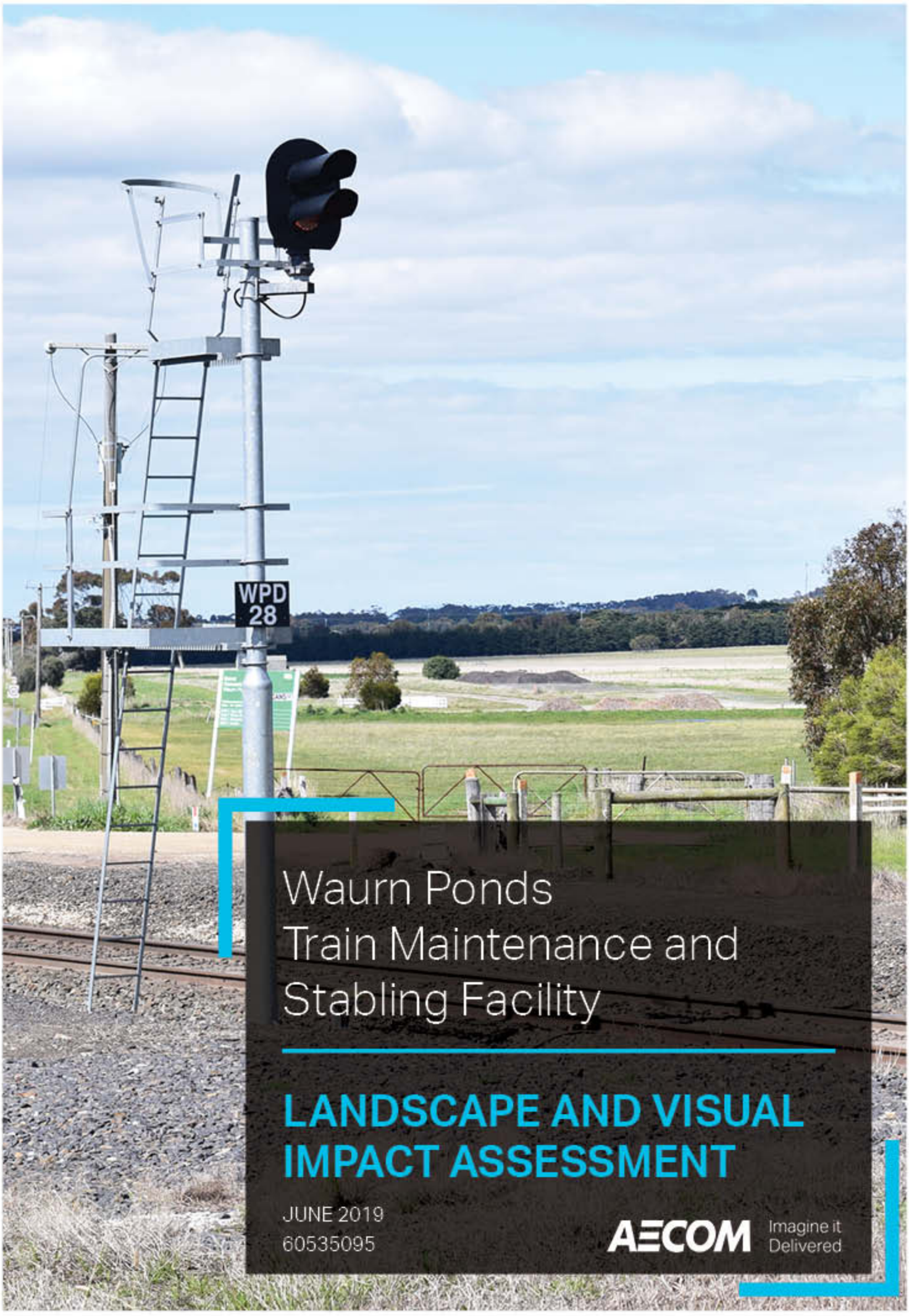

Waurn Ponds Train Maintenance and Stabling Facility

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

JUNE 2019
60535095

AECOM Imagine it Delivered

Waurn Ponds Train Maintenance and Stabling Facility

Landscape and Visual Impact Assessment

Client: Rail Projects Victoria

ABN: 69 981 208 782

Prepared by

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Executive Summary

This Landscape and Visual Impact Assessment (LVIA) has been prepared by AECOM on behalf of Rail Projects Victoria (RPV). The LVIA investigates the proposed Waurn Ponds Train Maintenance and Stabling Facility (the Project).

The purpose of this report is to undertake landscape analysis and landscape and visual impact assessment with a view to making recommendations for managing identified landscape issues that may be affected by the Project. The Project was assessed for an initial Stage 1 development and then a final Stage 2 development.

The report identifies important characteristics of the landscape, defining Landscape Character Types which were assessed for impacts arising from the Project. No significant landscape character impacts were identified.

Six sensitive visual receptor locations (viewpoints) were identified, all but one comprising residences within a one kilometre radius of the Project. These receptors were separately assessed for both Stages of the Project.

For Stage 1, viewpoints from sensitive receptors fell within the range of ‘No impact’ to ‘Minor to Moderate’, other than for Viewpoint 5 which was assessed as ‘Moderate to Major’. This latter assessment rating was due to both the high sensitivity of the receptor and the considerable change in the character of the view.

For Stage 2, viewpoints from sensitive receptors 2, 3 and 4 fell between ‘Minor’ and ‘Minor to Moderate’. Viewpoint 1 was assessed as being subject to a ‘Moderate to Major’ level of visual impact due to the substantial change in character to the existing rural view. Viewpoints 5 and 6 were assessed as being subject to a ‘Major’ (VP5) and ‘Moderate to Major’ (VP6) level of visual impact due to a combination of proximity to the Project and extent of change in the character of the view.

While the Project is still in design phase, built form and landscape mitigation measures can potentially be incorporated into the design in response to the above impacts. Mitigation measures have sought to increase integration of the Project into the existing landscape across a range of areas, including consideration of concentrating built form in the centre of the Project Land in order to conserve high quality regional views to either end of the facility. Implementation of proposed mitigation measures would be expected to reduce the impact ratings found within this report, correlating incrementally with increased adoption of proposed measures.

1.0 Introduction

1.1 Purpose of the Study

This Landscape and Visual Impact Assessment (LVIA) has been prepared by AECOM on behalf of Rail Projects Victoria (RPV). The LVIA investigates the proposed Waurn Ponds Train Maintenance and Stabling Facility (the Project).

The purpose of this report is to undertake landscape analysis and landscape and visual impact assessment with a view to making recommendations for managing identified landscape issues that may be affected by the Project. The report comprises of the following:

- An understanding of the landscape and visual attributes of the Project Land;
- Identification of sensitivities in relation to landscape and visual change associated with the Project;
- Assessment of potential landscape and visual impacts associated with the Project; and
- Provision of recommendations for managing any identified landscape and visual impacts arising from the Project.

Landscape value is described as *'the relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons'* (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

Visual amenity is described as *'the overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area'* (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

2.0 Project Description

2.1 Land Requirements

Project Land – All areas of land required within the Site for the purposes of the Project:

- At 255 Reservoir Road:
  - 350 metres south of the rail corridor between Pettavel Road and Bogans Lane.

Wider Project Land – All land that the Project requires for the delivery of ancillary infrastructure and associated construction activity:

- At 255 Reservoir Road:
  - Approximately 50 metres north of the rail corridor between Pettavel Road and Reservoir Road/Bogans Lane. It is anticipated that only a small portion of this wider project land will be required, subject to the determination of the ultimate location of the occupational crossing as part of Stage 2 of the project.
- Surrounding 255 Reservoir Road:
  - Within the existing rail corridor for approximately 3040 metres west and for 3550 metres east of Bogans Lane inclusive;
  - Within the Bogans Lane road reservation, 500 metres south of Reservoir Road;
  - Within the Pettavel Road road reservation, 170 metres north of the rail corridor and 480 metres south of the rail corridor;
  - Within the Reservoir Road road reservation, 800 metres east of, and including its intersection with Bogans Lane.

Figure 1 shows the regional context of the Project Land and Wider Project Land. Figure 2 shows the above Project Land and Wider Project Land in closer detail.

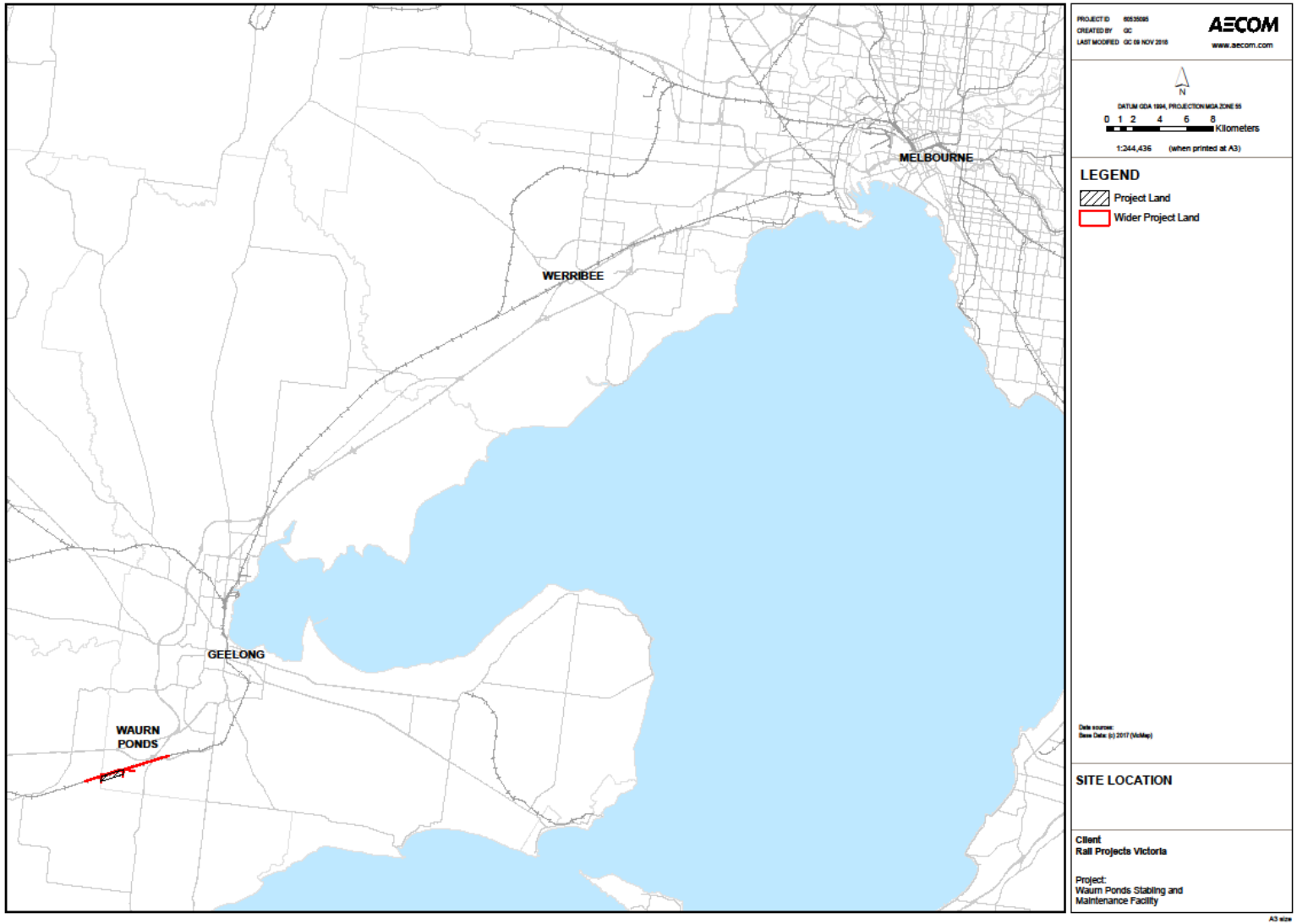


Figure 1 Regional Context Map

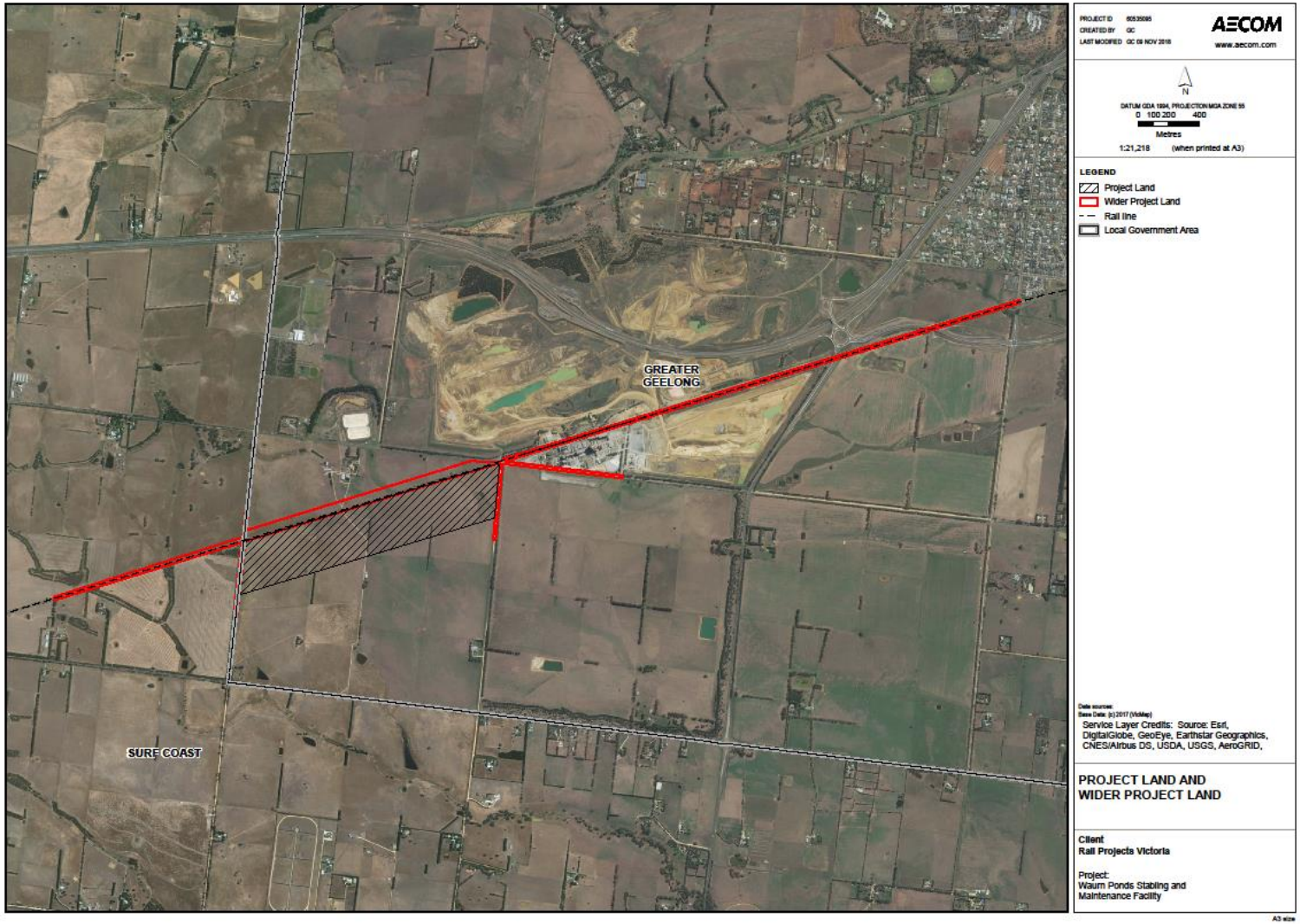


Figure 2 Project Land and Wider Project Land

2.2 Staged Delivery

It is proposed to deliver the Project in stages:

- Stage 1 is funded and is expected to be delivered by 2021.
- Delivery of the balance of the Facility (referred to in this report as Stage 2) is subject to further Government decision making in relation to the funding and procurement of new trains to service the Geelong Line and broader regional rail network and associated stabling and maintenance requirements. The timing for delivery of Stage 2 is unknown at this time. Stage 2 may be delivered in one or more stages depending on the outcome of this decision making.

Figure 3 presents the Concept Design for the Project. The Concept Design is indicative only and may be subject to change through the detailed design process.

2.2.1 Stage 1 Infrastructure

Stage 1 is anticipated to deliver a train stabling facility with the capacity to stable 6 trains. It is anticipated that the facility will primarily cater for VLocity/DMU trains, however, it is proposed to have capacity to cater for 3 locomotive trains in the short-term while locomotives continue to be phased out of the V/Line fleet. The facility would be located south of the existing railway corridor, directly east of the existing farm laneway at the centre of the Project Land, and west of Bogans Lane. The Stage 1 facility would occupy an area of approximately 11 hectares, and would be in the order of 1030 metres long, 150 metres wide at its widest section and 100 metres wide at its most narrow point.

Stage 1 is anticipated to comprise:

Initial Project Land development

- Land acquisition for the entire footprint of Stage 1 and Stage 2.
- On-site mobilisation.
- Connections to key services (electricity, water, sewerage, drainage, communications, etc.).
- Security fencing and entrance/exit gates around the perimeter of the stabling roads and Stage 1 facilities.
- Earthworks to support initial facilities and trackwork.
- Landscaping.
- Road access from Bogans Lane.
- Power and dam infrastructure works resulting from the acquisition of farmland for the Project Land.
- Modified stock crossing and vehicular access to the adjacent leasehold farm property (i.e. the Boral owned land to the east).
- It is expected that the existing level crossing that serves the central farm laneway will remain in operation at its current location, potentially with some modifications as required by V/Line.

Track layout

- Six stabling roads, comprising four single ended and two double ended stabling roads.
- One single entry/exit train access point from existing rail corridor towards the eastern end of the Project Land, just west of Bogans Lane.

Servicing facilities

- Fuelling facilities on four stabling roads.
- Power, toilet extraction and water replenishment equipment, footpaths and yard lighting provided on all of the stabling roads.

Ancillary facilities

- Upgrades to the existing signalling system within the rail corridor.
- Waste compound for rubbish and hard waste.
- Bunded fuelling area.
- Water storage and supply for stabling sidings.
- Drainage systems, including water sensitive urban design (WSUD) and the modification or relocation of farm dams.
- Telecommunications.
- Asphalt footpaths.
- CCTV to cover stabling sidings area.
- Driver and cleaner's amenities.
- Formed and sealed access roadways, with capacity to allow for B-double truck access and turnaround.
- Car parking for drivers, visitors and cleaners.

2.2.2 Stage 2

As stated above, Stage 2 is subject to further Government decision making. However, it is anticipated that Stage 2 will increase the stabling capacity of the Facility to 26 trains and will introduce a train maintenance facility. Based on an indicative concept design, the Stage 2 facility is anticipated to occupy an area of approximately 46 hectares, and be in the order of 1720 metres long, 320 metres wide at its widest section and 160 metres wide at its narrowest.

Stage 2 is anticipated to comprise:

Project Land development

- Security fencing and entrance/exit gates around the perimeter of the Stage 2 facility.
- Earthworks to support expansion of facilities and trackwork.
- Landscaping.
- A rerouting of the farm laneway to cross the rail corridor in proximity to the Pettavel Road boundary of the Project Land.

Rail facilities

- Two access points from existing rail corridor, one towards the eastern end of the Project Land and one towards the western end of the Project Land.
- Stabling roads for up to 26 trains.
- Bio-wash facilities.
- Train wash facilities.
- A maintenance facility with 5 maintenance roads.

Servicing facilities

- Expansion of fuel and water facilities.
- A substation.
- Expansion of staff facilities.
- One gatehouse along the entry road.

Ancillary facilities may include the following:

- Drainage systems, including WSUD and the modification or relocation of farm dams.
- Telecommunications.
- Internal/external access arrangements.
- Utility protection and installation.
- Signalling infrastructure.
- Emergency access via Pettavel Road.

2.3 Construction Phase

2.3.1 Construction Activities

Key construction activities anticipated for the Project include:

Table 1 Construction Activities

Stage	Construction Activities
Stage 1	
Project Land Development	• On-site mobilisation; • Connections to key services (electricity, water, sewerage, drainage, communications); • Security fencing and entrance/exit gates; • Earthworks to support initial facilities and trackwork; • Road access from Bogans Lane; • Initially required internal roads; and • Security and safety facilities.
Works	• Construction of internal roads, footpaths, car parking and associated sealing; • Construction of new rail tracks and associated signalling systems; • Construction of fuelling facilities; • Reinstatement and landscaping; • Installation of utility infrastructure; • Bulk earthworks; and • Construction of ancillary buildings and services.
Stage 2	
Works	• Construction of train maintenance building and internal fit out; • Construction of additional tracks and connections; • Modifications to the fuelling facility; • Automated train wash plant and bio-wash; • Extension of stabling sidings; • Expansion of staff amenities and training facilities; • Provision of train cleaners store and amenities building; • Expansion of staff car parking; and • Provision of train crew administration facilities.

Being grazed farmland, the Project Land is already substantially cleared of vegetation. The exception is two areas of linear shelterbelt vegetation. Vegetation removal will be minimised to the extent practical and occur progressively throughout all activities.

2.3.2 Construction Operation

The construction duration is expected to be approximately 12 to 18 months for each stage of the Project, and subject to the Project requirements at the time. During each phase, the construction operating hours will be undertaken in accordance with the relevant protocols.

During the Project Land preparation and construction phases, access to the Project Land is anticipated to be provided via Bogans Lane for Stages 1 and 2. Alternative access may be possible from Pettavel Road for Stage 2.

Vehicle movements would be coordinated as required and advised by standard traffic management measures.

The preferred Project Land access route during construction of the Site is via the Geelong Ring Road. Alternatively, access to the Project Land can be provided via Princes Highway.

2.3.3 Staff Numbers

During the construction phase it is expected that up to 100 personnel could be on-site at any one time.

2.4 Operational Phase

This section describes the expected operational activities.

Operational activities are subject to completion of the detailed design phase for each stage of the Project and confirmation of the operator's timetabling requirements.

2.4.1 Operation of Train Stabling and Maintenance Facilities

The Facilities are anticipated to operate 24 hours a day, seven days a week.

It is expected that trains will enter and exit the facility from turnouts constructed off the mainline. The layout of the track work would enable flexibility for the train operator and maintainers to minimise any potential conflicting train movements, and reduce the overall amount of shunting time on-site for the trains.

It is anticipated that trains will enter and exit the Project Land during the day and night as required to serve the railway timetable. Trains may arrive/depart at 10 minute intervals during peak periods. The total number of train arrivals and departures per day is not yet known and will be subject to the operator's timetabling requirements.

It is assumed that up to 3 trains may be idling at any one point in time during Stage 1 operations. The total number of trains idling as part of Stage 2 is subject to future detailed design and operational requirements. These assumptions will be reviewed subject to the operator's timetabling requirements.

The overall operational concept for the Facility is to provide an efficient series progression for stabling, servicing and maintenance (if required) of trains from initial train arrival until its next scheduled departure into revenue service. Typical train movements would be entry through the northern most fuelling roads, continuing through to the western most shunting neck. From here the train would head east into the stabling roads where it would reside prior to departure. If maintenance was required, trains would leave the stabling siding and enter the maintenance facility.

2.4.2 Staff numbers

It is anticipated that the Facility may accommodate 10 staff during Stage 1 of the Project and 40 staff during Stage 2, with the expectation that all staff will not be on-site at any one time, and staff will work in shifts. An expected breakdown of shift allocation is as follows:

Table 2 Staff Numbers

Shift Time	Staff Percentage	Number of Staff for Stage 1	Number of Staff for Stage 2
Morning	40%	4	16
Afternoon	40%	4	16
Overnight	20%	2	8

2.4.3 Vehicle and Staff access

The primary access point to the Facility would be located to the east from Bogans Lane. The preferred access route to the Project Land from the Geelong Ring Road would be via Anglesea Road and Reservoir Road. Vehicles will be expected to exit the Project Land the same way.

The primary access gate is to be utilised by staff and delivery vehicles to both enter and exit the facility. Visitors and administration office personnel would be directed to the relevant area and directed to the car park after checking-in, identification and registration at the primary access gate.

For Stage 2, emergency vehicle access could be provided at the western end of the Project Land from Pettavel Road, where required. Appropriate internal access would also be provided for emergency vehicles to the maintenance workshop, stabling tracks and main parts of the Facility.

The internal road layout would be designed to limit the need to cross tracks within the Project Land.

Adequate car parking spaces will be provided for both maintenance and operations staff and visitors. It is expected that car parking areas will be located to minimise walking distances to site facilities.

Pedestrian movement networks would be designed to provide adequate access, minimise walking distances to site facilities and provide for personal safety.

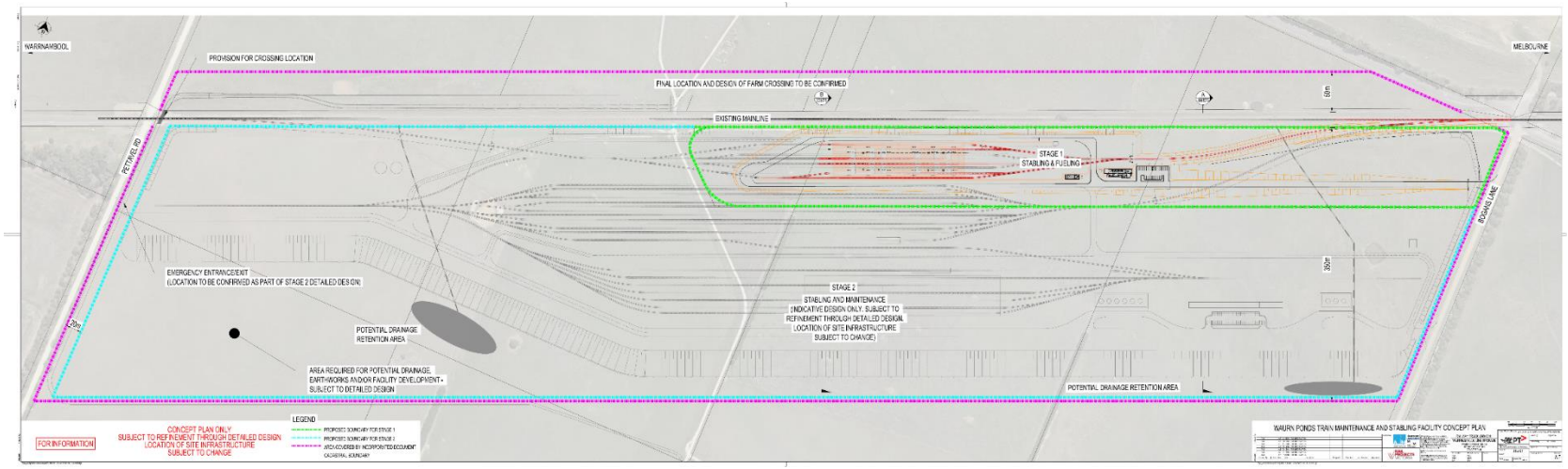


Figure 3 Concept Design

3.0 Methodology

There is no accepted National published guidance on landscape and visual amenity impact assessment specific to Australia. Therefore, the industry typically refers to guidance from elsewhere to produce a method for producing landscape and visual assessment. The method for this assessment has been developed with reference to Guidelines for Landscape and Visual Impact Assessment (GLVIA), Third Edition (2013), developed by the Landscape Institute and Institute for Environmental Management (UK).

3.1.1 Review of Legislation and Planning Policy

A review was undertaken of key planning legislation, policies and guidance relating to landscape and visual amenity within the LVIA Study Area at the Federal, State, and local level. The emphasis of the review was to identify elements outlined within legislation, policy and planning documents relevant to landscape and visual character and identity of the Study Area.

It is noted that whether the Project is directly covered by a designation (e.g. a National Park or other protected area) is not of primary relevance to the consideration of potential for landscape / visual impacts, since the visibility of Project components may extend and affect designated areas beyond the Project Land.

3.1.2 Desktop Analysis of Project, Landscape and Visual Resources

Existing data was gathered and reviewed, including:

- Site inspection protocols, available information on nearby residences, other sensitive visual receptors, available Project layout assumptions and photos of similar examples of key infrastructure elements;
- GIS mapping, including hydrology, land use, geology, vegetation, contour/topographical data; and
- Google Earth and Google Street View.

Using this data, a preliminary assessment of the landscape and visual resource was undertaken and used to inform the site inspection.

3.1.3 Zone of Theoretical Visibility (ZTV) Assessment

Zone of Theoretical Visibility (ZTV) mapping is a computer-generated analysis which identifies land from which it is theoretically possible to view the components of the proposal. These have been used primarily to guide the area of field work and representative viewpoint selection.

ESRI ArcGIS software was used to model the ZTV of the proposal for both Stage 1 and Stage 2. A digital elevation model was produced using a combination of 10 metre contour intervals within the Study Area. The ZTV was run using a viewing height of 1.6 metres (the average within the typical viewing level range of an adult).

The GIS software then digitally determines the likely extent over which the feature would be visible or not visible. In interpreting the ZTV, the following issues must be considered:

- It only takes into account the landform and does not include land cover factors such as the presence of buildings and trees, and represents a conservative scenario of potential impact;
- It does not take into account the effect of distance. Generally, the greater the distance from the options, the lower the impact, as the development will take up a smaller portion of the view, and atmospheric conditions may reduce the visual prominence of the Project within the view; and
- The ZTV is only accurate to the resolution of the elevation model.

3.1.4 Site Inspection

Two site inspections were undertaken by two AECOM team members on 7 July and 21 November 2017.

The purpose of the first site inspection was to:

- Inspect the site to appreciate views to / from sensitive visual receptors;
- Inspect publicly accessible locations identified within ZTV mapping as likely to provide significant views of the Project, including roads, publicly accessible locations and representative of views from sensitive residential receptors;
- Understand character / species and composition of typical wind break plantings;
- Assess and portray landscape character; and
- Undertake site photography suitable for preparation of photomontages.

The purpose of the second site inspection was to:

- Investigate view locations and characteristics and undertake site photography from within the private property of 255 Reservoir Road, Waurn Ponds.

The location of each viewpoint was recorded using both iPhone (SE model) GPS and compass data. Photographs were taken with a single lens reflex camera and a 36mm digital lens set to the equivalent of a 54mm focal length lens on a 35mm film camera. Photoshop CC (2015) was used for minor exposure adjustments and photo-stitching of adjoining images.

3.1.5 Definition of Study Area

Based on the findings of the desktop assessment and site inspection, a three kilometre Study Area was defined. Refer Figure 9.

3.1.6 Definition of Landscape Baseline

Based on the findings of the desktop assessment and site inspection, a landscape assessment was undertaken to determine the existing natural and cultural values within the Study Area. This includes determination of key landscape elements, features and values. Key aspects considered include:

- Landscape value of native and exotic vegetation;
- Hydrology patterns;
- Tourist features;
- Historical and cultural features;
- Opportunities to highlight existing features; and
- Appreciation of the visual impact of the Boral quarry and associated structures.

3.1.7 Definition of Visual Baseline

Based on the findings of the desktop and site inspection, a visual assessment was undertaken to determine the important views and view sheds within the Study Area. Key aspects considered include:

- Views and view sheds for the Study Area; and
- The relative importance or significance of the views and view sheds.

The visual baseline has been assessed and described in terms of views from selected representative viewpoints within the Study Area.

3.1.8 Landscape Character Assessment

Based on the outputs of the visual and landscape baselines, a Landscape Character Assessment was undertaken. This identifies what makes a place distinctive, without necessarily assigning a value to it. In brief, this assessment considers the way different components of the environment – both natural (the influences of geology, soils, climate, flora and fauna) and cultural (the historical and current impact of land use, settlement, enclosure and other human interventions) – interact together and are perceived to form a distinct pattern.

This approach has been used to establish a baseline audit of the current character of the landscape around the Project Land and to provide a framework for measuring the impact of the proposals. Using this approach, broad ‘Landscape Character Types’ (LCTs) have been defined and provide a

framework for describing the area. An understanding of landscape character can be helpful in informing the siting of new elements in the landscape and assist with identifying which types of mitigation may assist in integrating the Project in the landscape.

The baseline landscape character assessment involved mapping and describing broad landscape character types based on the desktop study and site inspection. Each character type identified represents a relatively homogenous character based on the consideration of the following attributes:

- Landscape value;
- Landscape elements that contribute to defining character; and
- Landscape character attributes.

The baseline assessment also considers factors which have influenced landscape change in the past and those that are likely to do so in the future.

3.2 Impact Assessment and Reporting

3.2.1 Landscape Effects

Landscape character refers to a distinct and recognisable pattern of elements that occur consistently in a particular type of landscape. Particular combinations of geology, landform, soils, vegetation, land use and human settlement create character, which makes each part of the landscape distinct and gives each its particular sense of place (Scottish Natural Heritage and the Countryside Agency, 2002).

Assessment of landscape effects deals with the effect of change and development on landscape as a resource.

The investigation here is with regard to how the Project will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

The consideration of potential impacts on landscape character is determined based on the sensitivity of the existing landscape to change and the magnitude of change that is likely to occur. The sensitivity of a landscape is judged on the extent to which it can accept change of a particular type and scale without adverse effects on existing landscape character. The level of sensitivity is determined on the basis of:

- The landscape's inherent values (e.g. perceptual qualities, cultural importance) and any specific values that may apply such as landscape planning designations; and
- The landscape's ability to absorb changes associated with the Project (e.g. the extent to which the Project may fit or be absorbed into the landform, land use, pattern, scale or texture of the existing landscape).

The magnitude of change to landscape character depends on the nature, scale and duration of the change that is expected to occur. The magnitude of change also depends on the loss, change or addition of any feature to the existing landscape. It is based on that part of the landscape character type which is likely to be impacted to the greatest extent by the Project (i.e. a 'conservative' scenario).

The sensitivity and magnitude of landscape effects address the following specific criteria:

- Sensitivity of landscape to proposed change, based on: susceptibility to change; value of landscape (High, Medium, Low, Negligible); and
- Magnitude of landscape effect, based on: size or scale of change; geographical extent of effects; duration and reversibility of effects (High, Medium, Low, Negligible).

A judgement is made on the overall level of significance of the landscape effects, described as Negligible, Low, Moderate-Low, Moderate, High-Moderate or High in relation to the baseline. Refer Table 3 for Significance of Landscape Impacts Matrix.

Table 3 Significance of Landscape Impacts

LANDSCAPE IMPACT ASSESSMENT			Magnitude of change in landscape caused by development			
			Dominant change (High)	**Considerable change (Medium)**	**Noticeable change (Low)**	**Barely perceptible change (Negligible) #**
			A clearly evident and frequent/continuous change in landscape characteristics affecting an extensive area, which is likely to fundamentally change the character of the landscape.	A considerable change in landscape characteristics, frequent or continuous and over a wide area or a clearly evident change, but over a restricted area.	A noticeable change in landscape characteristics over a wide area or a considerable change over a restricted area but will not fundamentally change the character of the landscape.	An imperceptible, barely or rarely perceptible change in landscape characteristics.
Sensitivity of landscape to proposal		Indicator				
	High	A landscape protected by national designation and/ or widely acknowledged for its quality and value; a landscape with distinctive character and low capacity to accommodate the type of change envisaged.	**Major***	**Moderate to major***	**Moderate**	**Minor to moderate**
	Medium	A moderately valued landscape, perhaps a regionally important landscape and / or protected by regional/state designation, or where its character, land use, pattern and scale may have some capacity to accommodate a degree of the type of change envisaged.	**Moderate to major***	**Moderate**	**Minor to moderate**	**Minor to Negligible**
	Low	A landscape valued to a limited extent, perhaps a locally important landscape or where its character, land use, pattern and scale is likely to have the capacity to accommodate the type of change envisaged.	**Moderate**	**Minor to moderate**	**Minor**	**Minor to Negligible**
	Negligible	A landscape which is not valued for its scenic quality or where its character, existing land use, pattern and scale are highly tolerant of the type of change envisaged, and the landscape has capacity to accommodate change.	**Minor to moderate**	**Minor**	**Minor to Negligible**	**Negligible**

* Denotes the most significant impacts for consideration by decision makers.

Note: If *no* changes would be perceptible a significance of No Impact is recorded.

Source: AECOM 2017

3.2.2 Visual Effects

Assessment of visual effects deals with the effects of change and development on the views available to people and their visual amenity. It assesses how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and/or the introduction of new elements (*Landscape Institute and Institute of Environmental Management and Assessment*, 2013).

Visual receptors have been considered in terms of the views they are likely to obtain, including consideration of any key vantage points, such as lookouts, where there is particular interest in the view. Visual receptors are identified based on:

- Proximity of the receptors to the Project, as the most affected visual receptors are anticipated to be located closest to the Project, unless they are located at an elevated vantage point; and
- The type of receptor (e.g. residents, those passing through the area by vehicle, pedestrians or workers) as different viewer types will have different perceptions about the proposed change.

The evaluation of potential impacts on visual amenity is based on the sensitivity of the viewpoint (and the visual receptors it represents) to change, and the magnitude of change that is likely to occur, as described below. The assessment considers the likely impacts of the Project, as proposed.

The sensitivity of each viewpoint is considered to be dependent on:

- The type of visual receptor, their likely interest in the view and sensitivity to the proposed change, e.g.: people who are engaged in outdoor recreation where their attention or interest is likely to be focused on views and the visual amenity they experience are likely to be more sensitive to a proposed change in that view than people at their place of work whose attention may be focused on their work, not on their surroundings, and where the setting is not important to the quality of working life; and
- Value attached to the view experienced, e.g.:
  - in relation to heritage assets, or through planning designations; or
  - indicators of value attached to views, e.g. through appearing on tourist maps, or provision of facilities for their enjoyment (such as parking places, sign boards and interpretive material).

The magnitude of change to views and visual amenity depends on:

- Size or scale of change in the view with regard to the:
  - loss or addition of features in the view and changes in its composition;
  - degree of contrast or integration of any new features with the existing landscape in terms of form, scale and mass, line, height, colour and texture; and
  - nature of the view of the proposed development in terms of amount of time it will be experienced, and whether the views will be full, partial or glimpses.
- Geographical extent of the visual effect with different viewpoints including the:
  - angle of view in relation to the main activity of the receptor;
  - distance of the viewpoint from the proposed development; and
  - extent of area over which the changes would be visible.
- Duration and reversibility of visual effects, e.g.:
  - duration in terms of short term, medium term or long term; and
  - reversibility with regard to the prospects and practicality of a the proposed change being reversed in say a generation, e.g. housing can be considered permanent, but wind energy developments for example are often argued to be reversible since they have a limited life and could eventually be removed and the land reinstated, or mineral workings partially reversible in that the landscape can be restored to something similar to, but not the same as, the original (Landscape Institute and Institute of Environmental Management and Assessment, 2013).

An assessment is undertaken of the overall level of significance of the visual effects in relation to the baseline as above. Refer Table 4 below for Significance of Visual Impacts Matrix.

Table 4 Significance of Visual Impacts

VISUAL IMPACT ASSESSMENT			Magnitude of change in views caused by development			
			Dominant change (High)	**Considerable change (Medium)**	**Noticeable change (Low)**	**Barely perceptible change (Negligible) #**
			Major changes in view, typically at close distances and/or affecting a substantial part of the view, continuously visible for a long duration, or obstructing a substantial part or important elements of the view.	Clearly perceptible changes in views, typically at intermediate distances and/or resulting in either a distinct new element in a significant part of the view, or a wider ranging, less concentrated change across a wider area.	Minor changes in views typically at longer distances or visible for a short duration, and/or are expected to be visually absorbed into the existing view to a moderate extent.	Change which is barely visible, typically at a very long distance and/or is visible for a very short duration, and/or is expected to be visually absorbed into the existing view.
Sensitivity of viewpoints to proposal	**High**	Indicator Viewers with a proprietary interest in their view and prolonged viewing opportunities such as residents and users of attractive and/ or well-used recreational facilities. Views from a regionally important location such as a scenic lookout whose interest is specifically focussed on the landscape.	**Major***	**Moderate to major***	**Moderate**	**Minor to moderate**
	Medium	Residents with a proprietary interest in their view, and visitors with an interest in their environment e.g. visitors to State Forests or travelling along a designated scenic route.	**Moderate to major***	**Moderate**	**Minor to moderate**	**Minor to Negligible**
	Low	Residents more focussed on their immediate surrounds, e.g. an enclosed garden, with limited interest in a wider view. Motorists with a passing interest in their surroundings e.g., those travelling along principal roads, or commuting to and from work.	**Moderate**	**Minor to moderate**	**Minor**	**Minor to Negligible**
	Negligible	Viewers with limited interest in their surroundings e.g., those travelling through landscapes of low visual amenity such as an industrial area.	**Minor to moderate**	**Minor**	**Minor to Negligible**	**Negligible**

* Denotes the most significant impacts for consideration by decision makers.

Note: If *no* changes would be perceptible a significance of No Impact is recorded.

Source: AECOM 2017

3.2.3 Photomontages

A photomontage is a technique whereby an image of the proposed development is produced using an existing photograph, overlayed with the proposed design, to provide an indicative representation of a proposal. The process entails inserting a computer-generated model of the proposal into a photograph taken from a geographically referenced viewpoint, using existing elements of a known size, location and scale to locate the digital representation within the photograph.

For this Project, photomontages have been created from the baseline viewpoints, using the assumptions provided by RPV. A three-dimensional model of the Project was developed using Microstation and Sketch-Up software. Site photographs were merged with the three-dimensional model to allow a 'virtual camera' to be set up using camera co-ordinates. Camera matching was undertaken using a reference point common to the three-dimensional model and physical features in the photographs. The model was then rendered with the photograph and edits to the foreground elements were made as necessary.

Photomontages have been compiled from six locations to appreciate the potential visual impact of the presence of the Project from a number of representative viewpoints. The images focus on viewing the Project in its wider setting, at the view level of a pedestrian, or resident within their home. Photomontages include the following representation:

- Panorama of existing view;
- 3D diagrammatic model of proposed view;
- Photomontage of proposed view with 3D diagrammatic model of the Project.

Photomontages have been prepared based on the concept design and typical cross sections. The accuracy of these images is therefore approximate, but considered sufficient to broadly illustrate the Project for the purposes of this report.

3.2.3.1 3D Diagrammatic Model

Due to the extent of view shown and size of the Project within the view, block colour has been used to differentiate between design elements, to highlight potential element visibility for the 3D diagrammatic model of proposed view. Colours used indicate the following:

- Buildings - Light grey.
- Trains – mauve.

3.2.3.2 Photomontage

For the photomontages, more realistic colours have been chosen to represent how these elements may be viewed within the landscape as follows:

- Buildings - Light grey.
- Trains – realistic representation of rolling stock.

Photomontages have been prepared for the following View Points (VP):

- Stage 1 - VP1, VP3, VP5 and VP6; and
- Stage 2 – VP1, VP3, VP5 and VP6.

Photomontages were not produced for:

- VP2 due to the extensive level of screening between the view point and the Project, and
- VP4 due to the view seen from this visual receptor location being fully contained within the broader view seen (and assessed) from the neighbouring VP3 visual receptor.

It is noted that the images produced are indicative only to illustrate the development from a number of representative viewpoints. The views selected within this analysis were chosen based upon the ZTV analysis, identification of sensitive receptors and on-site observations and are likely to represent locations from which the proposed development will be most highly visible.

3.2.4 Mitigation Measures

Following on from the assessment of impacts on the landscape and visual resource, a set of mitigation measures have been developed aimed at avoiding and reducing adverse impacts of the Project on identified sensitive receptors and viewpoints. Mitigation measures may include a range of techniques including, but not limited to, appropriate lighting design, staging or construction method, materials and colour selection, and buffer planting. The implementation of mitigation measures would be expected to reduce the impact ratings determined within this report.

3.3 Assumptions and Limitations

This methodology includes the following assumptions and limitations:

- At the time of writing this report, the Project layout was assumed based on the Concept Design, typical cross sections and the Project Description provided by RPV.
- The Project is proposed to be stepped down in height to better align with the existing topography of the site.
- Where a possible sensitive receptor has been identified but site access was not possible, the baseline, visual assessment and photomontage has been undertaken from the adjacent road.
- The site visit was undertaken in day time conditions. A separate lighting assessment has been undertaken by AECOM (AECOM, June 2019) that describes likely night time visual impacts. The assessment covers the issue of obtrusive lighting and sky glow, and includes control strategies and recommendations which have been summarised and expanded upon in this report.
- For assessment purposes, it is assumed that:
  - no mitigation is in place, other than for grassing of the facility's batter and perimeter areas;
  - views from sensitive receptors would be maintained where possible; and
  - trains would primarily be stabled to the centre of the Project Land, and the eastern (Stage 1 and 2) and western (Stage 2 only) ends of the Project Land would primarily be subject to the movement of trains into and out from the facility.
- A substation is proposed for Stage 2 of the Project (assumed to have a footprint of about 10m x 10m), but the location of this element has not been specified, and has therefore not been assessed within this report.

4.0 Policy Context

This section summarises the key planning policies and guidance relating to landscape and visual impact amenity within the LVIA Study Area at the State and local level.

4.1 State Government

4.1.1 Planning and Environment Act 1987

The most relevant objectives regarding this Project and LVIA are:

'4.1 (c) to secure a pleasant, efficient and safe working, living and recreational environment for all Victorians and visitors to Victoria'

'4.2 (c) to enable land use and development planning and policy to be easily integrated with environmental, social, economic, conservation and resource management policies at state, regional and municipal levels'

'4.3 (d) to ensure that the effects on the environment are considered and provide for explicit consideration of social and economic effects when decisions are made about the use and development of land'

'4.2 (e) to facilitate development which achieves the objectives of planning in Victoria and planning objectives set up in planning schemes'

4.1.2 Transport Integration Act 2010

The *Transport Integration Act 2010* (the Act) provides the policy framework for an integrated and sustainable transport system, developed after a comprehensive program of consultation with transport stakeholders. The Act brings together all elements of the transport portfolio – including roads, rail, ports and marine – under one statute. The Act requires transport agencies and other areas of government to have regard to broader social, economic and environmental considerations – a clear triple bottom line framework – when making decisions about the transport system.

Section 10 of the Act requires that '*the transport system should actively contribute to environmental sustainability* by: *(a) protecting, conserving and improving the natural environment;* and *(b) avoiding, minimising and offsetting harm to the local and global environment, including through transport-related emissions and pollutants and the loss of biodiversity.'*

Section 11.4, Integration of Transport and Land Use, states that '*…the transport system should improve the amenity of communities and minimise impacts of the transport system on adjacent land uses'.*

4.1.3 Planning Policy Framework

The Planning Policy Framework (PPF) is a dynamic document that informs planning and responsible authorities about the planning policies that need to be taken into account when planning in their respective areas. Of particular relevance to this Project and the LVIA are the following clauses:

- Environmental and Landscape Values (Clause 12);
- Built Environment and Heritage (Clause 15); and
- Transport (Clause 18).

A summary of those aspects of the PPF with direct reference to landscape and visual issues are discussed within Table 5.

Table 5 PPF clauses relevant to the landscape and visual values of the Project.

Clause	Relevance to Landscape and Visual Values of the Project
12.05-1S	Seeks to protect and conserve environmentally sensitive areas
12.05-2S	Aims to protect and enhance significant landscapes and open spaces that contribute to character, identity and sustainable environments
15.01-1S	Focuses upon the provision of environments that are safe and functional and which reinforce a sense of place and cultural identity
18.01-2S	Strives to locate transportation routes such that they minimise impacts upon the environment

4.1.4 Victorian Coastal Strategy (Victorian Coastal Council, 2014)

Reviewed every five years, the Victorian Coastal Strategy (the 'Strategy') is a requirement of the *Coastal Management Act 1995*. The Strategy sets a long-term vision and framework for the planning and management of the Victorian coast. The five key issues identified in the strategy include managing population growth, adapting to climate change, managing coastal land and infrastructure, valuing the natural environment, and integrating marine planning.

4.1.5 Coastal Spaces Landscape Assessment Study (2006)

The following is a summary of content relevant to this LVIA:

- Part of the LVIA Study Area located within the Surf Coast Shire Council is classified as Landscape Character Type 1, Precinct 1.2: Undulating Mixed Farming. This is described as follows:
  - *'Precinct 1.2 is an area of undulating, cleared pastoral land that meets the sea at Torquay. The hinterland has become increasingly occupied by smaller allotments such as hobby farms, horse paddocks, vineyards and tourist accommodation. It is crisscrossed by*

shelterbelts, with older conifers planted in strong lineal arrangements, and more recent plantings in less formalised arrangements of native trees. The landscape is dotted with simple rural buildings such as small farmhouses and sheds, many of which are located near the roadside. The topography becomes hillier approaching the coastline at Jan Juc, with undulations in the landform further emphasised when roads drape across them. Here, the quality of vegetation increases and becomes more coastal in character. However, this character has been eroded in places by hilltop residential estates that are dominated by large dwellings with very little vegetation. The precinct ends in a line of limestone sea cliffs and sandy surf beaches.'

- The Study includes general best practice guidance for the protection and management of visual qualities of Victoria's coastal landscape in relation to following relevant areas: vegetation, between settlements – hinterland locations, and infrastructure. (Refer to Section 4.1.6 for more specific guidance at the municipal and precinct scale).

4.1.6 The Great Ocean Road Region Landscape Assessment Study

Municipal Toolkit Surf Coast Shire, and Precinct Package, Precinct 1.2 Undulating Mixed Farming (Planisphere, for the Department of Sustainability and Environment, 2003)

The following is a summary of content relevant to this LVIA:

- Key relevant characteristics of Precinct 1.2 include sense of enclosure in the hinterland, shelterbelt planting, discreet placement of simple structures among vales and trees, and a rural outlook from road corridors inland;
- In response to the Precinct area objective to retain a rural outlook from inland road corridors within the precinct, the design response direction suggested in the study is for the retention of existing shelterbelts wherever possible, and the replacement of lost shelterbelt trees with the same species or alternative species, suitable to the local area;
- In response to the Precinct area objective to emphasise the sense of enclosure in the hinterland landscape and encourage the discreet placement of simple structures within the hinterland landscape, the design response direction suggested is for development to remain below the dominant tree canopy height, and to utilise low scale building forms, tucked into the landscape; and
- In response to the Precinct area objective to minimise the visual impact of infrastructure and signage development, the design response direction suggested is to avoid loss of vegetation, avoid brightly coloured signage and infrastructure, and to avoid landscape 'scarring' through loss of vegetation in visually prominent areas.

4.2 Local Government

Figure 4 and Figure 5 show Planning Zones and Planning Overlays in the Study Area vicinity.

The LVIA Study Area falls within the two Local Government Areas (LGA's) of the City of Greater Geelong and Surf Coast Shire Council. The Study Area itself however is entirely within the City of Greater Geelong. Due to the proximity of the Project to the LGA boundary, policies from both aforementioned LGA's will be assessed.

4.2.1 City of Greater Geelong

4.2.1.1 Municipal Strategic Statement (MSS)

There is no content within the City of Greater Geelong MSS of relevance to the LVIA.

4.2.1.2 Local Planning Policies

Table 6 City of Greater Geelong local planning policies relevant to LVIA

Clause	Relevance to Landscape and Visual Values of the Project
21.07-5	An objective for Rural Areas is to '*ensure that rural areas provide an attractive setting through the preservation of the rural landscape character*'.
22.05	Strives for the preservation of rural landscape settings and farming character and recognises its association with economic prosperity of the area through tourism and liveability.

4.2.1.3 Managing Development in Rural Areas (City of Greater Geelong, 2015)

The following is a summary of content relevant to this LVIA:

- A tourism study commissioned by City of Greater Geelong found that views (particularly ocean views), rural setting and character, and linkages with a rural industry or natural system (e.g. winery) were local drivers for rural tourism development;
- General siting and design principles outlined for non-rural uses in rural zones. Relevant guidelines include the following:
  - *'Appropriate landscaping should be used to reduce the visual impact of the buildings on the landscape'*
  - *'Buildings should not be sited on visually exposed ridgeline, unless the visual impact is minimised by using designs and colours that merge with, or compliment, the landscape'*
  - *'Buildings should be designed to respond to the topography of the land'*
  - *'Buildings, including sheds, should be constructed out of materials capable of blending in with the natural surrounding environment whether this be in natural form or via a tailored paint scheme'*
  - *'External finishes on buildings should: Respond to, compliment and/or reflect the colours and textures evident in the natural environment; Have a low reflectivity to minimise glare and visual impact'*

4.2.1.4 Rural Land Use Strategy (City of Greater Geelong, 2007)

The following is a summary of content relevant to this LVIA:

- Rural areas are recognised for their valuable role in providing an attractive open landscape as well as 'relief' from the congestion of urban areas;
- Rural landscapes are valued for their contribution to the liveability, well-being and identity for City of Greater Geelong residents;
- Recognises 'long sweeping views of agricultural land use against a backdrop of coastal areas' as a key element in the City of Greater Geelong's tourist product; and
- The community consider the rural landscape as a key part of the City's economy and character.

4.2.2 Surf Coast Shire Council

4.2.2.1 Municipal Strategic Statement (MSS)

Table 7 Surf Coast Shire Council Municipal Strategic Statement policies relevant to LVIA

Clause	Relevance to Landscape and Visual Values of the Project
21.01	Identifies that the rural landscapes of the Shire are valued by the community as providing a quality landscape and environmental setting, recognised for their contribution to the amenity and liveability of the Shire and tourism and recreation value.

Clause	Relevance to Landscape and Visual Values of the Project
21.01-4	Relevant key strategic directions of the Surf Coast Shire are: • *'To protect the rural landscape from urban intrusion and to provide clear distinction between townships'* • *'To protect and enhance the rural areas of the Shire for their diverse agricultural, environmental and landscape values and opportunities'* • *'To recognise that the rural landscape vistas are highly valued for their contribution to the amenity and liveability of rural areas'*

4.2.2.2 Local Planning Policy

Table 8 Surf Coast Shire Council local planning policies relevant to LVIA

Clause	Relevance to Landscape and Visual Values of the Project
21.06	The Rural Landscape clause categorises the Shire into five landscape precincts based primarily on landscape features, but also taking into account land use patterns and environmental values. The land immediately to the south and west of the LGA boundary bordering the Project Land is landscape precinct category 3: Mixed Farming. This precinct is described as: *'…a band of predominantly undulating, cleared pastoral land bisected by the Barwon River in the west and Thompsons Creek in the east, ending in low, environmentally significant, open swamp behind coastal dunes at Breamlea. The eastern saltmarsh area has a strong sense of isolation and openness, In the west the allotment and tenement sizes are conducive to agriculture, particularly broad acre farming. In the east the potential exists for sustaining an irrigated agricultural industry should recycled water become available.* *The settlement pattern is scattered and varies in density. The precinct includes the rural settlement of Freshwater Creek and the rural residential hamlets of Lower Duneed and Connewarre in the east. The township of Moriac is centrally located in the precinct and land to the west is sparsely settled'* Relevant objectives of the policy include the following: • '*To protect and enhance the landscape values of the rural precincts'* • *'To protect and maintain open and uncluttered rural landscapes, including vistas from main road corridors'* • *'To protect the rural landscape from urban intrusion and to provide clear distinction between townships'* • *'To recognise the importance of maintaining visual landscape qualities of the Great Ocean Road environs both for residents and visitors to the coast'* Relevant strategies to achieve these objectives include: • '*Encourage the siting and design of new buildings to complement existing farm structure, avoid locating on hilltops and ridges and to nestle into the landscape where possible'* • *'Promote indigenous revegetation around buildings and structures, wetlands and along waterways to assist blending new development with the surrounding landscape'* Relevant implementation strategies include the following: • *'Building should be of modest scale and nestle into the landscape'* • *'Buildings should be subservient to the landscape so as not to detract from its visual qualities'*

4.2.2.3 Rural Strategy (Surf Coast Shire Council, 2007)

The Surf Coast Rural Strategy sets out a long-term strategy vision for the Shire's rural areas. The following is a summary of content relevant to this LVIA:

- Strives to protect and maintain the existing rural character of the Shire by providing clear definitions and distinctions between rural and urban areas;
- The section of the Study Area within the Surf Coast Shire Council is identified as being with Rural Precinct 3: Mixed Farming. Key characteristics of the precinct include: '*an open undulating terrain with a rural outlook from road corridors; long distance views to a low horizon in the west and east, contrasting with a sense of enclosure in the centre aided by undulating topography, remnant vegetation and shelterbelt planting; large paddocks, occasionally delineated by shelterbelts; indigenous vegetation emphasising some landscape features (Barwon River, road reserves); the character of simple farming structure and their discreet placement among the vales and trees.'*
- Relevant strategies for Rural Precinct 3 include:
  - Encourage the design and siting of buildings to complement existing farm structures and to avoid distracting from the landscape values of the area.

4.2.3 Relevant Zones and Overlays

Table 9 Surf Coast Shire and City of Greater Geelong Zones and Overlays relevant to LVIA

Zone/ Overlay	Requirement relevant to Landscape and Visual Values of the Project
Farming Zone (FZ)	Seeks to provide for the use of land for agriculture. Relevant decision guidelines focus on environmental issues and focus more upon the preservation of flora and fauna (subject of a separate assessment). Nevertheless, this does call for retention of vegetation along waterways, gullies, ridgelines and property boundaries. It also calls for development to be sympathetic to areas of natural scenic beauty or importance.
Rural Living Zone (RLZ)	Aims to provide for residential use in a rural environment. Landscape values of the area must be protected and enhanced. This includes consideration of design and siting such that it preserves vistas and character.
Vegetation Protection Overlay – Schedule 1 (VPO1)	Schedule 1 related to 'Significant Roadsides and Linear Reserves', in this case with reference to the roadside vegetation along Pettavel Road. VPO1 seeks to protect and maintain significant indigenous vegetation and associated habitat corridors and minimise its loss through development.
Significant Landscape Overlay – Schedule 3 (SLO3)	This Schedule aims to protect scenic landscape views within the Waurn Ponds Valley when viewed from the Princes Highway at the westerly entrance into Geelong.

4.3 Key Considerations

Key considerations have been identified in response to the above, as follows:

Category	Consideration	Legislation / Planning Policy
Landscape Setting / Character	Preservation of rural landscape settings and farming character, recognising its association with economic prosperity of the area through tourism and liveability. Retain and protect attractive rural landscape settings / rural landscape character based on farming and environmental features.	*City of Greater Geelong Planning Scheme (Clause 22.05)* *Planning Policy Framework (12.05-1S and 12.05-2S)*
Views	Recognition that the rural landscape vistas are highly valued for their contribution to the amenity and liveability of rural areas.	*Surf Coast Shire Planning Scheme (Clause 21.01)*
Siting and Design of Buildings	Encourage the design and siting of buildings to complement existing farm structures and to avoid distracting from the landscape values of the area. Buildings should be subservient to the landscape so as not to detract from its visual qualities. Keep development below the dominant tree canopy height, and utilise low scale building forms, tucked into the landscape	*Surf Coast Shire Rural Strategy (2007)* *Surf Coast Shire Planning Scheme (Clause 21.06)* *Managing Development in Rural Areas (2015)* *The Great Ocean Road Region Landscape Assessment Study: Municipal Toolkit – Surf Coast Shire, and Precinct Package, Precinct 1.2 Undulating Mixed Farming (2003)*
Vegetation (existing)	Encourage retention of existing shelterbelt vegetation along property boundaries. Avoid loss of vegetation, particularly indigenous vegetation with habitat value. Avoid landscape ‘scarring’ through loss of vegetation in visually prominent areas.	*Farming Zone (FZ)* *The Great Ocean Road Region Landscape Assessment Study: Municipal Toolkit – Surf Coast Shire, and Precinct Package, Precinct 1.2 Undulating Mixed Farming (2003)* *Vegetation Protection Overlay – Schedule 1 (VP01)*
Vegetation (new)	Promote indigenous revegetation around buildings and structures to assist blending new development into the surrounding landscape Replace lost shelterbelt trees with the same species or alternative species, suitable to the local area	*Surf Coast Shire Planning Scheme (Clause 21.06)* *The Great Ocean Road Region Landscape Assessment Study: Municipal Toolkit – Surf Coast Shire, and Precinct Package, Precinct 1.2 Undulating Mixed Farming (2003)*

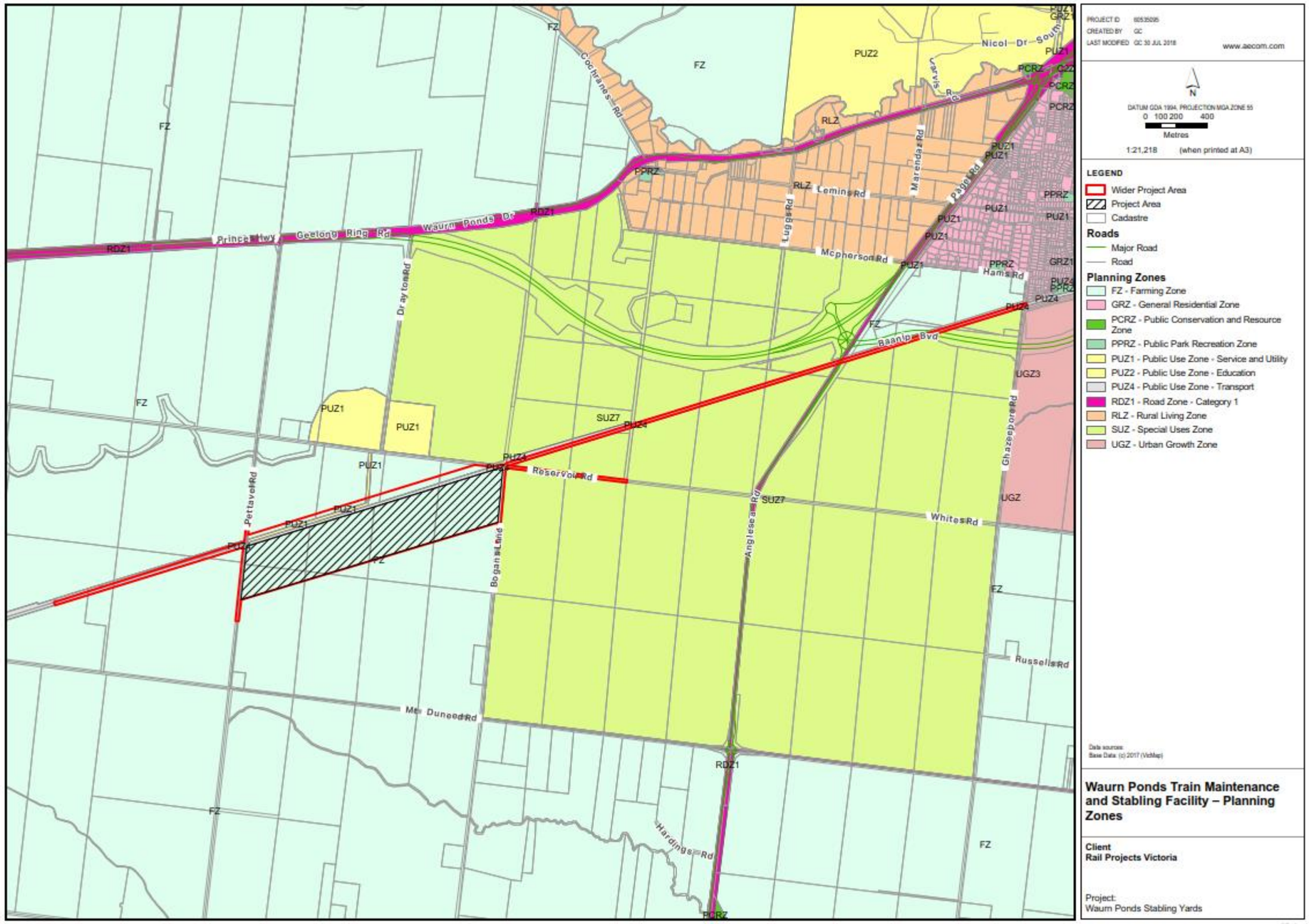
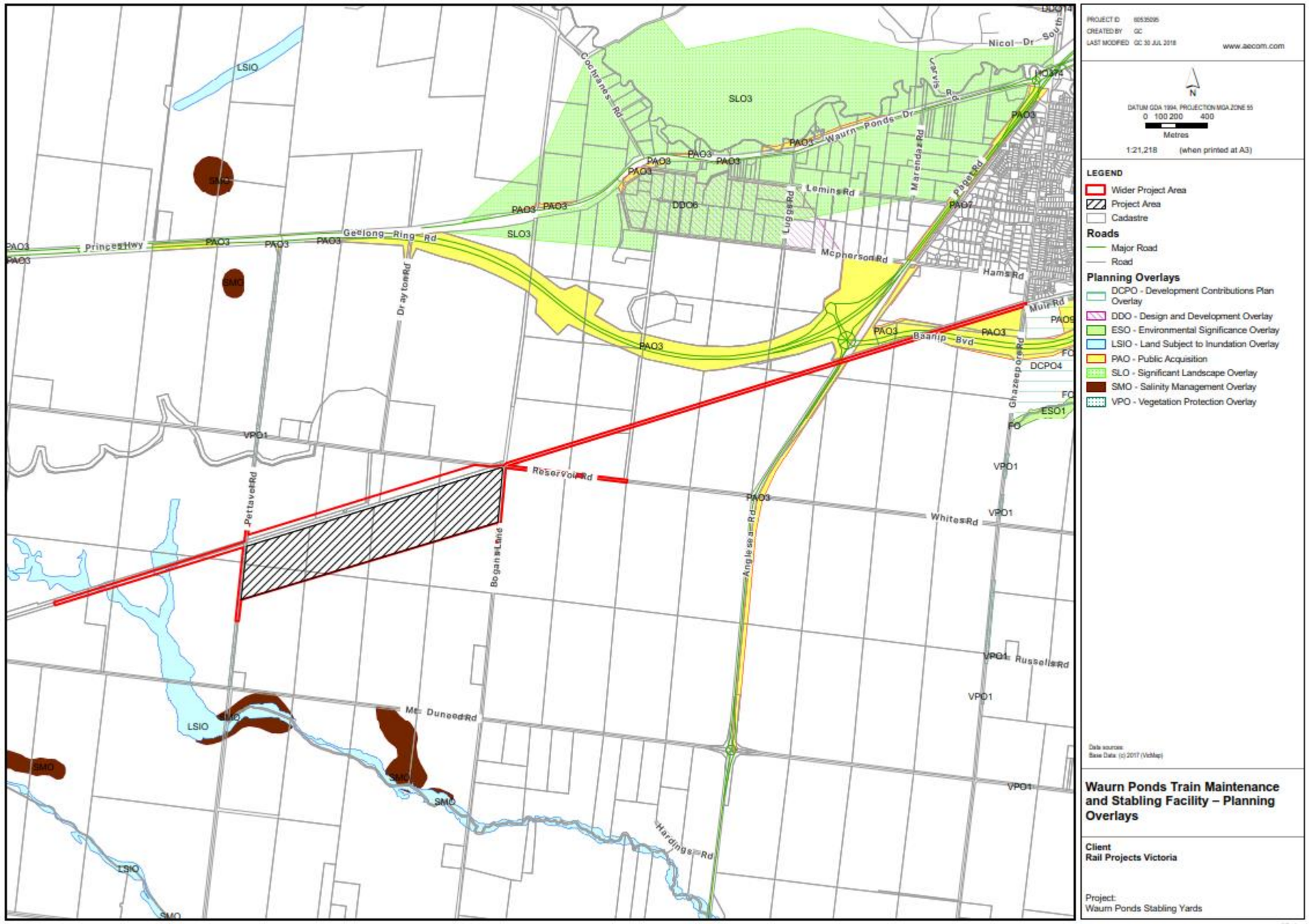


Figure 4 Planning Zones Plan



PROJECT ID 60535095
CREATED BY GC
LAST MODIFIED GC 30 JUL 2018
www.aecom.com

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DATUM GDA 1994, PROJECTION MGA ZONE 55
0 100 200 400
Metres
1:21,218 (when printed at A3)

LEGEND

- Wider Project Area
- Project Area
- Cadastre

Roads

- Major Road
- Road

Planning Overlays

- DCPO - Development Contributions Plan Overlay
- DDO - Design and Development Overlay
- ESO - Environmental Significance Overlay
- LSIO - Land Subject to Inundation Overlay
- PAO - Public Acquisition
- SLO - Significant Landscape Overlay
- SMO - Salinity Management Overlay
- VPO - Vegetation Protection Overlay

Data sources:
Base Data: (c) 2017 (VicMap)

Waurn Ponds Train Maintenance and Stabling Facility – Planning Overlays

Client
Rail Projects Victoria

Project:
Waurn Ponds Stabling Yards

Figure 5 Planning Overlays Plan

5.0 Existing Conditions

To understand the level of visual modification which may result from the Project, it is important to understand the existing visual and landscape character of the Study Area. This establishes a baseline against which an assessment can be made regarding the degree to which the Project would alter the existing landscape and/or visual character.

As previously mentioned, the assessment will be based on a Study Area of approximately 3 kilometres from the Project. Refer Figure 9.

5.1 Land Use

The Waurn Ponds township is located on the Princes Highway on the western edge of Geelong. It is home to the Waurn Ponds Shopping Centre, a regional retail facility, as well as Deakin University's Geelong Waurn Ponds campus to the north of the Princes Highway.

West of the Waurn Ponds township, farming is currently the predominant land use. This is typically cropping and sheep grazing in nature.

Mt Duneed Estate is a winery located to the north of the Project Land off Pettavel Road. Facilities include a café / bar, private dining room, wedding and conference facilities. Outdoor entertainment events are also hosted at this venue, including music festivals. Grapes have been grown in the region since 1848.

A large quarry and cement works, zoned as Special Use Zone (Schedule 7), is located close to the Project Land, north of Reservoir Road. Built infrastructure associated with the quarry and cement works is condensed and located to the north-east of the Project Land, with entry off Reservoir Road just east of the existing rail crossing. The remainder of the quarry and cement works consists of a series of open pits and ponds. Associated with the quarry and cement works are a number of tall vertical elements including sheds and cement mill facilities. Limestone quarrying began in the area in the 1840's.

Immediately south of the existing quarry, additional land zoned Special Use Zone (Schedule 7) is currently used for farming purposes (refer Figure 4).

A rural residential area zoned 'Rural Living Zone' is located to the south side of the Princes Highway extending west from Waurn Ponds township to the quarry and cement works site. This residential area contains allotments larger than two hectares, with residences set back from the road. The land use in this area is predominantly residential, with a number of wineries and vineyards, as well as the local Waurn Ponds Hall.

The area located just north of the Project Land and zoned for public use is the Pettavel Basin, which is a Barwon Water asset associated with Geelong's potable water supply infrastructure.

The Princes Highway / Geelong Ring Road runs east to west connecting Geelong to Warrnambool via the inland towns of Colac and Camperdown. This is zoned as 'Road Zone Category 1'. Inward facing rest areas are located in the section traversing the quarry and cement works.

Anglesea Road is a popular tourist road connecting the Geelong Ring Road to Anglesea and beyond via the Great Ocean Road. Cape Otway Road also forms part of an inland route to the Great Ocean Road, connecting to Lorne and Skenes Creek. All other roads in the area are predominantly local, including a number of unsealed roads such as Bogans Lane and Pettavel Road (south of Reservoir Road).

The existing rail corridor is zoned as Public Use (Transport). Existing facilities include a single at-grade rail line extending west from Waurn Ponds and terminating in Warrnambool, forming the V/Line Warrnambool Line. The Geelong Line, also part of the V/Line regional service, terminates at Waurn Ponds station.

Other relevant uses or proposed land uses just outside of the Study Area include the following:

- The Urban Growth Zone proposed to the land south of Waurn Ponds station;

- Freshwater Creek township and Recreation Reserve; and
- Mount Moriac Recreation Reserve.

5.2 Landform, Geology and Hydrology

The Project Land lies within a small undulating valley associated with Thompson Creek and its tributaries as shown in Figure 6. Elevation typically falls away gradually to the south-east from a ridgeline north of the Project Land with a high point at the Devon Road / Princes Highway intersection of over 160m AHD as shown in Figure 7. The Princes Highway runs along this ridgeline descending towards Geelong.

The underlying geology of the Project Land is Newer Volcanic Group Basalt flows, with Red Bluff sandstone to the west and Batesford Limestone to the north-east towards Geelong (Figure 6).

The existing rail corridor runs midway through the valley, traversing the Site at an elevation of approximately 100 AHD. The rail corridor traverses Moriac in the west at a similar elevation, and Waurn Ponds station to the east at approximately 60 AHD (Figure 7).

A series of dams and drainage channels are dotted across the agricultural landscape, including a concrete lined open drain to the north-west of the Project Land just south of Reservoir Road.

The land forms associated with the quarry and cement works include large scale pits and other scarification, with a number of contained water bodies.

Pettavel Basin, located on Reservoir Road, also includes a small water body.

5.3 Vegetation

Rural agricultural farmland is the predominant landscape surrounding the Project Land. This typically consists of flat to slightly undulating grassland / pasture (currently managed by sheep grazing immediately adjacent to the site) defined by established tree stands along roadways, some fence lines, drainage corridors along property access ways and surrounding residential dwellings.

On visual inspection, trees adjacent to roadways, along fence lines and drainage lines include predominantly native species such as Eucalypts, Casuarinas and Melaleuca, planted as a single species or a combination planted in wider rows. Often these tree rows are dense and visually impenetrable, however discontinuous, allowing for frequent and varying open views across the rural landscape.

Additional to the above, there are three north-south running shelterbelt plantings within and immediately south of the Project Land. These comprise dense ‘walls’ of conifers. These cultural plantings comprise highly characteristic, structuring elements across the region, as recognised within Council policies. Refer s.4.1.5, s.4.1.6 and s.4.2.2.3.

Roadside vegetation along the eastern side of Pettavel Road, consisting of predominantly Sheoaks and River Red Gums, has a Vegetation Protection Overlay – Schedule 1 in the Greater Geelong Planning Scheme, and is therefore deemed a Significant Roadside and Linear Reserve for the protection of remnant species and habitat value.

Densely planted linear tree rows in rural landscapes usually function as wind protection for crops and livestock, as well as a provider of shade and erosion protection for waterways. Linear native vegetation corridors in rural landscapes also provide landscape scale biodiversity and habitat connectivity.

Dense buffer planting is present adjacent to the Princes Highway, associated with the adjacent quarry and cement works. Cultural plantings are also present within the Study Area such as an olive grove on the southern side of Mt Duneed Winery, and various wineries as mentioned in Section 5.1. Linear plantings of exotic species are also commonly located close to residential properties and include species such as Pines and Cypress.

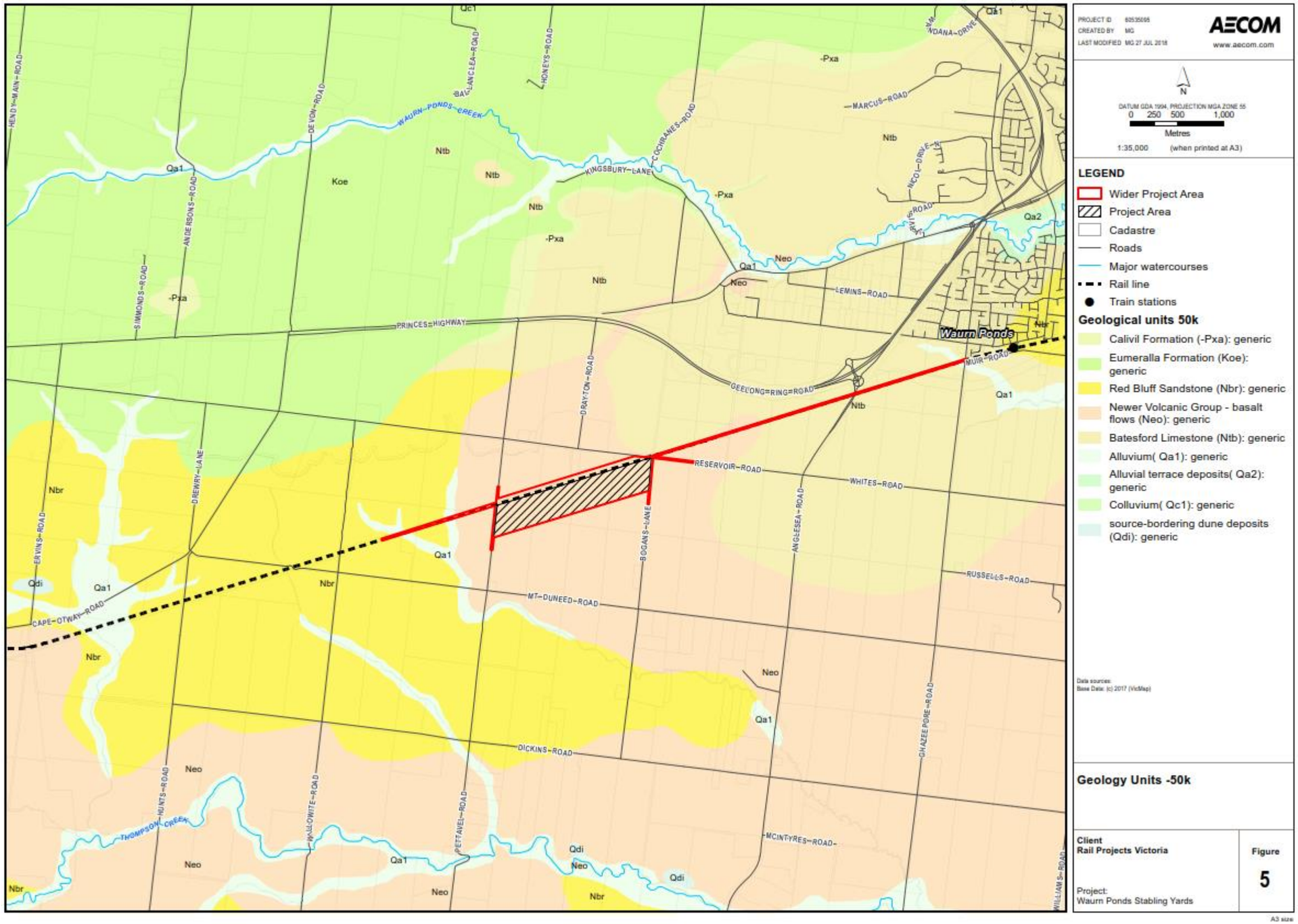


Figure 6 Geology Plan

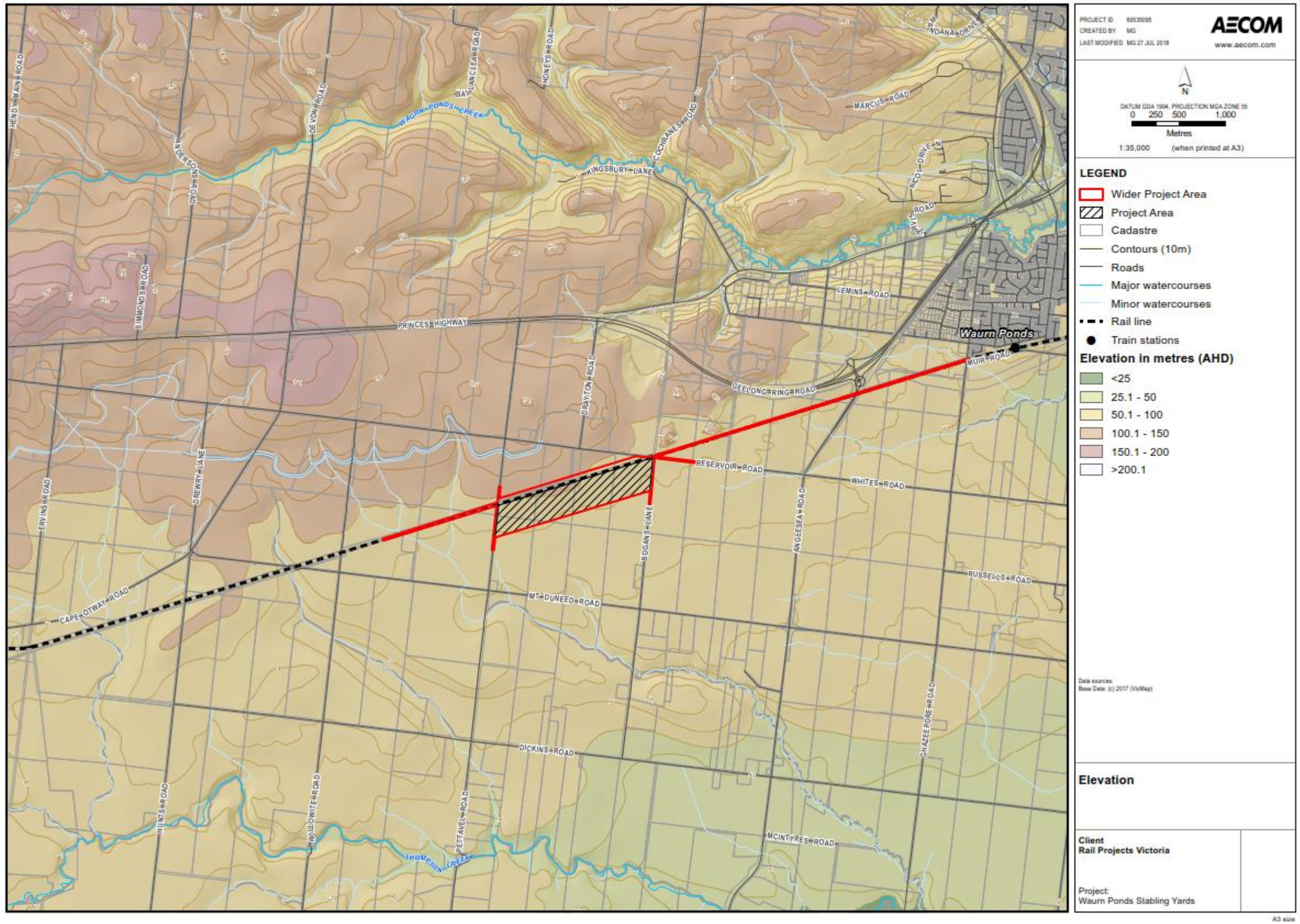


Figure 7 Elevation Plan

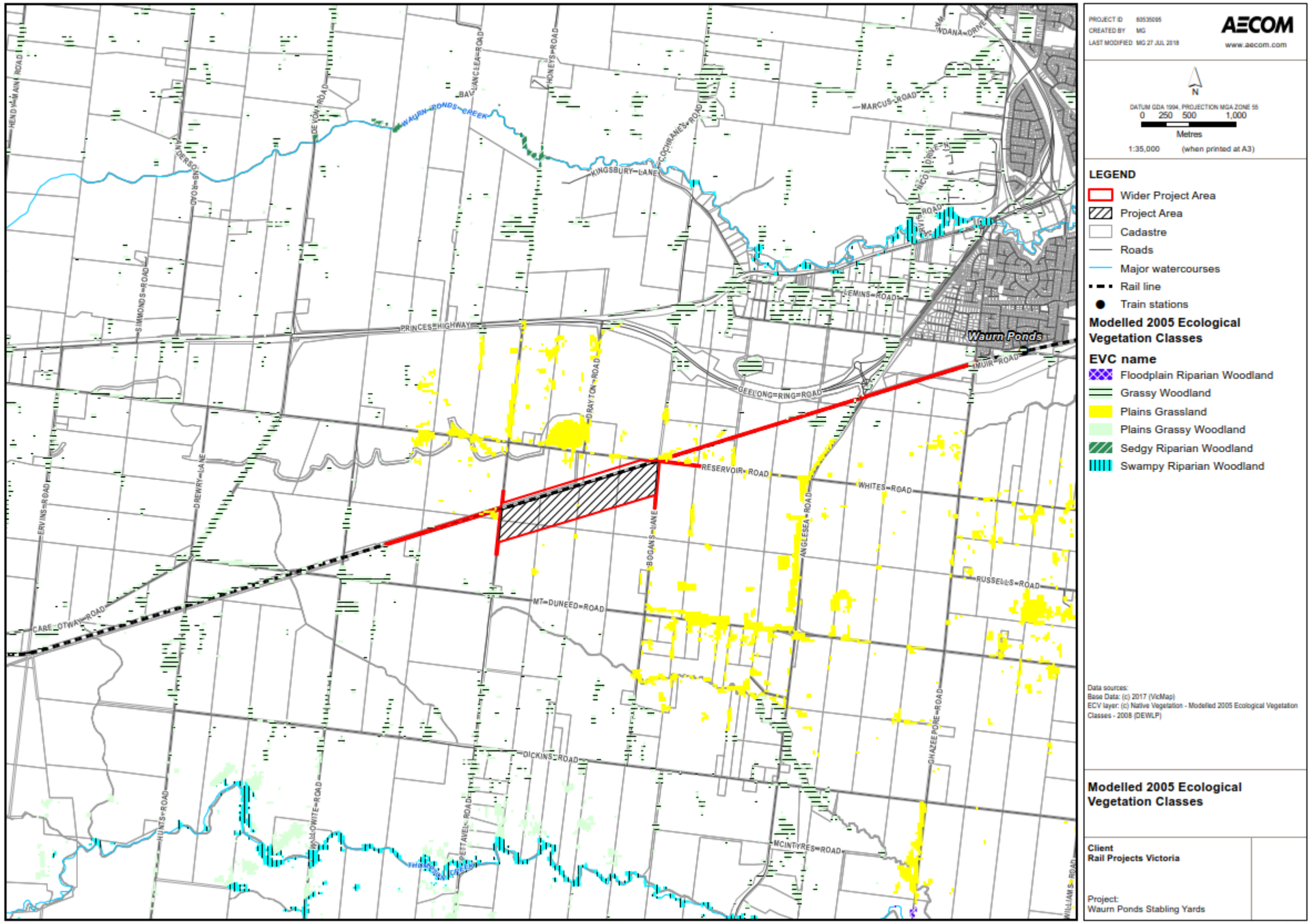


Figure 8 Ecological Vegetation Classes (2005) Plan

The aerial imagery reflects a more homogenous, open landscape in the area south of Reservoir Road and north of Mt Duneed Road, with a similar agricultural treatment and less tree planting to fence lines in comparison to the landscape beyond, which reflects a finer grain (more tree planting along lot boundary lines), and a more diverse, patchwork landscape.

Ecological Vegetation Class (EVC) modelling from 2005 reveals small patches of remnant Plains Grassland within farmland and along property edges in the surrounding landscape to the north-west and south-east of the Project Land, with Grassy Woodland further towards Geelong, and towards Thompson Creek to the south (refer Figure 8).

A 2019 ecological assessment undertaken by AECOM for the Project identified small remnant patches of the EVC's Plains Grassland, Grassy Woodland, and Plains Sedgy Wetland within the Project Land, as well as areas of Scattered Trees. Native vegetation was predominantly located within the rail corridor and along the western edge of the Project Land, with the reminder of the Project Land consisting predominantly of introduced and planted vegetation.

6.0 Landscape Character Types

Based upon the assessment of the natural and cultural influences that shape the landscape and visual context of the Study Area, the following Landscape Character Types (LCTs) have been identified.

Each character type identified represents a relatively homogenous character based on the consideration of the following attributes:

- Landscape value (e.g. landscapes designated for their scenic or landscape importance or valued recreational function);
- Landscape elements that contribute to defining character e.g. residential, river/creek corridors, rural and landform, etc.; and
- Landscape character attributes (including scale, grain and perceptual characteristics such as the sense of remoteness, tranquillity and/or its perceived rural character.

The LCT's are outlined below and defined in Figure 9 as:

- LCT 1: Flat Rural
- LCT 2: Undulating Rural
- LCT 3: Quarry
- LCT 4: Rural Residential

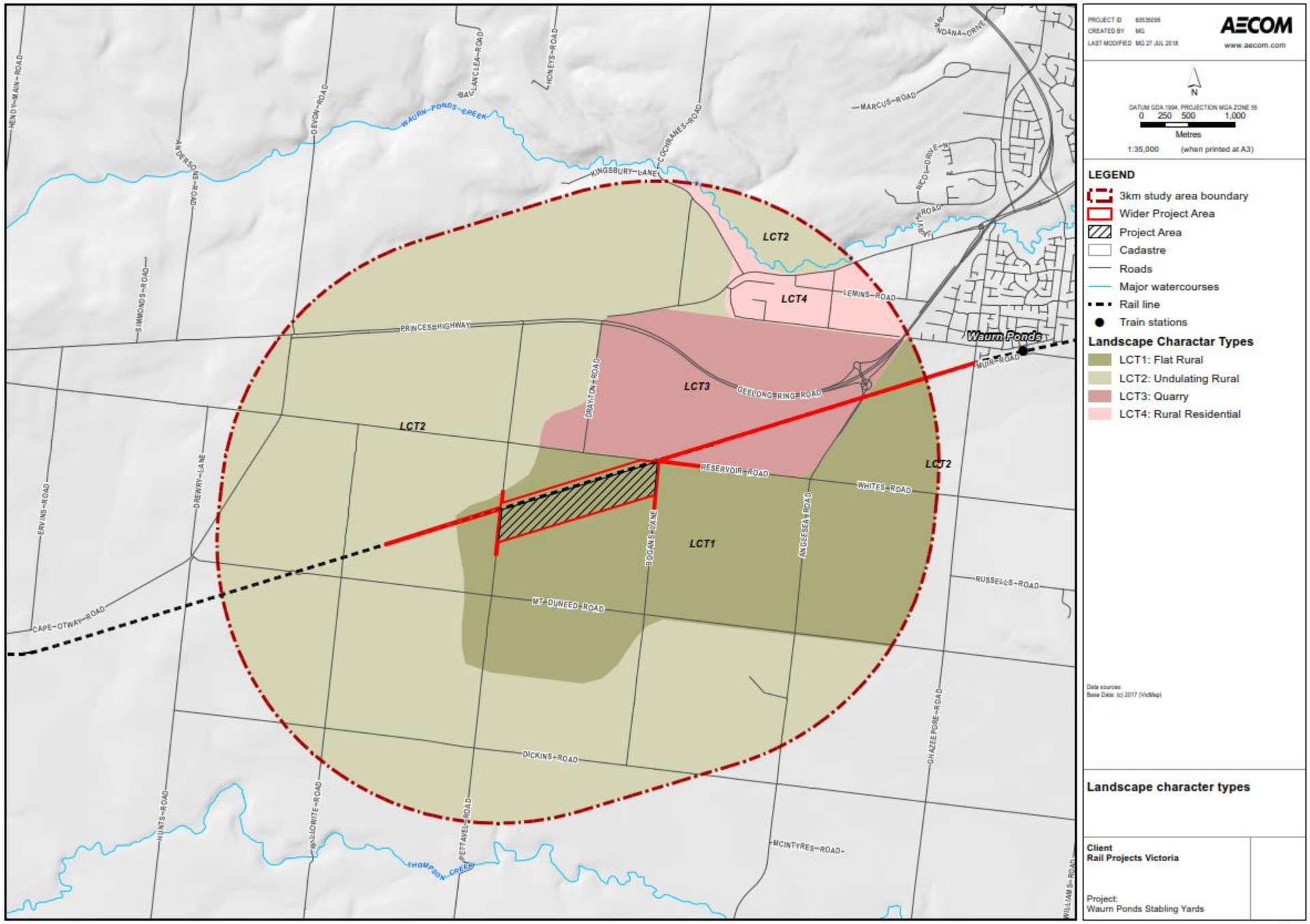


Figure 9 Landscape Character Types Plan

6.1 Landscape Character Types

6.1.1 Landscape Character Type 1: Flat Rural

6.1.1.1 Location

LCT1 is associated with the relatively flat rural farming land generally located to the south side of the rail corridor. Figure 10 illustrates the typical character of LCT1.

6.1.1.2 Key Characteristics

- Relatively flat topography (broadly 1-2% slopes);
- Large cleared paddocks, homogenous in agricultural treatment;
- Few tree rows within fields (e.g. along fence lines) between roadways. Where tree rows do exist between roadways, they are aligned with the road grid, and discontinuous;
- Very few buildings;
- Few private vehicular access roads;
- Unsealed roads on a square grid alignment, typically lined with rows of native trees, and without street lighting; and
- Long flat views across the landscape.

6.1.1.3 Sensitivity

The rural character associated with LCT1 is identified within the Greater Geelong and Surf Coast Shire Planning Schemes as being valued for its provision of an attractive rural landscape setting, and its subsequent links with tourism, liveability, and economic prosperity of the area. Of particular value are rural landscape views from roadways, and the role of the rural landscape in maintaining a clear distinction between urban areas. The policies therefore seek to protect farming and environmental features characteristic of the rural area, such as shelterbelt planting along roadsides and property boundaries, and ensure built form blends into the surrounding landscape.

Figure 10 Typical character of LCT1

6.1.2 Landscape Character Type 2: Undulating Rural

6.1.2.1 Location

LCT2 is associated with slightly undulating topography predominantly to the north of the rail corridor. Figure 11 illustrates the typical character of LCT2.

6.1.2.2 Key Characteristics

- Slightly undulating topography;
- More diverse and generally finer grain farming uses / treatments in comparison to LCT1;
- More tree rows between roadways. Often these tree rows are not aligned to the road grid, rather following drainage and contour lines;
- More buildings and private roadways in comparison to LCT1;
- Moderately elevated views looking south into the shallow valley for the area to the north of the rail corridor;
- Sealed and unsealed roads, predominantly without street lighting; and
- Land uses are predominantly residential / farming, with the exception of the Mt Duneed Winery Estate.

6.1.2.3 Sensitivity

LCT2 is slightly more diverse, finer grain and subtly undulating in comparison to LCT1. Similar to LCT1, the rural character is identified within the Greater Geelong and Surf Coast Shire Planning Schemes as being valued for its provision of an attractive rural landscape setting, and its subsequent links with tourism, liveability, and economic prosperity of the area. Of particular value are rural landscape vistas, views from roadways, and rural landscapes role in maintaining a clear distinction between urban areas. The policies therefore seek to protect farming and environmental features characteristic of the rural area, such as shelterbelt planting along roadsides and property boundaries, and ensure built form blends into the surrounding landscape.

The presence of the winery on Pettavel Road is characteristic of the areas historical association with winemaking, as well as present day local tourism activity.

Figure 11 Typical character of LCT2

6.1.3 Landscape Character Type 3: Quarry

6.1.3.1 Location

LCT3 is associated with the scarified exposed topography and vertical infrastructure of the Boral Quarry site, and also includes the adjacent Pettavel Basin site. Figure 12 illustrates the typical character of LCT3.

6.1.3.2 Key Characteristics

- Highly modified exposed landscape consisting of a series of large scale pits, with the site continuing to be used for processing of clinker, concrete production and rehabilitation activities, and with operations undertaken 24 hours a day, seven days a week;
- A cluster of buildings associated with the quarry and cement works, including mill infrastructure and sheds of considerable height (estimated height range of 15-35+ metres);
- Landform bunding in some locations surrounding pits, as well as continuous linear buffer vegetation to most edges along roadways and the rail corridor, provides a visual barrier to the quarry pits from nearby roads, including the Geelong Ring Road;
- Princes Highway / Geelong Ring Road traverses through this LCT, including two rest areas;
- Two clumps of dense tree vegetation on either side of the Princes Highway; and
- Warrnambool rail corridor traverses through this LCT.

6.1.3.3 Sensitivity

Buffer vegetation and bunding appear to protect much of the topographic features of LCT3 from view from surrounding public areas. However, the cluster of quarry and cement works vertical infrastructure is visually prominent from the surrounding landscape, and from a significant distance.

The buffer vegetation surrounding the quarry is a mix of native vegetation such as Eucalypts and Melaleuca, similar in character to other linear plantings in the surrounding area. Therefore, although planted outside of the road corridor itself, this vegetation could be considered characteristic of the rural landscape setting and therefore may have local value.

The remainder of the quarry site does not have recognised significance within local policy. However, the industrial towers may function as local wayfinding elements, particularly due to their location on the edge of Geelong, perhaps signifying the transition between urban and rural.

Figure 12 Typical character of LCT3

6.1.4 Landscape Character Type 4: Rural Residential

6.1.4.1 Location

LCT4 is associated with the rural residential area on the western edge of Geelong along Waurn Ponds Drive, and a small area of properties along Cochranes Road. Figure 13 illustrates the typical character of LCT4.

6.1.4.2 Key Characteristics

- Topography is gradually undulating from south to north, with slightly steeper slopes towards Waurn Ponds Creek;
- Built form consists of predominantly detached residential dwellings set back far from the street, often with outbuildings associated with the property;
- Land uses are predominantly residential, with some small-scale farm / tourism uses such as wineries and vineyards;
- Lot size are greater than two hectares, and much larger than the nearby urban residential development of Waurn Ponds town centre, however much smaller than the land holdings associated with the farmland surrounding the Project Land in LCT1 and LCT2;
- Fine grain linear buffer vegetation is typical along roadways and along property boundaries;
- Sealed road, without street lighting, kerbs or footpaths; and
- Area adjoins the urban residential area on the western edge of Geelong.

6.1.4.3 Sensitivity

A Significant Landscape Overlay – Schedule 3 (SLO3) covers a large portion of LCT4, seeking to protect the landscape and scenic values of the Waurn Ponds Valley. It describes the landscape character as comprising ‘smoothly rounded hills sloping steeply to a flat-bottomed, meandering river valley’, and recognises the areas visual prominence and exposure when viewed from the Princes Highway. The SLO3 seeks to protect the valley from inappropriate development.

Figure 13 Typical character of LCT4

7.0 Sensitive Receptors and Representative Viewpoints

7.1 Viewpoint Selection

A total of six representative viewpoints have been identified for assessment. Representative viewpoints were chosen following a three-stage process:

7.1.1 Identification of Zone of Theoretical Visibility

A Zone of Theoretical Visibility (ZTV) analysis was undertaken for the Project to provide a preliminary representation of a conservative visual envelope. (Refer Figure 14).

The methodology for this analysis is presented in Section 3.1.3.

7.1.2 Desktop Studies

A desktop study was undertaken of the Study Area to identify potential visual receptors likely to be impacted upon by the Project. This included an assessment of residential properties, public roads, gathering nodes and public open spaces. A preliminary list of potential representative viewpoints was established for subsequent ground-truthing on-site.

7.1.3 Site Inspection

Two site inspections were undertaken during daylight hours on 7 July and 21 November 2017, attended by two AECOM employees. During this site visit, potential sensitive visual receptors identified during the desktop study were investigated and confirmed, and representative viewpoints finalised to illustrate representative views from both public areas and the private property of 255 Reservoir Road. A preliminary assessment was made of viewpoints against the known Project Land.

7.2 Visual Receptors

The desktop analysis identified potential sensitive receptors within the Study Area. The site visit concentrated on those receptors within close proximity to the Project and which were representative of a broader group of receptors. Table 10 illustrates the assessment process undertaken during the site visit, for relevant sensitive receptors identified. Refer Figure 15 for plan illustrating these locations.

Table 10 Preliminary Assessment of Sensitive Receptors undertaken during the site visit

Sensitive Receptor	Visual Impact Assessment Required?
Geelong Ring Road Rest Stops The rest stops on either side of the Geelong Ring Road are within a one kilometre distance to the Project Land. These are locations for road users to stop, rest, and possibly take in the surroundings. The western bound rest stop was visited and the conclusion was made that no views towards the Project Land can be achieved from this location. The rest stop is designed to be inward-facing toward the Highway. Therefore, a visual assessment was deemed not necessary from this location.	**No**

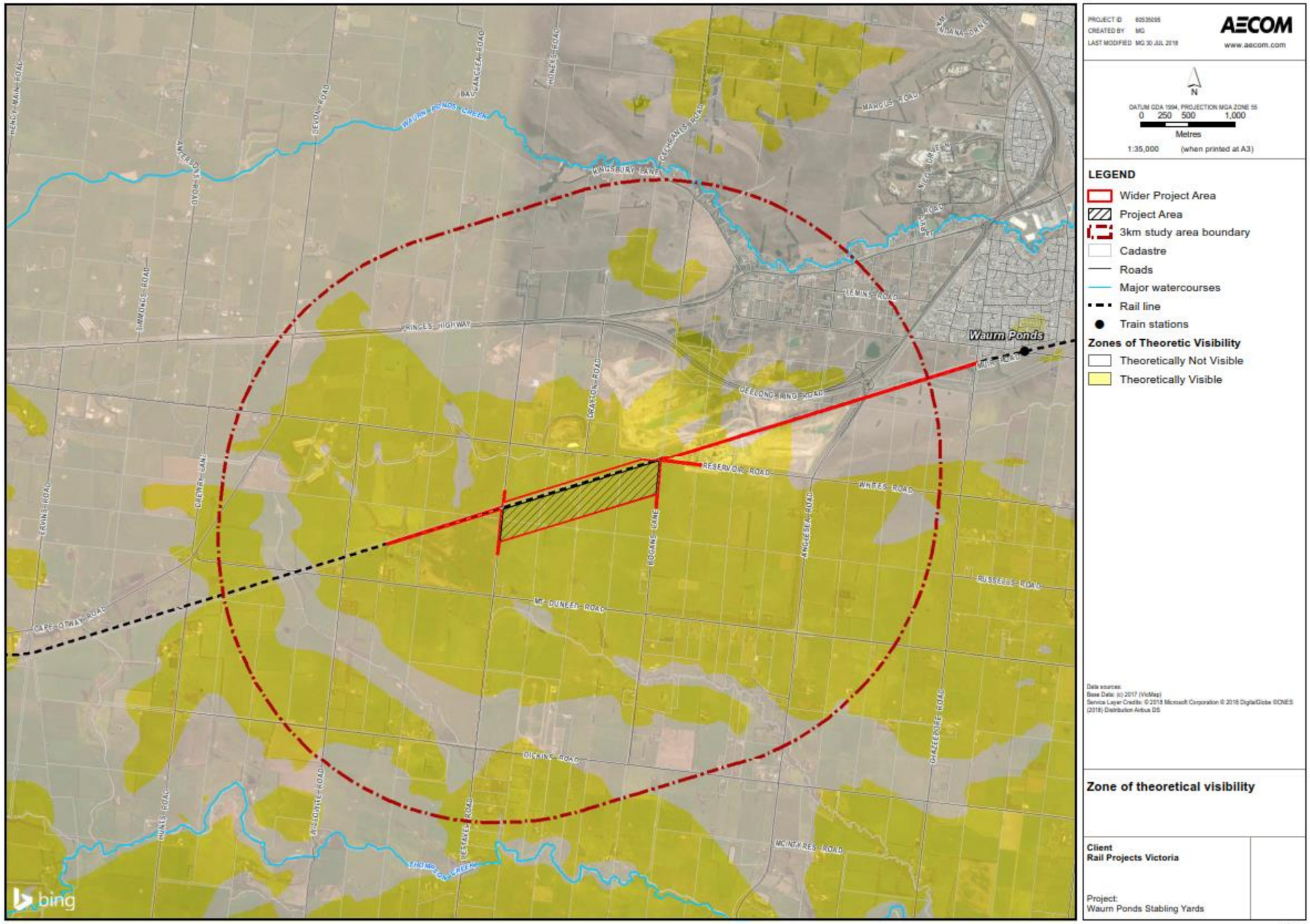
Sensitive Receptor	Visual Impact Assessment Required?
Mt Duneed Estate Winery Mt Duneed Estate Winery is a commercial sensitive receptor. ZTV analysis shows the winery facility to be located just outside of the zone of visibility, and the site visit confirmed this. The winery building is sited slightly to the northern side of a ridgeline, facing towards the north, with commanding views towards the Princes Highway. Public access and address is also from the north side of the building. On the southern side of the winery building, an olive grove is present which likely would shield views to the south from the southern side of the building. Therefore, a visual assessment was deemed not necessary from this location.	**No**
Sensitive Receptor 1 (SR1): Bogans Lane This residence is located within the ZTV and is within a one kilometre distance from the Project Land. The site visit revealed residents may experience views towards the Project. Therefore, a visual assessment was deemed necessary to assess potential visual impacts from a representative location.	**Yes** Refer Section 8.2 for visual impact assessment.
Sensitive Receptor 2 (SR2): Reservoir Road A number of residential properties are located along Reservoir Road, west of the Pettavel Road intersection. These properties are within the ZTV. The site visit revealed residents may experience views towards the Project. Therefore, a visual assessment was deemed necessary to assess potential visual impacts from a representative location.	**Yes** Refer Section 8.2 for visual impact assessment.
Sensitive Receptor 3 (SR3): Reservoir Road This residence is located within the ZTV and within a one kilometre distance from the Project Land. The site visit revealed residents may experience views towards the Project. Therefore, a visual assessment was deemed necessary to assess potential visual impacts from a representative location.	**Yes** Refer Section 8.2 for visual impact assessment.
Sensitive Receptor 4 (SR4): Reservoir Road This residence is located within the ZTV and within a one kilometre distance from the Project Land. The site visit revealed residents may experience views towards the Project. Therefore, a visual assessment was deemed necessary to assess potential visual impacts from a representative location.	**Yes** Refer Section 8.2 for visual impact assessment.
Sensitive Receptor 5 (SR5): Reservoir Road This residence is located within the ZTV and within a one kilometre distance from the Project Land. The site visit revealed residents may experience views towards the Project. Therefore, a visual assessment was deemed necessary to assess potential visual impacts from a representative location.	**Yes** Refer Section 8.2 for visual impact assessment.

Sensitive Receptor	Visual Impact Assessment Required?
Bogans Lane / corner Mt Duneed Road Potential Receptor (PR1) This corner of Bogans Lane and Mt Duneed Road, is located within the ZTV and is further than one kilometre from the Project Land. The residence is set back approximately 25-30 metres from both Mt Duneed Road and Bogans Lane. A large extent of established planting is present within the property boundary edges, shielding any potential views towards the Project Land. Therefore, a visual assessment was deemed unnecessary from this location as no views are available from this residence. Similarly, bunding and dense vegetation is present along the property boundary to the northern side of Mt Duneed Road east of this sensitive receptor. This vegetation shields potential views from residence located further east along Mt Duneed Road.	**No**
Mt Duneed Road (PR2) Two residential properties are situated adjacent to each other on the northern side of Mt Duneed Road. Both residences are within the Project ZTV, and are approximately one kilometre from the Project Land. Neither of the two residences can be seen from the road due to large setbacks. Aerial photography and ground-truthing of actual filtered views through trees along Mt Duneed Road suggest any potential views are likely to be minimal from these residences. This is due to continuous tree rows between these residences and the Project Land, particularly trees on both sides of the drainage channels within one of the properties, and roadside trees along Pettavel Road. The elevation in this location is only slightly higher than the Project Land. Therefore, a visual assessment from this location was deemed unnecessary as views are unlikely to be achieved from these sensitive receptors.	**No**
Anglesea Road (PR3) Anglesea Road is an arterial road and tourist route connecting Geelong to the Surf Coast and Otways. It also services regular commuters from the local area. Sensitive receptors would therefore include tourists and local road users. A section of Anglesea Road, approximately 1.5 kilometres from the Project, is within the Project ZTV. However, the site visit revealed no available views towards the Project due to dense and continuous vegetation along the western property boundary edge of Anglesea Road, and similarly on the northern boundary of Mt Duneed Road. Therefore, a visual assessment was deemed unnecessary from this sensitive receptor, as no views are available.	**No**

7.3 Sensitive Receptors and Representative Viewpoints

As a result of the preliminary assessment outlined in Table 10, 5 residences and a shearing shed at Reservoir Road and Bogans Lane are the only visually sensitive receptors to be assessed as part of this LVIA. These receptors may regularly experience views of long duration and have the greatest knowledge and experience of the existing appearance of the Project Land and its place within the landscape. They are therefore likely to notice and experience any changes undertaken associated with the Project Land and can be considered to have an interest in these changes.

Sensitive Receptor 5, and properties further west along Reservoir Road are located upslope of the Project Land and therefore have potential to overlook the Project, rather than seeing it in a flat elevation or ‘side-on’. By contrast, Receptors downslope of the Project Land have the potential to see the Project in relief against the skyline (e.g. where Project elements of buildings and trains are seen in silhouette against a contrasting backdrop).



PROJECT ID 60535095
CREATED BY MG
LAST MODIFIED MG 30 JUL 2018

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DATUM GDA 1994, PROJECTION MGA ZONE 55
0 250 500 1,000
Metres
1:35,000 (when printed at A3)

LEGEND

- Wider Project Area
- Project Area
- 3km study area boundary
- Cadastre
- Roads
- Major watercourses
- Rail line
- Train stations

Zones of Theoretic Visibility

- Theoretically Not Visible
- Theoretically Visible

Data sources:
Base Data: (c) 2017 (VicMap)
Service Layer Credits: © 2018 Microsoft Corporation © 2018 DigitalGlobe ©CNES (2018) Distribution Airbus DS

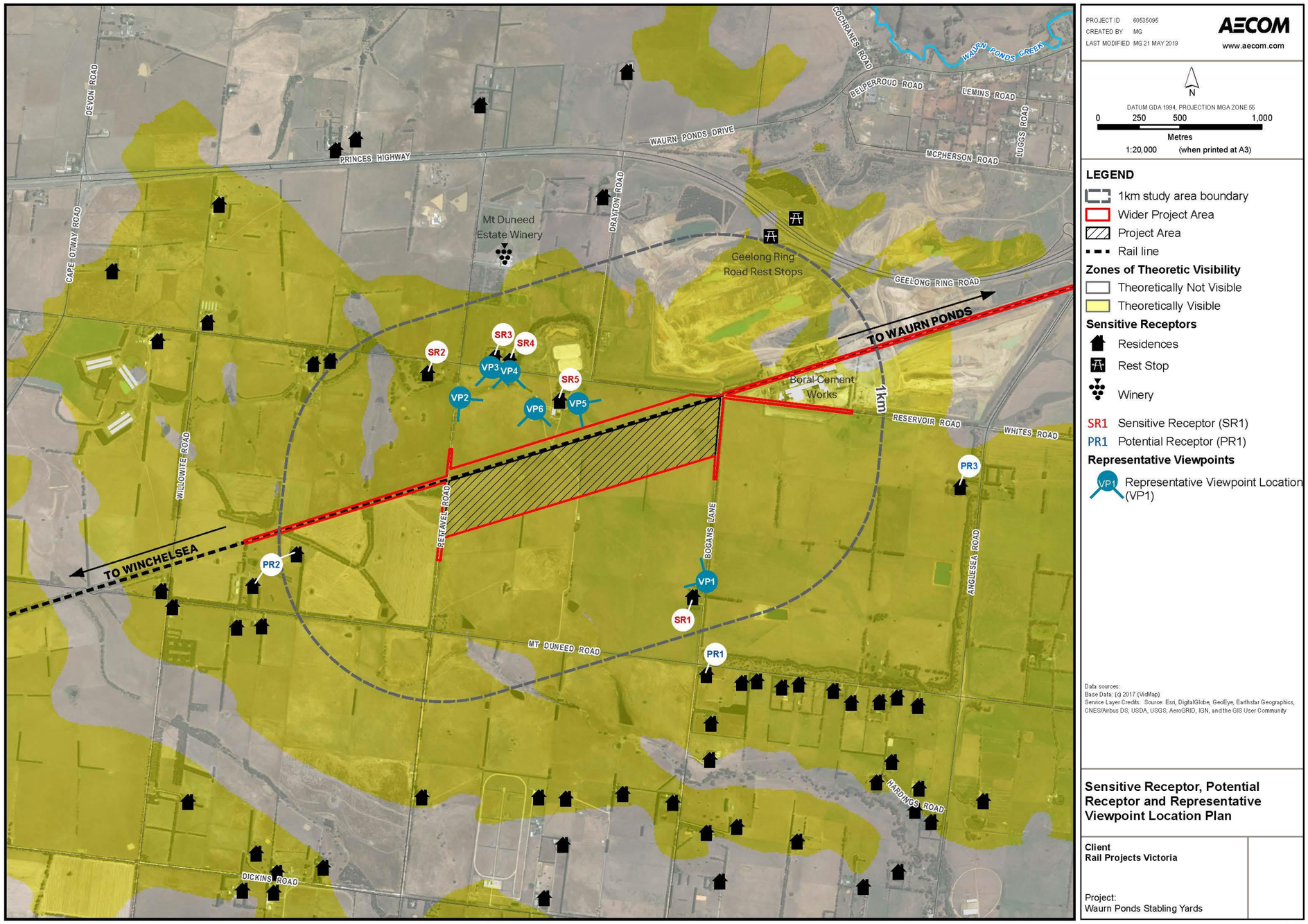
Zone of theoretical visibility

Client
Rail Projects Victoria

Project:
Waurn Ponds Stabling Yards

A3 size

Figure 14 Zone of Theoretical Visibility Plan



PROJECT ID 60535085
CREATED BY MG
LAST MODIFIED MG 21 MAY 2019

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DATUM GDA 1994, PROJECTION MGA ZONE 55
0 250 500 1,000
Metres
1:20,000 (when printed at A3)

LEGEND

- 1km study area boundary
- Wider Project Area
- Project Area
- Rail line

Zones of Theoretic Visibility

- Theoretically Not Visible
- Theoretically Visible

Sensitive Receptors

- Residences
- Rest Stop
- Winery
- SR1 Sensitive Receptor (SR1)
- PR1 Potential Receptor (PR1)

Representative Viewpoints

- VP1 Representative Viewpoint Location (VP1)

Data sources:
Base Data: (c) 2017 (VicMap)
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Sensitive Receptor, Potential Receptor and Representative Viewpoint Location Plan

Client
Rail Projects Victoria

Project:
Waurn Ponds Stabling Yards

A3 size

Figure 15 Sensitive Receptor and Representative Viewpoint Location Plan

Table 11 outlines the location and description of the sensitive receptors chosen for visual assessment from representative viewpoint locations.

Table 11 Sensitive Receptors and Representative Viewpoints for Visual Impact Assessment

Sensitive Receptor	Sensitive Receptor Location	Viewpoint (VP)	Viewpoint Description
SR1	Bogans Lane	**VP1**	This view is representative for the residential sensitive receptor identified along Bogans Lane. The view is taken from approximately 110 metres to the north of the property driveway, on the western side of Bogans Lane. The view is looking north-west.
SR2	Reservoir Road	**VP2**	This view is representative for one of the residential sensitive receptor located along Reservoir Road. This view is taken from approximately 250 metres south of the Pettavel Road / Reservoir Road intersection, on the eastern side of Pettavel Road. The view is looking south-east.
SR3	Reservoir Road	**VP3**	This view is representative for one of the residential sensitive receptor along Reservoir Road. The view is taken from the driveway on the north side of Reservoir Road. The view is looking south.
SR4	Reservoir Road	**VP4**	This view is representative for one of the residential sensitive receptors along Reservoir Road. The view is taken from the driveway on the north side of Reservoir Road. The view is looking south.
SR5	Reservoir Road	**VP5 + VP6**	Two viewpoints were chosen to illustrate key sensitive views for residents at Sensitive Receptor 5, Reservoir Road. The location for VP5 is on the eastern side of the residence near the formal entry driveway, looking south-east. VP6 is located on the south-western side of the shearing shed, looking south and provides a panoramic view across the rural landscape.

8.0 Landscape Impact Assessment

8.1 Landscape Impact Assessment

The following section includes an assessment of impacts on landscape values arising from the Project. Refer to Section 3.2.1 and Table 3 for assessment methodology and Significance of Landscape Impacts Matrix.

Table 12 Summary of the Landscape Character Impacts of the Project on LCT1.

LCT1: Flat Rural
Summary Description of Landscape Character LCT1 is a relatively flat rural area within and surroundings the Project Land. Land use is typically farming, currently large homogenous paddocks with sheep grazing, and isolated residences set back from the roadway. Few trees are present within fields other than for infrequent, predominantly north-south running windbreak rows of coniferous trees, with native tree rows predominantly along road ways and aligned to a grid. Few buildings and roads are present. The rail corridor traverses this LCT.
Sensitivity to Change The sensitivity of LCT1 to the anticipated change is considered to be **Low**, as: *Susceptibility to Change* The capacity of the LCT to accommodate the proposed change without undue consequences for the maintenance of the landscape baseline is considered to be moderate within the context of: • The presence of the existing rail corridor; • The immediate proximity of this LCT with the extensive Boral quarry site and cement works (LCT3); and • The legible extension of the Project westward from adjacent major urban and industrial land development into the LCT. *Value of Landscape Receptor* The landscape value of the LCT is considered to be of local significance, as reflected in the City of Greater Geelong Planning Scheme designation of Farming Zone (FZ).
Stage 1
Anticipated Change to LCT1 The long, broadly rectangular Project Land sits on relatively flat terrain within a number of large paddocks which slope gently from north to south. The facility will be in the order of 1030 metres long, and up to 150m wide at its widest section. The Facility is unlikely to impact the north-south running windbreaks of coniferous trees within the Project Land. The Project assumes construction on a relatively flat site that steps down in the order of four metres (in cut) below the level of the Warrnambool rail line. The surface of the operational area would change from one of a relatively uniform slope with pasture cover to one of limited rail infrastructure consisting of single entry road from the eastern end of the Project Land, six stabling roads, associated refuelling facilities, storage, internal road, car parking, driver and cleaner's amenities, gantries and associated yard lighting, and perimeter security fencing (up to 2.9 metres high). (Refer Section 2.0).

LCT1: Flat Rural

Magnitude of Change

The magnitude of change for LCT1 is considered to be **Low** (Noticeable Change) as:

Size or Scale

The Project assumes construction on a relatively flat site that is lower than the Warrnambool rail line. Stage 1 will be gradually cut in to the north/south central ridge of the Project Land such that at its western end, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. The scale of the Project will be broadly commensurate with that of the Warrnambool rail line corridor (i.e. it closely adjoins and can be seen as a localised widening of the rail corridor within the otherwise expansive LCT1 setting).

Geographical Extent

The Project will comprise a moderately sized new feature located over a minor proportion of the LCT, with the effects primarily influencing the immediate setting of the Project Land, and not considered likely to fundamentally change the character of the LCT.

Duration and Reversibility

The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.

Landscape Character Impact

The landscape character impact for LCT1 in Stage 1 is therefore considered to be **Minor**.

Stage 2

Anticipated Change to LCT

The Facility lies within LCT1. The long, broadly rectangular Project Land sits on relatively flat terrain within a number of large paddocks which slope gently down from north to south. The Project assumes construction on a relatively flat site that steps down four times across a distance of approximately 350 metres and an overall ultimate height of about five metres (in cut) below the level of the main rail line. The southern edge of the Stage 2 land ‘platform’ would sit up to a height of eight metres above existing ground level.

The Project will be in the order of 1720 metres long and 320 metres wide at its widest section, resulting in the loss of one, and partial loss of a second row of shelterbelt trees. The surface of the operational area would change from one of a relatively uniform slope with pasture cover and two rows of shelterbelt planting, to one of extensive rail infrastructure including the following elements of most relevance to this report:

- Two access points from the existing rail corridor;
- Stabling for up to 26 trains;
- A substation (≈ 10m x 10m);
- Expanded perimeter security fencing (up to 2.9 metres high);
- Expanded gantries and associated yard lighting; and
- Buildings including:
  - bio-wash facilities (≈ 50m long x 6m wide x 13m high);
  - train wash facilities (≈ 30m long x 6m wide x 8m high);
  - maintenance facility (≈ 250m long x 50m wide x 10m high);
  - expanded staff facilities (≈ 120m long x 7.5m wide x 5m high);
  - expanded car parking (50 cars); and

LCT1: Flat Rural
- tank storage (≈ 11no.).
Magnitude of Change The magnitude of change for LCT1 is considered to be **Medium** (Considerable Change) as: *Size or Scale* The Project assumes construction on a relatively flat site that is the same level as the main rail line, with a number of new structures, the tallest of which is 12 metres high. It is noted that Stage 2 will also be gradually cut in to the north/south central ridge of the Project Land such that centrally, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. The Project Land steps down a further two times, comprising half a metre and one metre. *Geographical Extent* The Project will comprise a clearly evident change but over a relatively minor area of the LCT, with the effects influencing the broader setting of the Project Land, but not considered likely to fundamentally change the character of the LCT. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Landscape Character Impact The landscape character impact for LCT1 in Stage 2 is therefore considered **Moderate**.

Table 13 Summary of the Landscape Character Impacts of the Project on LCT2.

LCT2: Undulating Rural
Summary Description of Landscape Character LCT2 is a gently undulating rural area surrounding much of LCT1 to the north, west and south. The overall rural grain is finer than LCT1, with more diversity in farming uses, more tree rows often following land forms rather than lot boundaries, and more built form. LCT2 has moderately elevated views looking south. The rail corridor traverses this LCT.
Sensitivity to Change The sensitivity to change for LCT2 is considered to be **Low,** as: *Landscape Value* The landscape value of LCT2 is considered to be of local significance, with policies seeking to protect farming and environmental features characteristic of the rural area, such as shelterbelt planting along roadsides and property boundaries, and ensure built form blends into the surrounding landscape. However, there is no specific policy protection within the Surf Coast Shire Council Planning Scheme for much of this LCT. *Susceptibility to Change* The likely capacity for LCT2 to accommodate the proposed change without undue consequences for the maintenance of the landscape baseline is considered to be moderate, due to: • The highly localised effect of the Project located within the adjoining LCT1;

LCT2: Undulating Rural
• The Project assumes construction on a relatively flat site that is the same level as the Warrnambool rail line; • The addition of the Project is proposed within a similar adjoining rural LCT (LCT1) characterised by large homogenous paddocks with sheep grazing, isolated residences set back from the roadway, and few trees present within fields other than for infrequent, predominantly north-south running windbreak rows of coniferous trees. The rural grain for LCT2 is finer than LCT1, with more diversity in farming uses, more tree rows often following land forms rather than lot boundaries, and more built form. This provides a supporting and complementary rural character for LCT1. Elements of this more fine-grained character could be drawn upon assisting with landscape integration of the Project; • The potential for the inclusion of characteristic shelterbelt elements within a future landscape plan; and • The proximity of the Project with the existing LCT3 quarry and cement works.
Stage 1
Anticipated Change to LCT LCT2 wraps around the Project Land to the north, south, and west. Anticipated change for LCT2 is considered likely to be localised given the confined nature of the Project, potentially with some localised effect proximate to the north-west corner of LCT1.
Magnitude of Change The magnitude of change for LCT2 is considered to be **Negligible** (Barely Perceptible Change) as: *Size or Scale* The addition of the Project to the adjoining LCT1 represents a small fractional proportion of the total area of that LCT, which is proximate along a relatively small edge of LCT2. It is noted that Stage 1 will be gradually cut in to the north/south central ridge of the Project Land such that at its western end, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. *Geographical Extent* The geographical extent of the effect is likely to be limited to the immediate setting of the Project Land given that it that draws upon the pasture land cover along its boundary and has the potential for the inclusion of characteristic shelterbelt elements and other elements from within LCT2 within a future landscape plan as discussed above. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Landscape Character Impact The landscape character impact for LCT2 in Stage 1 is therefore considered **Minor to Negligible**.
Stage 2
Anticipated Change to LCT

LCT2: Undulating Rural
LCT2 wraps around the Project Land to the north, south, and west. Anticipated change for LCT2 is considered likely to be substantial but highly localised change given the relatively confined nature of the Project.
Magnitude of Change The magnitude of change for LCT2 is considered to be **Low** (Noticeable Change) as: *Size or Scale* The addition of the Project is proposed within a similar adjoining rural LCT (LCT1), which provides a supporting and complementary rural character for LCT2, and therefore could be expected to provide some supportive effect on the character of this LCT (e.g. the overall rural grain for LCT2 is finer than LCT1, with more diversity in farming uses, more tree rows often following land forms rather than lot boundaries, and more built form, elements of which could assist with landscape integration of the project). It is noted that Stage 2 will also be gradually cut in to the north/south central ridge of the Project Land such that centrally, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. *Geographical Extent* The geographical extent of the effect may extend to a moderate distance from the Project, potentially within a radius of 2-3 km to adjacent ridgelines given the Project assumes construction on a relatively flat site that is the same level as the main rail line. However, it also has the potential for the inclusion of characteristic shelterbelt elements and other elements from within LCT2 within a future landscape plan that would assist with landscape integration as discussed above. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Landscape Character Impact The landscape character impact for LCT2 in Stage 2 is therefore considered **Minor**.

Table 14 Summary of the Landscape Character Impacts of the Project on LCT3

LCT3: Quarry
Summary Description of Landscape Character LCT3 is a highly modified, open ground, exposed quarry landscape consisting of a series of large scale pits and a cluster of buildings associated with the cement works to the south-west of the character type. A narrow row of buffer vegetation surrounds the Project Land. The cement works comprises a substantial industrial complex, dense with large sheds, silos and a tall mill structure. The rail corridor and the Geelong Ring Road traverse this LCT.
Sensitivity to Change The sensitivity to change for LCT3 is considered to be **Negligible,** as: *Landscape Value* The landscape value of LCT3 is considered to be low, in that the Project would have no undue consequences for the maintenance of the baseline situation, or the achieving of landscape planning policies and strategies.

LCT3: Quarry
Susceptibility to Change The likely capacity for the LCT to accommodate the proposed change without undue consequences for the maintenance of its landscape baseline is considered to be high given its highly industrialised nature.
Stage 1
Anticipated Change to LCT Anticipated change to the character of LCT3 resulting from the Project is considered likely to be very low. The key change would be a reduction in the extent of rural edge to the southern edge of the LCT. The Project would reduce the uniformity of rural / industrial edge running along Reservoir Road, extending large infrastructure development into the rural landscape. A higher frequency of trains and vehicular traffic are also expected to pass through / adjacent to the LCT associated with the proposed train maintenance and stabling facility.
Magnitude of Change The magnitude of change for LCT3 is considered to be **Low** (Noticeable Change) as: *Size or Scale* The scale of change would be moderate within the context of the above described 'spill' of immediately adjacent large infrastructure into the rural landscape. Proportionally, the Project would be considerably smaller than LCT3, but still of broadly analogous scale given its length and width, and high contrast of the Project with its immediate rural surrounds. It is noted that Stage 1 will be gradually cut in to the north/south central ridge of the Project Land such that at its western end, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. However, the Project would not change the key characteristics of this LCT. *Geographical Extent* The geographical area over which the landscape effects would be felt would comprise the immediate setting of LCT3. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Landscape Character Impact The landscape character impact for LCT3 in Stage 1 is therefore considered to be **Minor to Negligible**.
Stage 2
Anticipated Change to LCT The Project would result in a reduction in the extent of rural edge to the southern edge of the LCT. The Project would remove the clear rural / industrial boundary between LCT1 and LCT3 along Reservoir Road, extending large infrastructure development from north of Reservoir Road into the rural landscape to the south side or Reservoir Road.

LCT3: Quarry
A higher frequency of trains and vehicular traffic are also expected to pass through / adjacent to the LCT associated with the proposed train maintenance and stabling facility.
Magnitude of Change The magnitude of change for LCT3 is considered to be **Medium** (Considerable Change) as: *Size or Scale* The scale of change would be considerable within the context of the above described extension of immediately adjacent large infrastructure into the rural landscape, and south of Reservoir Road from which it had previously been precluded. Proportionally, the Project would be considerably smaller than LCT3, but still of broadly analogous scale given its length and width, and high contrast of the Project with its immediate rural surrounds. However, the Project has the potential to comprise a new industrial element of this LCZ. It is noted that Stage 2 will also be gradually cut in to the north/south central ridge of the Project Land such that centrally, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. *Geographical Extent* The geographical area over which the landscape effects would be felt would comprise the immediate setting of LCT3, comprising a large infrastructure development set within LCT1 and adjacent to areas of LCT2. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Landscape Character Impact The landscape character impact for LCT3 in Stage 2 is therefore considered to be **Minor**.

Table 15 Summary of the Landscape Impact Impacts of the Project on LCT4

LCT 4: Rural Residential
Summary Description of Landscape Character LCT4 is characterised as rural residential land use on gradually undulating topography. Built form consists of detached residential dwellings set back from the street, often with a number of outbuildings. Lots are large, over 2 hectares in size, often including one or two small paddocks. This LCT is located on the western edge of Waurn Ponds along the Princes Highway north of LCT2, and currently exists as a low density residential transition between urban and rural development.
Sensitivity to Change (**No impact**, therefore no assessment undertaken)
Stage 1
Anticipated Change to LCT

LCT 4: Rural Residential
No change is anticipated to the character of LCT4, due to its distance from the Project and distinct separation from the Project by LCT3.
Magnitude of Change (**No impact**, therefore no further assessment undertaken)
Landscape Character Impact The landscape character impact for LCT4 in Stage 1 is therefore considered to be **No Impact**.
Stage 2
Anticipated Change to LCT No change is anticipated to the character of LCT4, due to its distance from the Project and distinct separation from the Project by LCT3.
Magnitude of Change (**No impact**, therefore no further assessment undertaken)
Landscape Character Impact The landscape character impact for LCT4 in Stage 2 is therefore considered to be **No Impact**.

8.2 Visual Impact Assessment

The following section includes an assessment of impacts on visual values from the Project. Refer to Section 3.2.2 and Table 4 for assessment methodology and Significance of Landscape Impacts Matrix.

8.2.1 Representative Viewpoints

As outlined in Section 7.0, the following viewpoint locations are assessed below:

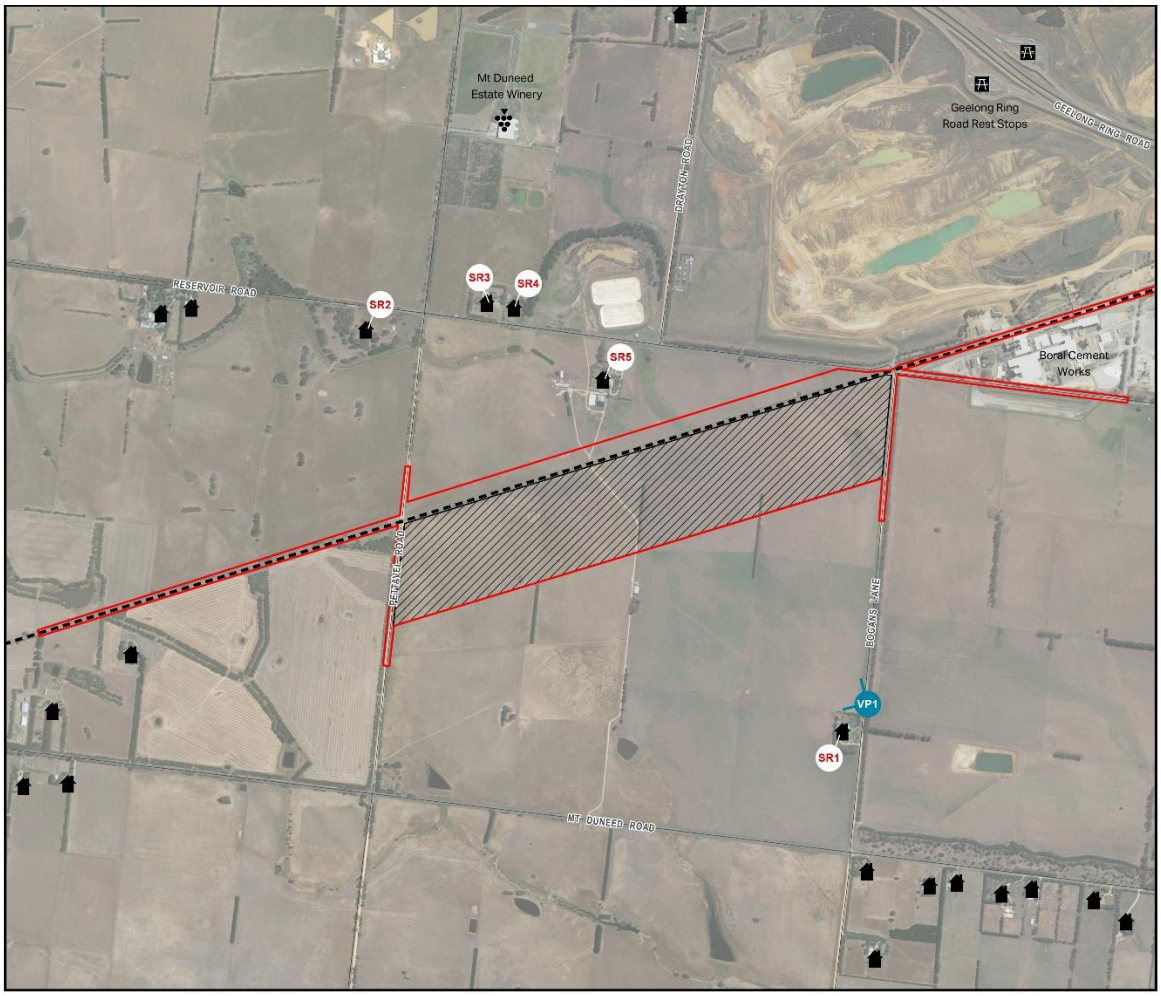
- VP1: Bogans Lane (SR1)
- VP2: Pettavel Road (SR2)
- VP3: Reservoir Road (SR3)
- VP4: Reservoir Road (SR4)
- VP5: Reservoir Road (SR5)
- VP6: Reservoir Road (SR5)

Photomontages are provided to show the potential impacts from those locations considered to be more sensitive and/or where the impact is potentially more significant.

Table 16 VP1 description and visual assessment

VP1: Bogans Lane (SR1)

Location Plan



Description of Existing View

VP1 is located on Bogans Lane, approximately 110 metres to the north of the property driveway on the western side of the roadway. The sensitive receptor for this location is the residence at this address.

The single storey dwelling is set back from the road by approximately 30 metres, oriented towards the east, and sited at a similar level to Bogans Lane. A large shed is present on the north side of the house with a number of outbuildings to the west of the shed. Aerial photography indicates that the garden area is bordered on all sides by dense vegetation, aside from a small opening on the north-west corner, with possible views towards the Project Land from the shed and a section of the garden only. Significant direct views of the Project Land appear unlikely to be available from the residence.

In this location, Bogans Lane is an unsealed road with dense continuous vegetation along its eastern edge. Views towards the Project Land can be described as long flat views of LCT1, looking north-west towards the slightly elevated ridgeline of LCT2. Rural pasture dominates the foreground, with layered north-south running rows of trees to the middle ground.

VP1: Bogans Lane (SR1)
It is unlikely this view is experienced from the residence itself. However, the large shed and the north-west corner of the garden may be exposed to narrow views through small gaps between vegetation. Refer Figure 16 - VP1 Existing View.
Sensitivity to Change The sensitivity of the visual receptor to the proposed change is considered to be **Medium**. *Value attached to the views* No planning designations are applicable to the view. The residents are familiar with their rural surroundings and would have views to the Project from the north-west corner of their garden, while entering and leaving the property, and when working in the fields. However, the remainder of the house and garden is highly visually enclosed with dense screen planting to much of the garden perimeter. *Susceptibility of visual receptors to change* Residents are generally considered to have high levels of sensitivity to changes in the landscape within proximity of the home. However, given the extent of screening around the residence, and the subsequent extent to which their attention may be focused on views of the Project, sensitivity is considered likely to be moderate.
Stage 1
Anticipated Change to View The Project is unlikely to impact the north-south running windbreaks of coniferous trees within the Project Land. Most of the infrastructure would be located towards the centre and northern edge of the Project Land. The western half of the facility is predominantly in cut, up to about four metres below the level of the main rail line, and contains the train stabling / fuelling area, comprising a near flat, benched site, with one step-down of about 0.5m south of the vehicle access road. The eastern end of the Project Land would have the entry / exit rail facility road and vehicle access road each sitting on corridor earthworks formations, set relatively high above existing ground level, in particular the vehicle access road. A substantial portion of the Project would be screened by the retained eastern shelterbelt. Stabled trains would be visible. Gantries for lighting above the train stabling roads, and the perimeter security fencing may also be visible at this distance. (Refer Figure 16 – Stage 1 – Photomontage).
Magnitude of Change The magnitude of change for VP1 is considered to be **Low** (Noticeable Change). *Size or Scale* The Project would add a new element to the view from the rural homestead. Notwithstanding that the structure runs across approximately 900m of the Project Land, it comprises a relatively small proportion of the view given its relatively high level of screening by shelterbelt plantings, and notwithstanding the substantial access road formation visible to the centre and eastern end of the Facility. The composition of the view will change from that of: • A predominantly open rural paddock, set against a background comprising the edge of LCT2 situated on a low rise, with managed grassy slopes and substantial tree cover,

VP1: Bogans Lane (SR1)

- To one containing a long, low horizontal landform in the background of the view with stabled trains atop the western end of the Facility.

The view from the homestead enclosure would potentially be seen for relatively short periods from a substantially constrained viewing 'window' through screen planting in the north-west corner of the homestead (garden area and out-buildings).

Geographical Extent

The Project will be seen at a distance of about one kilometre, looking up towards the flat western stabling area and eastern vehicle access road. Trains close to the southern edge of the stabling area would be seen in near full elevation. Vehicles on the eastern end and central portion of the vehicle access road would be seen in full elevation, although also seen against the vegetated backdrop along Reservoir Road, reducing their visual prominence, as compared to be seen against the skyline. The extent of the area over which the change would be visible (through the small opening in the perimeter hedge) would be considerable when close to the opening.

Duration and Reversibility

The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.

Visual Impact Rating

The overall rating of visual impact for VP1 in Stage 1 is therefore assessed to be **Minor to Moderate.**

Stage 2

Anticipated Change to View

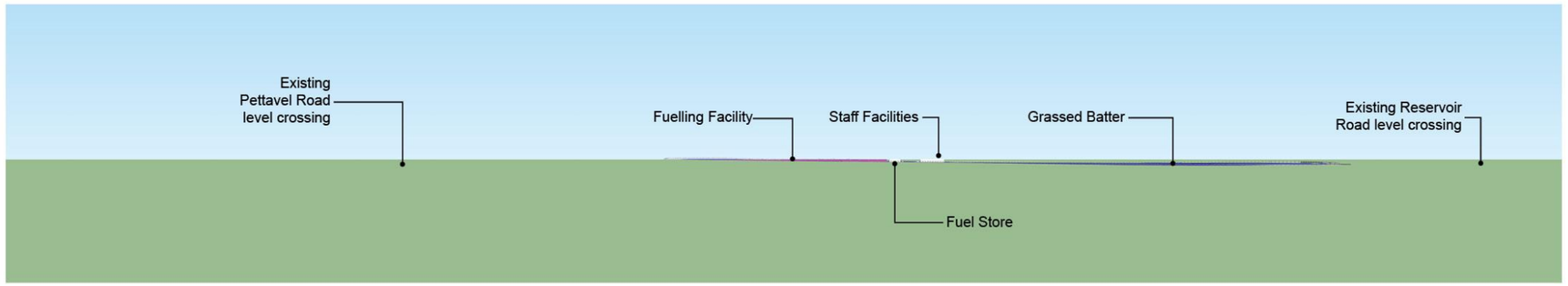
The Project assumes construction on a relatively flat site that steps down four times across an overall height of about 5.5 metres (in cut) below the level of the main rail line. The southern edge of the Stage 2 platform will sit up to a maximum height of eight metres above the existing ground level.

The Project will be in the order of 1720 metres long, and 320 metres wide at its widest section. The Project will result in the loss of one, and the partial loss of a second row of shelterbelt trees within the Project Land, resulting in only a relatively small portion of the development being screened by these characteristic, mature landscape elements. The mass and up to 8m height of the tall southern batter of the Project platform will be visually prominent. Seen elements of the Project will include:

- Two access points (rail and vehicle) from the existing rail corridor;
- Stabling for up to 26 trains;
- A substation (≈ 10m x 10m);
- Additional perimeter security fencing (up to 2.9 metres high);
- Additional gantries at assumed 25m intervals and associated yard lighting for all stabling roads; and
- Buildings including:
  - bio-wash facilities (≈ 50m long x 6m wide x 13m high);
  - train wash facilities (≈ 30m long x 6m wide x 8m high);
  - maintenance facility (≈ 250m long x 50m wide x 10m high);
  - expanded staff facilities (≈ 120m long x 7.5m wide x 5m high);
  - additional car parking (50 cars); and
  - tank storage (≈ 11 tanks of varying size).

VP1: Bogans Lane (SR1)
Refer (Figure 17 – Stage 2 – Photomontage).
Magnitude of Change The magnitude of change for VP1 is considered to be **High** (Dominant Change) *Size or Scale* The Project will involve a moderate to high loss of mature shelterbelt planting, and loss of a distant view to a neighbouring rural homestead (Sensitive Receptor 5). The composition of the view will change from that of an open rural paddock, set against a low rise with managed grassy slopes and a relatively small amount of tree cover, to one with obvious industrial scale and form interventions across a relatively narrow band of the landscape. The view would include: a long earthworks platform with up to an eight metre high batter slope. Long buildings will be visually prominent towards the southern edge of the Facility, including from right to left: a tank storage enclosure; the expanded staff facilities; and the Maintenance Facility with Train Wash Facilities seen marginally protruding above it. The visible proportion of the Project would increase substantially over that for Stage 1. Views from the residence to the Project appear to be unlikely. Views from the enclosed garden setting will be partial through a substantially constrained viewing 'window' in the north-west corner of the homestead (garden area and out-buildings), but unlikely to be significant from most parts of the garden. *Geographical Extent* The Project will be seen at a distance of about 700m, looking up towards the relatively flat stabling facility. The long, flat tops of the above described buildings will be visually prominent, seen in high visual contrast against both the backdrop of trees and the open skyline. This would replace the existing relatively visually consistent, 'soft' rural wooded skyline. The stabled trains at the western end of the Facility would also be visually prominent, and seen stepping up the stabling area platform. The extent of the area over which the change would be visible (through the small opening in the perimeter hedge) would be considerable when close to it. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Visual Impact Rating The overall rating of visual impact for VP1 in Stage 2 is therefore assessed to be **Moderate to Major.**

VP1 Existing View

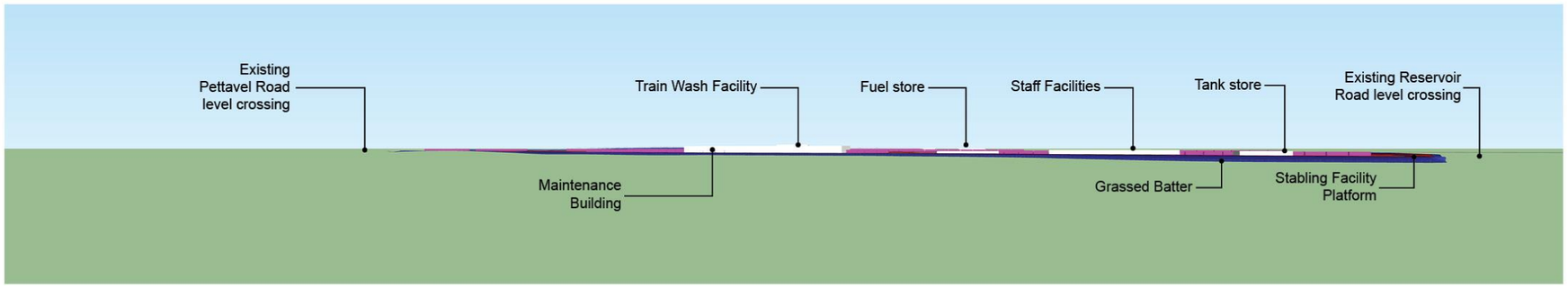


VP1 - Stage 1 - 3D Model View

VP1 - Stage 1 - Photomontage

Figure 16 VP1 Existing View, 3D Model View and Photomontage for Stage 1

VP1 Existing View



VP1 - Stage 2 - 3D Model View

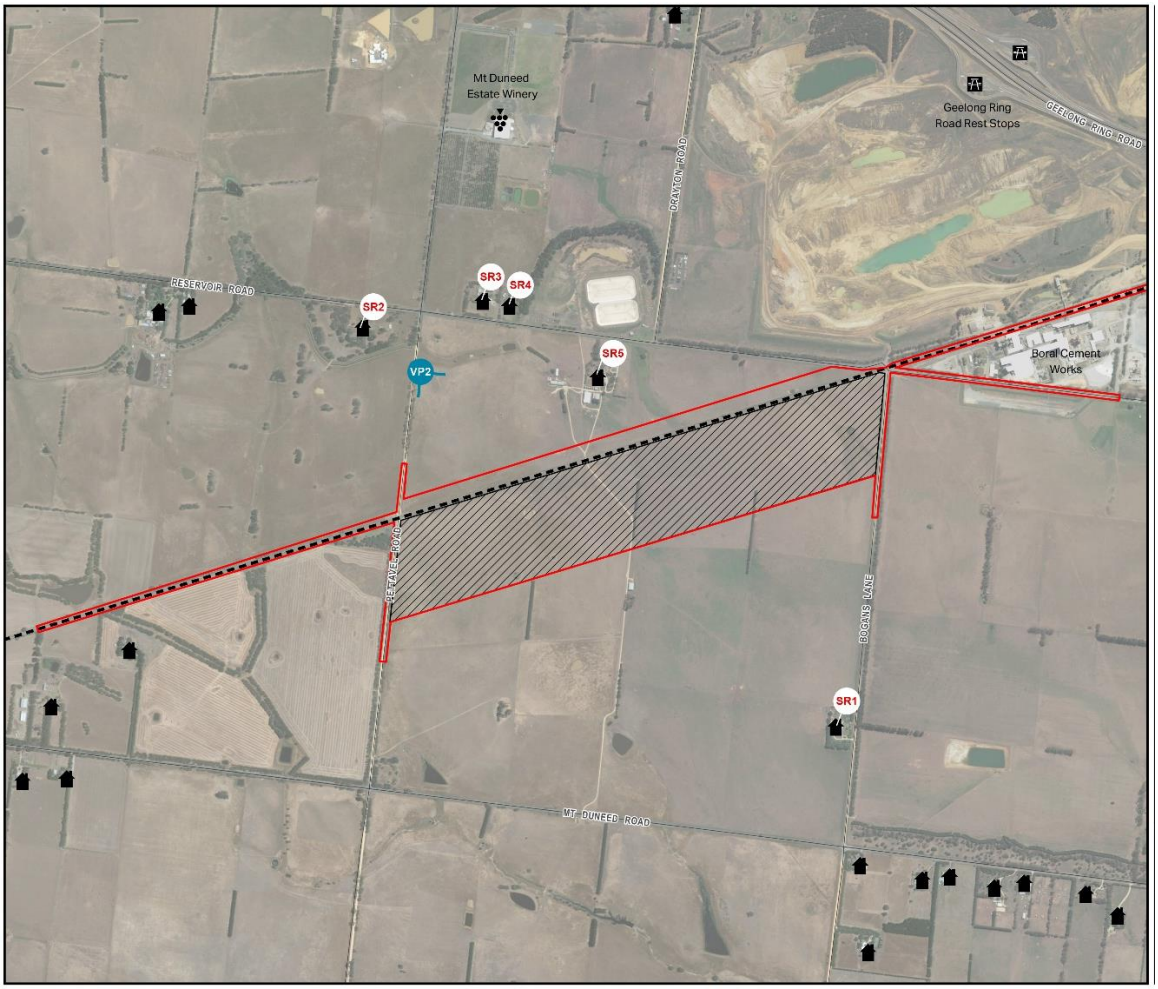
VP1 - Stage 2 - Photomontage

Figure 17 VP1 Existing View, 3D Model View and Photomontage for Stage 2

Table 17 VP2 description and visual assessment

VP2: Pettavel Road (SR2)

Location Plan



Description of Existing View

VP2 is located approximately 250 metres south of Reservoir Road, on the eastern side of Pettavel Road. The sensitive receptor for this location is one of the residences (SR2) along Reservoir Road. This view is also relevant for residences further to the west along Reservoir Road.

The single storey dwelling is set back approximately 45 metres from Reservoir Road and 170 metres from Pettavel Road, located at an elevation slightly higher than that which the representative view is taken. The house appears to be oriented on a north-south axis, with possible filtered views to the south-east across the shallow valley. A small shed appears to be located half way between the dwelling and Pettavel Road. Scattered mature eucalypt vegetation is present on the southern gentle slope between the dwelling and a dual channel open drain to the south. This drain intercepts Pettavel Road just to the north of the viewpoint location. A dense row of mature Pines is located on the northern side of this channel, to the south-east of the dwelling.

Pettavel Road is an unsealed road with a gentle slope from Reservoir Road towards the rail corridor. Discontinuous stands of native vegetation are present on both sides of the road creating intermittent open views across the shallow valley floor. VP2 can be described as an open view of rural pastureland with a low grassy undulation to the foreground and long distant views to the south towards the valley edge. Rural pasture dominates, with some middle ground vegetation

VP2: Pettavel Road (SR2)
present associated with the nearby residence to the east, as well as some inter-paddock shelterbelt rows of trees within LCT1. Filtered views may be available from the residence (SR2), and perhaps a similar view from a greater distance and slightly higher elevation from properties further west along Reservoir Road. Refer to Figure 18 - VP2 Existing View.
Sensitivity to Change The sensitivity of the visual receptor to the proposed change is considered to be **Low**. *Value attached to views* No planning designations are applicable to the view. *Susceptibility of visual receptors to change* Residents are generally considered to have high levels of sensitivity to changes in the landscape within proximity of the home. However, given the extent of screening around the residence, the extent to which their attention may be focussed on views of the Project is considered likely to be low, or potentially even negligible.
Stage 1
Anticipated Change to View VP2 has a view looking south-east towards the central and western parts of the Project Land. The Project is unlikely to impact the north-south running windbreaks of coniferous trees within the Project Land. It is noted that Stage 1 will be gradually cut in to the north/south central ridge of the Project Land such that at its western end, the Facility will sit about four metres below the level of the main rail line, reducing the relative height of the Facility by an equivalent amount when viewed from the north and north-west. The orientation of this view and crest in the landform make it unlikely that infrastructure will be visible from this location, other than potentially the permeable perimeter security fencing which will be set at existing ground level.
Magnitude of Change The magnitude of change for VP2 is considered to be **Negligible** (barely perceptible change). Given the internal, enclosed focus of the garden, the scale of change to this view will be low or potentially even negligible. Where a constrained view to the Project may be available through a small break in the south-east corner of the perimeter screen planting, the orientation of this view and crest in the landform makes it unlikely that infrastructure will be visible from this location.
Visual Impact Rating The overall rating of visual impact for VP2 in Stage 1 is therefore assessed to be **Minor to Negligible**.

Stage 2

Anticipated Change to View

VP2 has a view looking south-east towards the central and western parts of the Project Land. Train stabling roads are proposed for up to 20 trains in the potential view catchment for this viewpoint location. Rerouting of the existing farm laneway is proposed to cross the rail corridor proximate to the Pettavel Road boundary of the Project Land. A ten metre high maintenance shed and 13m high bio wash facility near the centre of the Project Land may be partially visible. Perimeter security fencing could be visible. It is noted that Stage 2 will also be gradually cut in to the north/south central ridge of the Project Land such that centrally, the Facility will sit about four metres below the ground level of the Warrnambool rail line to the north, reducing the relative height of facilities when viewed from the north and north-west by an equivalent amount.

Magnitude of Change

The magnitude of change for VP2 is considered to be **Low** (Noticeable Change).

Size or Scale

Given the internal, enclosed focus of the garden, the scale of change to this enclosed view will be low and potentially even negligible. However, where a constrained view to the Project is available through a small break in the south-east corner of the perimeter screen planting, the scale of change in the view would be considerable, including many or all of the items listed above for the Stage 2 'Anticipated Change to View'. However, the Project would also comprise a relatively small proportion of the Facility within the south-eastern quadrant.

The view from the residence to the Project would be partial at best, with the dense shelterbelt planting south of the residence likely to screen most views to the western half of the Project. Views to the eastern end of the Project would be screened by existing landform. Given the extent of screening, the view would be likely to be experienced over short periods of time.

Geographical Extent

The view from the residence would be seen from a slightly elevated location. The Project would be viewed over a distance of about 900 metres to one kilometre, with only a small central portion likely to be visible.

Duration and Reversibility

The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.

Visual Impact Rating

The overall rating of visual impact for VP2 in Stage 2 is therefore assessed to be **Minor**.

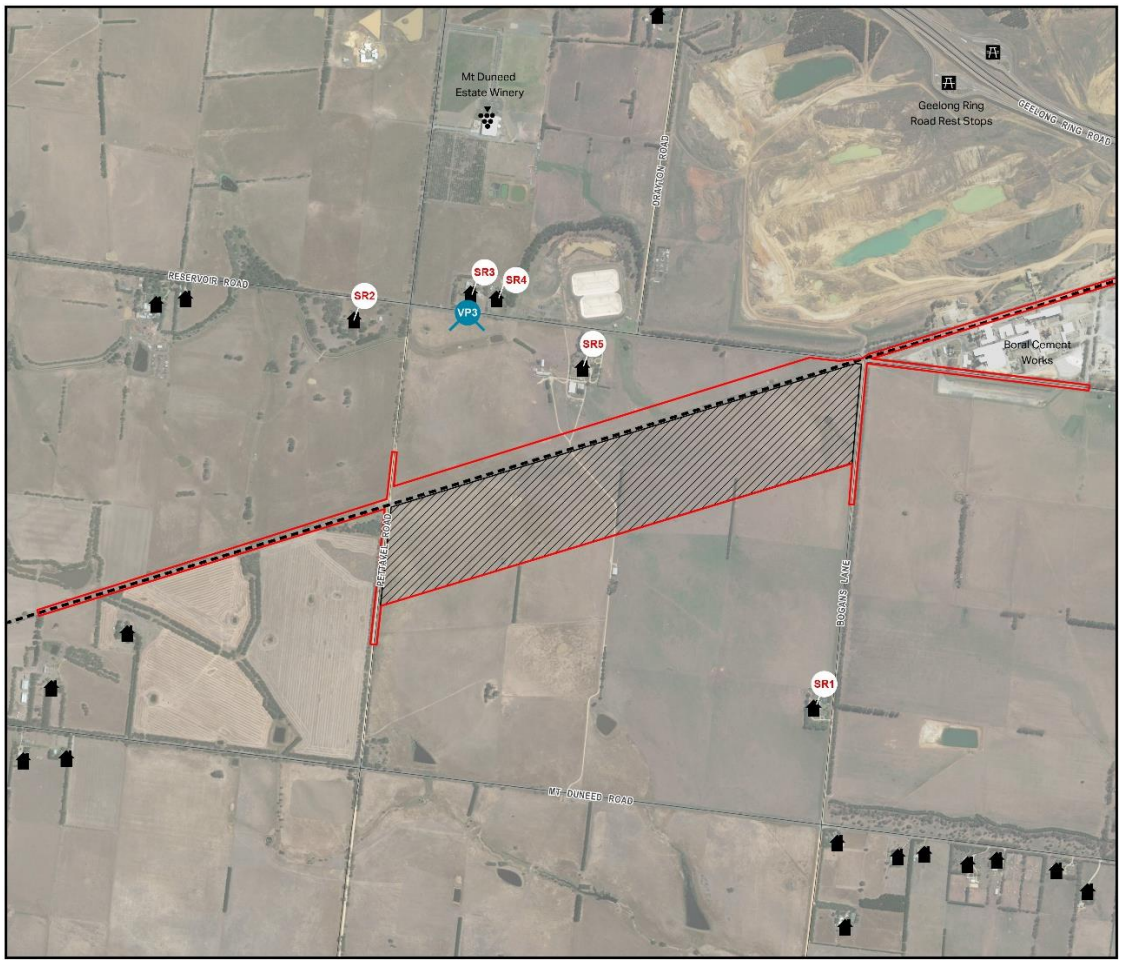
VP2 Existing View

Figure 18 VP2 Existing View

Table 18 VP3 description and visual assessment

VP3: Reservoir Road (SR3)

Location Plan



Description of Existing View

VP3 is located on the Reservoir Road frontage to one of the properties along Reservoir Road. The sensitive receptor for this viewpoint are the SR3 residents.

The single storey dwelling is set back from Reservoir Road by approximately 50 metres and is sited on elevated land that forms part of a ridgeline, higher than that of Reservoir Road. The orientation of the house appears to be on a north-south axis, with likely views directly south towards Reservoir Road, and to the east across the adjoining property. A densely planted row of semi-mature Eucalypt and Casuarina vegetation is present along the extent of the southern property boundary and frontage, with a single clear opening on the eastern corner of this boundary at the driveway entry. Dense screening is in place along the western and northern boundary, and the northern half of the eastern boundary. Intermittent large and moderately sized shrub vegetation is present along the southern half of the eastern property boundary. Therefore, the landscape character of most of the garden areas can be described as visually enclosed.

Almost no tree or large shrub cover is present on either side of Reservoir Road within that part of the road reserve adjoining the residential lot. However, a substantial row of screening large shrub and tree cover is present within the far side of the road reserve east of this residential lot. Further, views east of this row of road reserve vegetation appear to be dominated by the homestead and

VP3: Reservoir Road (SR3)
outbuildings (SR5), including substantial garden tree cover, all seen in the middle ground. Therefore, most views from the residence and garden to the surrounding landscape will be either highly filtered or not available beyond the residential lot boundary, with the exception of a view available from the south-east corner of the lot at the driveway entry, through which a substantial view is available. This comprises expansive views of pasture in the foreground and middle ground with layered vegetation on shallow valley edges to the horizon. Refer to Figure 19 for VP3 existing view.
Sensitivity to Change The sensitivity of the visual receptor to the proposed change is considered to be **Low**. *Value attached to the views* No planning designations are applicable to the view. Residents are typically concerned with changes proposed within proximity to their homes. However, the presence of relatively dense perimeter tree and shrub planting along the property boundary fronting Reservoir Road suggests views from the residence to the broader landscape may not be a priority for this visual receptor. *Susceptibility of visual receptors to change* The susceptibility of the visual receptor to the proposed change can be expected to be moderate, notwithstanding the above described perimeter screening. Changes to VP3 will likely be experienced daily when residents are entering and leaving the property, and from some areas of the front garden.
Stage 1
Anticipated Change to View The Project is not visible from this location. Refer to Figure 19 illustrating the anticipated change to view (Note: The western end of the Project in the 3D model is screened by the large shrubs shown in the photomontage). Therefore, there is no impact to the view from the Stage 1 Project.
Magnitude of Change There is no change in the view, therefore **No Impact**
Visual Impact Rating The overall rating of visual impact for Stage 1 from VP3 is assessed to be **No Impact.**

Stage 2

Anticipated Change to View

Little in the way of views to the Project would be available from the residence or front garden. The view within proximity of the driveway entry would include:

- A partial view of the western end of the stabling roads with stabled trains;
- Trains using the western shunting road or entering and leaving the western rail access road (and therefore primarily clear of trains);
- Storage tanks;
- Perimeter security fencing; and
- Potentially a farm crossing point proximate to the Pettavel Road boundary of the Project Land (refer to Figure 20).

No buildings within the facility will be visible. It is noted that the photomontage represents 'worst case'. The further one moves into the residential lot, the narrower the field of view to the landscape becomes due to the extent and density of screening along the Reservoir Road frontage and eastern side of the residential lot.

Further, it is noted that Stage 2 will be gradually cut in to the north/south central ridge of the Project Land such that centrally, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount.

Magnitude of Change

The magnitude of change for VP3 is considered to be **Medium** (Considerable Change), as:

Size or Scale

The overall composition of the view seen in Figure 20 (nominally from VP3), consisting of long views across LCT1 to the distant edge of the shallow valley will essentially remain intact, with the Project comprising a long, relatively narrow addition of rail infrastructure and stabled trains in the near middle ground of the view. As above, that part of the Facility to centre and right of frame would be expected to generally be clear of stationary trains but will be subject to movement of trains shunting between stabling roads and entering/egressing the Facility.

However, this wide view is only likely to be visible when the residents are leaving their property or when they are in their front garden within proximity of the front driveway, due to the extent of screening along the frontage and eastern boundary. The proportion of the above view that will be seen from the residence through the narrow 'window' of the entry drive is a small fraction of that shown in Figure 20.

Geographical Extent

The view is seen from an elevated location maximising the seen extent of the Project, which is viewed at a distance of about 550 metres in a moderate level of detail. The Project will be visible across a major component of this view, albeit in a relatively narrow band.

Duration and Reversibility

The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.

Visual Impact Rating

The overall rating of visual impact for Stage 2 from VP3 is therefore assessed to be **Minor to Moderate.**

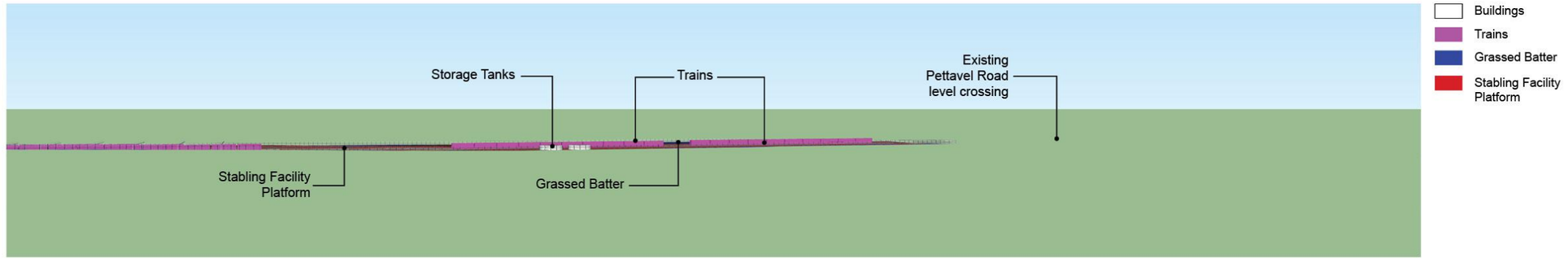
VP3 Existing View

VP3 - Stage 1 - 3D Model View

VP3 - Stage 1 - Photomontage

Figure 19 VP3 Existing View, 3D Model View and Photomontage for Stage 1

VP3 Existing View



VP3 - Stage 2 - 3D Model View

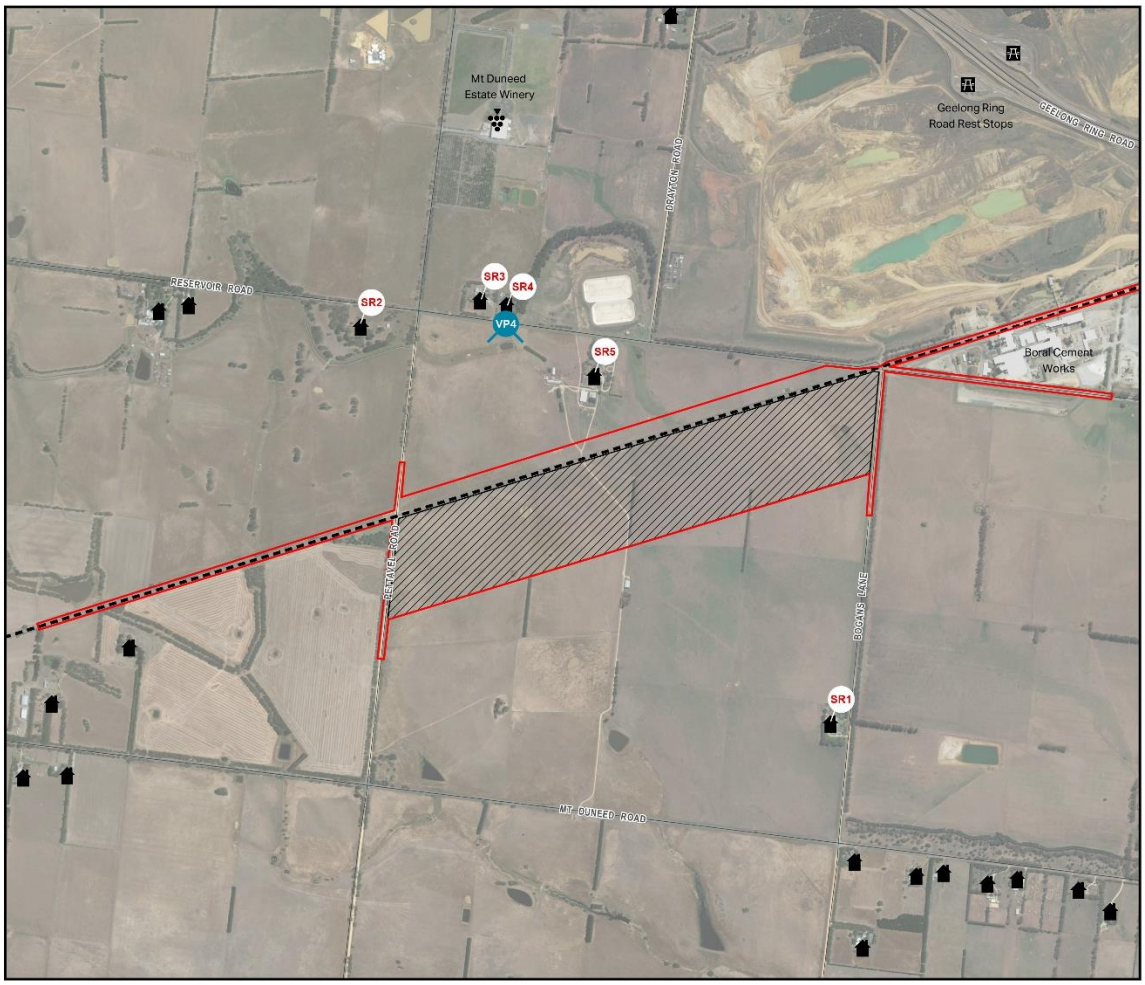
VP3 - Stage 2 - Photomontage

Figure 20 VP3 Existing View, 3D Model View and Photomontage for Stage 2

Table 19 VP4 description and visual assessment

VP4: Reservoir Road (SR4)

Location Plan



Description of Existing View

VP4 is located on the Reservoir Road frontage to a property (SR4) along Reservoir Road. The sensitive visual receptor for this viewpoint is the residents at this address.

The single storey dwelling is set back from Reservoir Road by approximately 60 metres and sited on elevated land that forms part of a ridgeline. The house is therefore sited at a higher level than Reservoir Road. The house appears to be oriented on a south-west north-east axis, with partial views to the Project likely to be available from the residence towards the south and south-eastern frontages. Mature buffer vegetation on the eastern property boundary to the adjacent Pettavel Basin screens views towards the east, however there is little other planting of significance on the land. Canopy vegetation to the front boundary of the neighbouring property impedes valley views to the south-west. Therefore, most views from the residence are expected to be directly south towards Reservoir Road, and south-east towards the homestead and associated outbuildings of the adjacent Reservoir Road Property. Potentially the extent of these views will be small.

Stands of mature large Melaleuca shrubs and at least one Eucalypt are situated on the southern side of the road reserve. It is likely that this vegetation would impede some views south across the valley, however a gap in vegetation is present just east of the driveway. Limited views may also be available above the existing screening vegetation to the landscape beyond. Views in this location

VP4: Reservoir Road (SR4)

are long distant views across the gently undulating rural valley landscape of LCT1. This framed view is characterised by expansive green pastures in the foreground and middle ground, set against a background of layered vegetation on shallow valley edges.

This view may be able to be seen from within parts of the residence, however, if available, it is more likely to be experienced by the residents when using the front porch and garden, and when leaving the property.

Refer to Figure 21 for the existing view from VP4.

Sensitivity to Change

The sensitivity of the visual receptor to the proposed change is considered to be **Medium**.

Value attached to the views

No planning designations are applicable to the view, however the garden design facilitates the framed view of the rural surroundings. The siting of the residence at a higher elevation to Reservoir Road, orientation of the residence to the south-east, and lack of screening vegetation along the front property boundary suggests at least a moderate level of value associated with landscape views from this receptor. The most open and therefore potentially most valued view from the residence is likely to be to the south-east, the direction in which the front of the house is orientated. However, as above, this middle ground view is intercepted by the residential property, buildings and vegetation of the adjacent property in Reservoir Road, which is likely to limit views to the eastern end of the Project located beyond. The view south through the gap in roadside vegetation would be expected to provide a tightly framed view across the valley, including a correspondingly reduced area of the Project. This would include a view of the maintenance shed.

Susceptibility of visual receptors to change

The susceptibility of the visual receptor to the proposed change can be expected to be moderate due to the extent of visual screening currently in place on the adjacent property looking south-east, limiting views to the project beyond. The tightly framed view across the valley would reveal a correspondingly reduced area of the Project.

Changes to VP4 will likely be experienced frequently when residents are entering and leaving the property, from the front garden and front porch, and possibly from inside the residence.

Stage 1

Anticipated Change to View

VP4 potentially has a minor outlook towards the south-east through gaps in vegetation to the eastern end of the Stage 1 Facility, although if present these would be expected to be relatively minor. Anticipated changes to this view could include: a partial view of overhead gantries with lighting, perimeter security fencing, and intermittent partial views of trains moving into and out from the Facility . No changes would occur to the south. It is noted that Stage 1 will be gradually cut in to the north/south central ridge of the Project Land such that at its western end, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount.

Magnitude of Change

The magnitude of change for VP4 is considered to be **Negligible** (Barely Perceptible Change) as:

Size or Scale

New landscape and built form elements that could be noticeable within VP4 will be located towards the south-east as described above. The composition of the view will change, consisting of

VP4: Reservoir Road (SR4)
large screening shrubs framing a narrow view in the immediate foreground, through to limited rail infrastructure. Long distance views beyond the Facility would be retained. *Geographical Extent* Given the likely minor extent of the Project seen from this location, the geographical extent of the any seen part of the Project would be minor. The Project may be visible towards the south-east, albeit in a relatively narrow horizontal band. The Facility will not be visible to the south, retaining the existing view across the landscape. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Visual Impact Rating The overall rating of visual impact for Stage 1 from VP4 is therefore assessed to be **Minor to Negligible**.
Stage 2
Anticipated Change to View VP4 potentially has an outlook towards the western side of the Project Land. Seen elements would comprise security fencing, periodic views of trains shunting between stabling roads and moving into and out from the facility, two large storage tanks and potentially other site infrastructure such as gantries and overhead lighting. As with Stage 1, a small view may also be possible to the south-east through gaps in vegetation, although if present this would be expected to be relatively minor. Anticipated changes to this view could include: view of the maintenance building, wash bay, stabled trains, overhead gantries with lighting, and security fencing . To the south, anticipated changes to this view will include: periodic views of trains shunting and entering and leaving the Facility, security fencing, , and the farm crossing point between the western edge of the Facility and Pettavel Road. As noted above, Stage 2 will also be gradually cut in to the north/south central ridge of the Project Land such that the centre of the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount.
Magnitude of Change The magnitude of change for VP4 is considered to be **Low** (Noticeable Change) as: *Size or Scale* The scale of the change in the view is low, given the likely limited view to substantial rail infrastructure to the south-east, and a potentially large number of daily train movements into and out of the Facility to the south, in conjunction with security fencing. Where trains are visible to the south, these are likely to be visually prominent given the relatively low viewing distance of about 550m and no Project screening currently proposed. *Geographical Extent* The view is from an elevated location, increasing the potential seen extent of the Project, which is viewed at a distance of about 550 metres in a moderate level of detail. However, the Project would be visible within a relatively narrow horizontal band, the broader existing view to the south

VP4: Reservoir Road (SR4)
otherwise expected to essentially remain intact, other than for periodic views of trains entering and exiting the Project Land. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Visual Impact Rating The overall rating of visual impact for Stage 2 from VP4 is therefore assessed to be **Minor to Moderate**.

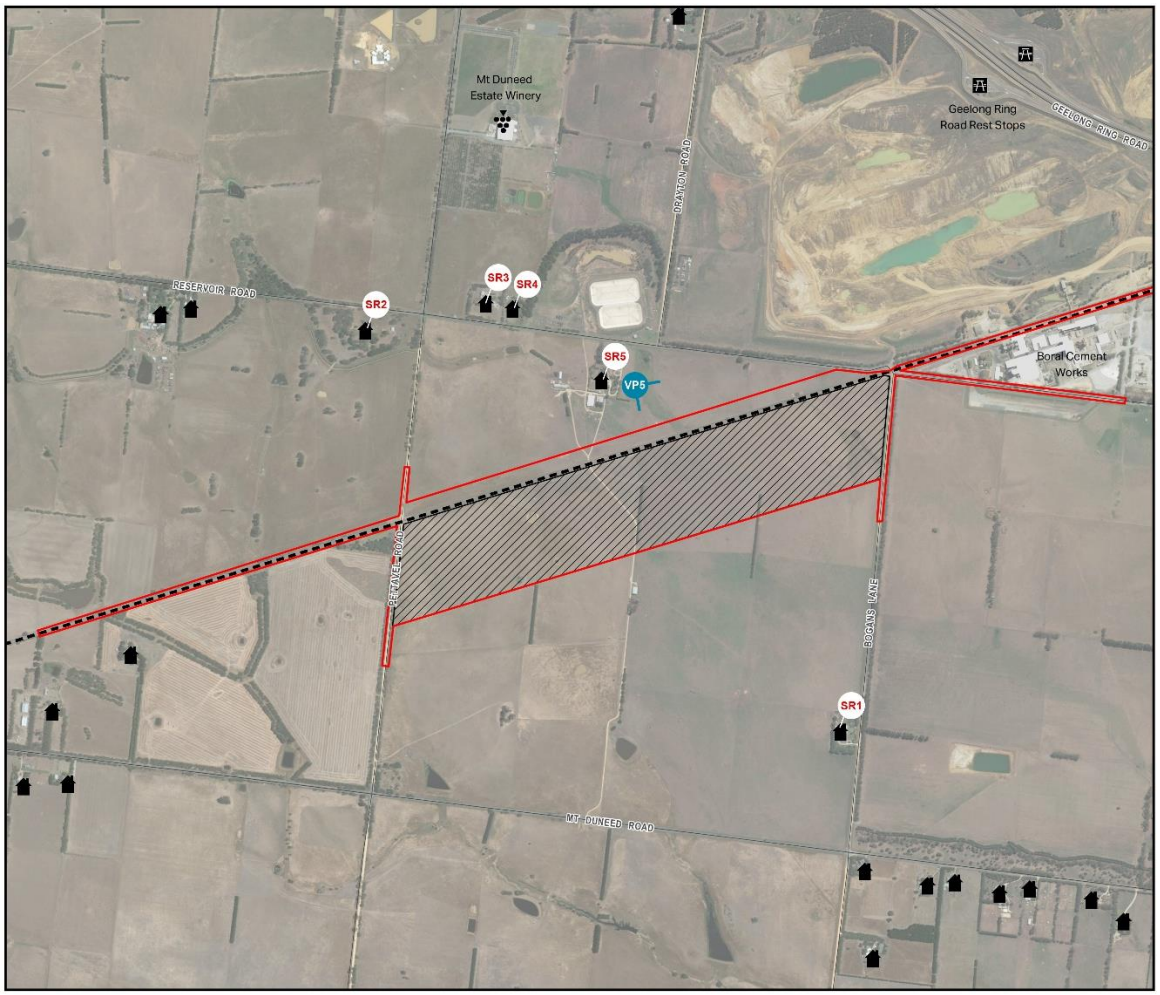
VP4 Existing View

Figure 21 VP4 Existing View

Table 20 VP5 description and visual assessment

VP5: Reservoir Road (SR5)

Location Plan



Description of Existing View

The property consists of a single storey dwelling set back from the southern side of Reservoir Road by approximately 100 metres. Further south of the residence are a number of agricultural sheds and silos, as well as a shearing shed to the western side of the residence. A network of unsealed roads form connections between the various sheds, and south across the rail line to Mt Duneed Road. Of the visual receptors assessed, VP5 is located within closest proximity to the Project Land, at a distance of approximately 260 metres north of the existing rail line.

The dwelling is sited on relatively flat terrain at a slightly lower elevation to Reservoir Road. The dwelling is oriented on a north-south axis, with formal entry on the eastern side. Clumps of shrub and canopy vegetation are present surrounding the dwelling, with additional linear shelterbelt trees extending along the entry driveway, and along some garden boundaries.

A significant gap in canopy vegetation on the eastern garden edge allows easterly views from the house. Existing garden vegetation frames the edges of the view to the immediate foreground. The centre of the view is across LCT1 and the existing rail line, towards the Boral quarry site and Bogans Lane. The vertical built form of the quarry site appears to the left of the view in the middle ground, with trees along Reservoir Road and along the fence line within the property to the

VP5: Reservoir Road (SR5)

foreground. The centre of the view includes long, distant farmland and tree canopy views towards Mt Duneed, which is seen on the skyline.

VP5 would include regular appearances of regional train services on the existing rail line to the foreground, traversing the full extent of this view.

Views from VP5 would be experienced by residents and visitors when using the formal vehicular entry and front door of the house. A moderately sized window on the northern side of the front door also may experience this view, and therefore this view may be experienced by residents inside the home.

Refer to Figure 22 existing view from VP5.

Sensitivity to Change

The sensitivity of the visual receptor to the proposed change is considered to be **High**.

Value attached to the views

No planning designations are applicable to the view. However, the residents can be expected to regularly experience views to the Project from: the formal entry to their home; potentially the front room of the residence itself; and when entering and leaving the property. Further, the formal garden design including framing of the view suggests that this view is likely to be valued by the residents.

Susceptibility of visual receptors to change.

Residents are generally considered to have high levels of sensitivity to changes in views seen from their homes. Changes to this view may be experienced when residents are at home during the daytime and may affect indoor views from living areas including the kitchen, specifically focused on the landscape; daily passing views when entering and leaving the residence; and frequent views from the front garden.

Stage 1

Anticipated Change to View

VP5 has an outlook towards the north-east corner of the Project Land. Anticipated changes to this view include the following built form elements: storage tanks; driver and cleaner's amenities; waste compound; water storage; overhead gantries with associated lighting; and security fencing.

The view to Mount Duneed will not be significantly impacted by the Project, due to the backdrop of well-wooded hills, and tree planting along Bogans Lane being subject to virtually no screening by the Project. A relatively small number of trains (provision to stable 6 trains) will regularly be seen entering and leaving the facility. It is noted that Stage 1 will be gradually cut in to the north/south central ridge of the Project Land such that at its western end, the Facility will sit approximately four metres below ground level to the north, reducing the relative height of facilities when viewed from the north by an equivalent amount. Refer to Figure 22.

Magnitude of Change

The magnitude of change for VP5 is considered to be **Medium** (Considerable change), as:

Size or Scale

Distinctive new built form elements will be clearly visible from this location, as identified above, in addition to the regular passage of trains into and out from the Facility. The Project would add a further 'industrial' element into the view, in addition the quarry and cement works. There will be a minimal loss of, and interruption to the view of the distant hills. The overall composition of the view

VP5: Reservoir Road (SR5)
largely remains unchanged, with the flat grassy plains of LCT1 to the foreground, garden vegetation framing the view, the tree line along Reservoir Road forming a perspective with the existing rail line, punctuated by the vertical industrial built form elements of the quarry and cement works in the middle ground. The existing long, open view across the valley to Mount Duneed remains intact. *Geographical Extent* The Project would be seen at a distance of about 400 metres, providing a high to moderate level of detail. The Project would be visible across much of this view, albeit in a relatively narrow horizontal band. *Duration and Reversibility* The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.
Visual Impact Rating The overall rating of the visual impact for Stage 1 from VP5 is therefore assessed to be **Moderate to Major.**
Stage 2
Anticipated Change to View VP5 has an outlook towards the north-east corner of the Project Land. Anticipated changes to this view will primarily comprise the addition of two new tank stores and expanded staff facilities. Further, this area will be subject to a high number of trains (provision to stable 26 trains) regularly seen entering and leaving the facility. It is noted that Stage 2 will be gradually cut in to the north/south central ridge of the Project Land such that the Facility will sit about four metres below ground level to the north, reducing the relative height of facilities when viewed from the north. Refer to Figure 23.

VP5: Reservoir Road (SR5)

Magnitude of Change

The magnitude of change for VP5 is considered to be **High** (Dominant change), as:

Size or Scale

Three additional buildings will be added to the view, with one of these and the two Stage 1 buildings visually coalescing into a 'single' large building mass with two new tank stores flanking either side of this. Additionally, the view will be subject to a high number of trains (provision to stable 26 trains) which will be regularly seen entering and leaving the Facility. This will comprise a substantial change to the current pastoral character of the view, to that of an open, 'industrial' setting unrelieved by any intervening landscape measures.

However, the stabling of trains would generally occur outside of this view, behind the tall garden mass planting to right of frame (refer Figure 23). The fixed elements of the Project would be visually prominent within the view, but across a relatively small proportion of the view.

Geographical Extent

The Project would be seen at a distance of about 400 metres, providing a high level of detail. The view would be seen within the context of the full background portion of the view, i.e. between the Boral facility and the dense shrub and tree planting to the circular residence driveway.

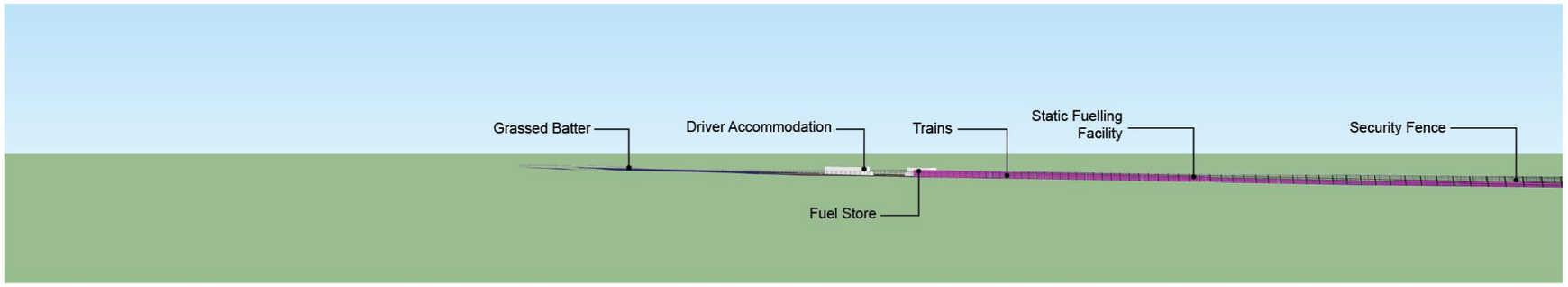
Duration and Reversibility

The duration of the Project will be long-term, with low potential for reversibility within the foreseeable future.

Visual Impact Rating

The overall rating of the visual impact for Stage 2 from VP5 is therefore assessed to be **Major.**

VP5 Existing View

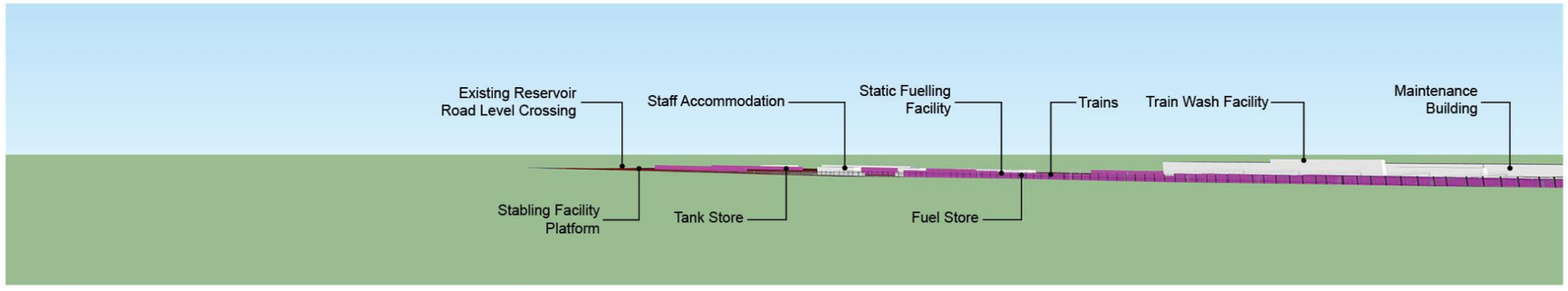


VP5 - Stage 1 - 3D Model View

VP5 - Stage 1 - Photomontage

Figure 22 VP5 Existing View, 3D Model View and Photomontage for Stage 1

VP5 Existing View



VP5 - Stage 2 - 3D Model View

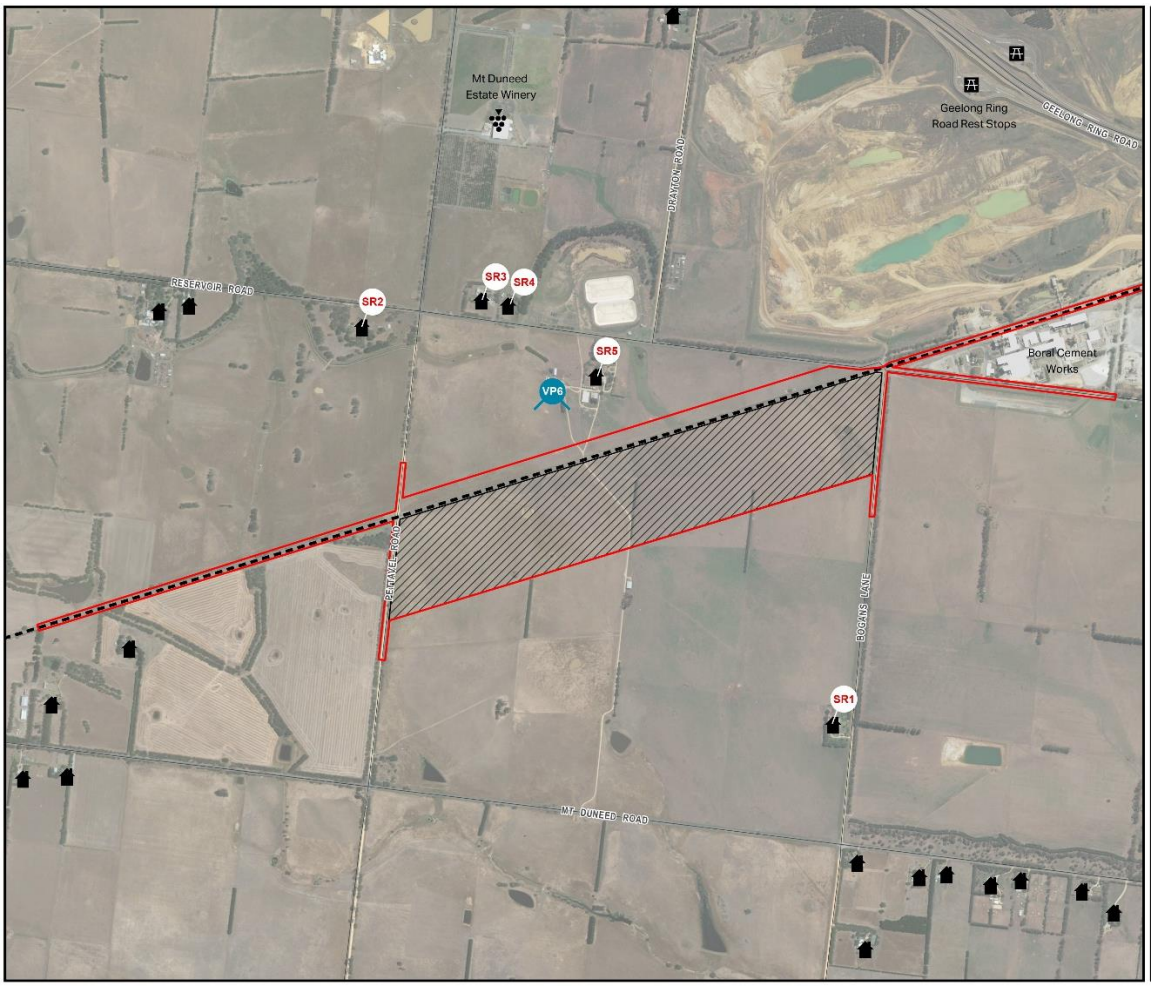
VP5 - Stage 2 - Photomontage

Figure 23 VP5 Existing View, 3D Model View and Photomontage for Stage 2

Table 21 VP6 description and visual assessment

VP6: Reservoir Road (SR5)

Location Plan



Description of Likely Existing View

This view is located west of the house discussed above in VP5 and located at the nearby shearing shed.

The shearing shed is sited on relatively flat terrain, slightly higher than the existing rail line, and located approximately 150 metres west of the dwelling. The orientation of the shed is on an east-west axis, with stock yards situated on the northern side. The shearing shed itself is elevated above existing ground levels, with a large window on the southern side of the building, with views looking south across the low-lying valley. Little vegetation is present surrounding the shed, however, a substantial windbreak of mature pine trees is present south-east of the shed, broadly orientated on a north-south axis.

VP6 is a representative view from the shearing shed window. The view is open and expansive across LCT1 and into the distance. Existing mature pine trees to the foreground form the eastern edge of the view. The existing rail line, although not clearly discernible, traverses the extent of the foreground view, with pasture to the immediate foreground. Mature native vegetation along Pettavel Road can be seen forming a perspective line from the western edge of the view into the

VP6: Reservoir Road (SR5)
distance. Views to the horizon reflect a relatively flat, open rural character of LCT1, LCT2 and substantial canopy cover beyond. VP6 would include regular appearances of regional train services on the existing rail line to the foreground, traversing the full extent of the view. Views from VP6 would be experienced by both residents and workers in the shearing shed. Refer Figure 24 for existing view from VP6.
Sensitivity to Change The sensitivity of the visual receptor to the proposed change is considered to be **High**. *Value attached to the views* No planning designations are applicable to the view, however the residents and workers are familiar with their rural surroundings and will regularly experience views to the Project on a daily basis from the shearing shed, which is a key workplace location on the farm. The location and large size of the south-facing windows for this viewpoint suggests that the view is valued by the residents. *Susceptibility of visual receptors to change* The susceptibility of the visual receptor to the proposed change can be expected to be high, as the shearing shed is a key location where they spend much of their working time on a daily basis, and the views over the property from this viewpoint may be linked to their role as farmers, for example assessment of the stock, the land, the weather, and train movements. However, the level of interest in the view is likely to vary from this location depending on the tasks being undertaken.
Stage 1
Anticipated Change to View VP6 has an outlook towards the western half of the Project. No elements of the Project will be visible within this view. Refer Figure 24.
Magnitude of Change No elements of the Project will be visible within this view, therefore **No Impact**.
Visual Impact Rating No elements of the Project will be visible within this view which is therefore assessed as **No Impact**.

Stage 2

Anticipated Change to View

A moderate change will occur in the view from this location, comprising: regular views to a high number of trains entering and exiting the facility (provision to stable 26 trains); the farm crossing point (potentially) between Pettavel Road and the western end of the Facility. A limited view of stabled trains with associated overhead gantries and lighting may be visible to left of frame (screened by the large conifer plantings). Perimeter security fencing and two large tanks will also be visible. It is noted that Stage 2 will be gradually cut in to the north/south central ridge of the Project Land such that the Facility will sit up to about four metres below ground level to the north, reducing the relative height of facilities when viewed from the north. Given the lack of buildings in the view, much of the scenic qualities of the broader landscape setting are conserved.

Refer to Figure 25.

Magnitude of Change

The magnitude of change for VP6 is considered to be **Medium** (Considerable Change), as:

Size or Scale

The view would be subject to regular high number of trains entering and leaving the facility. However, at most a limited view of stabled trains with associated overhead gantries and lighting is likely to be visible from this location, as these would be screened by the large conifer plantings to left of frame. Within this context, the scale of the Project is considered to be moderate when viewed from this location. Importantly, the qualities of the extensive pastoral view have the potential to be substantially conserved from this location.

Geographical Extent

The Project would be seen at a distance of about 400 metres, providing a high level of detail. However, the extent of the area over which the changes will be viewed is limited to a relatively narrow horizontal band with the facility being visually prominent across much of this view.

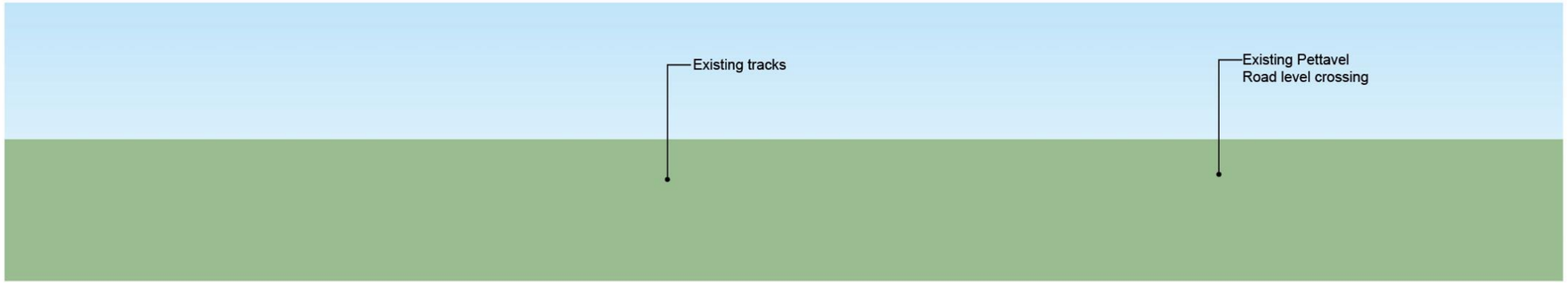
Duration and Reversibility

The duration of the Project would be long-term, with low potential for reversibility within the foreseeable future.

Visual Impact Rating

The overall rating of the visual impact for VP6 is therefore assessed to be **Moderate to Major.**

VP6 Existing View

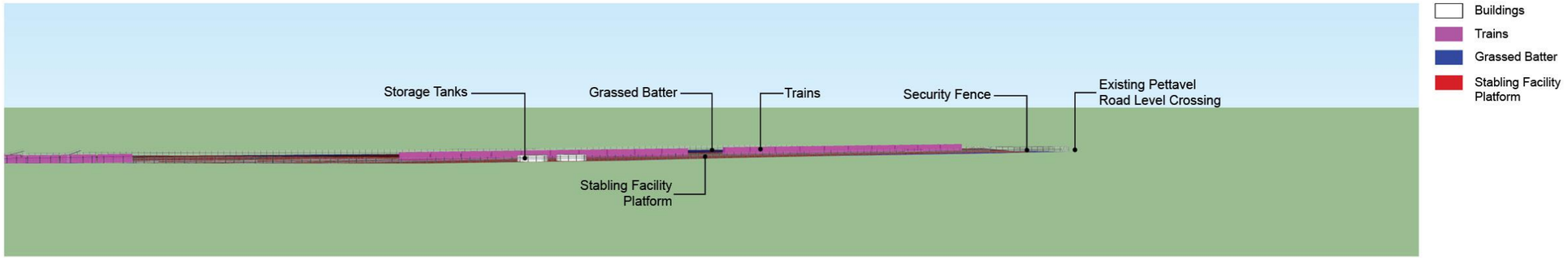


VP6 - Stage 1 - 3D Model View

VP6 - Stage 1 - Photomontage

Figure 24 VP6 Existing View, 3D Model View and Photomontage for Stage 1

VP6 Existing View



VP6 - Stage 2 - 3D Model View

VP6 - Stage 2 - Photomontage

Figure 25 VP6 Existing View, 3D Model View and Photomontage for Stage 2

9.0 Impact Assessment

A summary of landscape and visual impacts are as follows.

9.1 Summary of Landscape Impact

Table 22 provides a summary of landscape impacts.

Table 22 Summary of Landscape Impacts

LCT	Description	Sensitivity to Change	Magnitude of Change	Overall Rating
Stage 1				
LCT1	Flat Rural	Low	Low	**Minor**
LCT2	Undulating Rural	Low	Negligible	**Minor to Negligible**
LCT3	Quarry	Negligible	Low	**Minor to Negligible**
LCT4	Rural Residential	No Impact	No Impact	**No Impact**
Stage 2				
LCT1	Flat Rural	Low	Medium	**Moderate**
LCT2	Undulating Rural	Low	Low	**Minor**
LCT3	Quarry	Negligible	Medium	**Minor**
LCT4	Rural Residential	No Impact	No Impact	**No Impact**

9.2 Summary of Visual Impacts

Table 23 provides a summary of visual impacts.

Table 23 Summary of Visual Impacts

Viewpoint	Receptor	Sensitivity to Change	Magnitude of Change	Overall Rating
Stage 1				
VP1	Residence	Medium	Low	**Minor to Moderate**
VP2	Residence	Low	Negligible	**Minor to Negligible**
VP3	Residence	Low	No Impact	**No Impact**
VP4	Residence	Medium	Negligible	**Minor to Negligible**
VP5	Residence	High	Medium	**Moderate to Major**
VP6	Residence	High	No Impact	**No Impact**
Stage 2				
VP1	Residence	Medium	High	**Moderate to Major**
VP2	Residence	Low	Low	**Minor**
VP3	Residence	Low	Medium	**Minor to Moderate**
VP4	Residence	Medium	Low	**Minor to Moderate**
VP5	Residence	High	High	**Major**
VP6	Residence	High	Medium	**Moderate to Major**

10.0 Impacts at night

10.1 Expected Lighting Requirements

The Project is a 24-hour facility and therefore will likely have landscape and visual impacts at night time, primarily due to lighting associated with its functional operation and facility security. The AECOM 'Lighting Planning and Recommendations' report (AECOM, May, 2019) (the Lighting report) identifies the key areas requiring functional lighting:

- Stabling (Stage 1);
- Stabling Expansion (Stage 2);
- Existing Rail (Crossings, Entries and Exits to the Project Land);
- Storage;
- Car Parks;
- Ancillary Buildings;
- Maintenance Buildings;
- Train Wash; and
- Perimeter Fence.

The Lighting report also identifies the following relevant standards and guidelines associated with external lighting for the Project, including:

- AS/NZS 1680 Interior Lighting
- AS/NZS 1158 Lighting for roads and public spaces;
- AS 4282 Control of the obtrusive effects of outdoor lighting;
- VRIOGS 004.13 Victorian Rail Industry Operators Group Standards – Train Stabling Facilities (Note: This document requires that all lighting be mounted above the height of the trains, potentially causing much of the proposed Project lighting to be viewed surrounding the facility night and day);
- VLINE NIST 5031 V Line Standard for Lighting and Power Installations;
- Greater Geelong Planning Scheme; and
- Occupational Health and Safety Act, 2004, VIC.

10.2 Sensitive Receptors

Sensitive receptors identified in this report would currently experience views comprising a darkened rural landscape infrequently punctuated by modestly lit farm buildings, occasionally interrupted by well-lit commercial facilities (e.g. the quarry and cement works). Rural roads in the vicinity of the Project are unlit. Fundamentally the Project Land comprises part of a darkened rural landscape at night, other than around full moon.

Lighting sources can be characterised as three different areas as follows:

- An extensively lit central portion of the Facility given that all 26 stabling roads will be located in this zone, and will be subject to gantry-mounted yard lighting (gantries at assumed 25m intervals), in addition to both the Maintenance Building and the Train Wash being lit;
- A lesser amount of more discretely located lighting would be in place to either end of the Project including: access points to the Project Land, storage areas, car parks, and ancillary buildings including staff amenities; and
- Lighting to the perimeter security fencing.

In addition to the above, supplementary general lighting would be in place sufficient to meet safety and security requirements across the Facility.

Within this context, lighting will be visually prominent for many of the identified sensitive receptors, and others further from the Project Land with a direct (or near direct) line of sight to it. Lighting associated with perimeter security fencing also has the potential to be visually prominent at night.

Generally, sensitive receptors would be expected to be inside their homes at night, with their focus on evening tasks, relaxation, preparation for bed, etc. However, they would also be expected to spend some time relaxing outdoors during the evening, when the Project would be visually prominent within the otherwise darkened landscape. As such, the provision of lighting for the Project should minimise light spill, e.g. through the use of well-directed and well-shielded lighting sources. Strategically located landscape planting would also have the potential to reduce the impact of night lighting on the identified sensitive visual receptors, in addition to those further afield, particularly given the 1,700m x 320m dimensions of the Stage 2 Facility.

10.3 Control Strategies

The Lighting report reiterates general lighting control strategies as outlined in AS 4282, to minimise impact of lighting on sensitive receptor, including:

- Mounting height of luminaires;
- Set back of lighting from the edge of the property;
- Luminous flux output (per luminaire);
- Beam type and distribution;
- Distance to the adjoining property; and
- Vertical aiming angle.

Additional control strategies are also recommended, including the following:

- Shields on the luminaires to mitigate obtrusive light and glare;
- Introduction of trees or other objects on the boundary to mitigate light spill to neighbouring properties;
- Lens, diffuser or reflector to mitigate glare from the luminaire; and
- If site design and planning allows, moving the areas requiring high levels of illumination (e.g. car parks) away from the boundary will assist in reducing potential light spill.

The Lighting report recommends consideration be given to:

- Ensuring a smooth transition between the dark surroundings and the higher intensity lighting within the Project Land;
- The control of upwards light to minimise sky glow;
- Challenging, or applying for an exemption to a number of lighting requirements as outlined in the relevant standards; and
- Moving the proposed car park away from the Project Land boundary to minimise potential light spill.

The Lighting report concludes that if the lighting designer adheres to all recommendation made within the report, the impact on the surrounding sensitive receptors is expected to be minimal.

10.4 Landscape Mitigation for Lighting

As discussed above, Project lighting has the potential be visually prominent for both Stage 1 and Stage 2. It is noted that one of the above additional control strategies comprises ‘introduction of trees or other objects on the boundary to mitigate light spill to neighbouring properties’. There is potential for the inclusion of some shelterbelt planting alongside or within the Project boundary, in addition to

strategically located 'corridors' of planting within the facility to assist with reducing the visual prominence of the Facility at night.

Consideration should be given to the careful location of lighting, or incorporation of features to screen views of light sources from adjacent sensitive visual receptors in select locations. This could include measures such as placement of security fencing on the Project side of shelterbelt or 'corridor' plantings.

It is recommended that careful landscape consideration be given to these issues as part of the on-going design development process. As such, consideration could be given to the design of the Facility being undertaken in conjunction with an integrated landscape mitigation design to ensure sufficient room for landscape elements within the facility (e.g. shelterbelts that would assist in containing lighting impacts within the Facility).

11.0 Mitigation Measures

11.1 Mitigation Measures

The following section recommends mitigation measures that respond to issues arising within this assessment and that have the potential to adversely impact on:

- The character of the landscape within which the Project is located; and
- Views with the Project.

The mitigation measures address the most visually intrusive elements of the Project, as well as referencing key considerations drawn from the relevant planning and policy as outlined in Section 4.0. Recommended mitigation will address issues arising from the visual impact assessment. Refer s.8.2. As detailed design, including earthworks, has not been undertaken, recommendations will remain high-level. Lighting considerations will not be directly addressed.

11.1.1 Recommended Mitigation Measures

Mitigation measures recommended for the Project are as follows:

Table 24 Design and Siting of Buildings and Structures

Planning Policy Key Consideration	Mitigation Measure
Encourage the design and siting of buildings to complement existing farm structures and to avoid distracting from the landscape values of the area	• Use appropriate materials and finishes for buildings that complement the existing rural context. This should include the following: - Colourbond or galvanised steel materiality for building rooves, walls, and enclosures - A uniform colour for all building elements where possible - Built form colour and finish that complements the rural setting, does not create visual distraction, and seeks to blend in to the broader landscape, e.g. pale grey - Limit the use of reflective finishes which could create glare • Tank colour and finish should be similar to that of buildings and enclosures. • Consider measures to reduce the visual prominence of proposed perimeter security fencing, such that is does not comprise a visually dominant element within the landscape.

Planning Policy Key Consideration	Mitigation Measure
Keep development below the dominant tree canopy height, and utilise low scale building forms, tucked into the landscape	• Incorporate coniferous shelterbelt plantings into the design of the Facility using the same or similar species as traditionally used within the region. • Consider undertaking select shelterbelt plantings for Stage 2 in Stage 1 to quickly integrate / reduce visual impacts of the Stage 2 development.

Table 25 Vegetation

Planning Policy Key Consideration	Mitigation Measure
Encourage retention of existing shelterbelt vegetation	• Maximise the retention of existing mature tree stands within the Project Land.
Avoid landscape 'scarring' through loss of vegetation in visually prominent areas	• Reinstate vegetation to batters and disturbed areas which is consistent with that of the existing landscape, for example, reinstatement of existing pasture grasses, endemic tree species, and cultural coniferous shelterbelt plantings on the Project Land.

Planning Policy Key Consideration	Mitigation Measure
Promote indigenous revegetation around buildings and structures to assist blending new developments into the surrounding landscape *Replace lost shelterbelt trees with the same species or alternative species, suitable to the local area*	• Explore opportunities to incorporate linear dense plantings of discontinuous coniferous shelterbelt trees as characteristic of the existing rural landscape within or adjoining the Project Land, using existing species found on Project Land (preferred - we know they work), or alternate species, suitable to the local area. • Consider combinations of north-south and east-west shelterbelts aligning with the road grid, or diagonal plantings where aligning with the main rail corridor. • Ensure planting can be achieved with consideration for potential bushfire, security, and service offset requirements. • Ensure batter design and species selection enables successful planting outcomes and is readily maintainable (e.g. with batter slopes able to be safely negotiated with a tractor / slasher). • Consider the inclusion of indigenous species along road boundaries where indigenous species are already present. • Consider informal 'corridor' plantings or stands of endemic eucalypt species to the eastern end of the facility, strategically located to break-up the long, low massing of buildings and storage enclosures as seen from Viewpoint 5 (SR5), as diagrammatically indicated in Figure 26. Plantings would be carefully considered to conserve the existing well vegetated backdrop to the Project Land, including Mount Duneed. Note: The area of the Project Land shown in Figure 26 is restricted to the eastern end of the Facility. This is because the proposed informal 'corridor' plantings or stands of endemic eucalypt species are a specific response to mitigating visual impacts arising from the relatively small buildings within this area. Within the western end of the site, the only significant built form comprises two storage tanks, to which this principle could also apply. The use of eucalypt species for these smaller buildings and infrastructure is informed by: - Planning policy (Surf Coast Shire Council local planning policies – Cl.21.06): 'Promote indigenous revegetation around buildings and structures, wetlands and along waterways to assist blending new development with the surrounding landscape' / 'Building should be of modest scale and nestle into the landscape'), - Capacity to reduce fire hazard issues through considered arrangement and spacing of the trees rather than with a fixed shelterbelt form, and - Partial screening / filtered views / visual integration of smaller buildings, and a more nuanced landscape outcome that conserves long-distance views for sensitive receptors, rather than shelterbelt full screening approach for large buildings and stabled trains suited to the zone of concentration.

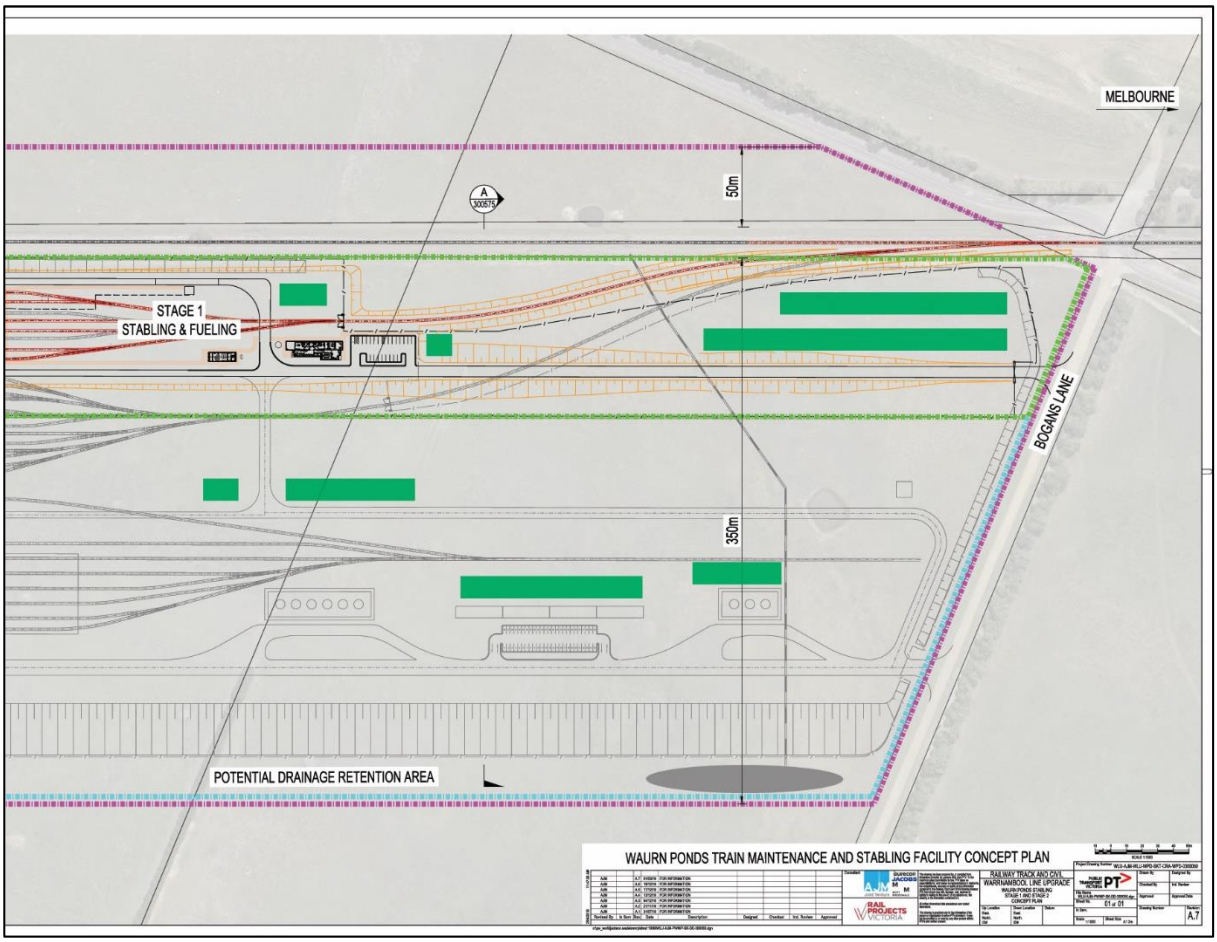


Figure 26 Conceptual layout for informal 'corridors' of endemic trees to reduce the visual prominence of the facility when seen from Viewpoint 5 (SR5)

Table 26 Other Considerations

Other Considerations	Mitigation Measure
Project Land Planning Principles	• Consider the use of shelterbelt planting to minimise or fully screen views of the Project from sensitive visual receptors. Refer Figure 27. • Consider the following high-level principles to conserve existing long views across the rural landscape from sensitive visual receptors (refer Figure 28): - Centre of Project Land is where: ▪ The stabling and associated yard lighting gantries will occur and where built form could be concentrated (zone of concentration) ▪ Shelterbelt planting could be provided along the northern and southern edges of this zone to screen views of the major infrastructure within the Project Land, comprising the large buildings, and up to 26 stabled trains with associated overhead gantry yard lighting – SR3, SR4 and SR5 would be screened by the northern shelterbelt, and SR1 screened by the southern shelterbelt - Eastern and western ends of Project Land would be where: ▪ Periodic train movement will be seen entering and leaving the facility, and

	▪ Built form could be kept to small scale and to a minimum coverage, resulting in ▪ Existing long-distance views being conserved, subject primarily to: visually 'permeable' infrastructure such as security fencing; periodic views of trains entering and leaving the Facility, and minimal cover of buildings and structures within these areas. • Should the client decide to proceed with the provision of shelterbelt planting, consider moving the top of the northern batter south 10m (preferred). This would effectively mean moving the whole development south that distance. 10m width would allow for a 2-3m slashing width either side of the shelterbelt, or alternatively a 4-6m slashing width along the existing rail corridor edge with the shelterbelt pushed towards the top of the batter. Planting at the top of the batter would also result in: - The row of trees being planted into *in situ* topsoil rather than into increasingly deep subsoil at the foot of the batter; - The row of trees following the lay of the land (rather than the increasing deep batter), which would provide better landscape integration of this feature for the sensitive visual receptors upslope; - The shelterbelt providing a potentially significant improvement in the screening of yard lighting for sensitive receptors upslope of the facility (NB: Planting at the top of the southern Facility batter would also result in an improved screening outcome for sensitive receptors south the of the Facility). • Prior to moving forward into the next stage of design, consider engaging a specialist team led by a landscape architect, and including a lighting consultant, a bushfire management consultant, an ecologist and a rail design specialist to explore master planning options for minimising the visual impacts identified in this report, e.g. facilitating sufficient room and *in situ* deep soil location for shelterbelt planting, and seeking to incorporate elements that also have useful habitat attributes.
Landscape Integration	• Prior to moving forward from Design Phase to detail design, engage a specialist team led by a landscape architect, and including a lighting consultant, a bushfire consultant and a rail design specialist to explore master planning options for minimising the visual impacts identified in this report (e.g. the use of coniferous shelterbelt plantings, and endemic eucalypt plantings in a manner that integrates the Project with the surrounding landscape character, and reduces impacts of lighting beyond the Project boundary). • Undertake landscape integration measures that reflect the character of LCT1 and LCT2. (Refer Section 5.0). • For perimeter security fencing along the northern boundary of the facility, consider placing this downslope of the cut batter to minimise visual impact from receptors to the north. • For perimeter security fencing, consider colouring the fencing, e.g. similar to a dry pasture colour or potentially a dull galvanised finish, to minimise visual impact from sensitive receptors. • Consider batter slopes flatter than 1 in 5 that are suitable for improved landscape integration outcomes for sensitive visual receptors.

Maintenance	• Consider batters slopes of 1 in 5 or flatter to facilitate safe and ready tractor / slasher mowing, including to facilitate ongoing grass fire management.

Table 27 Ecology

Other Considerations	Mitigation Measure
Ecology	• Consider engaging the services of an ecologist to inform the landscape integration design for the Project (e.g. provision of beneficial species-specific habitat), including with regard to open water / ephemeral edge settings associated with WSUD applications and drainage retention areas. • Retain existing mature ecologically significant trees along Pettavel Road. • Incorporate and/or reinstate roadside vegetation along the eastern side of Pettavel Road within the road reserve adjacent to the Project Land, consistent with the existing character and species composition already established.

11.1.2 Recommended Landscape Mitigation Measures

High level principles have been developed which could further conserve existing views across the rural landscape from sensitive visual receptors. These aim to concentrate built form with the stabling roads in the centre of the Project Land, potentially in conjunction with adjacent shelterbelt planting to screen this area. This would enable both ends of the Project Land to remain substantially open, other than for the periodic movement of trains into and out from it, thereby conserving rural views across these areas from sensitive visual receptors. Refer Figure 27 and Figure 28.

11.1.3 Bushfire Mitigation Measures

As above, *'high level principles'* have been developed which could further conserve existing views across the rural landscape from sensitive visual receptors (refer s.11.1.2). These comprise the addition of:

- Coniferous shelter belt planting to the central area of the northern and southern site boundaries (refer Figure 27 and Figure 28), and
- Informal 'corridors' of endemic trees to reduce the visual prominence of the facility buildings at the eastern end of the site (refer Table 25 and Figure 26).

These landscape measures would need to comply with the findings of the Bushfire Assessment and Development Report (Terramatrix, June 2019).

The Bushfire Assessment and Development Report requires a 22 metre defendable space around each building, and that this 'should aim to meet the standards of defendable space detailed in Appendix 2.' Refer Attachment 1. The bushfire consultant then states that … 'Analysis of the Landscape and Visual Impact Assessment and discussions with AECOM, *indicate this will be achievable*, but a more detailed landscape plan is required to confirm proposed plantings can be considered a 'low threat' (refer s.6.1.3 of bushfire report).

Further to the above, this report has made a series of recommendations to ensure the provided high level landscape principles can be developed through an on-going design process, to ensure the outcome meets all required bushfire management requirements. Refer Table 26.

As part of the consultation process with the bushfire consultant, the consultant provided correspondence that further developed the above authority requirements with details specific to the landscape approach proposed in this report (refer Attachment 2). Key points are summarised below:

- Shelterbelt plantings:
    - 'if the proposed conifer plantings are single row windbreaks* they are deemed to be low threat and therefore could retain branches within 2m of ground level'

  - the risk of grassfire ‘can be managed by ensuring no long grass exists around the trees’ - recommendation that ‘the whole site be managed with grass no more than 100mm high during the fire danger period’
- Informal ‘corridors’ of endemic trees:
  - for ‘eucalypts and any other plantings a detailed landscape/planting plan would be ideal denoting species to be planted and locations etc.’
  - ‘keeping the width of the plantings to single rows or no more than 20m wide strips is desirable, without dense shrubs under them that can act as “ladder fuels”’

* identified as ‘shelterbelts’ in this report

As can be seen from the above, the coniferous shelter belt planting concept (refer Figure 27 and Figure 28), and the informal ‘corridors’ of endemic trees concept (refer Table 25 and Figure 26) will meet bushfire requirements whilst still achieving the objectives of mitigating landscape and visual impacts.

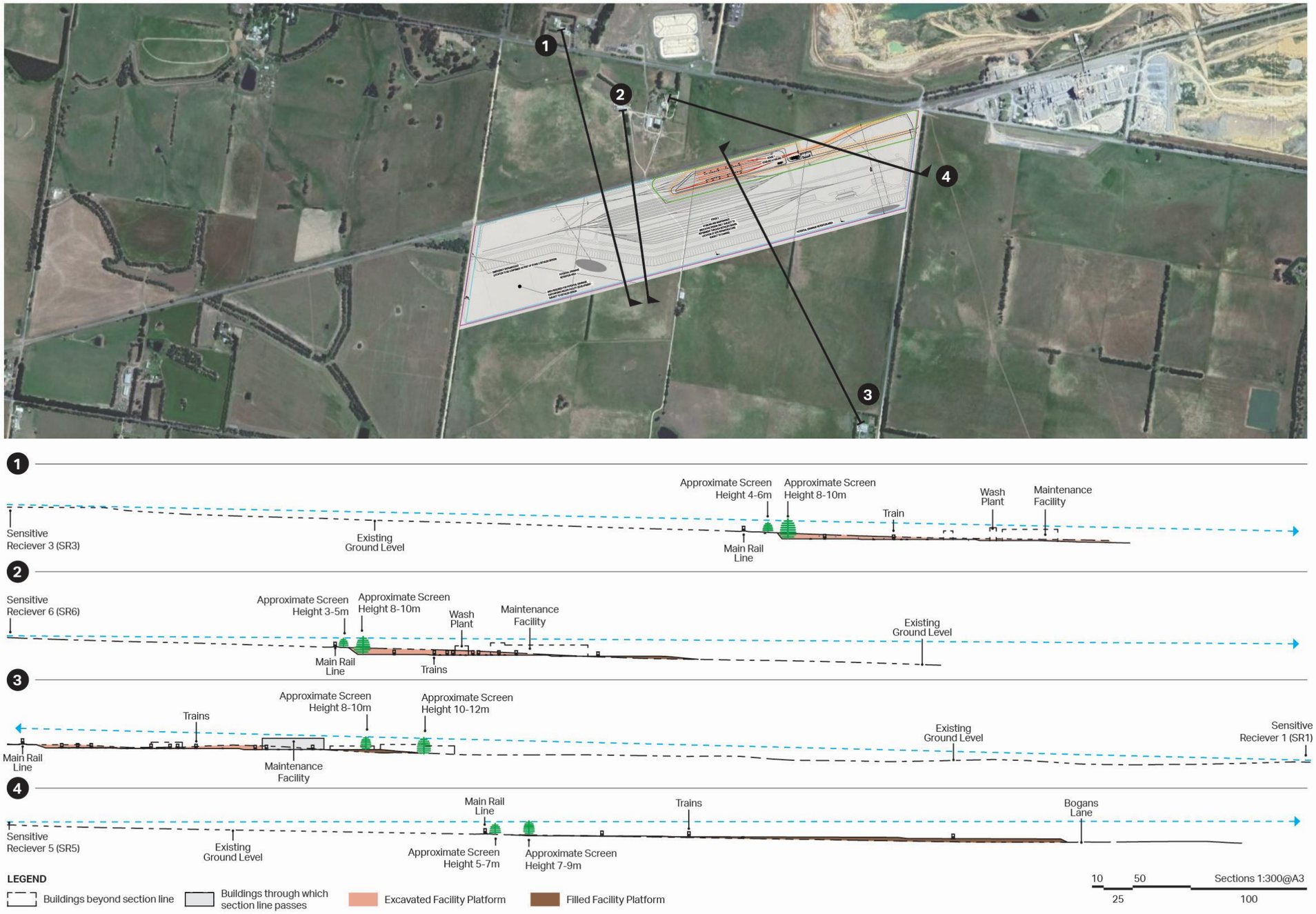


Figure 27 Indicative section / elevations showing approximate heights of shelterbelt planting that would be required to fully screen the Project from sensitive visual receptors

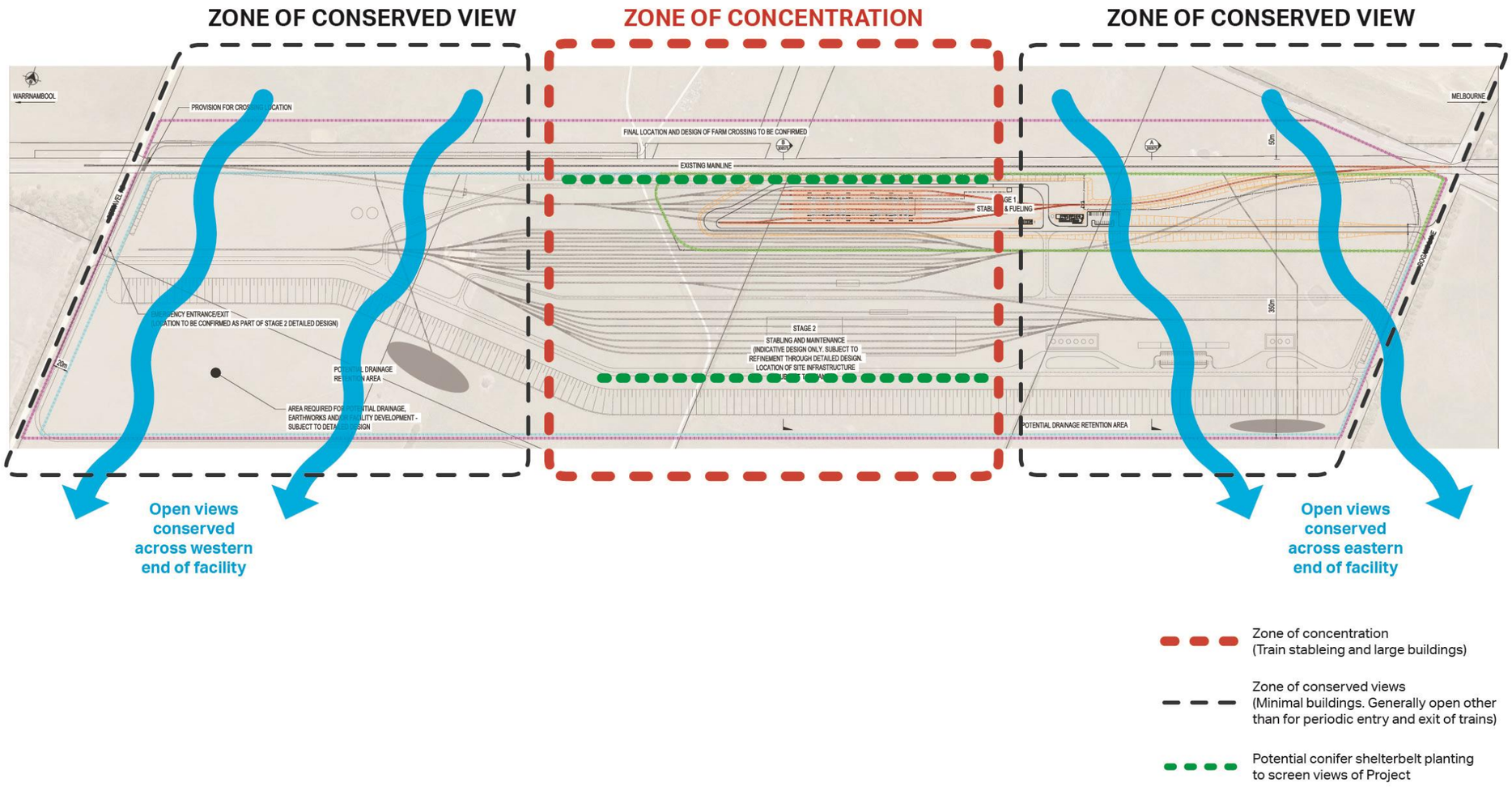


Figure 28 Plan view illustrating high level principles with potential to conserve existing rural views from sensitive visual receptors

12.0 Conclusion

This LVIA has been undertaken to understand the potential effects of the proposed Train Maintenance and Stabling Facility at Waurn Ponds. At the time of writing, the Project was in design phase.

Four landscape character types were identified within a three-kilometre radius of the Project Land, comprising Flat Rural, Undulating Rural, Quarry, and Rural Residential. This assessment found there to be no significant landscape character impacts arising from the Project.

Six representative viewpoint locations were chosen to assess the visual impact of the Project from nominated residential sensitive receptors. These viewpoints were located within a one-kilometre distance of the Project Land. Visual impacts were illustrated through the use of 3D models and photomontages for four sites, for both Stage 1 and Stage 2.

For Stage 1, the LVIA found that the Project would have effects ranging from: 'No Impact' for Viewpoints 3 and 6 as these views focussed on the western side of the Project Land where no development is proposed; within a range between 'Minor to Negligible' and 'Minor to Moderate' for Viewpoints 1, 2 and 4, and 'Moderate to Major' for Viewpoint 5.

For Stage 2, Viewpoints 2, 3 and 4 fell between Minor to Negligible and Minor to Moderate; and Viewpoints 1, 5 and 6 fell between Moderate to Major and Major.

The most significant impacts were from Viewpoints 1, 5 and 6. The Moderate to Major rating for Viewpoint 1 was due to the visual prominence of the Project when looking up the slope to a high, wide structural landform with rail infrastructure and stabled trains highly visible atop, resulting in a significant change in character to this previously rural view. Viewpoints 5 and 6 are associated with the house and shearing shed at Sensitive Receptor 5, and were rated as Major (VP5), and Moderate to Major (VP6). This is primarily due to the proximity to the Project to this receptor, and extent of change in views arising from the Project.

Whilst the Project is still in its design phase, site planning, built form and landscape mitigation measures can potentially be incorporated into the design to mitigate the extent of these visual impacts. High level principles have been developed which could further conserve existing views across the rural landscape from sensitive visual receptors. These aim to concentrate built form with the stabling roads to the centre of the Project Land, in conjunction with adjacent shelterbelt planting to screen this area. This would enable both ends of the Project Land to remain relatively open, other than for the periodic movement of trains into and out from it, thereby conserving rural views from sensitive visual receptors across much of the Facility.

Implementation of proposed mitigation measures would be expected to reduce the impact ratings found within this report.

References

AECOM, June 2019, *Waurn Ponds Train Maintenance and Stabling Facility: Ecological Assessment.*

AECOM, June 2019, *Waurn Ponds Train Maintenance and Stabling Facility: Lighting Planning and Recommendations.*

Terramatrix, June 2019, *Waurn Ponds Train Maintenance and Stabling Facility at 255 Reservoir Road, Waurn Ponds: Bushfire Assessment and Development Report.*

The Landscape Institute and the Institute of Environmental Management and Assessment, UK (2013), *Guidelines for Landscape and Visual Impact Assessment, Third Edition.*

Victorian Rail Industry Operators Group Standards, Australia 2010, *VRIOGS 004.13 Train Stabling Facilities, Revision A.*

Glossary

Term	Definition
Background view	Landscape visible in the distance (6km to 20km) where textures are no longer visible, but mountain and valley forms, skylines and ridgelines are important.
Foreground view	0 to 1km is the visual zone where colour contrast and textural detail are most clearly perceived.
Landscape sensitivity	The extent to which landscape can accept a change of a particular type and scale without unacceptable adverse impacts on its character.
Landscape value	Areas of formally designated landscape that through national or local consensus, reflect the value placed by society on particular environments and/or their features.
Middle ground view	1km – 6km – different elements in the landscape are visually apparent.
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, visiting or travelling through an area.
Visual impact	Changes in the appearance of the landscape or in the composition of available views as a result of development, to people's responses to these changes, and to the overall impacts in regard to visual amenity. This can be positive (i.e. beneficial or an improvement) or negative (i.e. adverse or a detraction).
Sensitive receptors	Individuals and/or defined groups of people who have the potential to be affected by a proposal.

Attachment 1

Excerpt from Waurn Ponds Train Maintenance and Stabling Facility at 255 Reservoir Road, Waurn Ponds: Bushfire Assessment and Development Report – Appendix 2 (Terramatrix, June 2019)

Appendix 2: Vegetation management requirements

As per Table 6 to Clause 53.02-5:

'Defendable space is provided and is managed in accordance with the following requirements:

- *Grass must be short cropped and maintained during the declared fire danger period.*
- *All leaves and vegetation debris must be removed at regular intervals during the declared fire danger period.*
- *Within 10 metres of a building, flammable objects must not be located close to the vulnerable parts of the building.*
- *Plants greater than 10 centimetres in height must not be placed within 3m of a window or glass feature of the building.*
- *Shrubs must not be located under the canopy of trees.*
- *Individual and clumps of shrubs must not exceed 5 sq. metres in area and must be separated by at least 5 metres.*
- *Trees must not overhang or touch any elements of the building.*
- *The canopy of trees must be separated by at least 5 metres.*
- *There must be a clearance of at least 2 metres between the lowest tree branches and ground level*

Unless specified in a schedule or otherwise agreed in writing to the satisfaction of the relevant fire authority' (Greater Geelong Planning Scheme, 2018).

Attachment 2

Correspondence from Terramatrix_ 20190417

Blanche, Mark

From:	Hamish Allan <hamish@terramatrix.com.au>
Sent:	Wednesday, 17 April 2019 5:46 PM
To:	Blanche, Mark; Matthews, Noel; Coddington, Gabrielle
Cc:	Barneveld, Adam Rinus
Subject:	Re: Waurn Ponds - Screen Shots

Hello Mark, as discussed if the proposed conifer plantings are single row windbreaks they are deemed to be low threat and therefore could retain branches within 2m of ground level, although obviously with dense flammable foliage down to ground level, there is a risk that a grassfire impacting the site could ignite at least the lower limbs. This risk can be managed by ensuring no long grass exists around the trees - our recommendations is that the whole site be managed with grass no more than 100mm high during the fire danger period. Alternatively, or as well, providing non-combustible mulch e.g. gravel under and around the trees would be useful, as well as maximising their setbacks from any unmanaged grassland beyond the site boundaries/in the rail corridor - the 20m setback need not be considered a requirement though because they can be deemed low threat under AS 3959 by virtue of them being a single row windbreak.

Re Eucalypts and any other plantings a detailed landscape/planting plan would be ideal denoting species to be planted and locations etc... Again keeping the width of the plantings to single rows or no more than 20m wide strips is desirable, without dense shrubs under them that can act as 'ladder fuels'. Eucalypts can likely more easily allow for pruning of branches within 2m of ground level than Cypress, and selection of species with a gum bark as opposed to finely fibrous stringybarks will reduce the potential bark hazard.

Gabby confirming we have started on our amended report and are aiming to get it to you mid next week with spreadsheet as requested.

regards

Hamish Allan
Manager – Bushfire Planning and Design
mobile: 0412 303 358
Use only a trained and accredited bushfire professional
BPAD Bushfire Planning & Design Accredited Practitioner Level 3

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