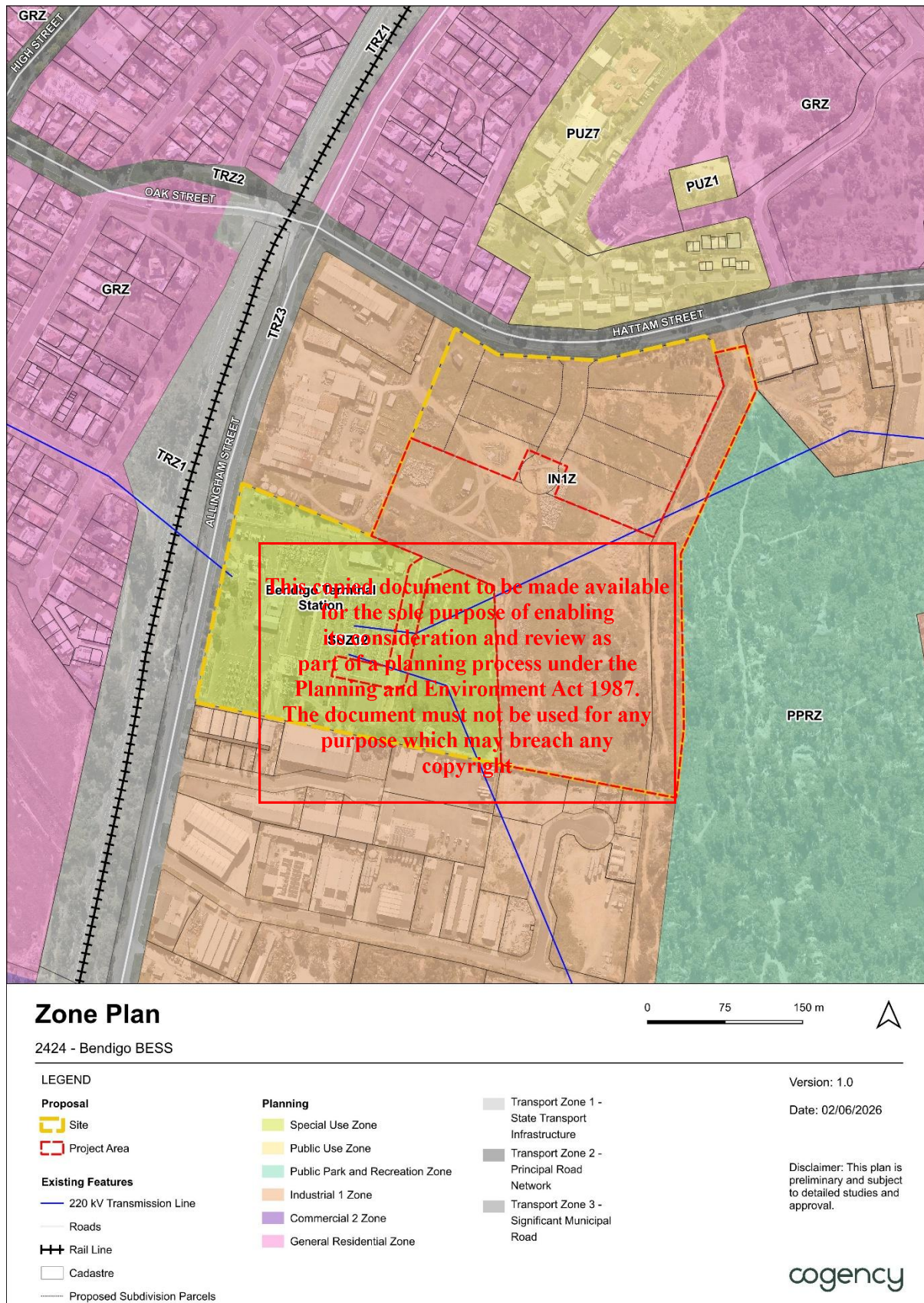


Figure 25 - Zoning Map.

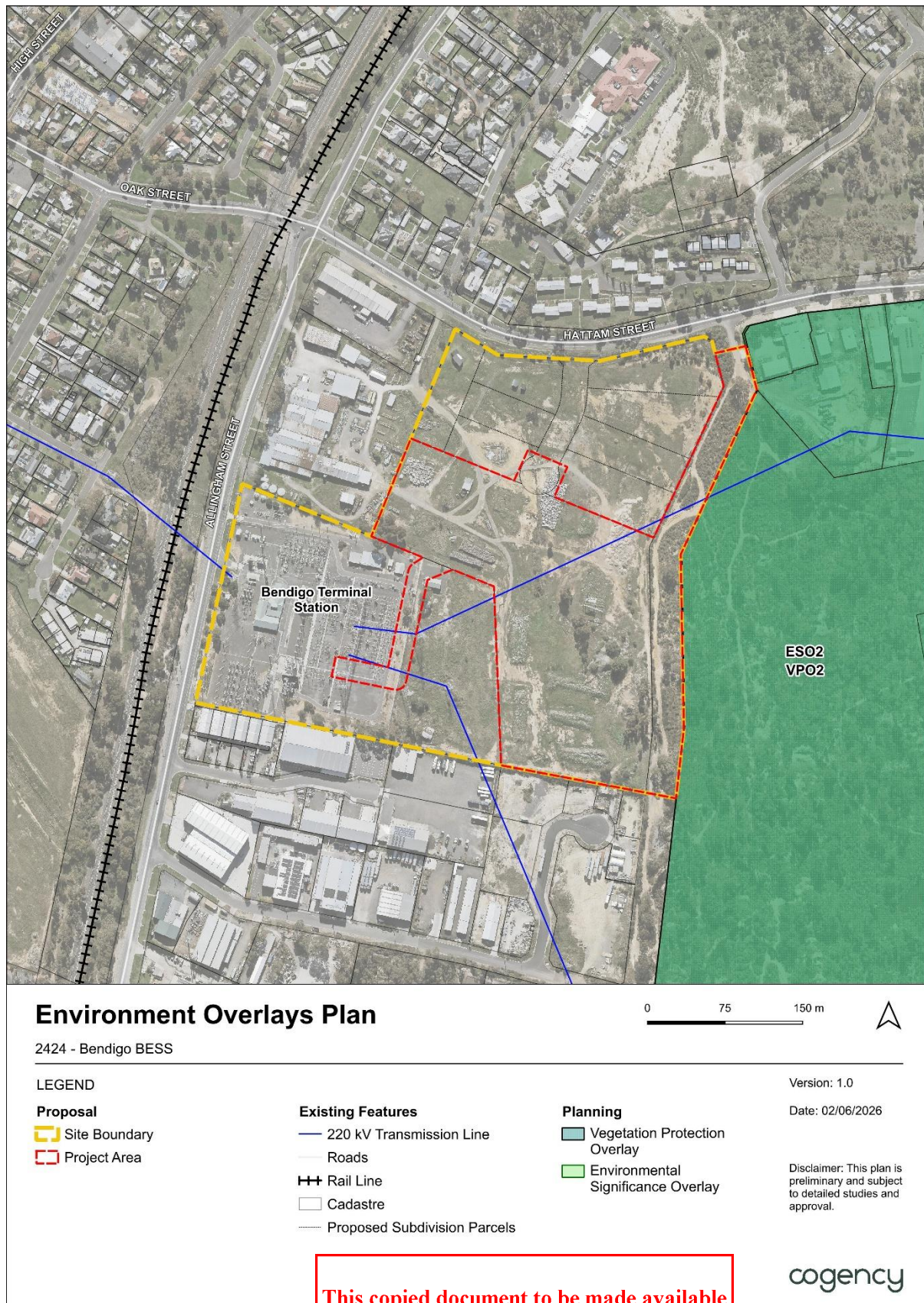


Figure 26 – ESO/VPO Overlay Map.

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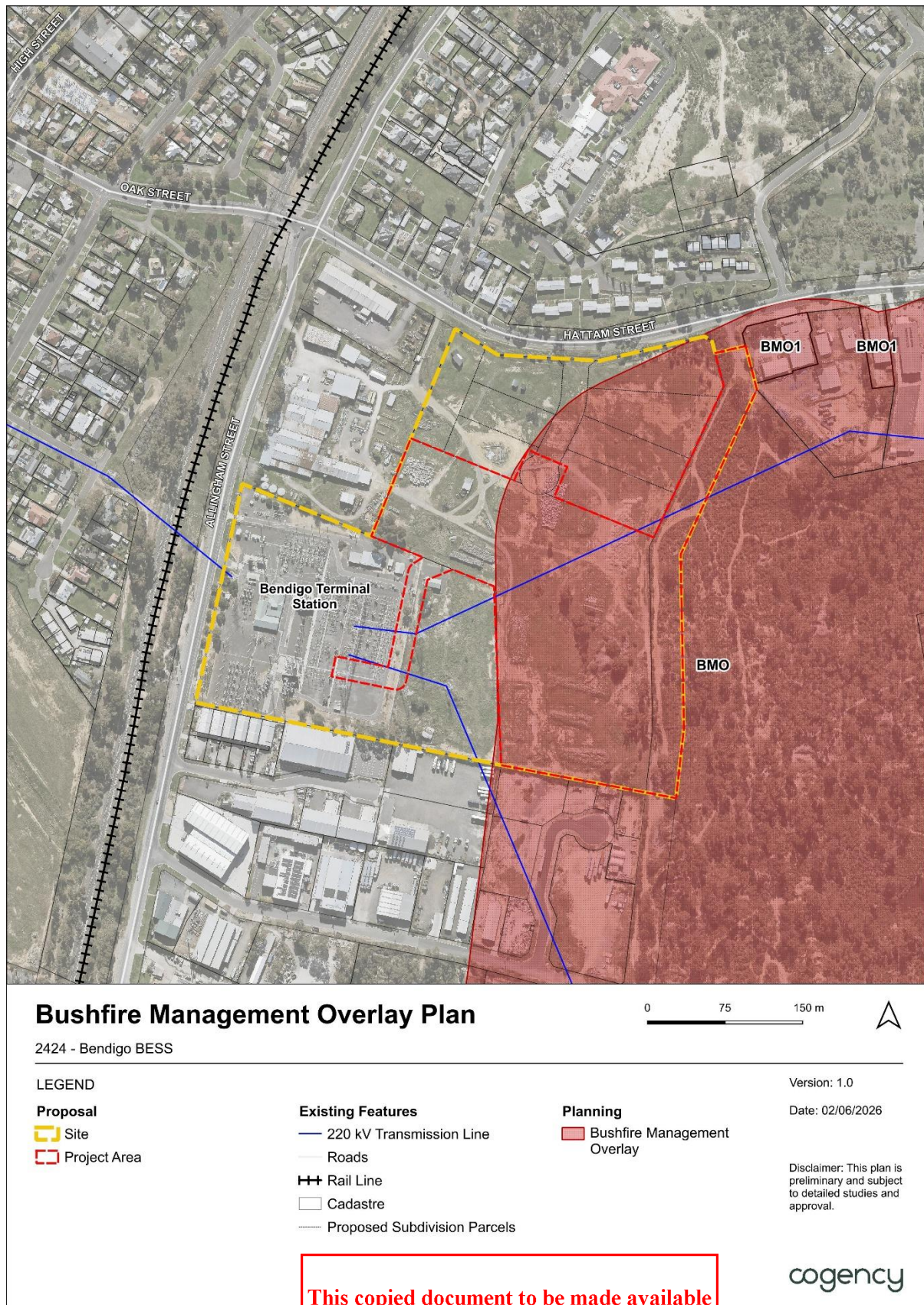


Figure 27 – BMO Overlay Map.

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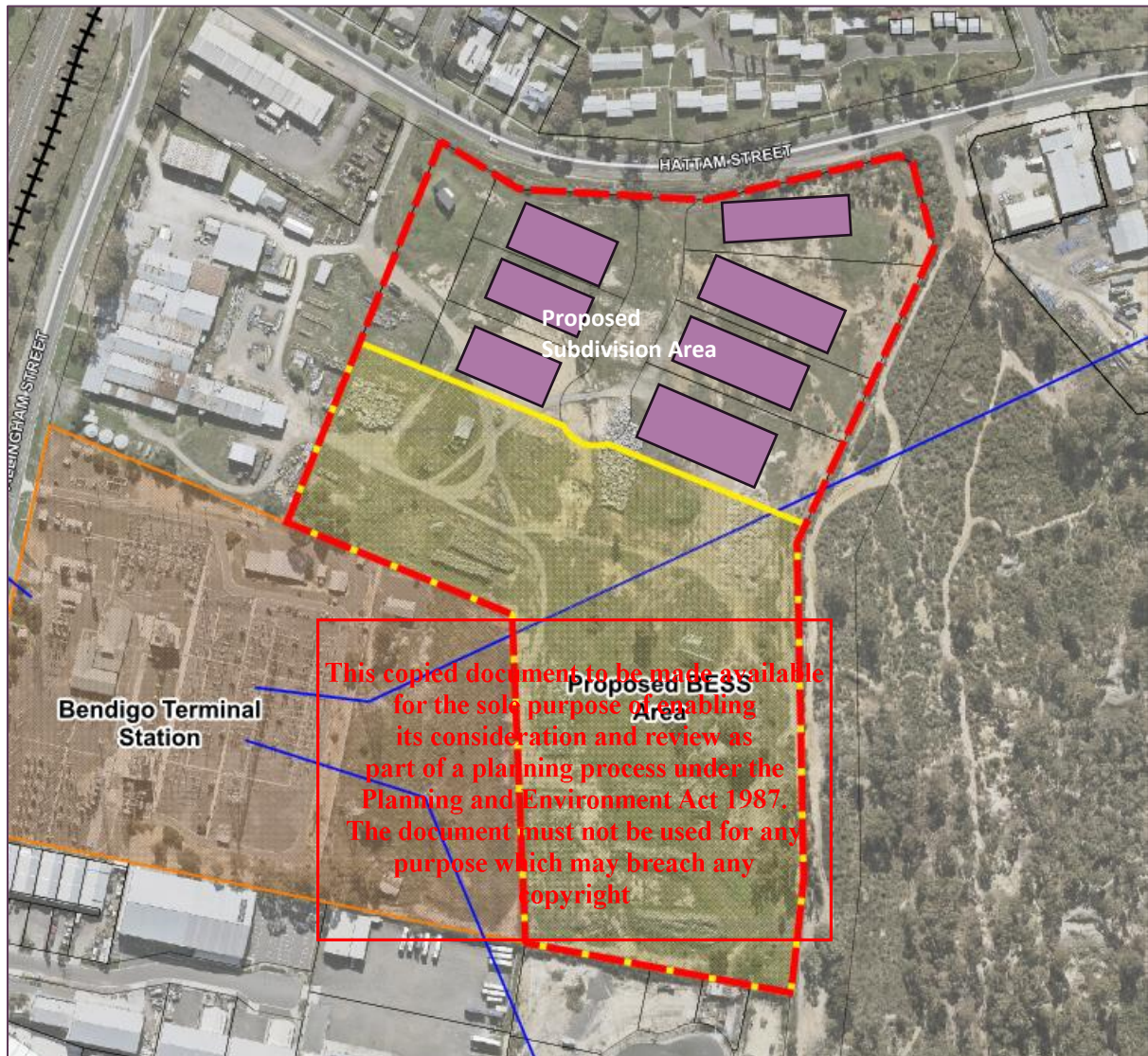


Figure 28 – Plan of proposed subdivision with hypothetical building footprints.

4.3 Urban form

4.3.1 Topography

The Project area is roughly bowl shaped, with a slight fall from the east to the west. Its high point at approximately 265m AHD is located in its southeast corner, and its low point at approximately 248m AHD is located to its northwest corner (refer to **Figure 29** and **Figure 30**). Average gradients across the Project area gentle and in the order of 1.5 percent (refer to **Figure 31**).

Outside of the Project area, the topography falls to the east along Hattam Street, to the northeast of the Project area (refer to **Figure 32**).

The topography rises to a localised highpoint, north of Hattam Street, and to the northwest of the Project area, to a broad hill that the aged care community is located on (refer to **Figure 33**).



Figure 29 - Elevation of broader surrounds of the Project area (Source: OpenStreetMap).



Figure 30 - Elevation of the Project area (Source: OpenStreetMap).

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Figure 31 - The slopes across the Project area are gentle, with a fall generally from the southeast to the northwest.



Figure 32 - The topography falls to the east along Hattam Street, to the northeast of the Project area.



Figure 33 - The topography rises to a localised highpoint, north of Hattam Street, and to the northwest of the Project area.

4.3.2 Built form

The predominant built form with the industrial area adjoining the Project area to the northeast, northwest and south, is comprised of simple, large massed, gable roofed warehouse type structures constructed of steel sheeting. Colours are typically subdued (refer to **Figure 34** and **Figure 35**).

The terminal station with its strongly industrial/infrastructure character sits between the industrial buildings that line the western boundary of the Project area.

The residences to the northwest of the Project area are older, mostly single storey and free-standing, constructed of either brick or weatherboard (refer to **Figure 36**).

The buildings on the south easterly part of the residential aged care community, including the Bendigo Heath clinic, are modest, single storey structures well dispersed over the site (refer to **Figure 37** and **Figure 38**). A large number of buildings have been removed from the south westerly part of the aged care community over recent times, but the zoning of the area is consistent with redevelopment of a similar use in the future.

The area to the south, between the Project area boundary and Gray Street, is relatively undeveloped (refer to **Figure 39**).

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Figure 34 – Industrial building immediately to the northeast of the Project site adjoining Hattam Street.



Figure 35 - Industrial building to the northwest of the Project site at the corner of Hattam Street and Allingham Street.



Figure 36 – The residences to the northwest of the Project area are mostly single-storey and free-standing.

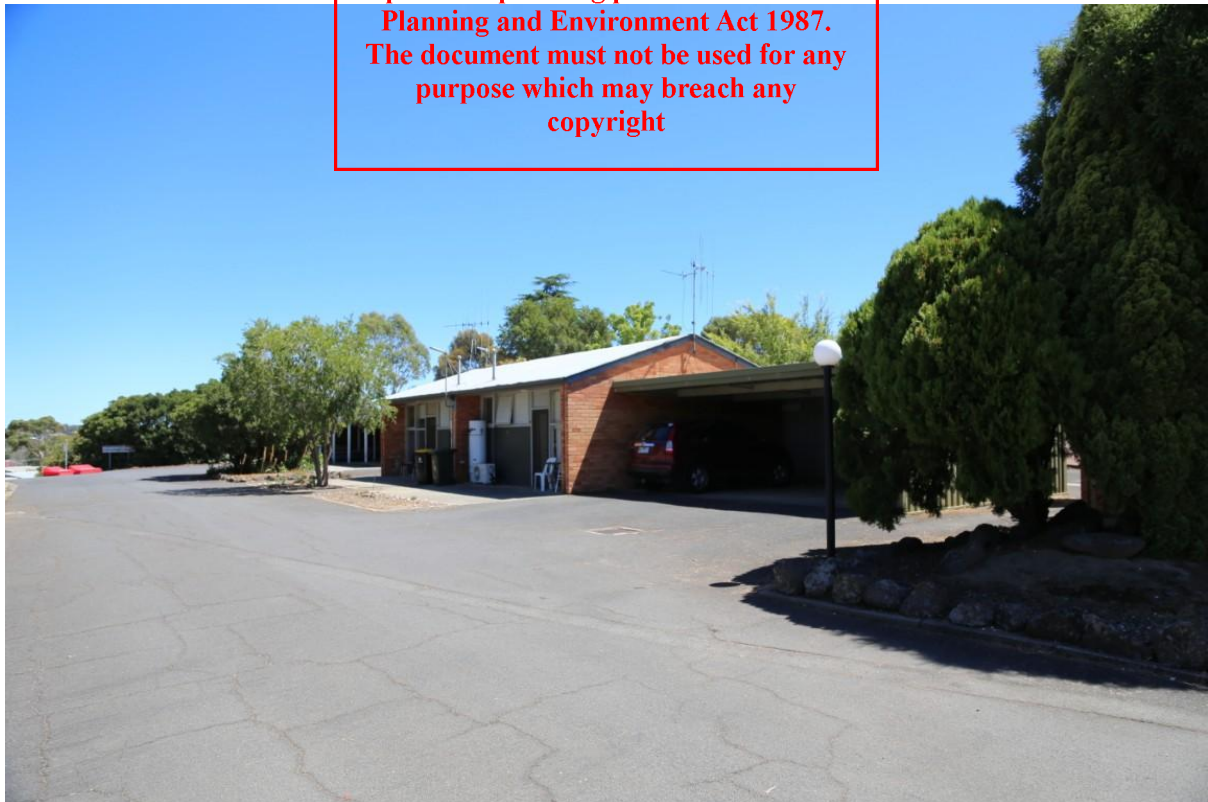


Figure 37 - The buildings within the aged care community are modest, single storey structures well dispersed over the site.



Figure 38 - The Bendigo Health clinic is located to the southeast of the aged care community, and to the northeast of the Project area.

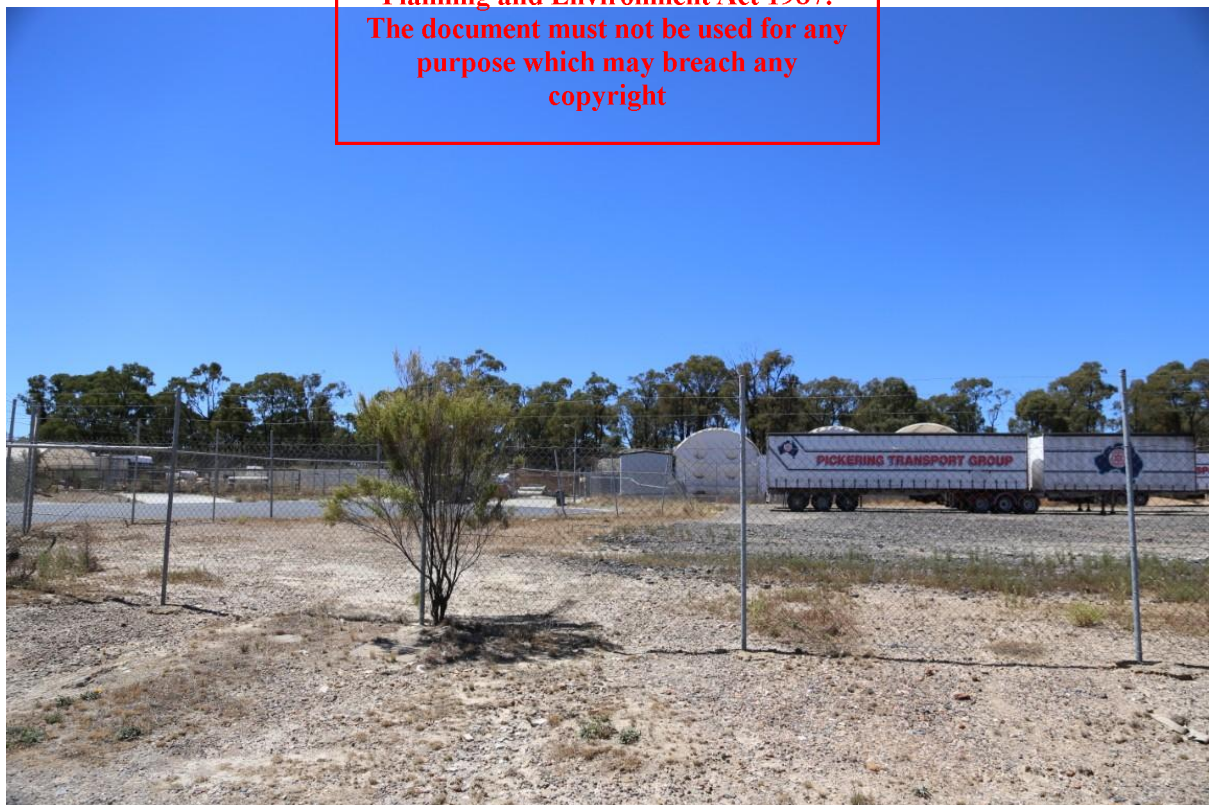


Figure 39 - Relatively undeveloped industrial area immediately adjoining the south of the Project area.

4.3.3 Vegetation

The presence of vegetation in the landscape setting of the Project has a direct relationship to the degree that it may be visible from sensitive viewpoints where there is no intervening built form to provide screening.

The Project area is mostly cleared of vegetation, apart from a stand of trees in its southeast corner (refer to **Figure 40** and **Figure 41**).

While the southern side of Hattam Street lacks substantial vegetation, the north side of Hattam Street contains a loose row of large shrubs and small trees. Outside the northern road verge, an area of scattered large shrubs and trees of varying heights are located within the residential aged care community (refer to **Figure 42**).

The normal density residential area to the northwest of the Project area has relatively sparse vegetation along Hattam Street, where height is limited by overhead powerlines, but has taller trees at regular centres along streets that run from it to the north (refer to **Figure 43** and **Figure 44**).

To the east of the Project area is an extensive area of tall and relatively dense vegetation over a portion of the Bendigo Regional Park (refer to **Figure 45**).



Figure 40 – Vegetation patterns of the Project area and immediate surrounds.

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Figure 41 – The Project area is mostly cleared of vegetation, apart from a stand of trees in its southeast corner.



Figure 42 – Typical roadside vegetation on the north side of Hattam Street to the north of the Project area.



Figure 43 – Residences to the northwest of the Project area fronting Hutton Street have scattered street tree planting within the road reserve.



Figure 44 – Typical vegetation surrounding a normal density residential area to the northwest of the Project area.



Figure 45 – Tall and dense vegetation to the east of the Project area in the Bendigo Regional Park.

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5 VISUAL IMPACT ASSESSMENT

5.1 Visibility of the Project

5.1.1 Theoretical zone of visual influence (TZVI)

The viewshed is the area from which views of a proposed development may be possible. Given the relatively low profile of the more extensive BESS components of the Project above ground level, the visual catchment will be limited and partially confined by vegetation throughout the landscape of the setting.

Figure 46 and **Figure 47** indicate single point theoretical viewsheds of the Project, based on a digital surface model (DSM). For the BESS area, 4m height on fill has been assumed, and for the proposed switching station components, a maximum of 15m height has been assumed.

TZVI's based on a DSM show the screening effects of vegetation as well as built form. In the DSM based analysis, the green shading represents with greater certainty, areas where the Proposal is likely to be visible at ground level, and the unshaded areas where there is likely to be no visibility.



Figure 46 – Surface model-based single point TZVI of the proposed BESS units, at 4m in height (Source: Google Earth Pro – 2022).

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Figure 47 - Surface model-based single point TZVI of the proposed switching station at 15m maximum height (Source: Google Earth Pro – 2022).

5.1.2 Visual prominence

In areas of flat topography without intervening vegetation or built form, the vertical field of view of a BESS unit with a height of 3m will be less than 2.5 degrees, or of moderate visual prominence in viewing distances beyond 70m, less than 0.5 degrees, or of low visual prominence in distances beyond approximately 350m, and less than 0.25 degrees, or of very low visual prominence in distances beyond 700m.

The vertical field of view of the typical components of the switching station, 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.

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 48**). Due to the relatively low-profile form of the Project and the considerable amount of screening provided by the existing vegetation, the detailed assessment of viewpoints has been confined to sensitive locations that are within 1 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.

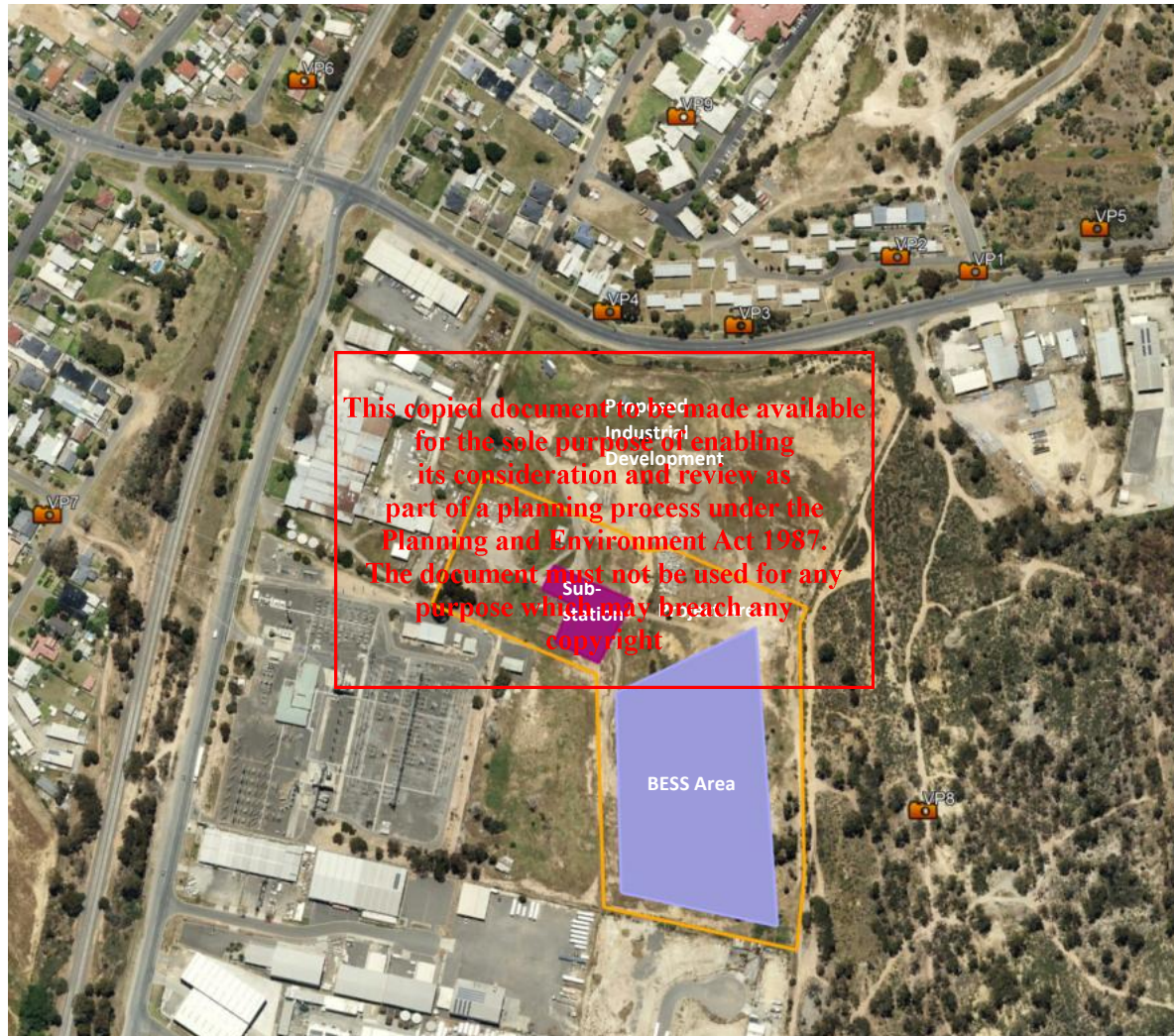


Figure 48 – Assessed higher sensitivity viewpoint (VP) locations (Source: Google Earth Pro - 2022).

5.3 Viewpoint assessment

This section includes a detailed assessment of the Project from the selected, highest sensitivity viewpoints. Given the form and density of the urban setting and the limited visibility beyond the surrounding interfaces, the assessment is confined to proximate adjoining viewpoints.

The assessment assumes that the proposed industrial development to the north of the Project area will occur at a similar time to the Project.

5.3.1 Detailed assessment of representative sensitive viewpoints

VIEWPOINT 1 – HATTAM STREET/TUCKER STREET INTERSECTION	
Photo Location	Hattam Street at the southeast corner of the residential aged care community near the entry road (refer to Figure 49 -left).
Viewing Distance	300m to the Project (BESS) from the photo location.
Duration of View and Frequency of View	Residential: - Duration: Static. - Frequency: Low. Roadway: - Duration: Moving. - Frequency: Low to Moderate.
Visual Use Area	Residential "C" category road (refer to Figure 49 -right).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use. MODERATE – Sensitivity of "C" category road is moderate.
Visual Modification	
Pre-Industrial Development	LOW – From the residences to the northwest of this viewpoint, the Project will be partially screened from view by existing vegetation (refer to Figure 50). However, there is a high degree of compatibility with other built form surrounding the Project and backdropping it, particularly the existing terminal station. Although the Project will change the immediate character of the Project area, it is consistent with existing and permitted built form (refer to Figure 51).
Post-Industrial Development	VERY LOW – The proposed industrial development will screen views to the majority of the Project (refer to Appendix A).
Visual Impact	
Pre-Industrial Development	MODERATE - The high level of visual sensitivity combined with a low level of visual modification results in a moderate level of visual impact.
Post-Industrial Development	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 – As it is likely that the proposed industrial development to the north of the Project will be completed at a similar time to the Project, its built form will screen views to the majority of the Project.
Residual Impact -	LOW – The proposed industrial development would almost fully screen views of the Project.

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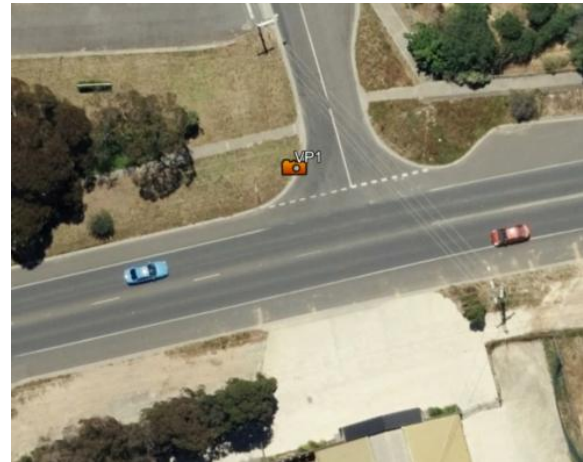


Figure 49 – Location of residence (VP1) and photo in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).



Figure 50 – VP1 – Landscape character of setting.

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Figure 51 – VP1 –Existing view southwest towards the Project area from Hattam Road.

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VIEWPOINT 2 – RESIDENTIAL AGED CARE COMMUNITY	
Photo Location	Carpark to the south of one of the residences where views to the Project may be possible (refer to Figure 52 -left).
Viewing Distance	280m to the Project (BESS).
Duration of View and Frequency of View	Duration: Static. Frequency: Low
Visual Use Area	Residential – partially screened setting (refer to Figure 52 -right).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	
Pre-Industrial Development	LOW – From the residences to the north of this viewpoint, the Project will be partially screened from view by existing vegetation (refer to Figure 53). However, there is a high degree of compatibility with other built form surrounding the Project and backdropping it, particularly the existing terminal station. Although the Project will change the immediate character of the Project area, it is consistent with existing and permitted built form (refer to Figure 54).
Post-Industrial Development	VERY LOW – The proposed industrial development will screen views to the majority of the Project (refer to Appendix A).
Visual Impact	
Pre-Industrial Development	MODERATE - The high level of visual sensitivity combined with a low level of visual modification results in a moderate level of visual impact.
Post-Industrial Development	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 – As it is likely that the proposed industrial development to the north of the Project will be completed at a similar time to the Project, its built form will screen views to the majority of the Project.
Residual Impact -	LOW – The proposed industrial development would almost fully screen views of the Project.

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Figure 52 – Location of VP2 in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).

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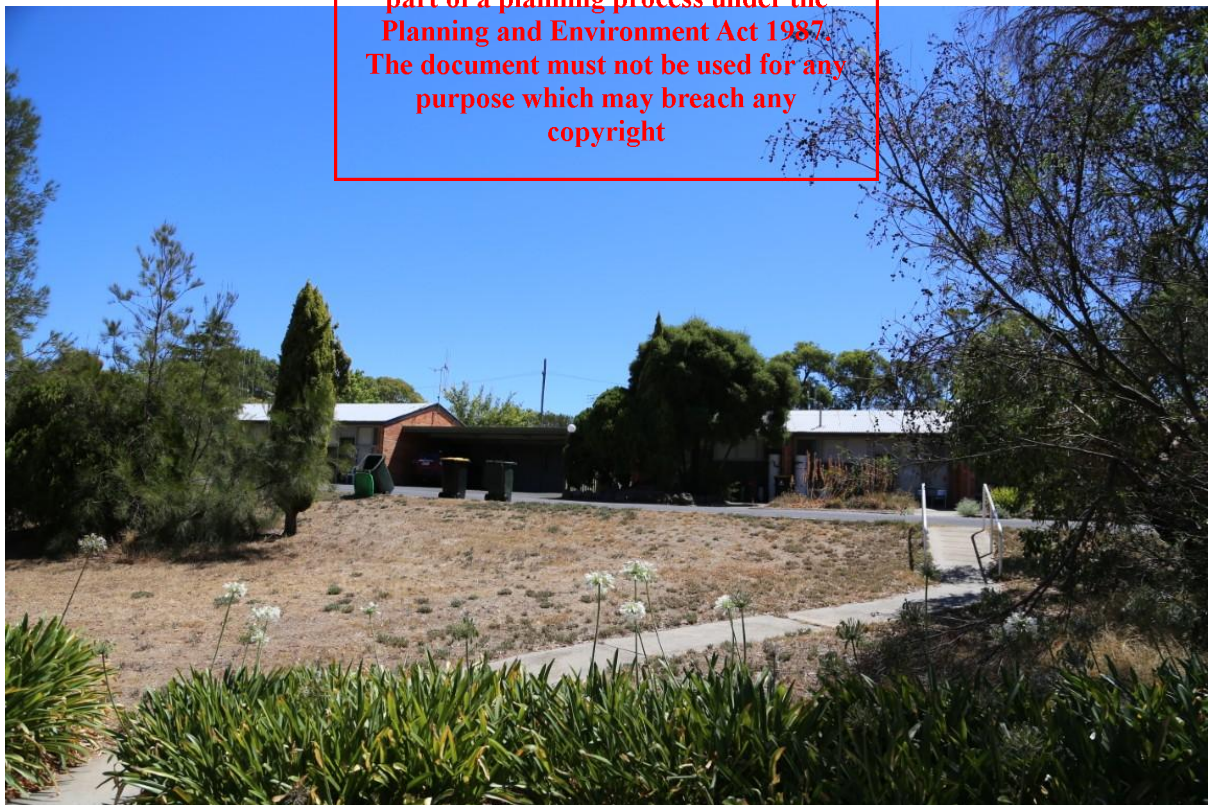


Figure 53 – VP2 – Landscape character of the setting



Figure 54 – Existing view south towards the Project area.

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VIEWPOINT 3 – HATTAM STREET	
Photo Location	Northern verge of Hattam Street (refer to Figure 55-left)
Viewing Distance	210m to the Project (Switching Substation).
Duration of View and Frequency of View	Duration: Moving. Frequency: Low to moderate.
Visual Use Area	"C" category road (refer to Figure 55– right and Figure 56).
Visual Sensitivity	MODERATE - Sensitivity of users is moderate based on the "C" category road use within 500m.
Visual Modification	
Pre-Industrial Development	MODERATE – From the roadway, the Project area is fully visible. However, the BESS area is of relatively low visual prominence due to its low height. The switching substation will be more visually prominent but will be backdropped by the existing terminal station. Although the Project will change the immediate character of the Project area, it is consistent with existing and permitted built form (refer to Figure 57).
Post-Industrial Development	VERY LOW – The proposed industrial development will screen views to the majority of the Project. The switching substation will be visible along the line of the street between the industrial buildings but will be backdropped by the similar but larger form of the existing terminal station (refer to Appendix A).
Visual Impact	
Pre-Industrial Development	MODERATE - The moderate level of visual sensitivity combined with a moderate level of visual modification results in a moderate level of visual impact.
Post-Industrial Development	LOW to VERY LOW - The moderate level of visual sensitivity combined with a very low to low level of visual modification results in a low to very level of visual impact.
Proposed Amelioration	None Required – As it is likely that the proposed industrial development to the north of the Project will be completed at a similar time to the Project, its built form will screen views to the majority of the Project.
Residual Impact -	LOW to VERY LOW – The proposed industrial development would almost fully screen views of the Project.

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Figure 55 – Location of residence (VP3) and photo in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth)

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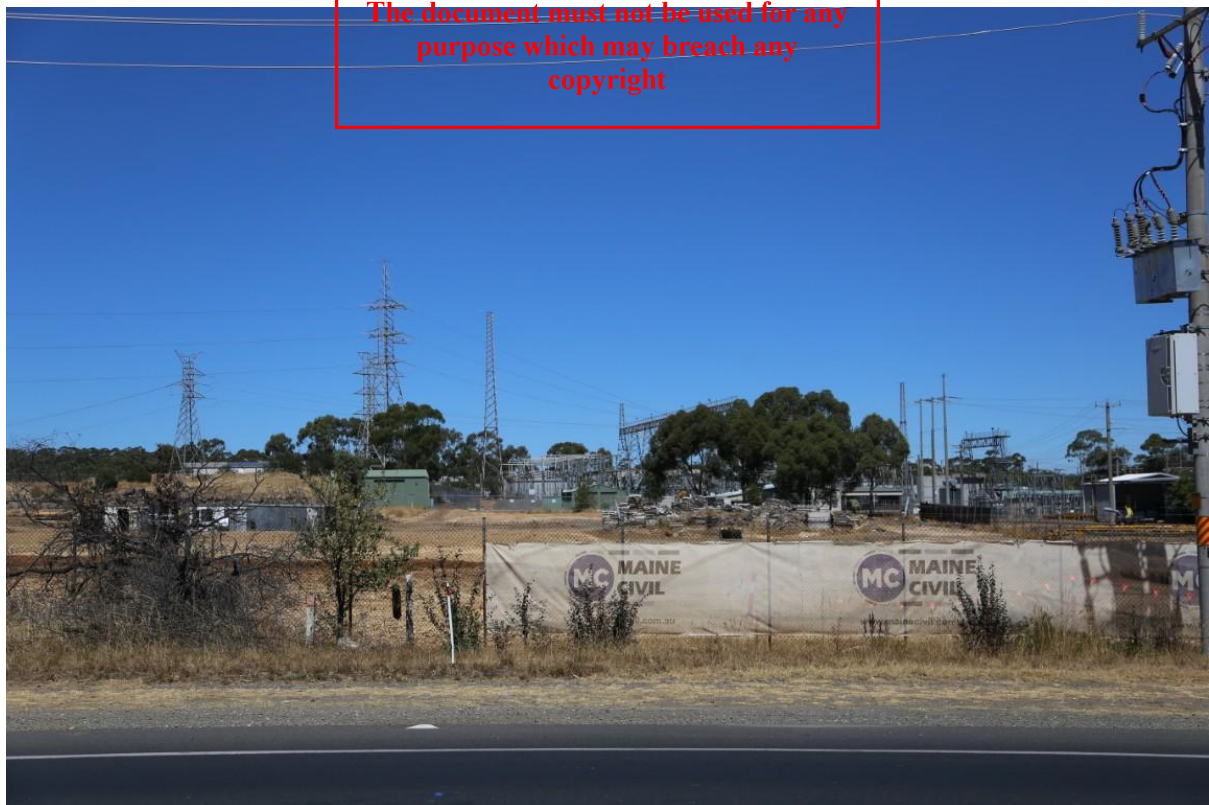


Figure 56 – VP3 - Landscape character of the Project setting as viewed from Hattam Street.



Figure 57 – VP3 – Existing view south to the Project area from Hattam Street.

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VIEWPOINT 4 – RESIDENCE AT 13 HATTAM STREET	
Photo Location	Northern verge of Hattam Street to the southeast of the residence (refer to Figure 58 -left).
Viewing Distance	175km to the Project (Switching Sub Station).
Duration of View and Frequency of View	Duration: Static. Frequency: Low.
Visual Use Area	Residential – minimally to partially screened setting (refer to Figure 58 -right and Figure 59).
Visual Sensitivity	HIGH - Sensitivity of users is high based on the residential use.
Visual Modification	
Pre-Industrial Development	LOW to MODERATE – From the residences to the west of this viewpoint on Hattam Street, the Project will only be partially filtered from view by existing vegetation. However, the BESS area is of relatively low visual prominence due to its low height. The switching substation will be more visually prominent but will be backdropped by the existing terminal station. Although the Project will change the immediate character of the Project area, it is consistent with existing and permitted built form (refer to Figure 60).
Post-Industrial Development	VERY LOW – The proposed industrial development will screen views to the majority of the Project (refer to Appendix A).
Visual Impact	
Pre-Industrial Development	MODERATE to HIGH - The high level of visual sensitivity combined with a low to moderate level of visual modification results in a moderate to high level of visual impact.
Post-Industrial Development	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 – As it is likely that the proposed industrial development to the north of the Project will be completed at a similar time to the Project, its built form will screen views to the majority of the Project.
Residual Impact -	VERY LOW – The proposed industrial development would almost fully screen views of the Project.

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Figure 58 – Location of residence (VP4) in relation to Project (left aerial view) and immediate landscape setting (right aerial view) (Source: Google Earth).



Figure 59 – VP4 – View of the landscape setting of the residence.

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Figure 60 – VP4 – Existing view south southeast to the Project area.

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5.4 Assessment of TZVI not visible - high sensitivity viewpoints

The TZVI analysis (refer to **Figure 46** and **Figure 47**) for the components of the Project indicates that the higher sensitivity viewpoints shown in **Table 6** will not be significantly impacted by the Project as a result of intervening topography.

Viewpoint (VP)#	Distance from Project site	Sensitivity	TZVI Visibility - BESS	TZVI Visibility - Substation	Modification level	Initial Impact	Residual Impact*
VP5 – Dja Dja Wurrung Centre - Larnangurak	430m	M	Not Visible	Not Visible	Not Visible	No Impact	No Impact
VP6 – Residence - 33 Poplar St	380mm	H	Not Visible	Minimal	Very Low	No Impact to Very Low	No Impact
P7 – Residence - 24 McLachlan St	1.7km	H	Not Visible	Minimal	Very Low	No Impact to Very Low	No Impact
VP8 – Bendigo Regional Park	120m	H	Not Visible	Minimal	Very Low	No Impact to Very Low	No Impact
VP9 – Carshalton House – Residential Aged Carer	280m	H	Not Visible	Minimal	Very Low	No Impact to Very Low	No Impact

*Residual impact following completion of proposed industrial subdivision.

Table 6 – TZVI not visible high sensitivity residential viewpoints

5.5 Connecting powerline/grid connection

An underground powerline is proposed to connect the Project to the main grid at the Bendigo Terminal Station. The powerline route will extend from the switching substation at the Project in a south westerly direction to the terminal station, with the majority of the length located within the existing terminal station property.

5.6 Lighting impacts

The applicable environmental lighting zone for the surrounds of the Project area, based on AS-NZS-4282-2023, is Category A3, medium district lighting area. This is due to the existing commercial/industrial uses, including the existing terminal station, that have attributes of higher intensity lighting.

It is likely that the batteries, switch room 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 A3 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. However, the development on the proposed industrial area will mostly screen views of the predicted low levels of lighting.

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5.7 Cumulative impact

Given the industrial use zoning of the area, it is intended that the area does change character. Therefore, the assessment of cumulative impacts is not required.

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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 taller Project components are associated with the switching substation, and this has been located approximately 150m from the closest residence.

The siting will also made effective use of the proposed industrial development located to its north which will mostly screens views of the Project once completed.

6.1.2 Perimeter screening

6.1.2.1 Vegetation

Given the eventual screening of the Project by the proposed industrial development located to its north, specific ameliorative screening is not required. However, the interfaces of the Project with the streetscape should be landscaped in accordance with Council's landscape guidelines.

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 urban setting. White should not be used as it contrasts strongly with 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. Additionally, it will be backdropped in views from the north by the greater mass of the existing terminal station.

The outer façade of the acoustic wall should be coloured/patterned in colours compatible with the adjacent natural setting of Bendigo Regional Park, in order to break up its visual mass.

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 it is apparent that any required amelioration can be achieved on-site, and that no off-site actions will be required.

7 COMPLIANCE WITH THE INDUSTRIAL DEVELOPMENT GUIDELINES

The Greater Bendigo Industrial Development Guidelines (2025) aim to:

- *ensure that future industrial subdivision and development is environmentally sustainable, functional and attractive for business operators, employees, visitors and residents, attracting businesses to Greater Bendigo into the future.*

The Project is located in the Golden Square Industrial Land Precinct.

Of relevance to the Project is Part C - Development Guidelines, which sets out the applicable design guidelines. Of relevance to urban character and visual assessment are:

- **Section 1 - Site Layout** – siting and orientation.
- **Section 3 - Built Form** - building design and detail, building heights, colours, materials and finishes.
- **Section 4 – Landscaping** - landscape design, including planting, fencing and outdoor amenity.
- **Section 6 - Interface Treatments** – interfaces to residential, open space, roads and railways.

Where not of relevance to a Project such as this N/A is 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

7.1 Compliance assessment

7.1.1 Section 1 - Site Layout

7.1.1.1 Section 1.1 - Site Responsive Design

Relevant objectives:

- To ensure new development is designed to respond to the local site characteristics and surrounding context.
- To ensure new buildings are appropriately located to prevent any significant loss of vegetation and amenity to adjacent buildings, residential areas and surrounding streetscapes.

Response to relevant guidelines:

	Site Responsive Design	Response
1.1.1	Develop a site responsive design with consideration of:	
	Existing and future land uses and how they might interface with the site.	<i>The Project is set well back from residential interfaces and will be located adjacent to existing and future industrial uses.</i>
	Treatment of any surrounding sensitive interfaces.	<i>The only sensitive interface is to the Bendigo Regional Park. The interface will be similar to that of the existing industrial development to the south and northeast of the Project area.</i>

	Site Responsive Design	Response
	Existing built form character and heights of buildings on adjoining sites.	<i>The BESS will be significantly lower than most surrounding built form. The switching substation will effectively be collocated with the existing terminal station.</i>
	Areas of existing vegetation.	<i>Refer to ecological report.</i>
	Predominant landscape and cultural heritage character of the area.	<i>The existing industrial landscape character is typically of low value.</i>
	Views both from within and to the site.	<i>The Project will be effectively contained within surrounding industrial development</i>

7.1.1.2 Section 1.2 – Building Setbacks

Relevant objectives:

- To create cohesive streetscapes that are characterised by consistent building setbacks.
- To ensure the siting of buildings provides adequate space for landscaping and planting and strengthens the landscape character of the area.

Response to relevant guidelines:

	Building Setbacks	Response
1.2.1	Set the building back from the property boundary on a major road to be consistent with the predominant front setbacks in the street, where the surrounding lot sizes and uses are consistent.	<i>There are no major road frontages. The closest setback of 22m to the operations and maintenance building is significantly greater than existing developments in the vicinity of the Project area.</i>
1.2.2	Provide side setbacks to create adequate space for standalone buildings and spaciousness between buildings	<i>Side setbacks vary between 10m and 38m.</i>
1.2.3	Avoid locating rainwater tanks, secondary buildings or storage areas in front setbacks where practical	<i>The closest water tank is greater than 10m from the front boundary. No other ancillary buildings are located within in the 22m front setback.</i>

7.1.1.3 Section 1.3 – Building Siting and Orientation

Relevant objectives:

- To ensure buildings are appropriately sited to address the primary street frontage.

- To ensure building frontages provide opportunities for passive surveillance of the surrounding public realm.
- To provide opportunities for access to daylight and natural ventilation in buildings.
- To minimise impacts of overshadowing development on adjoining uses.
- To maximise opportunities for passive heating and cooling techniques.

Response to relevant guidelines:

	Building Siting and Orientation	Response
1.3.1	Site buildings so that the building frontage (i.e. entrance, reception, customer service area) is parallel to and opens onto the primary street frontage.	<i>The operations and maintenance building is located closest to the entry to the site.</i>
1.3.2	Orientate buildings so that loading and servicing, and large areas of car park (greater than 20 spaces) are preferably located to the rear or the side of the site.	<i>Carparking is limited to four spaces located near the entry to the operations and maintenance building.</i>
1.3.3	Where practical, orientate habitable areas, particularly offices, to take advantage of the northern aspect and shading devices to control internal light and heat.	N/A

7.1.2 Section 3 – Built Form

7.1.2.1 Section 3.1 – Building Design and Detail

Relevant objectives:

- To encourage site responsive and ESD outcomes that improve the amenity, environmental performance and minimise on-going operational costs of industrial development.
- To provide industrial buildings that are fit for purpose and representative of industrial use.
- To encourage flexible and innovative industrial building design that allows for a variety of uses and future adaptation as industry needs change over time.

Response to relevant guidelines:

	Building Design and Detail	Response
3.1.1	Design industrial buildings to be reflective of an industrial form of development.	<i>The structures are consistent with the required form of energy infrastructure.</i>
3.1.2	Locate primary building entrances at the front of the building and design windows to overlook the street and surrounding public realm.	N/A
3.1.3	Design office areas to read as a separate architectural component in design and scale from the industrial component of the building, locating office areas at the front	<i>The operations and maintenance building is of a different form and</i>

	Building Design and Detail	Response
	of the building and factory and warehouse facilities to the rear of the building.	<i>scale, as well as being separate to the other elements on the site.</i>
3.1.5	Design facade treatments with variation in articulation, materials and colour but avoiding excessive detailing.	<i>The acoustic wall will have the largest physically unbroken façade. However, its surface pattern and colouring will ensure that it does not appear as a mass.</i>
3.1.8	Use light coloured, low solar absorption roofing materials.	<i>Light colours are utilised, such as pale greens and greys.</i>
3.1.9	Ensure expansive building walls visible from the street, public open space or key public viewing areas are articulated to provide visual interest. Avoid excessive blank walls in areas visible from the primary street entrance.	<i>All structures over the site are well set back from the primary frontage (~20m to 40m), relatively small and spatially separated, providing a high degree of articulation.</i>
3.1.10	Design secondary buildings to be consistent with the overall design theme of the site	<i>The structures are consistent with the required form of energy infrastructure.</i>

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7.1.2.2 Section 3.2 – Building Height

Relevant objectives:

- To ensure building heights respond to the predominant scale of the built form in the surrounding area.
- To ensure buildings are appropriately scaled to maintain key views in surrounding areas.
- To ensure new buildings have minimal impact on the amenity of any adjoining public realm and residential areas.

Response to relevant guidelines:

	Building Height	Response
3.2.1	Building heights should respond to the scale of existing development in surrounding areas, particularly to adjoining residentially zoned areas.	<i>The tallest structure, the substation, is located near the existing terminal station. All other structures are lower, with a smaller footprint, compared to those in surrounding areas.</i>
3.2.2	Where an industrial development is visible from a surrounding sensitive area, it should be demonstrated that the tallest building element will have minimal visual impact on the sensitive use.	<i>The tallest element, the substation, will be mostly screened by future industrial development. Where its upper parts may be visible, they will be viewed in the context of the</i>

	Building Height	Response
		<i>existing terminal station that will backdrop views.</i>

7.1.2.3 Section 3.3 – Roof Design

Relevant objectives:

- To provide articulated roof forms that create visual interest and variation in the surrounding streetscape.

Response to relevant guidelines:

	Roof Design	Response
3.3.1	Design roof forms to integrate with the prevailing roof forms in the surrounding area, be simple in design, and detailed to reflect their non-residential character. Roof forms should be low pitched unless necessitated by the particular industry function. Where appropriate, steeper pitched roof elements may be used to reduce the apparent bulkiness of large roof areas.	<i>Roof forms will be simple and not expansive.</i>
3.3.2	Design the roof form to delineate the office and entry areas from the industrial components of the building.	N/A
3.3.3	Locate and screen roof mounted building infrastructure and services to minimise visibility from the street.	N/A
3.3.6	Consider incorporating green facades or green roofs (where feasible) to reduce heat loads on internal building spaces.	N/A

7.1.2.4 Section 3.4 – Colour, Materials and Finishes

Relevant objectives:

- To support the desired contemporary character of industrial development and encourage the detailing of high-quality materials and appropriate architectural treatments.
- To encourage the use of materials that are robust, durable and require low maintenance.
- To encourage the use of a coordinated palette of building colours, material and finishes.
- To encourage the use of sustainable and recycled materials during the design, construction and operational stages of development.
- To use light coloured roofing materials.

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Response to relevant guidelines:

	Colour, Materials and Finishes	Response
3.4.1	Design new buildings using contemporary materials and finishes.	<i>The structures will be made of highly durable materials, fit for purpose as energy infrastructure elements.</i>
3.4.2	Use materials, finishes and/or colours to provide articulation in the building facade. Avoid the excessive use of unfinished pre-cast concrete walls.	<i>The majority of structures are small, separate elements. The acoustic wall will have the largest physically unbroken façade. However, its surface pattern and colouring will ensure that it does not appear as a mass.</i>
3.4.6	Use a cohesive colour palette that compliments the surrounding context.	<i>Light colours, such as pale greens and greys, drawn from the natural setting will be utilised.</i>

7.1.3 Section 4 - Landscaping

7.1.3.1 Section 4.1 – Landscape Design

Relevant objectives:

- To encourage sustainable landscape design principles that respond to the characteristics and qualities of the particular site and local area.
- To encourage high quality, attractive landscaping that positively contributes to the streetscape, particularly within front setbacks.
- To protect significant trees and vegetation.
- To encourage the use of local, drought tolerant, and low ongoing maintenance species.
- To provide definition and screening between properties.

Response to relevant guidelines:

	Tree siting and area requirements	Response
4.1.1	Design and site buildings to retain existing high retention value vegetation on site where possible. Remnant trees should be retained and included in the landscape design. Incorporate existing vegetation into building setbacks, building recesses or within open space areas.	<i>Tree removal has been minimised on the mostly cleared site.</i>
4.1.2	New buildings, driveways, and vehicle crossovers should be setback from tree protection zones areas of trees that are to be retained.	<i>Driveways and crossovers avoid existing trees</i>



4.1.3	Avoid locating tree species where the root system might impact on services and assets within the road reserve.	<i>To be resolved when landscape plan prepared.</i>
4.1.4	Provide for the effective impact of vegetation by planting at appropriate densities, and where possible, consolidating landscape areas. Shrubs, grasses, hedges and ground covers should be planted at a minimum of 2-4 plants per m2.	<i>To be resolved when landscape plan prepared.</i>
4.1.5	Site large trees with consideration of their ability to shade windows (and minimise the need for internal mechanical cooling)	<i>To be resolved when landscape plan prepared.</i>

	Primary frontage landscape zones	Response
4.1.6	Landscaping must be incorporated into 1.5m wide (minimum) front setback. Where the primary frontage is adjacent to a residential area, or a major road, a landscape zone is required (refer to Figure 26).	<i>To be resolved when landscape plan prepared. The site does not front a residential area or major road.</i>
4.1.7	Use a two-layer planting of semi mature trees and low growing shrubs (less than 900mm high) to maintain visibility and surveillance in front setbacks.	<i>To be resolved when landscape plan prepared. However, visual screening of the site structures is also a consideration.</i>
4.1.8	Consider providing elements within the front landscape setback that will encourage use of the space by staff and visitors.	<i>To be resolved when landscape plan prepared.</i>
4.1.9	Corner sites should provide landscaped setbacks to both street frontages to the satisfaction of the responsible authority.	<i>The site is not on a corner.</i>

	Site and rear boundary landscape zones	Response
4.1.10	Provide a landscape buffer along the rear property setback if the site adjoins a public street or is visible from a railway line, freeway or residential area. Where the property abuts open space the landscape treatment should encourage passive surveillance opportunities.	<i>The rear of the site does not adjoin a public street, nor is visible from a railway line, freeway or residential area.</i>
4.1.11	Use landscaping treatments to minimise the visual impact of blank walls.	<i>To be resolved when landscape plan prepared but would only apply to the acoustic wall.</i>

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	Visual and acoustic screening treatments	Response
4.1.12	Design landscape buffers to be a minimum of 5m deep and planted with species that provide an appropriate level of coverage for visual screening.	<i>To be resolved when landscape plan prepared.</i>
4.1.13	Utilise landscaped mounding in combination with planting of shrubs and canopy trees for effective and aesthetically pleasing screening.	<i>To be resolved when landscape plan prepared.</i>
4.1.14	Use landscape screening on large building façades, to improve the appearance of the building.	To be resolved when landscape plan prepared but would mainly apply to the acoustic wall.

	Species selection	Response
4.1.15	Select species suited to the local site conditions, with consideration of growing habits, available root space, and potential impacts on neighbouring properties.	<i>To be resolved when landscape plan prepared.</i>
4.1.16	Select species to integrate with the surrounding landscape character and of a scale commensurate with the scale of built form elements within their setting.	<i>To be resolved when landscape plan prepared.</i>
4.1.17	Group plants with similar water needs and irrigate accordingly.	<i>To be resolved when landscape plan prepared.</i>

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7.1.3.2 Section 4.3 – Fencing

Relevant objectives:

To ensure the front boundary treatment contributes positively to the appearance of the streetscape and clearly delineates the public and private realms.

To ensure fencing provides for adequate site security.

To ensure fencing is a coordinated design element within the site.

To enable passive surveillance of car parks, street and the surrounding public realm through the use of transparent front fencing.

Response to relevant guidelines:

	Fencing	Response
4.3.1	Use transparent fencing, and where possible, avoid the use of high, solid fencing where front fencing is required.	<i>Transparent security fencing is utilised around the site perimeter.</i>

4.3.2	Locate security fencing at or behind the building line where front security fencing is required. Avoid the use of razor or barbed wire fencing.	<i>Security fencing is required around the site perimeter but can be visually softened with landscaping on the outer side.</i>
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7.1.4 Section 6 – Interface Treatments

7.1.4.1 Section 6.1 – Residential Interfaces

Relevant objectives:

- To protect the amenity of residential areas and other sensitive uses.
- To ensure the desired character is maintained when industrial precincts are viewed from key public areas.

Response to relevant guidelines:

	Residential Interfaces	Response
6.1.1	Provide a transition in height so new development relates to the scale of the surrounding residential buildings located at the interface edge where an industrial site abuts or is located opposite a residential property (refer to Figure 33)	<i>No residences immediately abut the Project, with the closet being located approximately 170m from the closet Project component.</i>
6.1.2	Provide vegetated screening or mounding to soften the visual impact of the proposed development where an industrial site shares a side or rear boundary with a residential property. The screen should be located within the property setback.	<i>No residences immediately abut the Project, with the closet being located approximately 170m from the closet Project component.</i>
6.1.3	Site new development away from surrounding sensitive interfaces and provide sufficient visual and acoustic screening within the industrial property.	<i>The Project is located approximately 170m from the closet sensitive residential interface.</i>

7.1.4.2 Section 6.2 – Open Space Interface

Relevant objectives:

- To protect the amenity and local character of open space areas.
- To ensure industrial areas contribute to a high quality built environment within the municipality when viewed from surrounding open space areas.

Response to relevant guidelines:

	Open Space Interfaces	Response
6.2.1	Ensure built form addresses surrounding open space. Where development fronts public open space, the building should address the open space by providing:	<i>N/A</i>

	Open Space Interfaces	Response
	- Primary building entrance to be located on the primary street frontage, with a footpath connection to the public realm. - Windows and openings at ground level. - Internal uses located within the building to provide passive surveillance opportunities over the public open space.	
6.2.2	Where development backs onto public open space the building should seek to address the open space by providing windows overlooking the open space.	N/A
6.2.3	Where development backs onto public open space, avoid having large blank walls visible from the open space (if possible the wall should be articulated in its form and detailing).	Low BESS units to 3m in height, spaced approximately 4m apart, are located along the interface Bendigo Regional Park.
6.2.4	Avoid the use of high, solid fencing along property boundaries that interface with open space.	Visually permeable fencing will be used along the eastern interface with Bendigo Regional Park.

7.1.4.3 Section 6.3 – Main Road Interface

Relevant objectives:

To protect the amenity and desired character of main roads, particularly those considered as gateway locations.

To ensure industrial areas contribute to a high quality built environment within the municipality when viewed from main roads.

Response to relevant guidelines:

	Main Road Interface	Response
6.3.1	Ensure built form located on main roads and key arrival routes contributes to creating a continuous built form edge.	N/A
6.3.2	Encourage development located along key arrival routes to be of an appropriate scale to act as a defining gateway marker.	N/A
6.3.3	Ensure signage and advertising does not detract from a visually pleasing arrival experience. Avoid the placement of signage on front fences or footpaths.	N/A
6.3.4	Encourage the retention of existing vegetation where the vegetation contributes to the main road character.	N/A
6.3.5	Provide a landscape buffer along the rear property setback if the site adjoins a public street or is visible from a freeway.	N/A

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7.1.4.4 Section 6.4 – Railway Interface

Relevant objectives:

- To ensure industrial areas contribute to a high-quality built environment within the municipality when viewed from train corridors.

Response to relevant guidelines:

	Railway Interface	Response
6.4.1	Provide dense vegetated screening or mounding to soften the visual impact of the proposed development, in the case where an industrial site interfaces with a rail corridor.	N/A
6.3.2	Encourage the articulation of building façades and roof forms that face onto a railway corridor to provide an attractive visual interface for passengers.	N/A

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8 CONCLUSION

8.1 Landscape character impacts

The IN1Z allows for the development of industry, which may include built form with significant height and a large footprint.

The proposed form of the Project will be consistent with, albeit it of a typically lower overall height, than other developments anticipated for the IN1Z, such as those in the proposed subdivision to the north of the Project area.

However, the taller elements of the Project, within the substation, will be seen from the residential areas to the north, albeit in the context of the backdropping terminal station on SUZ12 land and the associated HV pylons.

The existing industrial landscape character of the Project area and surrounding areas is of relatively low scenic quality and the overall landscape impacts, or landscape change, will be consistent with those allowed under the zoning.

The urban landscape of the Project setting has a generally high landscape absorptive capacity, with the undulating topography reducing opportunities for overlooking from sensitive viewpoints.

The vegetation, which is scattered and occasionally arranged in dense bands, and existing built form is highly effective at screening **This report or the view point to be made beyond the visually open Hattam Street frontage**

8.2 Visual impacts

8.2.1 Visual prominence

In areas of flat topography, the vertical field of view of a BESS unit with a height of 3m will be less than 2.5 degrees, or of moderate visual prominence in viewing distances beyond 70m, less than 0.5 degrees, or of low visual prominence in distances beyond approximately 350m, and less than 0.25 degrees, or of very low visual prominence in distances beyond 700m.

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 sensitive viewpoints, resulting in an angle of less than 30 degrees, or no greater than a moderate level of visual prominence.

8.2.2 Consideration of visual fit within the setting

The presence of the existing energy infrastructure provides the Project a significant degree of visual fit within the landscape setting. Additionally, the form of future uses in the IN1Z will be typically higher and bulkier than the Project.

8.2.3 Initial visual impact

Prior to the construction of the industrial development to the north of the Project area, 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 1 - Hattam Street/Tucker Street intersection to the east of the residential aged care community and northeast of the Project with a moderate initial visual impact;

- Viewpoint 2 – Residential aged care community to the north northeast of the Project with a moderate initial visual impact;
- Viewpoint 3 – Hattam Street to the north of the Project with a moderate initial visual impact; and
- Viewpoint 4– Residence at 13 Hattam Street to the northwest of the Project with a moderate to high visual impact.

While the Project will be visible from these viewpoints, the relatively flat topography means that future industrial development will mostly screen views of the Project.

The viewpoints assessed in detail are representative of the likely views and levels of impacts to be experienced by surrounding sensitive viewpoints.

Apart from the above, overall, the Project is assessed as having a low level of visual impact or not being visible at all due to it being well screened by existing built form to its west and south, or existing vegetation to its east.

8.2.4 Residual impact

The residual visual impact for all viewpoints will typically reduce to no impact, or very low impact after the development of the industrial estate to the north of the Project area.

8.2.5 Cumulative impact

The assessment of cumulative impact is not considered necessary given the zoning of the land.

8.2.6 Impact of connecting underground powerline

Any impacts associated with the underground powerline will be limited as it is distant from any sensitive viewpoint.

8.3 Lighting impacts

Within the Category A3 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. However, the development on the proposed industrial area will mostly screen views of the predicted low levels of lighting.

The development of the industrial estate to the north of the Project area will further ameliorate views to already low levels of lighting and will generate their own lighting.

8.4 Amelioration

Given the eventual screening of the Project by the proposed industrial development located to its north, specific ameliorative screening is not required. However, the interfaces of the Project with the streetscape should be landscaped in accordance with Council's landscape guidelines.

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 urban setting. White should not be used as it contrasts strongly with 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.

The outer façade of the acoustic wall should be coloured/patterned in colours compatible with the adjacent natural setting of Bendigo Regional Park, in order to break up its visual mass.

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Appendix A – Massing model views

3D massing model views were prepared in Google Earth Pro, utilising the digital terrain model base, with views generated in the Streetview function.

The massing models are shown overlaid over any intervening vegetation, built form or topography and are intended to convey the location and approximate extent and worst-case visual prominence of the Project, to aid the detailed viewpoint assessment.

The colours are represented as follows:

- Mauve– BESS;
- Purple/Maroon – Substation; and
- Orange – Future industrial development.

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Figure 61 – VP1 – 3D massing model - View southwest from Hattam Street to the Project – at completion of construction.

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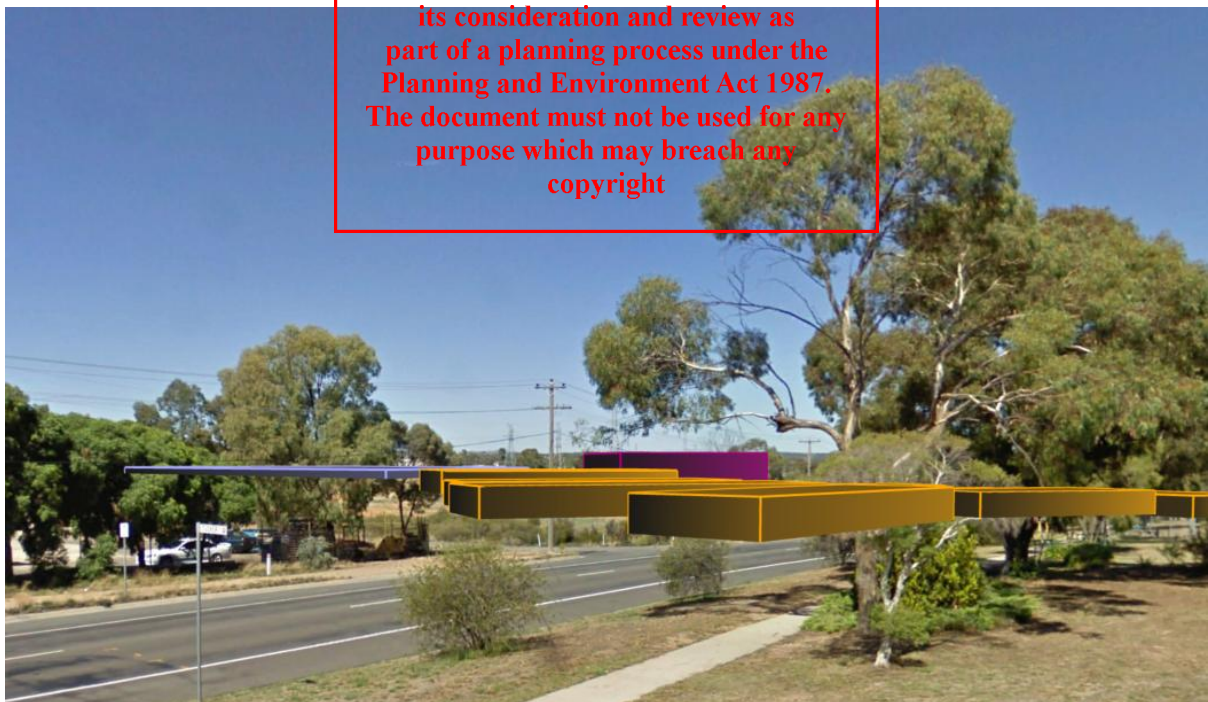


Figure 62 – VP1 – 3D massing model - - View southwest from Hattam Street to the Project – with completed industrial subdivision.

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Figure 63- VP2 - 3D massing model - View southwest to the Project – at completion of construction.



Figure 64 – VP2 – 3D massing model - - View southwest to the Project – with completed industrial subdivision.

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Figure 65 – VP3 – 3D massing model - View south from Hattam Street to the Project – at completion of construction.



Figure 66 – VP3 – 3D massing model - View south from Hattam Street to the Project – with completed industrial subdivision.

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Figure 67 - VP4 – 3D massing model - View south southeast from Hattam Street to the Project – at completion of construction.

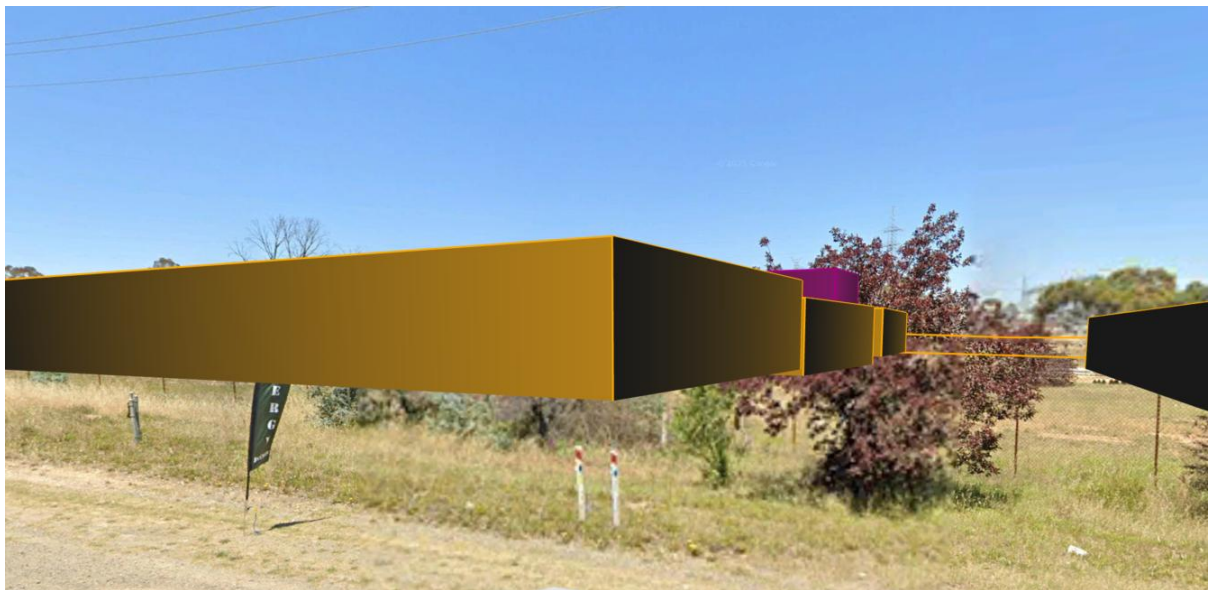


Figure 68 - VP4 – 3D massing model - View south southeast from Hattam Street to the Project – with completed industrial subdivision.

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**Peter Haack Consulting
2/10 Waltham Place
Richmond
Victoria 3121
www.peterhaack.com.au
ABN 15 235 313 089**