Montrose Quarry Stage 2 Extension

Landscape and Visual Impact Assessment

Landscape and Visual Impact Assessment – Technical Report
Prepared for **Boral Resources (Vic) Pty Ltd**

Tract
Level 6, 6 Riverside Quay,
Southbank, VIC 3006
(03) 9429 6133
www.tract.com.au
14 November 2024

Quality Assurance

Montrose Quarry Stage 2 Extension

Landscape and Visual Impact Assessment – Technical Report

Project Number

0322-0548-01

Prepared By

Amanda van der Westhuizen, James Rex, Mark Reilly

Reviewed By

Jack Collings

Project Principal

Alistair Wenn

Date of Issue

14 November 2024

Revisions

Rev	Date	Details	Prepared By	Reviewed By	Project Principal
00	23 October 2022	LVIA Technical Report – Draft	AvdW	MR	MR
01	21 November 2023	LVIA Technical Report – Draft 01	AvdW	MR	MR
02	14 November 2024	Additional RVAA Included - LVIA Technical Report	JR	JC	AW

Executive Summary

The Project

Boral owns and operates Montrose Quarry and associated processing plant, concrete and asphalt plants at 56-72 Canterbury Road, Montrose, VIC 3765.

The site currently operates under Work Authority 100 (WA 100) issued under what is now the Mineral Resources (Sustainable Development) Act 1990. The existing quarry has been in operation for a number of decades.

Boral is now seeking to extend the existing extraction boundary to increase the life of the quarry operation. This Landscape and Visual Impact Assessment (LVIA) forms part of a Work Plan Variation (WA 100 Expansion) to be lodged by Boral in support of the proposed quarry expansion.

Study Area

The site is situated in Montrose, Victoria, an area located at the foothills of the Dandenong Ranges approximately 32 km east of Melbourne. The study area is located within the Yarra Ranges Shire local government area and is positioned at the interface of various residential, industrial and major road land uses (refer to Figure 3 for assessment study area).

The site and the proposed expansion area is bound by Canterbury Road to the north, residential housing to the northeast, Dr Ken Leversha Reserve to the east and south, and Fussell Road to the west.

The proposed stage 2 development will result in an expansion of the current pit by approximately 25%, including 9.53 Ha of remnant vegetation and 4.5 Ha of already cleared land. The proposed development will reduce existing landform levels along the eastern and southern edges of the quarry pit and remove vegetation in the new extraction area. The existing operational patterns and plant facilities will remain the same. (Refer to Appendix 1 for the Site development plan)

Planning Policy and Strategic Context

An overview of the study area in terms of the strategic context relevant to this assessment has been provided in Section 4. An important theme is the protection and enhancement of significant landscapes and open spaces that contribute to character, identity and sustainable environments. The scenic beauty and unique landscape features of the Dandenong Ranges and foothills as a backdrop throughout the Shire is emphasised as a core component of its landscape values and scenic amenity. The planning scheme requires that these characteristics should be maintained and protected.

In terms of Zones and Overlays, the existing quarry pit lies within the SUZ1, and the proposed quarry expansion area lies within SUZ6. The purpose of SUZ6 is essentially the protection of properties in proximity from noise, dust and visual intrusion.

The proposed quarry expansion area is covered by an Environmental significance overlay (ESO), with an objective to ensure that any new development is sensitively designed and sited to reinforce the existing environmental characteristics of the area. It is also covered by a Significant Landscape Overlay (SLO1). Relevant objectives relate to retaining a forest dominated landscape within this area and maintaining the appearance of uninterrupted forest ranges when viewed from Melbourne's outer east and surrounds.

There are other overlays surrounding the site which have been noted as relevant, however, the most prominent being those associated with The Dandenong Ranges National Park, towards the east of the Site area. The emphasise on the scenic beauty and unique landscape features within Yarra Ranges is a core component of its landscape quality. Within the study area, the foothills of the Dandenong Ranges and the visual amenity provided by the ranges represent a backdrop throughout the Shire.

Baseline Values (Existing conditions)

The study area is located at the foothills of the Dandenong Ranges, 35km east of Melbourne on the edge of the Urban Growth Boundary, with the Green Wedge zone extending eastwards and southwards from the quarry site boundary. The landform within the study area is a prominent landscape feature with the Dandenong Ranges providing a backdrop to the wider landscape setting.

The study area represents a transition from the urban areas of Boronia, Croydon and Mooroolbark in the west, through the residential areas of Kilsyth South and Montrose (including east of the Site area), to the conservation area of the Dandenong Ranges National Park in the east.

The existing quarry is located at the intersection of the Canterbury Road industrial precinct. The landscape to the immediate west of the existing quarry site has developed as an industrial precinct, which extends down Canterbury Road to the south-west. With the exception of native street tree planting, the industrial setting generally has a minimal and fragmented landscape presence and is in a relatively poor condition.

On that basis, people moving through the wider study area represent a range of interests from residential, industrial and commercial users through to tourists and day leisure seekers accessing the north-western end of the Dandenong Ranges National Park.

The existing Montrose Quarry is currently in operation and is a part of the existing baseline condition of the study area. The quarry includes an active extraction pit, haul roads, stone processing area with a concrete and asphalt plant facility. There is a prominent perimeter landscape buffer surrounding the Site area. The existing operational patterns and plant facilities will remain the same within the proposed development.

New Conditions Assessment – Key Findings

The Landscape impact Assessment found that there would be impacts similar in nature to existing quarry impacts but cover a greater area. The reduction in vegetation and landform change is the major landscape impact. Landscape impacts are considered to have a relatively Low level of significance on the basis of the size of the change and the potential for at least partial mitigation (revegetation) over time as a result of quarry rehabilitation and likely future end use development.

The Visual impact Assessment indicated that across the study area, the overall nature of effects will largely remain consistent with existing conditions of the operational quarry. The assessment identified:

- Seven representative viewpoints within the study area which have no view of the existing quarry or the proposed stage 2 development.
- Two representative viewpoint locations (Canterbury Road) have a view of the existing quarry, or parts of the processing plant associated to the existing Montrose Quarry. However, the proposed stage 2 development has been determined to have a negligible or neutral visual impact onto these receptors and on that basis the visual impact of stage 2 works is considered a Low level of significance.
- Three representative viewpoint locations (Warburton Track Cambridge Road, Sherman Road and Mountain Highway) have existing partial views of the quarry pit. These views will experience a change as a result of stage 2 works, but the change will be minimal and consistent with existing effects. On that basis the visual impact of stage 2 works is considered a Low level of significance.
- Viewpoint 2 (Mt Dandenong Road) will experience clear views of the quarry pit, but the viewing distance (5km+) and the complexity of the existing visual field means that the changes are likely to be substantially visually absorbed, and on that basis, have a Low level of significance.
- Viewpoint 12 (Burkes Lookout) will experience clear views of the Stage 2 pit changes and operations. At a distance of 1.8km the changes will be clearly evident with only minimal screening potential. The panoramic view from this location is based on views of suburban development, including large scale industrial land uses. The visual complexity and changing nature of the view is itself the point of interest. It also acts to absorb visual changes. On that basis, the visual impact of stage 2 change is considered to be Moderate level of significance only and partly reversible with site rehabilitation over time.

The Cumulative Impact Assessment indicates that across the study area, the overall nature of effects will largely remain consistent with existing conditions of the operational quarry. This is due to viewpoints with a discernible change in the

shape of the quarry extraction area occurring within existing seen areas. The magnitude of change will be clear at viewpoint 12 (Burkes Lookout), but this impact is likely to be seen as an isolated change and is not considered a cumulative impact.

Residential Visual Amenity Assessment

The potential residential visual amenity impacts have predominantly been identified towards the southern portion of the study area, within the foothills of Mount Dandenong due to the designated values associated to visual amenity within this area. The residential locations are a representative selection of properties with valued visual amenity.

The assessment found that the visual amenity would typically not be impacted by the proposed development, and it is not anticipated that there would be new visibility towards the extraction pit from the selected residential locations. However, it is anticipated that the landform changes and removal of vegetation within the site area towards the south of the site area would become perceptible from limited residential views. The removal of vegetation may alter the visual horizon line and lower the height of the vegetated backdrop from a limited number of residential locations, which has been assessed as a negligible magnitude of change, given the existing conditions and wider context of view.

The visual amenity assessment determined the significance of impact rating would be considered low – negligible and the residential visual amenity threshold would not likely be exceeded.

Mitigation Measures

It has been noted that the existing on-site and offsite vegetation (street trees, shelter belt tree plantations and private gardens) function as the primary visual impact mitigation measure at this time and have the capacity to provide this function into the future. Therefore, the following key mitigation measures have been identified:

1. Landscape buffers and Site Rehabilitation
    - Retain and further develop as much of the existing EVC vegetation already existing on site, including remnant woodland vegetation and quarry buffer plantations. Including plant buffers along Fussell Road (western boundary) and minimise the removal of vegetation during the construction of the Western Haul Road.
    - Develop tree planting where possible along the northern edge of the pit to visually isolate the processing area and concrete / asphalt plant areas and to offset effects from southern viewpoints.
    - Ensure that all new or infill planting is based on local EVC species.
    - Progressively reinstate / rehabilitate quarry faces as these become available, to soften the visual contrast and improve the visual offering. The short-term rehabilitation of the upper benches on the northern and eastern faces in particular have potential to mitigate visual impacts likely to be experienced by sensitive receptors in close proximity to the site.
2. Other Recommendations
    - Ensure that infrastructure utilises non-reflective materials with low colour contrast colours.
    - Minimise light spill and radiance from existing operations.
    - Where possible, increase the level of street tree planting in Canterbury Road within 1km of the quarry site boundary.
3. End use planning
    - It is understood that Boral is developing a long-term End Use Master Plan for the quarry pit closure, rehabilitation and site use option(s). All end use site planning options will retain, and potentially enhance visual screening and site vegetation systems that visually integrate the site with the surrounding landscape.

Evaluation

Based on the results of the landscape and visual impact assessment, the proposed development is largely going to have a minimal effect on the landscape and surrounding visual amenity. This is because the nature and magnitude of change is anticipated to be similar to the existing conditions of the current operational quarry.

It has been noted that with sufficient mitigation measures currently in place at the existing quarry, the identified impacts would progressively be rehabilitated and reduced over time.

Contents

1 Table of Contents

Glossary of Terms

Amenity	A measure of scenic quality.
Analysis	Process of breaking down landscape or visual attributes into component parts to understand how it is made or valued.
Assessment	General term for description, classification and analysis of landscape or visual attributes.
Classification	A process of sorting the landscape into different types using selected criteria, but without attaching relative values to the different kinds of landscape.
Cumulative impact	The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.
Duration of effects	Measure of both time and the reversibility of effects.
Effect	A consequence of change.
Impact	A positive or negative change to the landscape or the visual environment.
Landscape	A distinctive physical area as perceived by people, whose character is the result of the action and interaction of natural and / or human factors. Human perception of the land conditioned by knowledge and identity with a place.
Magnitude of change	Combination of scale, extent and duration of an effect.
Mitigation	Measures to avoid, reduce or compensate for adverse landscape and visual effects.
Perception of landscape	The psychology of seeing and potentially attaching value or meaning to a landscape
Receptor	Physical landscape resource, viewer or special element that will experience an effect as a result of change.
Scenic quality	A relative judgement, based on common community perceptions, about the visual qualities associated with a landscape type or character area.
Sensitivity	The extent to which changes in landscape and visual resources can accept change without unacceptable, adverse effects on its character.
Significance	A relative measure of the importance of a landscape or visual change against a defined value system
Study area	Combination of the proposed development site and the surrounding area, typically to a radius of at least 5km.
Visual absorption capability	Index of an areas ability to accommodate changes without a significant reduction in landscape and visual quality or amenity.
Visual amenity	The value of a particular area or view in terms of what is seen.
Visual assessment	Deals with potential effects on the visual resources of the setting from changes in the composition and quality of views, people's response to likely changes and the overall effect on visual amenity.
Visual sensitivity	The extent to which a landscape can change without unacceptable adverse effects on its visual character or scenic quality.
Wireframe Visualisation	A computer simulation to illustrate the appearance of a proposed development.
Zone of Visual Influence	Commonly referred to as 'ZVI'. An area within which a proposed development may have an effect on visual amenity. This is also referred to as the 'Zone of Theoretical Visibility'.

1 Introduction

This Landscape and Visual Impact Assessment (LVIA) has been prepared by Tract Consultants Pty Ltd for Boral Resources (Vic) Pty Ltd (Boral).

Boral owns and operates Montrose Quarry and associated processing plant and equipment, along with concrete and asphalt plants at 56-72 Canterbury Road, Montrose, VIC 3765. The site currently operates under Work Authority 100 (WA 100) issued under what is now the Mineral Resources (Sustainable Development) Act 1990. The quarry was established as early as the 1950's.

Boral is now seeking to extend the existing extraction boundary to increase the life of the quarry operation. The proposal to expand the extraction boundary requires the following statutory approvals:

- An amendment to the Yarra Ranges Planning Scheme and a planning permit under the Planning and Environment Act 1987.
- A Work Authority and Work Plan Variation under the Extractive Industries Development Act 1995 for the extended quarry operations.
- A Works Approval and Licence under the Environment Protection Act 1970 for the increased water discharge volumes associated with the quarry activities.

This LVIA forms part of a Work Plan Variation (WA 100 Expansion) to be lodged by Boral in support of the proposed quarry expansion.

This assessment is based on the Montrose Staging Plan and Rehabilitation Concept provided by Boral (GHD Pty Ltd, 2022), as described in Section 3. The assessment is focused on the condition that will exist at the completion of all extraction stages; however, it does discuss the various stages. There are no new buildings, plant or equipment proposed.

Figure 1 below shows the proposed extension area at the ultimate stage, the proposed development / extension has been modelled based on this plan below and forms the basis of this assessment.

Refer to Section 3 and Appendix 1 for the proposed development staging.

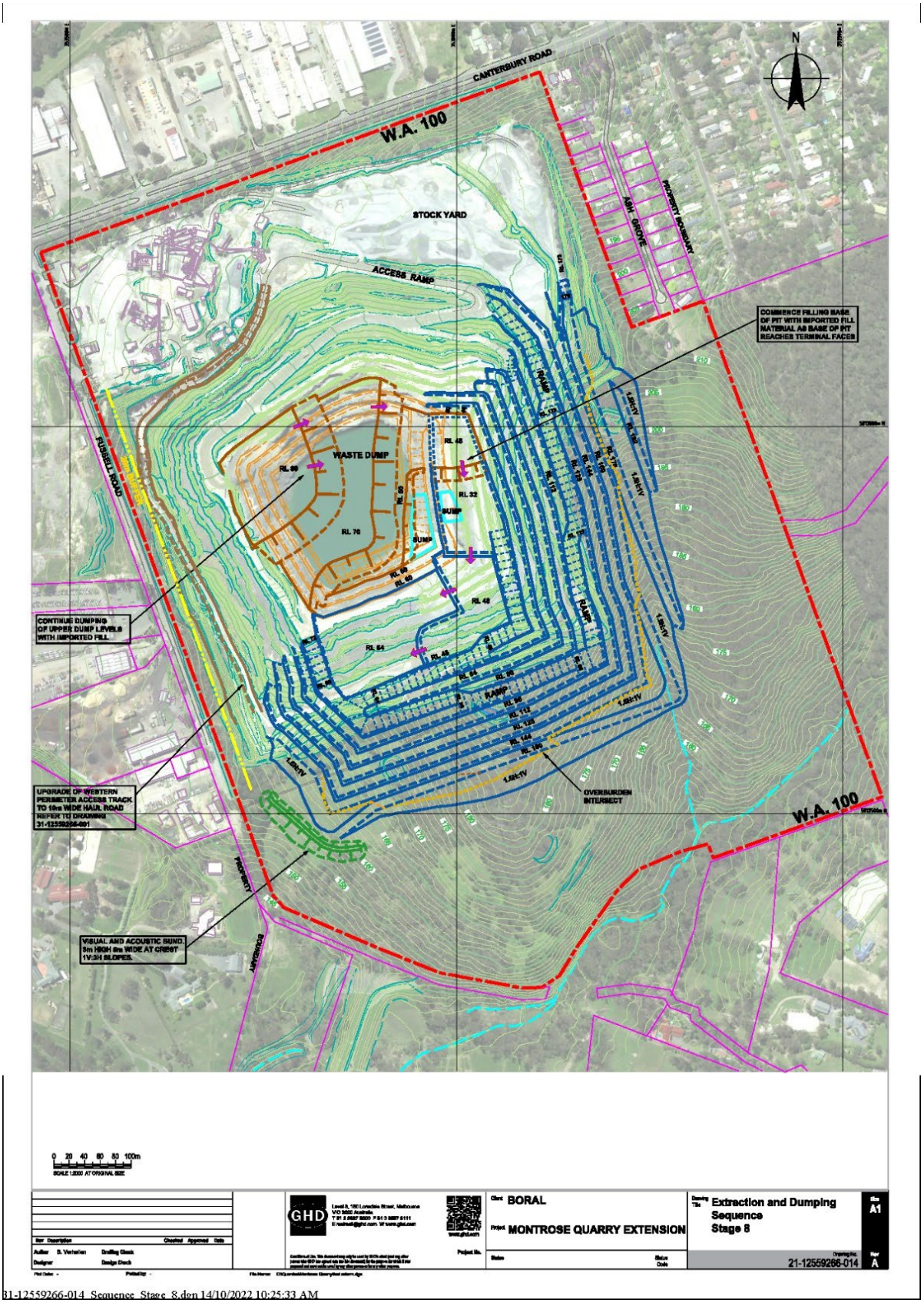


Figure 1: Stage 8 Proposed ultimate extraction area

1.1 Scope of Assessment

The purpose of this Landscape and Visual Impact Assessment is to evaluate the likely visibility of proposed new structures and key features within the site area, from surrounding viewpoints and the effect of the likely change on the landscape character and scenic quality of the landscape and surrounding areas.

The scope of this study has been informed by the information provided within the Boral Montrose Staging Plan and Rehabilitation Concept (GHD Pty Ltd, 2022) and includes the following:

- Description of the development proposal;
- Summary of the regional strategic context and landscape values;
- Baseline values of existing visual conditions and the surrounding landscape values;
- Modelling to determine the theoretical zone of visibility of existing conditions and of the new proposal;
- Key findings based on the theoretical ZVI modelling, site inspection and supporting indicative wireframe visualisations;
- Assessment of landscape and visual impact related to the Proposal;
- Assessment of Residential Visual Amenity related to the Proposal;
- Potential mitigation measures and recommendations;
- Evaluation of the Proposal in terms of landscape and visual impacts.

This assessment focusses on the final expanded footprint as a worst-case scenario. Staging and sequencing of the works are considered in terms of the expected timeframe and duration of impacts as well as the benefits of ongoing and pre-emptive mitigation works.

1.2 Assumptions

The assessment does not consider:

- Specific impacts from every possible viewing location. The aim of the assessment is to establish the baseline nature and magnitude of related changes and effect of those changes expected for typical, representative and worst-case scenarios.
- Targeted consultation relating to community values or visitor perceptions of landscape and visual quality. However, publicly available documents have been referenced to establish a baseline understanding in this regard.
- The potential impact on cultural heritage resulting from the Proposal.
- The effects of glint and glare on visual receptors resulting from the Proposal.
- The consideration of landscape and visual impacts resulting from lighting during night-time conditions, as no additional lighting beyond that which is already present is proposed.
- The effects of future land use changes such as new residential development, road development or tourist activities that are not defined at this time but may occur within the areas adjoining the study area.
- The consideration of rehabilitation plan and / or end of life plan options for the Montrose Quarry. This assessment deals only with the baseline final landform for closure as a worst-case scenario.

1.3 Study Area

The site is situated in Montrose, Victoria, an area located at the foothills of the Dandenong Ranges approximately 32 km east of Melbourne.

The study area of this assessment includes a study extent of approximately 6km from the edges of the existing pit on the site. This radial distance equates to 'background' views and is generally acceptable to capture the nature and magnitude of effects for this scale of development.

The study area is located within the Yarra Ranges local government area and is positioned at the interface of various land uses, including residential, rural living, agricultural, industrial and open space. The site and the proposed expansion area is bound by Canterbury Road to the north, residential housing to the northeast, Dr Ken Leversha Reserve to the east and south, and Fussell Road to the west.

The Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation is the Registered Aboriginal Party (RAP).

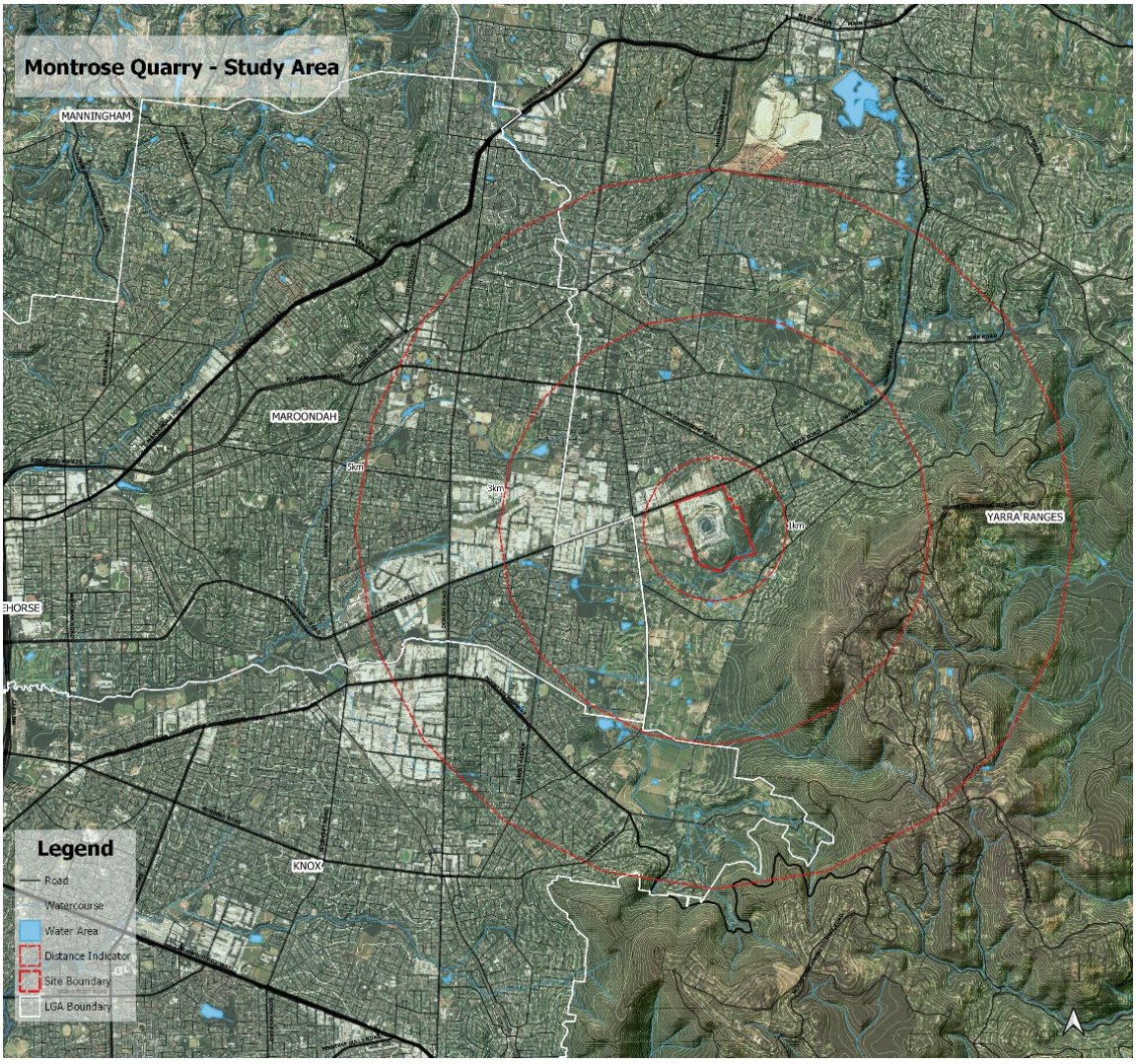


Figure 2: Study Area

2 Study Methodology

2.1 Assessment Methodology

General assessment methodology reference

The overall method applied to assess landscape and visual impacts of the existing landscape is based on principles outlined in Guidelines for Landscape and Visual Impact Assessment Third Edition (The Landscape Institute 2013), which represents a 'best practice' approach within the United Kingdom and has been extensively trialled since 1995 on an extensive range of project types including extractive industry projects, wind farms, property and road infrastructure development.

Refer to Figure 6: Landscape and Visual Impact Assessment for Tract's overall LVA methodology which informs the structure and content of this report.

Visualisation references

In terms of visual representation of effects (wireframe visualisation images), the methodology is based on the principles outlined in the following publications which are cross referenced within the Guidelines for Landscape and Visual Impact Assessment Third Edition (The Landscape Institute 2013):

- Visual Representation of Development Proposals, Advice Note 17/19 (Landscape Institute UK, 2019),
- Photography and Photomontage in Landscape and Visual Impact Assessment, Advice Note 1/11 (Landscape Institute UK, 2011) and
- Visualisation Standards for Wind Energy Developments (The Highland Council Scotland, 2013).

Professional judgement in LVIA

Structured professional judgement (qualitative assessment) is an integral part of the process and has been used in conjunction with quantitative based assessment procedures in this project. Tract has used a team-based approach to validate professional judgements.

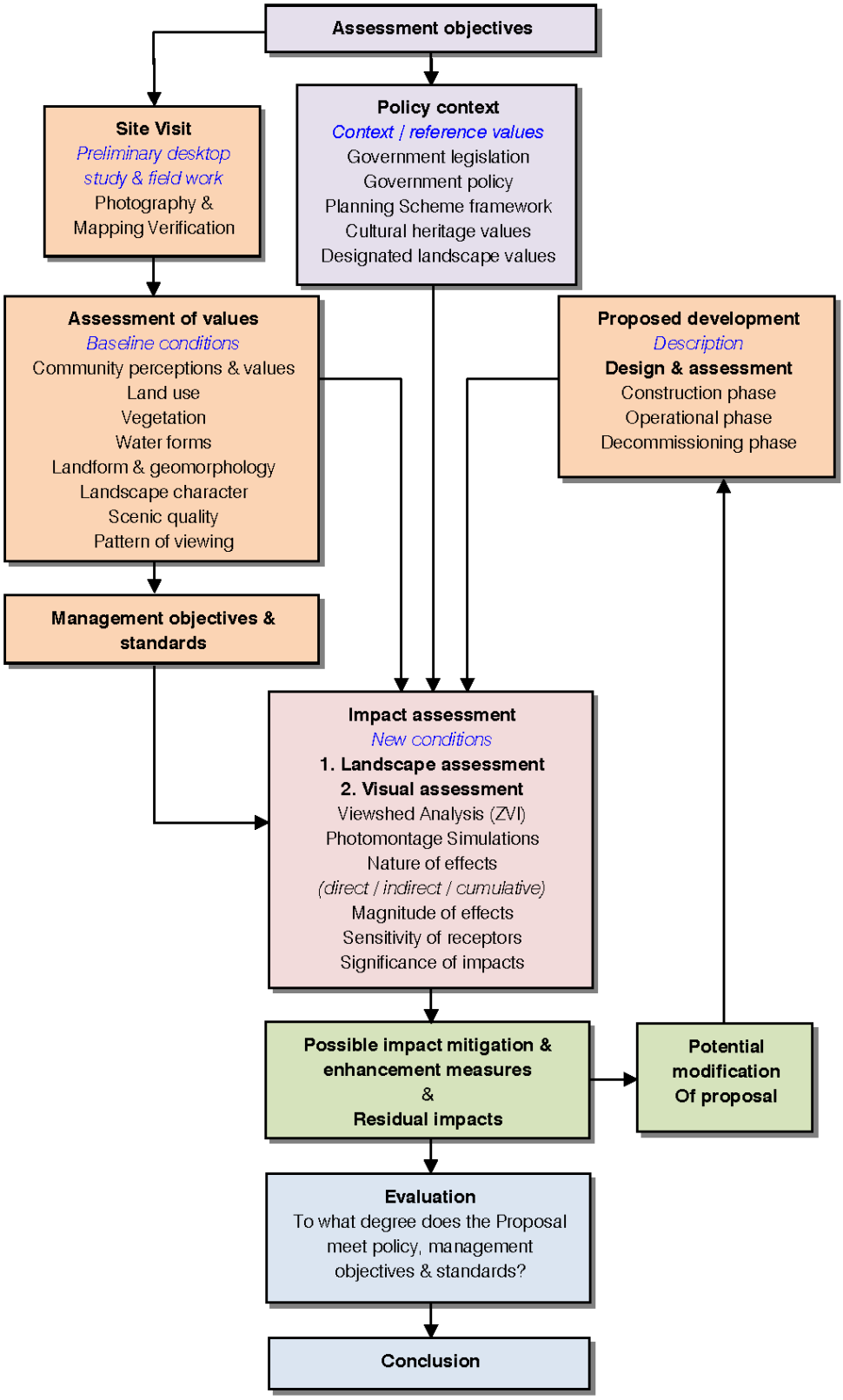


Figure 3: Landscape and Visual Impact Assessment process

2.2 Impact Assessment Definitions

Impact assessment has been based on the criteria of sensitivity of receptors including the landscape and its users (visual receptors), duration of impacts, nature and magnitude of impacts, and significance of impacts.

Nature and Magnitude of impacts

The nature and magnitude of impacts is the anticipated extent of change that will be experienced by receptors, refer to Section 2.2 for the definition of impact significance levels.

Visual Receptor

A visual receptor is a place, route, viewer or interest group. Receptor sensitivity is a measure of the direct or indirect effects that development changes may have on a receptor or their view, refer to Section 2.5 for the identified sensitivity levels within the study area.

Significance

The significance of impacts will be determined by a combination of sensitivity of the receptor (whether it is landscape or a visual receptor) and the magnitude of the predicted changes.

The ratings shown in Table 1 define the levels of significance of impacts expressed as three levels.

The impact ratings are made against the baseline values identified within Section 5.

The descriptive meanings of high, moderate and low significance impacts are explained in Table 2.

The significance ratings reflect an assessment of the overall importance of the predicted impact and also indicate mitigation priorities. A number of 'moderate' rating factors may collectively represent a relatively 'high' degree of change to a receptor (cumulative impact) and therefore mitigation measures may need to be considered for more than 'high significance' rated impacts.

Table 1: Impact significance matrix – the nature & magnitude of impacts

MAGNITUDE OF CHANGE				
	high	moderate	high	high
	moderate	moderate	moderate	high
	low	low	moderate	moderate
	negligible	low	low	low
	No change	Nil / negligible	Nil / negligible	Nil / negligible
		low	moderate	high
		RECEPTOR SENSITIVITY (Landscape / Viewers)		

2.3 Nature and Magnitude of Impacts

Table 2 defines the likely effects of the changes resulting from each level of predicted impact identified in Table 1 from major adverse (high) to major beneficial (negligible).

Table 2: Nature and magnitude of impacts – definition

Impact Significance Levels	Definition Visual Impacts on Landscape	Definition Visual impacts on Receptors
Major adverse **HIGH (6)**	Total or substantial alteration to key features of the baseline conditions. Effects are at considerable variance with the landform, scale and pattern of the landscape and cannot be substantially mitigated. Would cause a high quality or designated landscape to be substantially changed and its quality and values diminished.	Total or substantial alteration to key features of the baseline conditions. The Proposal forms a significant and dominant part of a view of high scenic quality. Other scenic elements become subordinate and diminished in value. The valued scenic character of the site is markedly changed. Sensitive visual receptors are adversely affected by the change.
Moderate adverse **MODERATE (5)**	Would be noticeably out of scale with the landscape and clearly at variance with key landscape attributes identified within the baseline conditions. Will leave an adverse impact on a landscape of recognised quality.	The Proposal forms a clearly visible and recognisable new element within the overall scene that is readily noticed by the receptor. The scenic character and quality of the site is diminished.
Minor adverse **LOW (4)**	Will have an apparent but not obvious or dominant effect on an area of recognised landscape character or its key attributes.	The Proposal constitutes a discernible but minor component of the wider view. Awareness of the element will have a negative but not a marked effect on overall scenic quality.
Neutral **NEGLIGIBLE (3)**	Only a very slight change to baseline conditions and maintains existing landscape character and quality. New features complement the scale, landform and pattern of the site landscape and its broader setting.	The Proposal or associated activity is hardly visually discernible. The activity or feature is visible but has an insignificant effect on the perceived values or scenic quality of the setting.
Minor beneficial **NEGLIGIBLE (2)**	Likely to enable the restoration of valued landscape characteristics or features lost or diminished through existing land use activities. Potential to contribute to the development of a new and higher quality landscape character.	The Proposal fits comfortably within the existing visual landscape. The Proposal helps to articulate existing visual character and amenity values. Potential for the Proposal to contribute to the development of a new and higher value visual character.
Moderate / Major beneficial **NEGLIGIBLE (1)**	Fits comfortably within the existing landscape character and clearly contributes to the development of higher landscape values. Results in a significant improvement to the quality of the landscape through the rehabilitation of damaged areas or the removal of features or activities that have a negative impact on landscape values. Results in a distinctive landscape feature that has the potential to add new values to the landscape without diminishing existing valued landscape characteristics.	Fits comfortably within the existing landscape character and clearly contributes to the development of higher landscape values. Results in a significant improvement to the visual quality of the landscape through the rehabilitation of damaged areas or the removal of features or activities that have a negative impact on scenic values. Results in a distinctive landscape feature that has the potential to add new visual or tourism values to the landscape without diminishing existing valued visual characteristics.

Table 3: Impact duration

Impact duration

The ***duration*** of impacts is defined as:

Short term	Project construction and establishment phase (<2 years)
Medium term	Early project operational phase (2 – 10 years)
Long term	Within projected operational phase (10 – 40 years)
Permanent	Beyond projected operational phase (40 years +)
Reversible	Physical potential for full rehabilitation to original baseline condition within feasible cost parameters and land use objectives
Irreversible	Permanent physical change to the baseline condition Beyond feasible cost parameters and land use objectives

Distance factors:

Table 4: Distance factors – dependant on the nature of the change

Distance	Definition of typical effects
Foreground (<1 km)	• Obvious or dominant visual change to the landscape and landform characteristics including Colour contrast and textural details are clearly perceived. • On-site movement is potentially evident • Landform characteristics and the relationship between landscape features are clearly discernible.
Middle ground (1 – 3 km)	• Potentially obvious visual change to the landscape and landform characteristics. • Colour contrast is evident but potentially not dominant • Views are more likely to be broken by foreground features. • Landform characteristics and the relationship between landscape features may be clearly discernible.
Background (3 – 5 km)	• Likely minimal visual recognition of strong colour and light contrasts and large -scale vegetation clearance only. • Minimal recognition of form and detail and no appreciation of vehicle movement. • Distance zone where different landscape elements or types are visually apparent.
Distant views (5 km +)	• Only landform features such as valleys, skyline and ridgelines are visible. • Depending on the scale of change, likely minimal visual recognition of strong colour and light contrasts and large-scale vegetation clearance only. • Minimal recognition of form and detail and no appreciation of vehicle movement. • Depending on the scale of the development, the visual scale of the change may be barely discernible and appear as a relatively minor visual element within a larger landscape complex.

2.4 Community Perceptions and Values

This LVIA process considers existing information sources, including Yarra Ranges Council's published strategies and guidelines, which make reference to landscape character values and visual quality of the surrounding area. In this context, these information sources are considered to generally represent the broader community values relating to the landscape and visual resources of the setting.

Many levels of perception will also be based on generic physiological factors that are broadly consistent for people across all communities. The common perceptions, listed below in Table 4: Common perceptions & values, create a basis for subsequent value judgements.

Common perceptions and values

Existing empirical research suggests that there are common physiological, visual and aesthetic factors affecting visual perception and that these factors are likely to be relatively consistent across communities.

These findings, in isolation are indicative only factors to be considered as a part of the assessment. The factors do not provide a quantitative measure or definitive analysis of likely perceptions of visual effects / impacts or the values that may be attached to those changes in the viewed landscape, as they do not consider elements such as context, cultural meaning and the manner in which the receptor views the landscape.

Table 4: Common perceptions & values

Visibility	The magnitude of visual impact is at least partly determined by the nature of that view and whether it is moving or static.
Field of view	Horizontal line of sight: The normal binocular field of vision (horizontal line of sight / width of view) is considered to be between 100° and 124°. Within the binocular field of vision, the viewer has depth perception. Either side of the binocular field is a monocular field of 42° for each eye (peripheral vision) which provides the viewer with awareness of movement speed and locational cues. Within the binocular field is a central field of view of around 10° which allows symbol recognition. Within the central field of view is a fovial field (zone of visual acuity) of 2.5° where viewed objects are sharply fixed and in detailed focus. Vertical line of sight: The normal vertical field of view is considered to be 120 degrees (50° above horizontal and 70° below horizontal) with the limit of colour discrimination at 55 degrees (25° and 30° below horizontal).
Method of Perception:	These fields of vision indicate a field of view and visual 'recognition' but in isolation, are not meaningful measures of scenic perception. The process of recognising and observing an object or scene (Dynamic Visual Acuity) is complex and involves constant scanning of the seen area, recognition and refocussing within the field of view; a process that is modified (narrowed and simplified) by viewer movement, the speed of movement of the viewer and secondary activities such as driving, but enhanced by colour contrasts, illumination, proximity, size, shape, symbol recognition based on expectation and other factors.
Occupied view area:	The nature and magnitude of the visual impact is likely to have a proportional relationship to the percentage of the available view taken up by development infrastructure, new activities or landscape interventions. Objects may be visible, but not dominant, particularly when they occur within landscapes that have been modified by human activity and where the context and complexity of the natural landscape has been significantly altered. A spread of built elements or landscape changes across a wide view or several viewable areas is likely to result in a perception of greater overall visual impact than a similar number of built elements within a more confined viewable area.
Horizontal field of view	As a general guide only, a visual element of less than 5° of a field of view may be considered insignificant, depending on the nature of background visual contrasts and the movement of the viewer. A field of view of between 5° and 30° may be potentially noticeable, depending on the nature of background visual contrasts and the movement of the viewer. A field of view of over 30° is likely to be highly noticeable and potentially dominant, depending on the vertical field of view.

Vertical field of view	As a general guide only, less than 0.5° of a field of view may be considered insignificant, depending on the nature of background visual contrasts and the movement of the viewer. A field of view of between 0.5° and 2.5° may be potentially noticeable, depending on the nature of background visual contrasts and the movement of the viewer. A field of view of over 2.5° is likely to be highly noticeable and potentially dominant.
Speed of movement	As the speed of movement increases, viewer concentration on a fixed area increases and peripheral vision diminishes, effectively shrinking the visual field. Foreground detail begins to fade.
Distance	The greater the viewing distance, the less detail is observable and the more difficult it is to distinguish between the site or object and its background, diminishing the impact.
Relative elevation	Objects viewed against a skyline silhouette or at the edge of a break in slope are likely to have a greater visual impact than objects or changes viewed from a location where features are viewed against a land backdrop. Colour contrasts may modify this outcome.
Size, colour & form	The greater proportion of a view occupied by new features or activities the greater the impact. Contrasting colours and forms increase the relative impact of change.
Illumination	Luminance contrast increases the visual definition of the shape, size and location of objects and potentially changes the context in which objects are re viewed. Lighting colour and movement increase the potential level of contrast.
Activity	Movement of objects, including vehicles and light reflection changing with movement will increase impact.
Complexity	Changes to a visually complex field of view with elements of varying scales and form are likely to result in lower impacts than changes to a relatively uniform field of view.
Context	The extent to which the proposed development is in character with the land use and landscape character of the site will affect the perceived level of impact.
Weather conditions	The overall clarity of the view, the angle of the sun and the degree to which skyline silhouettes are masked by clouds etc will affect visibility.
Change	The degree of change in the view and the process of change will affect the degree of impact on the viewer.
Familiarity	Changes to a familiar visual setting or where the viewer interacts with the setting is likely to have a relatively greater impact on the viewer than changes to a setting that is rarely seen or poorly understood.
Cultural context	Changes to a visual setting with significant cultural value or purpose is likely to have a relatively greater impact on the viewer than what may be considered a 'generic' landscape setting with no specific value.
Individual context	The perception of a visual impact or visual improvement within a landscape is likely to differ between communities, cultural groups and among individuals. Personal context and values strongly influence the manner in which visual effects are valued.

2.5 Visual Receptor Sensitivity

Visual receptor sensitivity is a measure of the direct or indirect effects that development changes may have on a view or scenic resource. Sensitivity factors could include physical elements, visual character and cultural values. For the purposes of the impact assessment viewer sensitivity is defined as a combination of the following factors:

- A direct relationship to or dependence on the visual environment
- Familiarity with the place and its landscape and scenic qualities
- The distance of the receptor from the potential impact and the available angle of view (field of view)
- The number of people that use that location and are likely to experience changes to scenic quality

Table 6: Visual Receptor Sensitivity includes a summary of receptor sensitivity values referenced in this study.

Table 6: Visual Receptor Sensitivity

Sensitivity	Receptors
High Sensitivity	• State level parks and scenic reserves, major recreation trails and formal scenic view locations • Parks and public spaces within towns • Residential properties
Moderate	• Highways and major regional roads • Secondary tourist roads and recreational driving routes • Schools, hospitals and residential care facilities
Low	• Local rural roads • Industrial land uses

2.6 Landscape Sensitivity

Landscape character and scenic quality is used as a basis to assess the landscape's sensitivity to change, which is used further to assess the visual impacts resulting from proposed development within the landscape. Landscape sensitivity refers to the extent to which a landscape can change without unacceptable adverse effects on its visual character and quality, independent of whether the proposed development is visible by receptors or not. Landscape sensitivity levels are described in Table 7.

Table 7: Landscape Sensitivity

Sensitivity Level	Definition
High	Key characteristics of the landscape are highly vulnerable to the type of change being assessed, with such change likely to result in a significant change in valued character.
Moderate	Some of the key characteristics of the landscape may be vulnerable to the type of change being assessed. Although the landscape may have some ability to absorb change, some alteration in character may result. Considerable care may be needed in locating and designing change within the landscape.
Low	Key characteristics of the landscape are less likely to be adversely affected by the proposed change. Change can potentially be more easily accommodated without significantly altering character and there may be opportunities to positively create new character. Sensitive design is still needed to accommodate change.

2.7 GIS and Computer-based Modelling

Visibility analysis:

Visibility analysis through Zone of Visual Influence (ZVI) modelling was used to produce a model identifying potential visual receptors and areas that may be subject to views of the Proposal. ZVI modelling produces a theoretical zone indicating all places with a line of sight to the modelled data points.

ZVI modelling was based on:

- Digital Terrain Model only and did not consider existing vegetation. This results in a 'worst case' scenario in terms of the theoretical extent of visibility.
- A modelling height of 1.6m above the predicted surface level of the future structure to simulate a typical viewer eye height.

The actual extent of visibility was verified by reference photographs and representative wireframe visualisations (photomontages), as described in Section 2.9.

Data limitations:

Modelling and assessment outcomes are limited by the following:

- LiDAR data provided by the client (2021-22 Montrose 1120 LiDAR Project MGA Zone 55, GDA2020 8pts/m2, Accuracy of 0.2m Horizontal, 0.1m Vertical), in combination with publicly available contour data of Metropolitan contour data 1 meter – Vicmap elevation data (DELWP).
- Boral Montrose Staging Plan and Rehabilitation Concept (GHD Pty Ltd, 2022). The ZVI has been produced based on an even spacing of data points along the perimeter of the full extent of the expanded quarry pit (i.e. at the completion of Stage 8 of the proposed expanded operations).

It is considered that, given the scale of the Proposal, the size of the investigation area and the margins of accuracy applying to the modelling process, the modelling results are sufficiently accurate for the purposes of this assessment. Again, no vegetation or built form is taken into consideration during the ZVI modelling, therefore the results shown represent a worst-case scenario for assessment and confirmation on site.

Best-practice modelling process:

As the first step in the process, several photo locations and GPS points were recorded during the site visit. Photos were taken with a DSLR Camera (Canon EOS R5) with a 50mm fixed lens focal length.

Conditions on the 4 days of photography were partly cloudy to cloudy with adequate long-range visibility for the purposes of the assessment.

Survey equipment (FLX100 GNSS antenna) used in conjunction with Zeno Mobile software operated from a Samsung Galaxy Tab S7 was used to establish the GPS location and elevation of viewpoints with and accuracy of less 100mm. The same survey equipment was used to position 2 reference point for each viewpoint for use in 3D software to match the virtual camera with the photos taken on site.

A 3D virtual model was developed in 3D software (3D Studio Max) including the 3D model of the existing quarry pit, and of the proposed expanded pit.

The viewpoint GPS locations were added into the 3D model to setup virtual cameras for camera matching. Once the views were matched, a wireframe render was produced to superimpose on the existing conditions photograph to create before and after conditions.

No mitigation measures were added to the views to show their potential effects, but their possible effects are generally described within the assessment.

Background

The photographic and imaging techniques adopted for this study are intended to produce visual representations that:

- Are as geometrically and aesthetically accurate as possible to permit decision makers, after suitable field inspections, to make a reasonable, balanced judgement of the effects of a proposed change;
- Are based on a transparent, structured and replicable procedure, to allow others to confirm the accuracy of the information presented;
- Are intended to present findings in a manner that is easily understood by non-technical people.

It is important to note that photographic images and simulations cannot provide the visual experience that a human observer would receive in the field. The detailed technical assessments and professional judgements presented in this study have been made on the basis of site inspections, modelling and available information.

2.8 Selection of Viewpoints

The potential viewpoints identified within this technical assessment are represented by photographed existing conditions from the site inspection (refer to Appendix 3 for selected viewpoints).

The viewpoints have been selected based on the following criteria:

- Locations have been nominated for testing based on a desktop assessment that were considered to be the most representative receptors.
- Viewpoints were identified and tested through the ZVI modelling process as being the most likely areas of potential visual impact. Within these areas, the most representative and the likely 'worst case' visual impact locations were selected to be tested during a site inspection.
- The selected viewpoints were all publicly accessible.

Selection of Residential Visual Amenity Locations

The private property locations identified within this technical assessment are represented by existing condition photography (refer to Appendix 5 for selected viewpoints).

The viewpoints have been selected based on the following criteria:

- Locations have been nominated for testing based on the previously assessed private property locations (LVIA Stage 1 conducted approx. 2007). No community consultation was conducted during this selection process; however, previous consultation focused the investigation of visual impact from private properties focused on residences along Sheffield Road, Glasgow Road, Gordon Avenue, Bracken Avenue, and Taruna Rise.
- Private property viewpoint locations were confirmed through the ZVI modelling process as being the most likely areas of potential visual impact. Within these areas, the most representative and the likely 'worst case' visual impact locations were selected to be tested during a site inspection.

The selected private property locations have all been represented by publicly available locations only and did not include photography within private property. It has been noted at specific residential locations that views and visual amenity may be greater from the resident's backyard, and / or from more elevated viewing locations (i.e. balconies, from second story viewing areas or living spacings dependant on viewing angle and viewing distances.

2.9 Photomontage (Wireframe) Simulations

The appearance of the Proposal was further assessed by means of wireframe-based simulations of selected viewpoints and selected residential private property locations. These wireframe images are not photorealistic representations of new structures but do provide an accurate representation of the scale, shape and location of new structures within exiting conditions. Different versions of the photographic model from each main viewpoint show:

- Existing conditions.
- Wireframe photomontage simulations of the infrastructure position, size and massing, inclusive of people making use of the infrastructure, as this would in many instances represent the most visible aspect.
- The likely extent of the infrastructure that would be seen from the viewpoint, along with those unseen parts of the structure that would be blocked by landform or other structures.

The potential mitigation measures such as vegetation are discussed within the assessment section but not modelled in the current wireframe images as they would be subject to a detailed design process.

Photomontage images have not been produced for this assessment as Zone of Visual Influence (ZVI) modelling, wire frame imagery and on-site assessment has been seen to be adequate to establish the likely nature and magnitude of impacts.

- The viewpoint photography for wireframe simulation was undertaken across several days as follows:
    - 28 February 2023; cloudy and bright conditions with fair visibility deteriorating to rain and poor visibility by midday;
    - 7 March 2023, partly cloudy and bright conditions with fair visibility;
    - 4 April 2023, partly cloudy and bright conditions with good visibility;
    - 30 October 2024, partly cloudy and bright conditions with good visibility.

2.10 Residential Visual Amenity Assessment

Residential Visual Amenity is the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from within their place of residence and private gardens.

The general approach of a Residential Visual Amenity Assessment (RVAA) is similar to the methodology described above within Section 2.3 (based on GLVIA3), with the addition of specifically assessing a singular visual receptor (the resident) and incorporating an assessment on the Residential Visual Amenity Threshold (Landscape Institute, 2019).

Judgements formed in respect of Residential Visual Amenity should not be confused with the judgement regarding Residential Amenity. It is also noted that a RVAA does not consider or provide an assessment on the other components which typically influence 'Residential Amenity' (I.e. Noise, air quality).

3 Project Description

3.1 Project Background

Boral is seeking to extend the existing extraction boundary of the existing quarry pit to the south and east in order to increase the life of the quarry operation by approximately 40 years. This will allow approximately 35 million tonnes of additional stone to be quarried.

The quarry is a significant strategic resource for Boral as it is located within a growth corridor with strong and steady demand forecast growth, driven by population and with potential upsides from planned infrastructure projects. In particular, the Victorian Government's pipeline of significant infrastructure projects (including the Metro Tunnel, North East Link, and West Gate Tunnel projects) are likely to increase demand for quarry materials in the future. The site also includes both concrete and asphalt batching plants which result in significant pull through.

The activities proposed are effectively a continuation of those currently undertaken in the current quarry extraction areas.

3.2 Site Development

3.2.1 Overview

The current quarry operation, located at 56 Canterbury Road, occupies 57.5 Ha out of Boral's 77.4 ha landholding at Montrose and supplies concrete aggregates for projects across the greater metropolitan Melbourne area. The proposed extension will increase the current extraction area by approximately 14Ha (consisting of 9.53 hectares of remnant vegetation and 4.5 hectares of cleared land).

The quarry's main approval is Extractive Industry Work Authority 100 (WA 100), issued under the Mineral Resources (Sustainable Development) Act 1990. This allows the operation of extractive activities at the site.

Refer to Appendix 1 for the Site development plan (existing and proposed) and Quarry staging plan

According to Boral, operations at Montrose Quarry are divided into the following categories:

Pre-Processing (Blasting, drilling, transport and unloading), which takes place within the quarry pit:

- Vegetation and waste rock are removed.
- Soil and soft overburden are removed using earth-moving equipment.
- Rock is extracted by drilling and blasting using a multi-level open pit extraction method.
- Extracted rock is loaded onto dump trucks for transport to the Primary Crusher for processing.

Processing (Crushing, screening and binning), which takes place within the processing area in the north-western part of the site:

- The quarried stone is dumped by the haul trucks into a hopper at the Primary crusher.
- The material then undergoes various stages of crushing, screening and binning into various stone size classifications.
- Numerous conveyors are used to transfer material between the various stages of processing and finally to the finished product bins and/or to open area stockpiles and to the asphalt and concrete batching plants.

Post-Processing (Material handling – stockpiling, transport and sales) which takes place in the north and north-eastern part of the site:

- Material handling in this category consists of the finished product that is transferred to open area stockpiles by truck operations, and the sale of material, which involves loading from the stockpiles (by sales-loader) and from overhead bins, followed by transport to the weighbridge and then off-site.

Associated Activities (Asphalt and concrete batching plants) which takes place adjacent to the processing area in the north-western part of the site:

- The concrete batching plant stores, measures and discharges concrete constituents into concrete mixers for transport to job sites. The raw materials are primarily delivered to the batch plant by conveyors, with sand and cement delivered by road. The concrete batch plant is enclosed, with emissions extracted to a baghouse.
- The asphalt batching plant measures and mixes asphalt constituents for storage and transport offsite. The aggregate is delivered to the plant by conveyors, with the other constituents (e.g. sand, bitumen and fillers) delivered by road. The asphalt plant is enclosed, with emissions extracted and emitted to the atmosphere through a baghouse exhaust stack.
- Material handling and the sale of material involves followed by transport to the weighbridge and then off-site.

3.2.2 Quarry Pit

Existing development

GHD undertook a review of the November 2020 topography as part of the Boral Montrose Staging Plan and Rehabilitation Concept (GHD Pty Ltd, 2022). The existing pit and operations are summarised as follows:

- The current maximum depth of the quarry pit is in the order of 180 m below crest level, at approximately RL 21 m.
- Typical slope geometry consists of an overall slope angle in the order of 35° to 40°, batter heights occurring variably between 10 and 18 m and slope faces in the order of 75°.
- Bench widths along the North and South Wall were in the order of 10 to 15 m, and 5 to 10 m along the East and West walls. In some areas along the East Wall, bench widths were observed to be less than 5 m, with loss in berm width evident on some benches due to local batter scale instabilities.
- Quarrying operations are currently deepening the existing pit and where geometry allows additional trimming of the batters is conducted to maximise the extractable resource.
- Operations are conducted by pre-strip, drill & blast followed by truck & shovel. As required an excavator will follow the truck and shovel operations to scale walls and remove loose debris. All material is transported to the surface level primary crusher for processing.
- All extracted material is processed onsite with additional feed from Boral's Coldstream operations as required.

Image 1: Quarry Pit Operations

Proposed expansion

The proposed expansion of the pit has been detailed in the Boral Montrose Staging Plan and Rehabilitation Concept (GHD Pty Ltd, 2022). GHD has presented a 75m batter face with the following design parameters:

- Minimum pit level – RL 28m.
- Batter angle (resource) – 75 degrees
- Batter angle (rehabilitation) – 33 degrees
- Inter ramp angle (IRA) – 49-51 degrees
- Batter height – 16m
- Batter width – 12m
- Ramp width – 20m
- Ramp grade (permanent access ramp t base of pit) – 1:10

Of note is that the ridges to the east and to the south-east of the pit and including associated existing vegetation in this area will be removed as part of this operation.

The development of 8 staging plans over the proposed extended operation of the quarry was based on extraction and backfill rates supplied by Boral. These staging plans consider access and dumping options and align with Boral's site practices. GHD calculated that all overburden would be stripped within 8 years of commencing stage 1 and all available resource will be extracted within 22 years from commencement.

The following is a breakdown description of the proposed staging and sequencing:

- **Stage 1** (0.5 years): Initial eastern ramp access, OB excavation at RL 192. Upgrade of western haul road. Initial southern access ramp; at RL 192 and RL 160; visual and acoustic bund.
- **Stage 2** (0.5-2.3 years): Advance eastern batter face at RL 192. Advance southern OB and resource faces from RL 192 to RL 144. Complete first tier of dump at RL 36 and begin second tier at RL 50.
- **Stage 3** (2.3-5.5 years): Eastern batter, complete RL 192. Advance southern OB and resource faces, introduce bench level RL 128. Complete second tier of dump at RL 50 and commence third tier at R L70.
- **Stage 4** (5.5-7.3 years): Eastern batter, excavate RL 176. Southern batter, Advance benches RL 126 to RL 160 eastwards. Complete third tier of OB dump at RL 70 and begin fourth tier at RL 88
- **Stage 5** (7.3-10.2 years): Eastern batter, complete RL 176 and 160, establish RL 144. Complete OB excavation to RL 128. Finish dumping to RL 88 (fourth / final tier).
- **Stage 6** (10.2-14-7 years): Eastern batter, complete RL 144 and RL 128, establish RL 112. Southern batter, complete RL 128 and establish RL 112.
- **Stage 7** (14.7-21.8 years): Eastern batter, continue RL 112 and establish RL 96. Southern batter, continue RL 96 and establish RL 80. No access from western haul road, access now from eastern haul road.
- **Stage 8** (21.8-29.3 years): Completion of levels RL 96 & RL 80. Commencement of levels RL 64, RL 48 and RL 32 via extension of access ramp on southern and eastern sides. Potential to commence placement of imported fill material.

Staging and sequencing of the works will roll out over a period of 30 years before the final void is achieved, but a number of landscape impacts associated with expansion of the pit extent, such as vegetation clearance, are likely to occur within the first 7 years of the project.

This LVIA is based on an assessment of the condition that will exist at the completion of all extraction stages. Refer to Figure 5 to Figure 12 for the proposed expanded pit stages and Appendix 1.

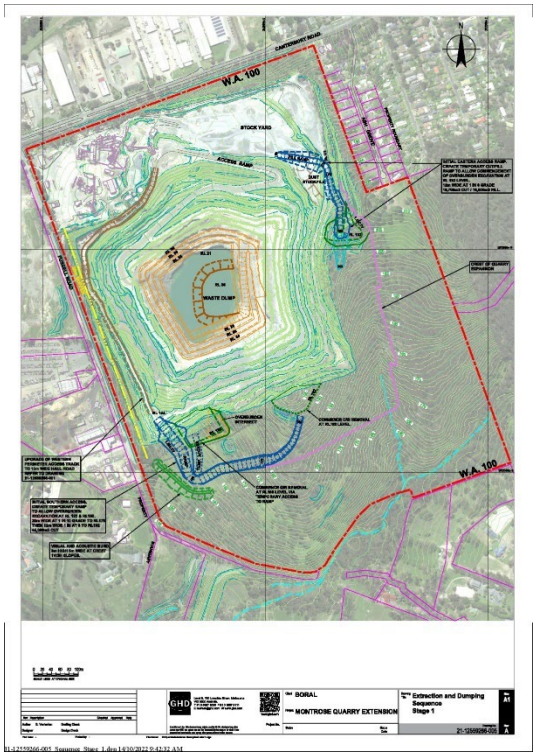


Figure 4: Proposed Expanded Pit – Stage 1 (source GHD)

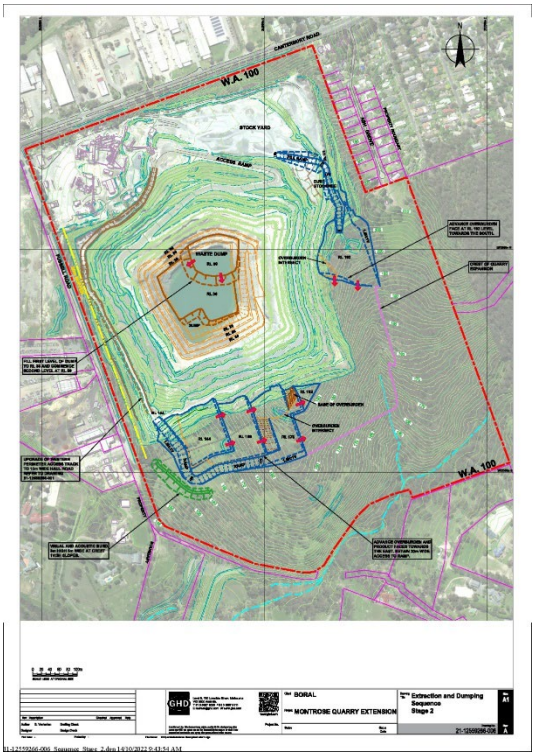


Figure 5: Proposed Expanded Pit - Stage 2 (source GHD)

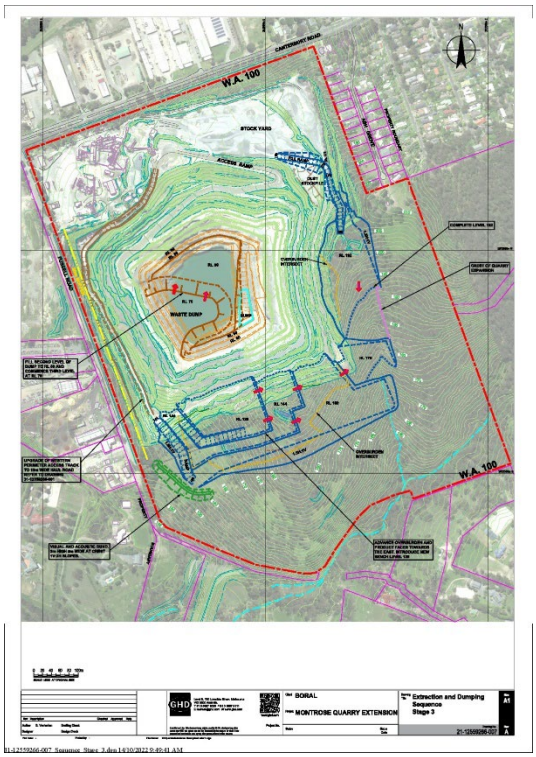


Figure 6: Proposed Expanded Pit - Stage 3 (source GHD)

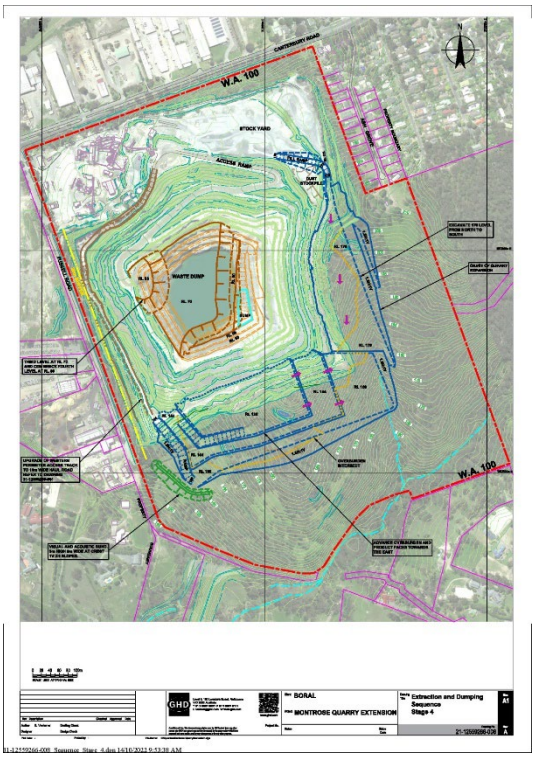


Figure 7: Proposed Expanded Pit – Stage 4 (source GHD)

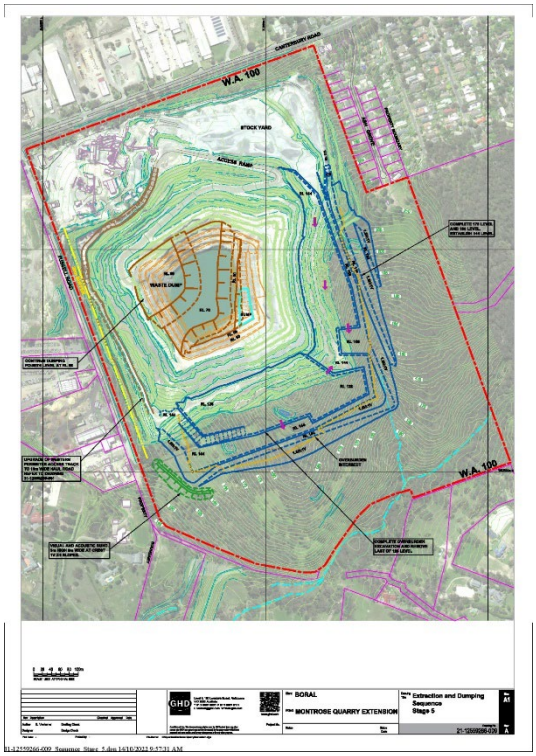


Figure 8: Proposed Expanded Pit – Stage 5 (source GHD)

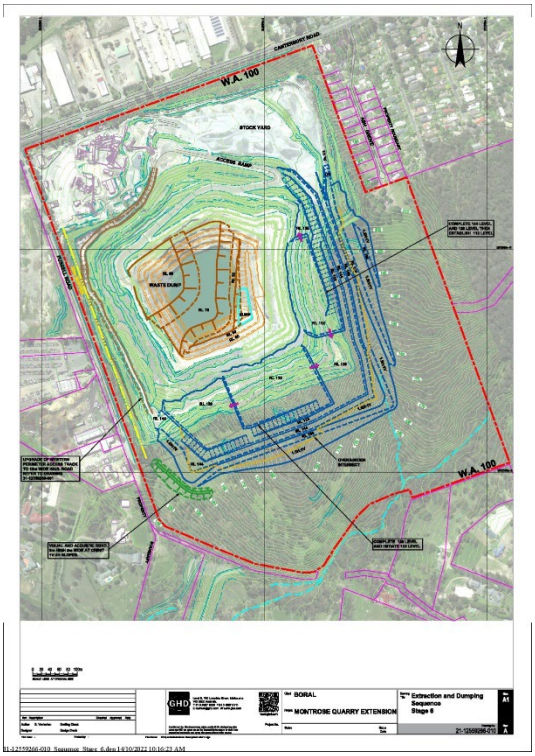


Figure 9: Proposed Expanded Pit – Stage 6 (source GHD)

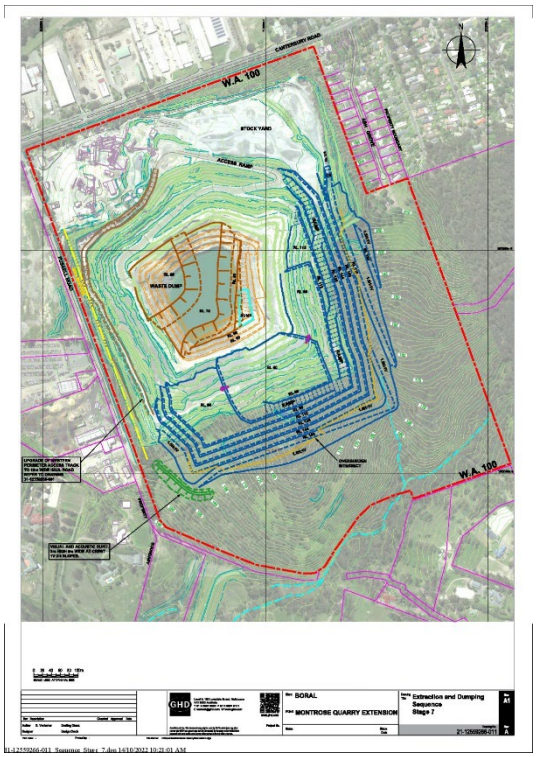


Figure 10: Proposed Expanded Pit – Stage 7 (source GHD)

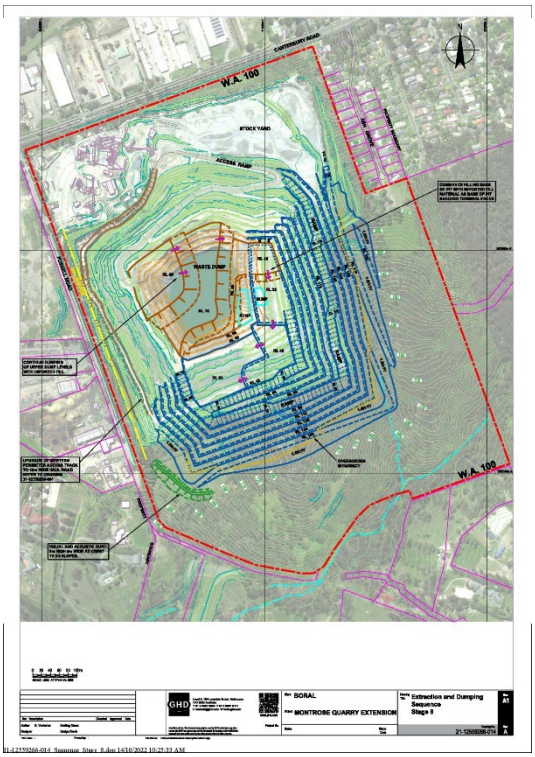


Figure 11: Proposed Expanded Pit – Stage 8 (source GHD)

3.2.3 Overburden and Stockpiles

Existing Overburden and Stockpiles development

The existing overburden is located under the existing stockpile yard which was previously the active quarry. Figure 12 below provided by Boral shows the locations and management of the stockpiles on site and Image 2 shows a typical stockpile area on site.

Proposed Overburden and Stockpiles development

Management of material stockpiles will remain largely unchanged, with operations remaining in current locations and at current operational levels. The overburden required to be removed in the quarry expansion will be placed in an internal dump at the base of the pit and progressively filled in layers up to a final level, nominally RL 88 (GHD Pty Ltd, 2022).

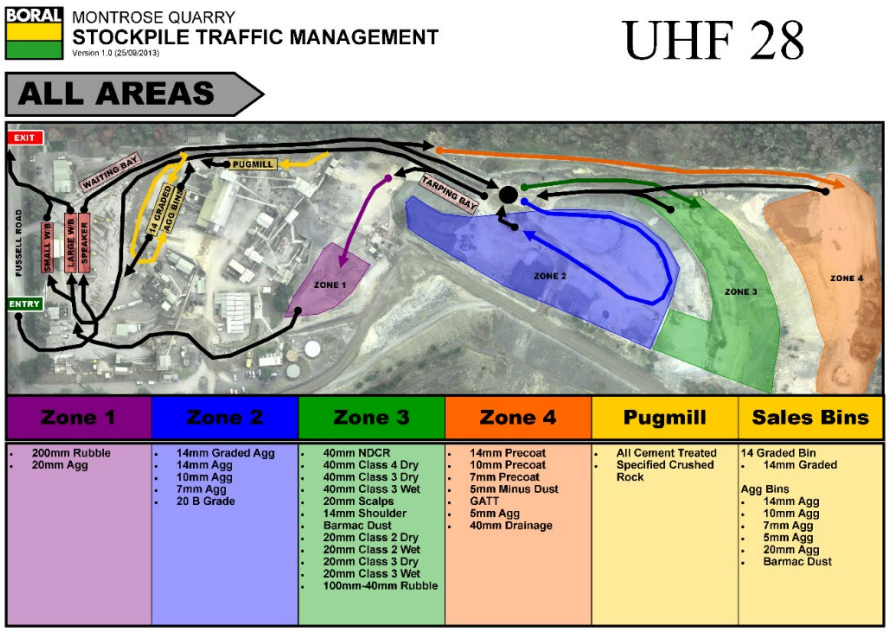


Figure 12: Stockpile Traffic Management (source: BORAL)

Image 2: Stockpile Area

3.2.4 Processing and Batching

Existing development

The processing area is located in the north-western of the site and consists of the following:

- Quarry Plant, Asphalt Plant (Image 3) and Concrete Plant (Image 4);
- Primary Crusher;
- Workshop;
- Office and Weighbridge (Image 5);
- Haul roads and parking (Image 6).

Proposed development

The proposed operation within the Montrose Quarry including the extraction and processing rates will remain largely unchanged.

Image 3: Processing Area 1 – Asphalt

Image 4: Processing Area 2 – Concrete

Image 5: Weighbridge

Image 6: Existing Haul Road into the Pit

3.2.5 Vehicle movement

Existing development

Access to the Work Authority site is off Fussell Road via Canterbury Road. Off-site, trucks transport materials off Fussell Road via Canterbury Road.

There is an average of 180 to 230 (day) road truck movements both Tandem and Truck & Trailer. 35 Light vehicle in courier / employees / visitor (on-site each day)

Proposed development

Site operations will remain largely unchanged, with vehicle movement and circulation onto, off and within the processing area remaining the same.

Consideration may be given to improving access and circulation off Fussell Road in the west, but this has not yet been designed. Any changes to access are anticipated to be within the existing access area.

In terms of internal access into the pit, GHD has proposed the following:

- An eastern access ramp:
  - Designed as a 12 m wide cut / fill ramp at 1 in 8 grade, from the RL 160 stockyard area up to RL 192 to allow excavation of the uppermost overburden benches.
- The existing western perimeter track:
  - Upgraded to create a haul route that will allow access to the southern region of the expansion.
  - The western haul road would require clearing of vegetation along Fussell Road (refer to Figure 15). However, existing vegetation within the 20m road edge buffer would be retained.

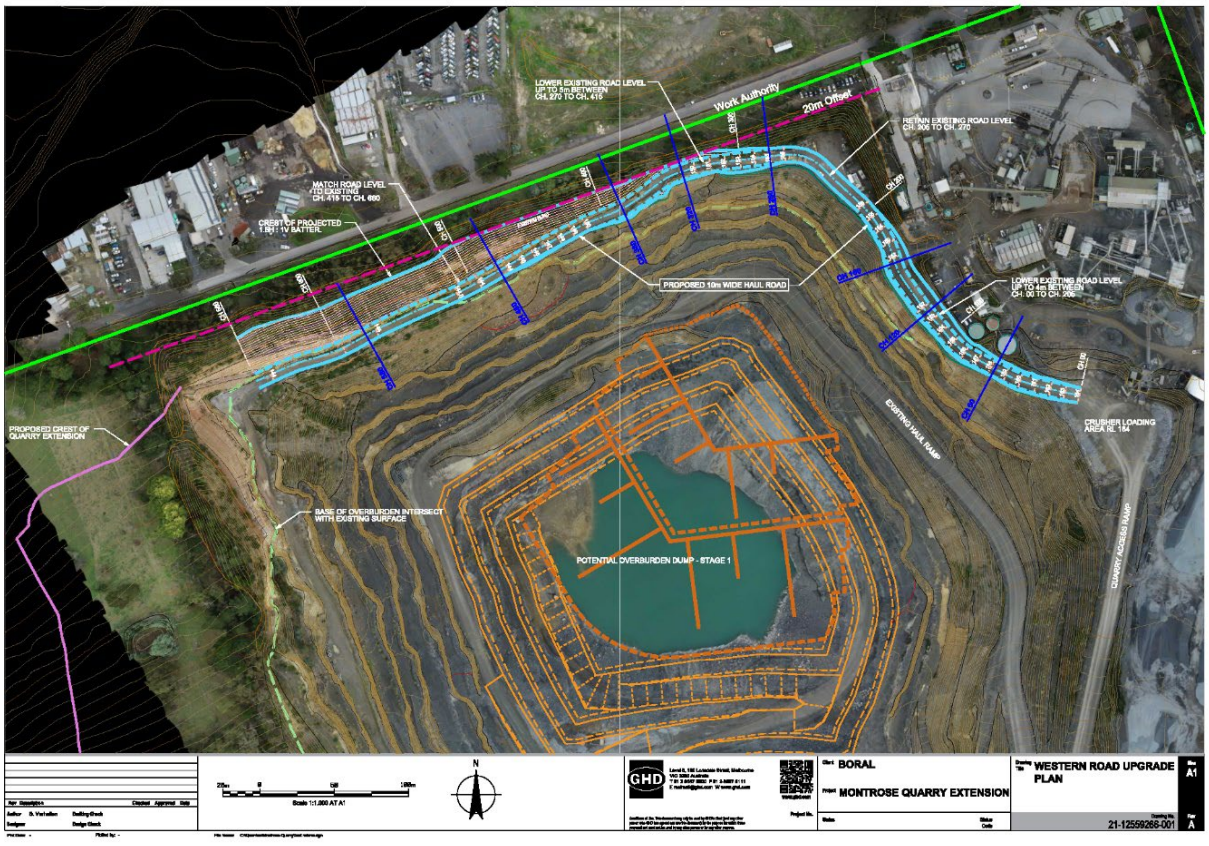


Figure 13: Proposed New Western Haul Road (source: GHD)

3.2.6 Screen Bunds and Planting

Existing development

The existing developments (10 January 2023) current vegetated bunds are located mostly around the perimeter of the quarry. There is approximately a 20m vegetation offset from the boundary which provides additional visual screening to the site boundaries, refer to Image 7 to Image 10.

Proposed expansion

The proposed quarry pit expansion will entail the enlargement of the pit to the south and east and the associated development of new temporary and permanent haul roads as well as visual and acoustic bunds along the new pit edge in the southwest.

Image 7: Existing Screening Vegetation to the West (along Fussell Road)

Image 8: Existing Screening Vegetation to the North (along Canterbury Road)

Image 9: Existing Screening Vegetation to the South

Image 10: Existing Screening Vegetation to the East of the pit

3.2.7 Buffer areas

Existing development

The work authority buffer zones include the following, as indicated in the image below (source: Boral, 2023):

- 45m along Canterbury and Fussell Roads.
- 20m along the eastern and southern boundaries.

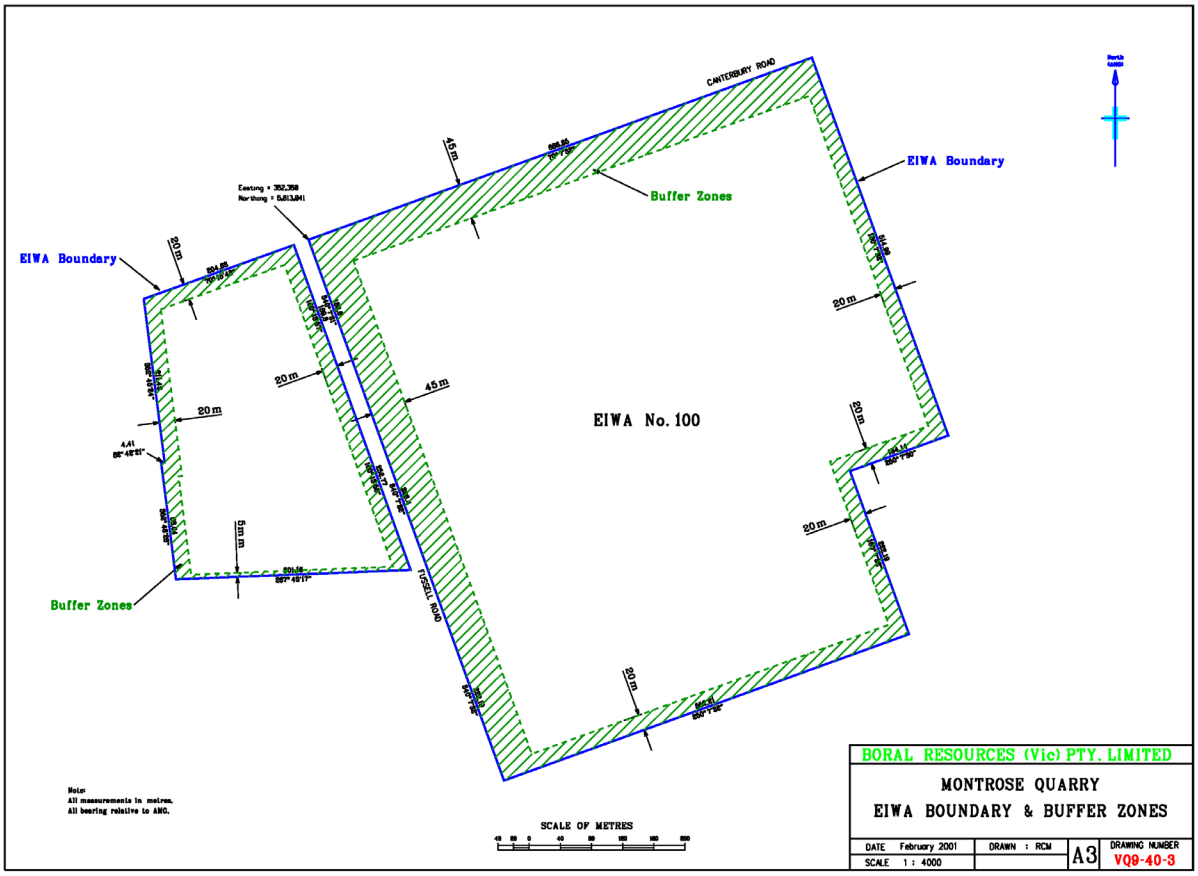


Figure 14: Current Buffer Areas (source: BORAL)

Proposed expansion

GHD has applied a minimum buffer between the crest of each pit wall and the WA 100 boundary. In addition, buffers relating to sensitive receptors, open space, roads and ecological concerns have also been applied. The resulting batter geometries negotiate both buffer zones and noise attenuation bunding as required.

Boral are seeking to reduce the buffer along Fussell Road to 20m to allow for the new haul road. All future buffers are proposed to be a minimum of 100m in relation to existing sensitive receptors (i.e. residential property boundaries).

3.2.8 Hours of Operation

Existing development

The extraction, sales, processing operations and truck movements commence from 6:00am and operate continuously through to 6:00pm from Monday to Saturday.

Blasting takes place between 8:00am and 5:00pm Monday to Friday and from 8:00am to 1:00pm on a Saturday. No site operations or truck movements occur on Sundays or Public Holidays. Works outside of these hours will only be for essential maintenance unless otherwise authorised in advance by the Responsible Authority (Yarra Ranges Council) and the Department of Primary Industries (DPI).

Proposed development

Operations will remain largely unchanged, with hours of operation remaining as is.

3.2.9 Lighting

Existing development

There is limited operational lighting within the processing area for maintenance, when required, which will usually be complete by 12am. Vehicles operating within those times will use headlights.

There is no other lighting within the site or its surroundings. Light sources are static and shielded to minimise light spill beyond the operational area.

Proposed development

Site operations will remain largely unchanged, with lighting of plant and equipment remaining as is.

3.2.10 Rehabilitation Landform

Existing development

The current approved Reclamation Plan for Montrose Quarry (January 1994) involves the placement of overburden and tree planting. This plan notes the following:

- Only those faces above RL 159 are exposed to have views outside the quarry perimeter, therefore only those faces will require tree screening.
- Intermediate benches will be created above the RL 159 bench that will halve the face heights on final faces and allow for overburden placement and tree planting. This will (reportedly) ensure that tree screens will effectively cover exposed rock faces. This will affect those faces associated with the RL 159, RL 172 and RL 190 benches, where they exist.
- Overburden placement on main bench levels is to allow for a 3.4m wide vehicular access track adjacent to the face crest. An access track of nominal 1.5m width is to be maintained for intermediate benches after placement of overburden.
- Fences are to be erected on the crest of all faces above RL 144, including intermediate benches, for safety purposes. These will be farm type fences with steel posts.
- Catch drains are to be constructed, by either trenching or mounding techniques, so that runoff is diverted from faces.

Some of the upper benches on the eastern face of the existing pit have already been rehabilitated.

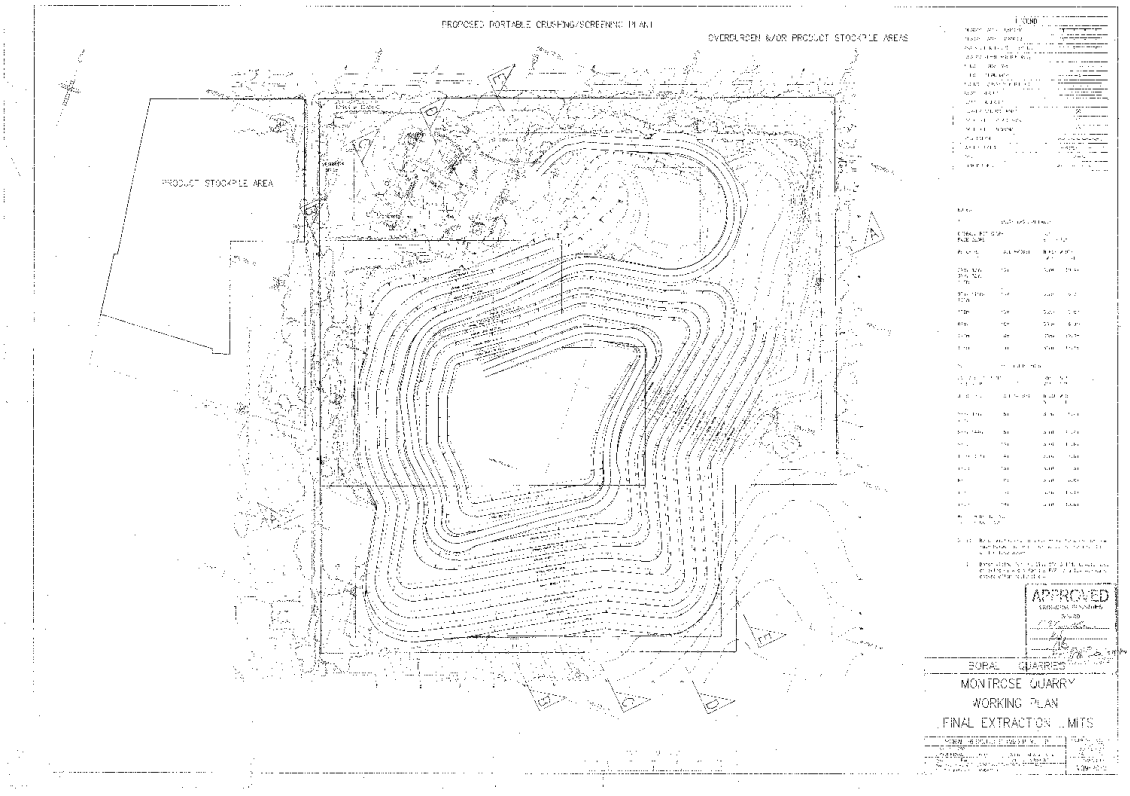


Figure 15: Current Approved Rehabilitation Landform (source: BORAL)

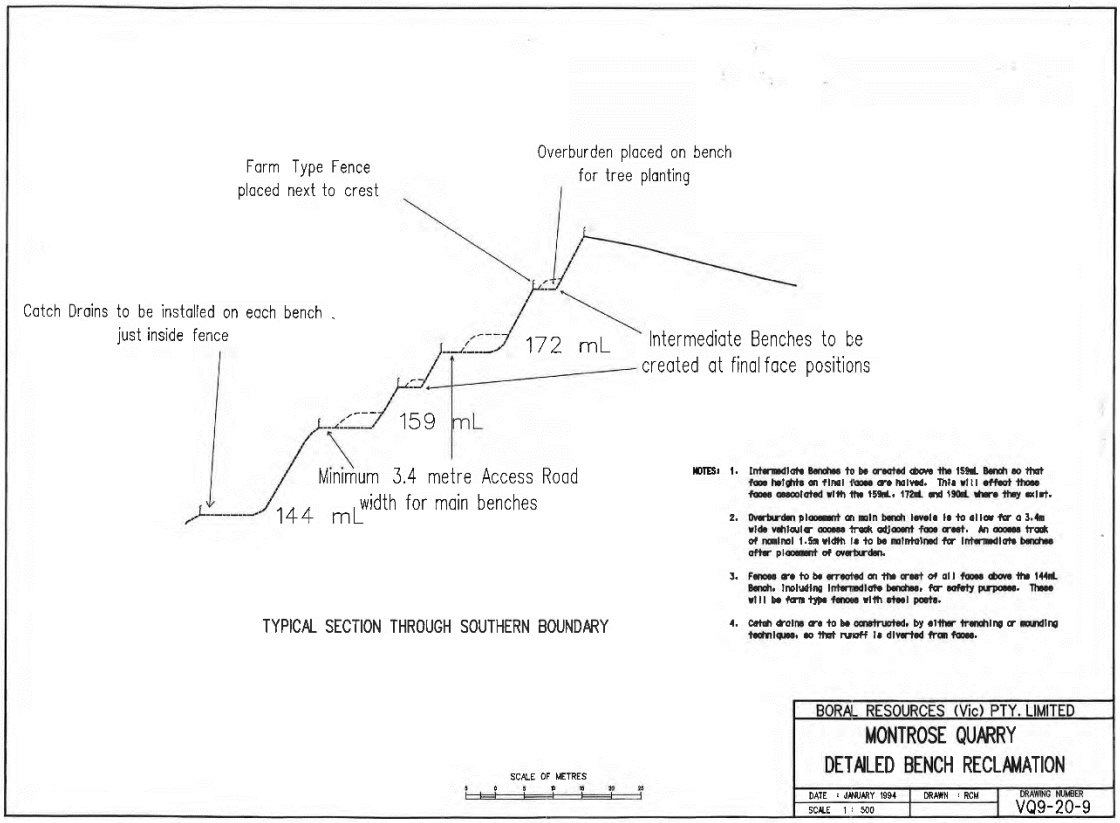


Figure 16: Current Approved Rehabilitation Landform – Typical Bench Reclamation (source: BORAL)

Proposed development

In response to the proposed expansion of the existing pit (measuring some 57.5Ha) by approximately 14Ha, and to a minimum depth of RL 28.

GHD has designed a final landform which would see the pit void filled with material from external sources in addition to the development of an internal overburden dump to manage mining waste from operations:

- This landform proposes to fill the final void to RL 98 (an additional 10 m in dump height above the nominal internal dump design as shown in staging plan 7).
- Further filling of the pit is required to take place from RL 98 to the pit crest at a slope of 3H:1V.
- Intermediate berms at nominal 30 m vertical intervals would confine the slope lengths to no more than 100 m lengths.
- A 15 m wide ramp on the eastern side (maintained from extraction operations) would provide access to the RL 98 level.
- This concept covers an area of 38 ha.

In addition, at the time of writing an End Use Plan for the quarry was underway but not complete.

End use options being considered are based on various scenarios involving filling the void. Filling of the void would commence as soon as practicable towards the completion of the extraction process. It is currently proposed that Boral will source the additional material required to complete the rehabilitation concept from external sources on the open market or from other Boral sites as required/available.

Boral currently assumes a possible quarry void backfill rate of 500,000 m3 per annum. At this rate, backfill of the remaining 15,000,000 m3 of void space would take approximately 30 years to complete.

A range of end use options, including different fill scenarios, are being considered.

The specific effects of various end use options within the pit area have not been considered within this LVIA.

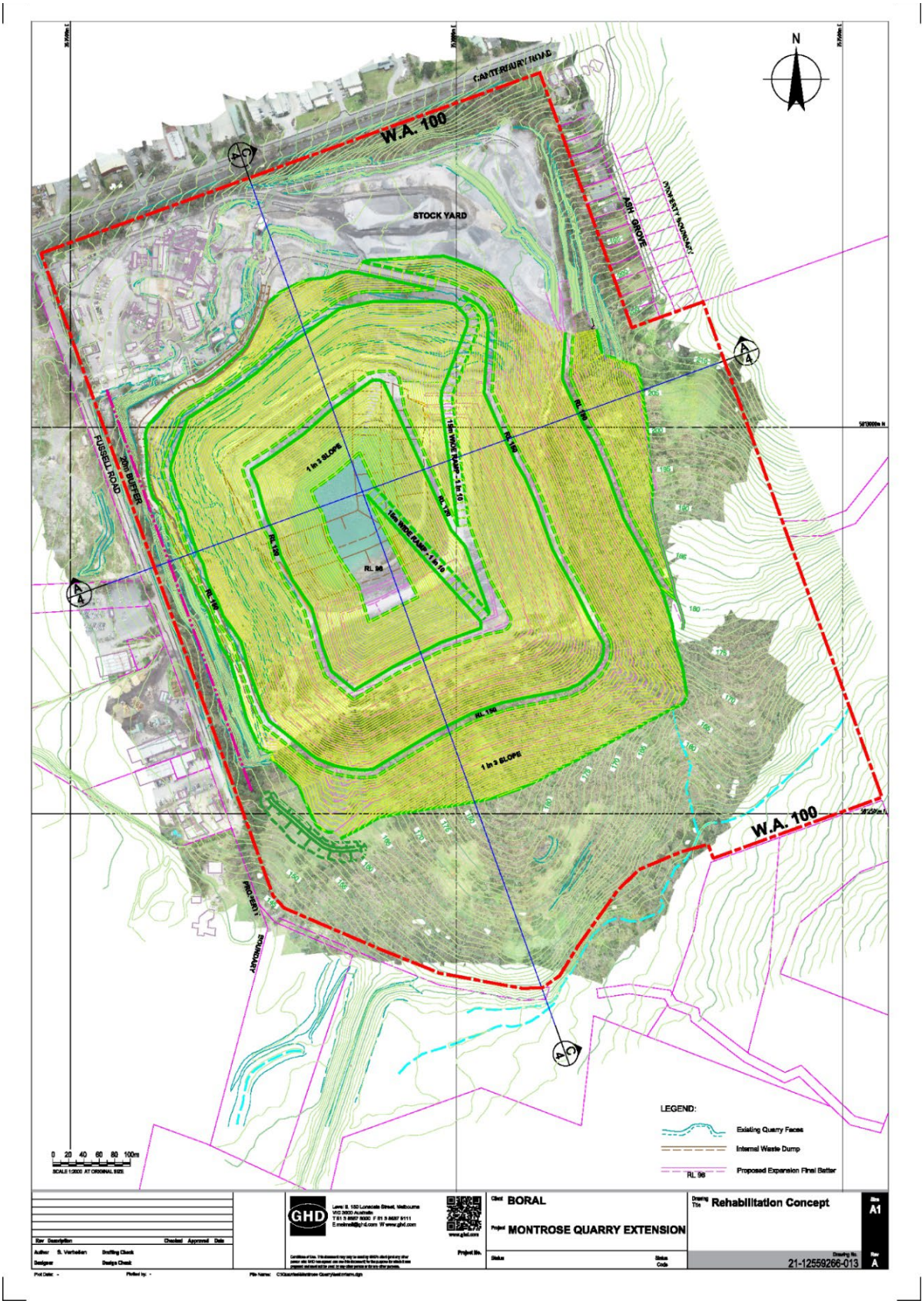


Figure 17: Proposed Rehabilitation Landform - plan (source: BORAL)

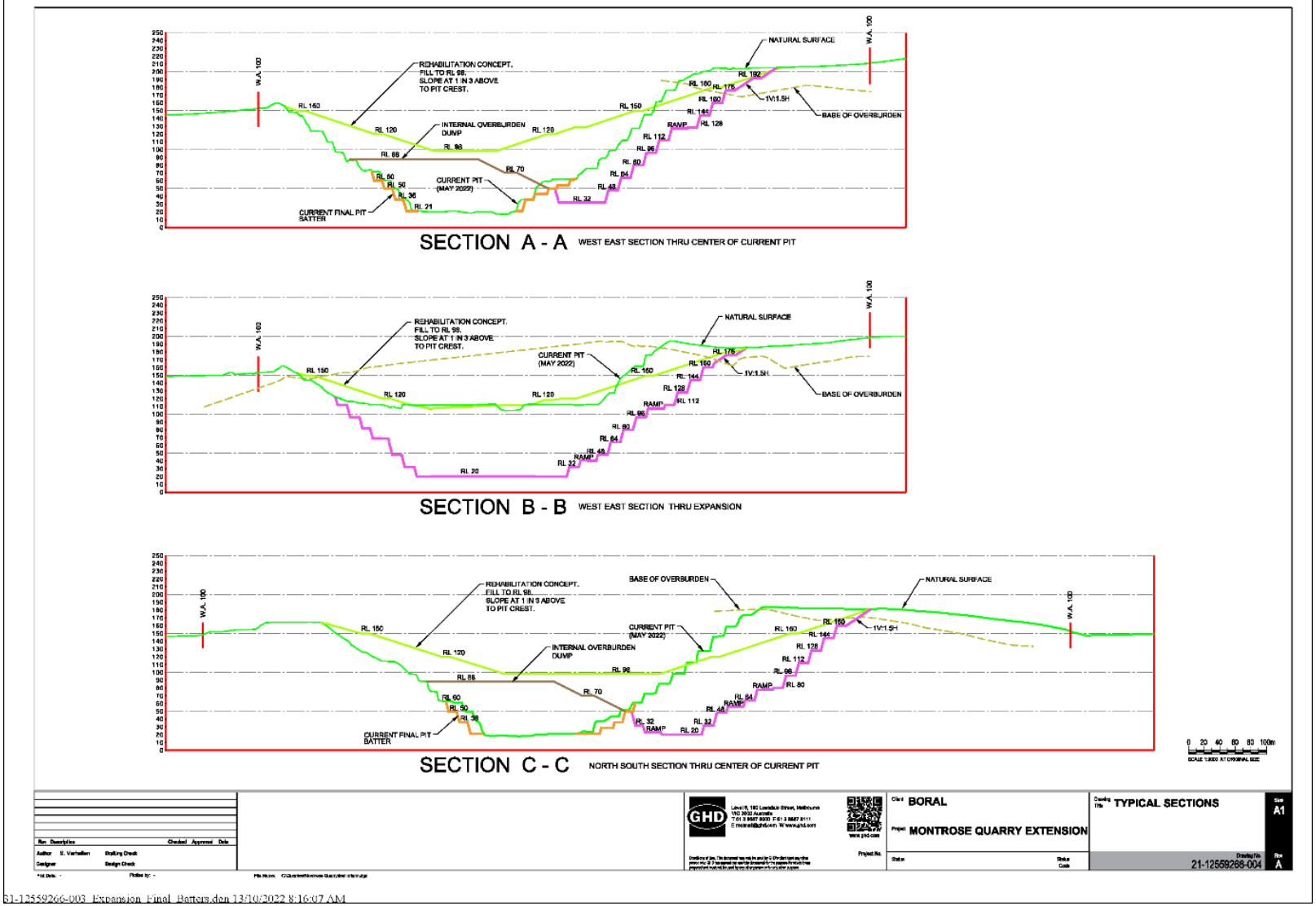


Figure 18: Proposed Rehabilitation Landform – alternative fill option sections (source: BORAL)

4 Planning Policy and Strategic Context

The purpose of this section is to provide an overview of the study area and its surroundings in terms of the planning policy and controls that most directly expresses community values that can inform the landscape and visual impact assessment process. The site area is located within the municipal area of the Yarra Ranges Council.

4.1 Existing Planning Controls

4.1.1 Victorian Planning Policy Framework

The Planning Policy Framework (PPF) establishes key themes related to planning in Victoria. Specific clauses of relevance to landscape values and the Site area are detailed below.

Clause 11.01-1R (Green Wedges – Metropolitan Melbourne) aims to 'protect the green wedges of Metropolitan Melbourne from inappropriate development.' It includes the following relevant strategies:

- *Promote and encourage the key features and related values of each green wedge area.*
- *Protect areas of environmental, landscape and scenic value such as biodiversity assets, national and state parks, Ramsar wetlands and coastal areas.*
- *Protect significant resources of stone, sand and other mineral resources for extraction purposes.*

Clause 11.01-1L-04 (Green Wedge) seeks to protect green wedge land through supporting the following values:

- *Maintaining a healthy biodiversity.*
- *Protecting valued rural landscapes.*
- *Supporting sustainable agriculture.*

Furthermore, this policy supports development adjacent to the Urban Growth Boundary to provide for a suitable transition. Developments should avoid adverse impacts on agricultural land, retain the rural landscape character, appear unobtrusively in the landscape, and retain significant habitats. Additionally, rural industry should be discouraged if it does not relate to the agricultural or rural use of the land. Buildings should be screened and separated to avoid impacts on sensitive uses.

Clause 12.05-2S (Landscapes) seeks to 'to protect and enhance significant landscapes and open spaces that contribute to character, identity and sustainable environments.'

- *Ensure significant landscape areas such as forests, the bays and coastlines are protected.*
- *Ensure development does not detract from the natural qualities of significant landscape areas.*
- *Improve the landscape qualities, open space linkages and environmental performance in significant landscapes and open spaces, including green wedges, conservation areas and non-urban areas.*
- *Recognise the natural landscape for its aesthetic value and as a fully functioning system.*
- *Ensure important natural features are protected and enhanced.*

Clause 14.03-1S (Resource Exploration and Extraction) seeks to 'encourage exploration and extraction of natural resources in accordance with acceptable environmental standards.' Specifically, it seeks to:

- *Provide for the long-term protection of natural resources in Victoria.*

Clause 14.03-1L (Extractive Industry) states the following strategies:

- *Ensure any new extractive industries in areas of natural significance and environmental sensitivity are prohibited.*
- *Prevent the expansion of existing quarry operations into established buffer areas that protect nearby residential areas and other sensitive land uses.*

- *Facilitate the preparation of a site rehabilitation strategy for any quarry that is expected to cease operation in the foreseeable future.*

4.1.2 Municipal Planning Strategy

The Municipal Planning Strategy (MPS) details contextual considerations and key issues for the municipality.

The Vision seeks for the natural environment to remain the defining characteristic of the municipality. The following Clauses are relevant to this assessment:

Clause 02.03-2 (Environmental and Landscape Values) states that the natural environment including hills and trees is the defining characteristic of the municipality. Yarra Ranges includes patches of remnant trees and vegetation which provides for habitat connectivity. There is also considerable bushland comprising native vegetation. The following strategies are highlighted:

- *Avoid the incremental loss and further fragmentation of large intact remnant patches of indigenous vegetation.*
- *Sustainably manage habitat areas and improve connections between them.*
- *Offset unavoidable vegetation removal by revegetation or land management measures that achieve a net increase in key biodiversity assets.*
- *Protect biodiversity assets on public land and areas that are accessible to the public.*

Clause 02.03-4 (Natural Resource Management) seeks to 'support development of existing extractive industry resources while protecting environmentally sensitive areas.'

Clause 02.03-5 (Built Environment and Heritage) describes scenic landscape as a key contributor to the identity of the municipality. Specifically, the provisions aim to 'protect and respect sensitive environments, significant landscapes and cultural and natural heritage.'

4.1.3 Zones

Special Use Zone

The Site is partially located within the Special Use Zone (SUZ). Broadly, the purpose of the SUZ is to provide 'for the use and development of land for specific purposes as identified in a schedule.'

It is affected by two schedules namely Schedule 1 'Earth and Energy Resources Industry' (SUZ1) and Schedule 6 'Extractive Resource and Environmental Buffer' (SUZ6).

The purpose of SUZ1 is:

- *To recognise or provide for the use and development of land for earth and energy resources industry.*
- *To encourage interim use of the land compatible with the use and development of nearby land.*
- *To encourage land management practice and rehabilitation that minimises adverse impact on the use and development of nearby land.*

The purpose of SUZ6:

- To protect properties in proximity to an extractive industry use from noise, dust, visual intrusion and other *adverse impacts.*
- *To maintain the amenity of the immediate area, by protecting remnant vegetation and by using extensive landscaping and visual screening.*
- *To preserve the option of future exploitation of stone deposits and ensure the detailed environmental and other assessment of any future stone extraction proposal through a planning scheme amendment process.*
- *To prevent the intrusion of uses into the area which are incompatible with an extractive industry use.*

Green Wedge Zone

A small section of the Site in its south-west corner is within the Green Wedge A Zone (GWAZ). The purpose of GWZ is:

- *To provide for the use of land and agriculture*

- *To protect, conserve and enhance the cultural significance and the character of rural and scenic non-urban landscapes.*
- *To recognise and protect the amenity of existing rural living areas.*
- *To protect, conserve and enhance the biodiversity, natural resources, scenic landscapes and heritage values of the area.*

The provisions of this clause specify decision guidelines specific to maintaining the character and appearance of the area in terms of 'architectural, scientific or cultural heritage significance, or of natural scenic beauty or importance.' Further environmental issues are noted including impact on flora and fauna, natural features, soil and water quality. Biodiversity such as riparian buffers along waterways as well as gullies, ridge lines and property boundaries.

4.1.4 Overlays

Bushfire Management Overlay

The majority of the southern and eastern section of the Site is affected by the Bushfire Management Overlay (BMO). The purpose of the BMO is to ensure that development of land prioritises the protection of human life and strengthens community resilience. However, the provisions of this overlay are not of relevance to this assessment.

Environmental Significance Overlay

Parts of the Site area in the south, along the eastern boundary and for a short stretch along the northern boundary are affected by the Environmental Significance Overlay 'Highest Biodiversity Habitat Areas and Biolink Corridors' (ESO1). The purpose of the ESO is:

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

More specifically, the Site is affected by B29 of Schedule 1 to the Environmental Significance Overlay (ESO1-B29).

The statement of environmental significance notes that the municipality includes large areas of remnant bushland which contribute to its landscape and environmental character. Significant locations, often along roadsides and waterways, also provide for ecological processes and wildlife habitat.

The Site is identified within 'Dr Ken Leversha Reserve' which holds significance. The environmental objectives include:

- *Ensure the long-term protection of the wildlife habitat and other conservation values of sites of botanical and zoological significance.*
- *Recognise the importance of sites of botanical and zoological significance as core habitat areas.*
- *Ensure that the habitat value of the sites is not diminished by the incremental removal of remnant vegetation or inappropriate development.*
- *Protect the natural resources and maintain the ecological processes and genetic diversity of the region.*
- *Ensure that any new development is sensitively designed and sited to reinforce the existing environmental characteristics of the area.*

Significant Landscape Overlay

Southern and south-eastern parts of the quarry site are subject to the Significant Landscape Overlay, Schedule 1 'Dandenong Ranges Landscape' SLO1 (refer to Figure 20).

Areas to the immediate south-west of the site are affected by the Significant Landscape Overlay, Schedule 6 'Rolling Hills and Bushy Agricultural Landscape' SLO6 (Refer Figure 21).

A small section of the Site in its north-eastern corner, and the residential areas to the immediate east of the site are affected by the Significant Landscape Overlay, Schedule 22 'Foothills and Rural Townships' SLO22 (refer Figure 22).

The purpose of an SLO is:

- *To identify significant landscapes.*
- *To conserve and enhance the character of significant landscapes.*

The landscape character objectives for SLO1 include:

- *To retain a forest dominated landscape in which large canopy trees and understorey vegetation soften the distinction between private and public land, and to provide a sense of enclosure.*
- *To retain the mix of indigenous, native and exotic trees which contribute to the landscape.*
- *To ensure that dwellings, commercial buildings and other structures are inconspicuous elements within the landscape.*
- *To maintain the appearance of an uninterrupted forested range as seen from Melbourne's outer eastern suburbs and other surrounding areas.*
- *To ensure that development is responsive to the natural characteristics of the land including slope and remnant vegetation and associated wildlife habitat.*

The landscape character objectives for SLO6 include:

- *To maintain a comparatively open rural landscape of farmland and bushland patches in which houses, farm buildings and tourist facilities are generally inconspicuous.*
- *To ensure that the siting and design of new buildings complements their setting and reinforces the rural landscape character of the area.*
- *To retain established trees and patches of indigenous vegetation as an important element of the rural landscape and habitat for wildlife.*
- *To allow middle and long distance views from the valley to the surrounding ranges.*
- *To maintain the appearance of an uninterrupted forested backdrop to views.*

The landscape character objectives for SLO22 include:

- *To recognise and conserve the environmental and visual sensitivity of residential areas.*
- *To maintain vegetation as a dominant element of the landscape and encourage retention and regeneration of native vegetation.*
- *To ensure development is sensitive to the natural characteristics of the land including slope, terrain and any existing vegetation.*
- *To ensure setbacks are generous, consistent with nearby dwellings and allow sufficient space for mature plantings.*
- *To ensure site cover maintains the ambience and sense of spaciousness.*
- *To ensure that buildings and works retain an inconspicuous profile and do not dominate the landscape.*
- *To ensure that the health of existing trees is not jeopardised by new development.*
- *To maintain an absence of front fences and informal rural character with either open style front fencing or an absence of front fencing.*
- *To protect and preserve the riparian areas along waterways.*

Particular Provisions - Energy and Earth Resources Industry

The purpose of Clause 52.08 is: *To encourage land to be used and developed for exploration and extraction of earth and energy resources in accordance with acceptable environmental standards.*

Particular Provisions - Extractive Industry and Extractive Industry Interest Areas

The purpose of Clause 52.09 is: *To ensure that use and development of land for extractive industry does not adversely affect the environment or amenity of the area during or after extraction.*

- *To ensure that excavated areas can be appropriately rehabilitated.*
- *To ensure that stone resources, which may be required by the community for future use, are protected from inappropriate use and development.*
- *The decision guidelines of this clause note considerations including effects on native flora and fauna, cultural heritage values, and the compatibility with natural systems and visual appearance.*

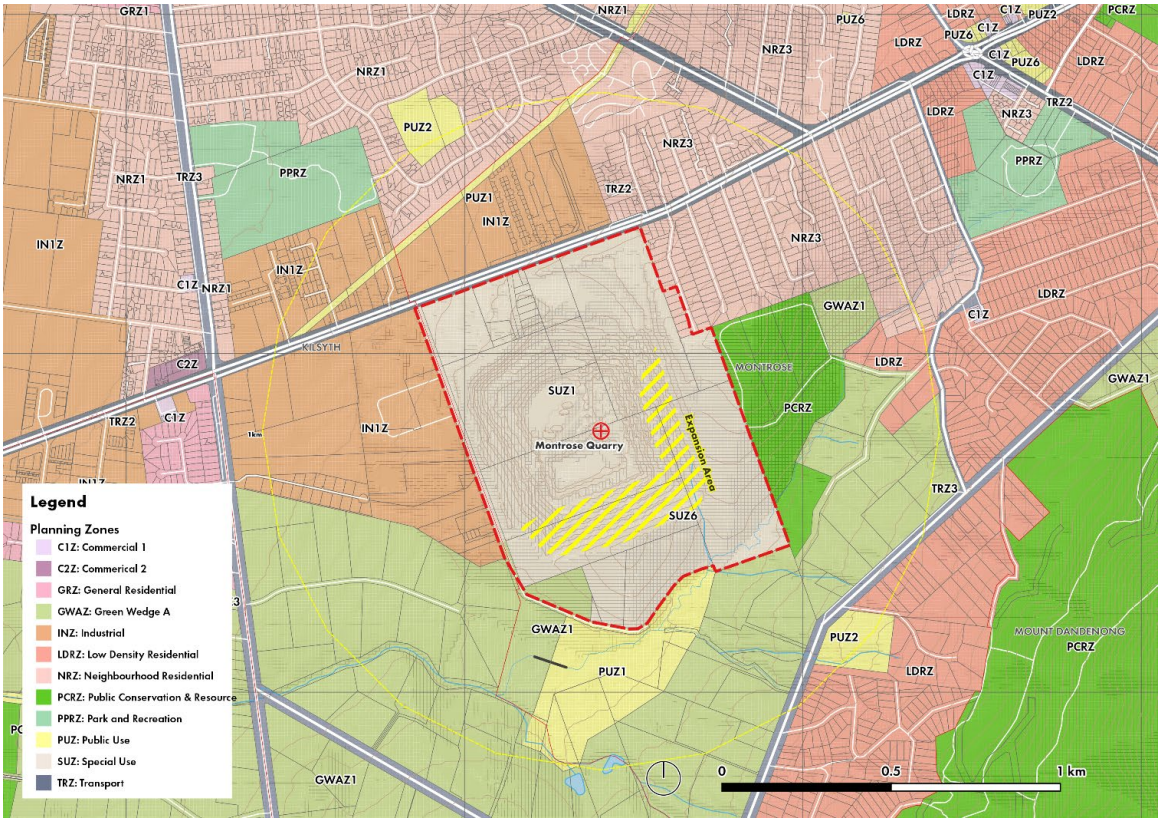


Figure 19: Land Use Zones

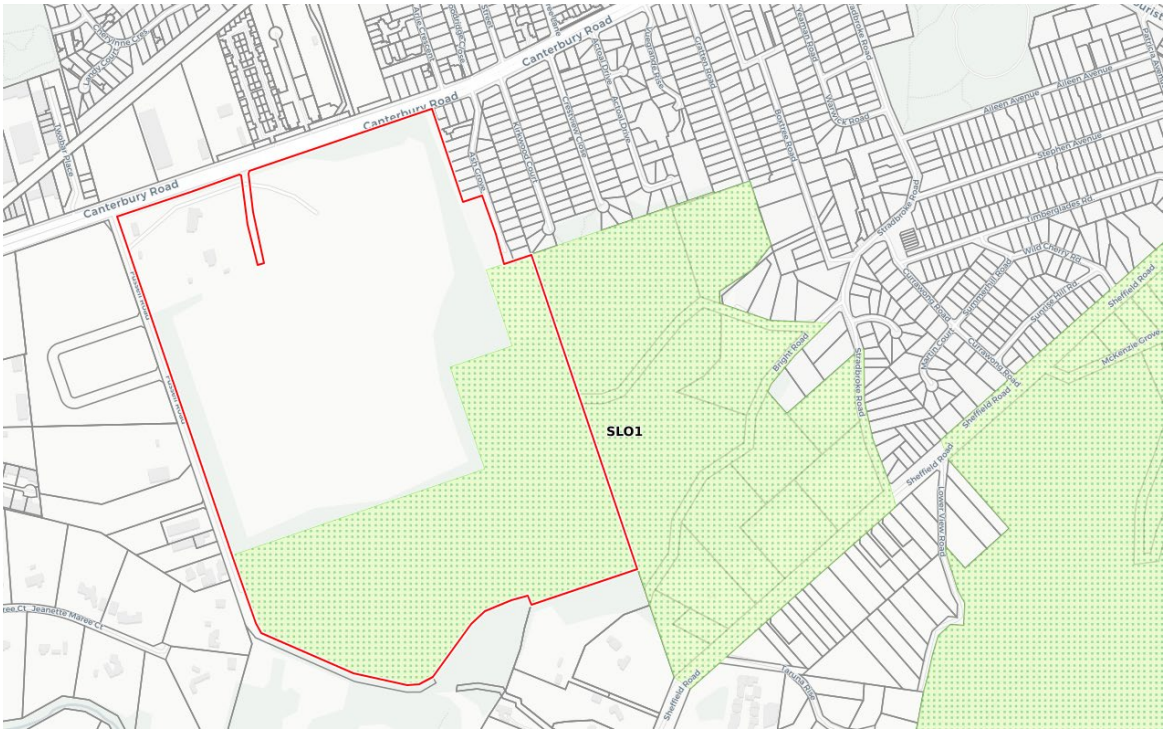


Figure 20: Planning Overlays – SLO1

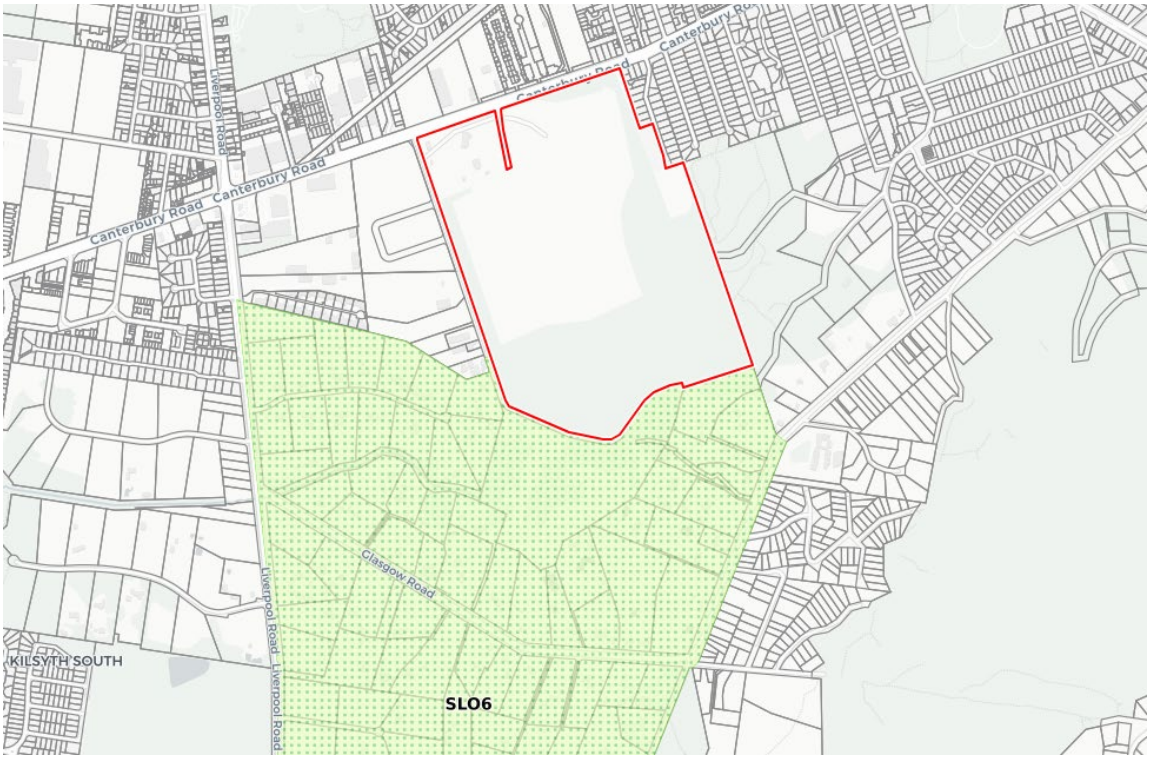


Figure 21: Planning Overlays – SLO6

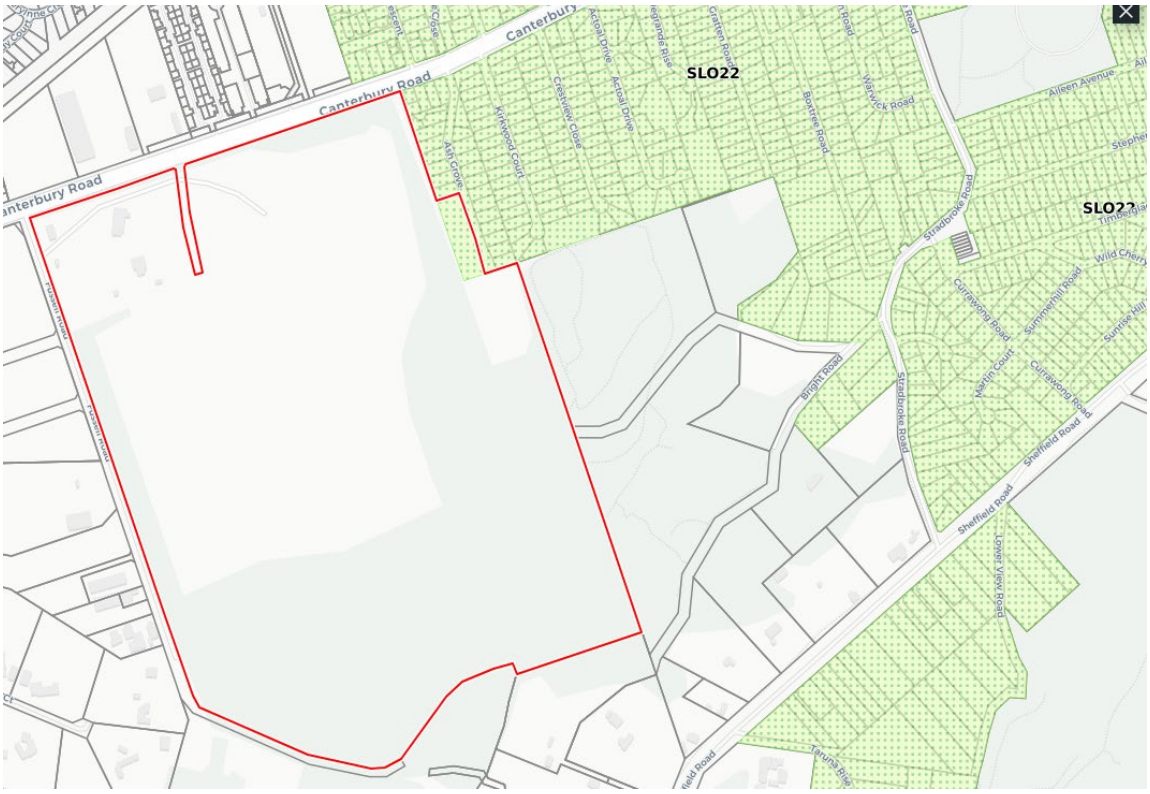


Figure 22: Planning Overlays – SLO22

4.2 Regional and Strategic Documents

4.2.1 Yarra Ranges Localised Planning Statement

A Localised Planning Statement applies to the Yarra Valley and Dandenong Ranges, alongside other areas of significant and distinctive geographic and physical features in Victoria. This document was published in 2017 by Yarra Ranges Council in collaboration with the Victorian Government.

Policies specific to extractive industry prioritises management to avoid adverse impacts and to prevent expansion of existing quarries into environmentally sensitive areas.

4.2.2 Dandenong Ranges National Park Management Plan

The Management Plan for the Dandenong Ranges National Park, prepared by Parks Victoria, was approved for implementation in 2006, and then amended in October 2017. The purpose of the management plan is to drive all aspects of management of the park.

Strategies for Natural Values Conservation recognise that the landscape of the park is a crucial component of the scenic backdrop of metropolitan Melbourne, and highly significant to the contemporary Wurundjeri people.

The landscape significance of the area has been recognised by the National Trust of Australia (Victoria). The Trust has classified a number of landscapes in the region, including the whole of the park and a number of locations within it.

Of specific importance are the following Management Strategies relating to landscape:

- *Encourage and support the Shire of Yarra Ranges in continuing to actively apply the requirements of the landscape overlays in their planning schemes when determining applications that may affect landscape values.*
- *Maintain existing viewpoints and provide information and interpretation material at these sites.*

The easy accessibility of the Dandenong Ranges National Park to Metropolitan Melbourne makes it a popular tourist destination for day visits and short stays. The landscape backdrop of metropolitan Melbourne is a major landscape feature of the Dandenong Ranges.

4.2.3 Yarra Ranges Built Environment Framework (Vision 2020 By Design)

This report includes a built environment framework which was undertaken for the Shire of Yarra Ranges (Planisphere with Planning Collaborative Pty Ltd, 2008). It identifies nine distinct urban and rural area types and presents guidelines for each. It also provides guidelines for a range of specific development types and landscape areas, which has been noted within the landscape classification of this report (refer to Section 5.5).

The framework notes that the location of the shire is where the state's most attractive and significant landscapes meet the edge of the metropolitan area. The importance of this landscape lies in that it is as an edge of the developed urban area of Melbourne, and a landscape resource for the metropolitan population, as well as for its own inhabitants.

4.3 Planning Policy - Key Findings

An important theme is the protection and enhancement of significant landscapes and open spaces that contribute to character, identity and sustainable environments. The scenic beauty and unique landscape features of the Dandenong Ranges and foothills as a backdrop throughout the Shire is emphasised as a core component of its landscape values and scenic amenity. The planning scheme requires that these characteristics should be maintained and protected.

The Shire also supports the development and expansion of existing extractive industry resources while protecting environmentally sensitive areas. Specific mention is made of the requirement to prevent the expansion of existing quarry operations into established buffer areas that protect sensitive land use.

The Site area is also within proximity to Industrial land uses bordered on Canterbury Road and Mountain Highway. These areas are poorly vegetated with large scale and visually dominant built forms with parking, service areas and signage that generally results in a cluttered, low visual quality. The existing Montrose Quarry and associated processing operation lies on the eastern extremity of the industrial node along Canterbury Road.

In terms of Zones and Overlays

- The existing quarry pit lies within the SUZ1, and the proposed quarry expansion area lies within SUZ6. The purpose of SUZ6 is essentially the protection of properties in proximity from noise, dust and visual intrusion.
- The proposed quarry expansion area is covered by an ESO, with an objective to ensure that any new development is sensitively designed and sited to reinforce the existing environmental characteristics of the area.
- The proposed quarry expansion area is also covered by a Significant Landscape Overlay (SLO1). Relevant objectives relate to retaining a forest dominated landscape and maintaining the appearance of uninterrupted forest ranges when viewed from Melbourne's outer east and surrounds.
- Rural residential areas to the immediate south-west of the site are covered by a Significant Landscape Overlay (SLO6). Relevant objectives relate to allowing middle- and long-distance views from the valley and surrounding ranges and maintaining the appearance of an uninterrupted forested backdrop to views.
- Residential areas along the foothills of the Dandenong Ranges National Park and to the north-east of the site are covered by a Significant Landscape Overlay (SLO22). Relevant objectives relate to recognising the visual sensitivity of these residential areas and maintaining vegetation as a dominant element of the landscape.
- The Dr Ken Laversha Reserve to the immediate east of the site is zoned for Public Conservation and Resource, as is the Dandenong Ranges National Park east of the site and in the far south of the study area.

Dandenong Ranges National Park

Localised landscape planning policies seek to place importance on restricting development to maintain iconic features such as the 'treed escarpments of the Dandenong Ranges and the visual amenity along main roads and tourist routes. The emphasis of the policy is on the management of visual effects and landscape character, rather than the principle of change.

- The landscape significance of the Dandenong Ranges National Park and surrounding area has been recognised by the National Trust of Australia (Victoria). The Trust has classified a number of landscapes in the region, including the whole of the park and a number of locations within it. The plan states a requirement to maintain and upgrade existing viewpoints and encourages the application of environmental protection overlays when determining applications affecting land adjacent to the park.

Montrose Quarry (Existing Site area)

The site forms part of the visual foreground to the Dandenong Ranges foothills and the Significant Overlay planning controls that exist over the eastern part of the quarry site and adjoining land uses to the north, east and south reinforce the role of the site as a part of the Dandenong Ranges foothills landscape. The Overlay system is intended to preserve the overall visual character and amenity of the Dandenong Ranges landscape and its role as a visual boundary to the metropolitan area.

5 Baseline Values

This report section provides a description and analysis of the conditions of the landscape and visual conditions that currently exist within the study area.

5.1 Context

The existing Montrose Quarry is located within an industrial land use area that sits at the intersection of the Canterbury Road industrial precinct, an Urban Residential housing area and a Green Wedge low density development area.

The study area is located at the foot of the Dandenong Ranges, 35km east of Melbourne on the edge of the Urban Growth Boundary, with the Green Wedge zone extending eastwards and southwards from the quarry site boundary.

The study area represents a transition from the urban areas of Boronia, Croydon and Mooroolbark in the west, through the residential areas of Kilsyth South and Montrose, to the conservation area of the Dandenong Ranges National Park in the east. The north and eastern parts of the study area are dominated by residential land uses. Industrial and commercial land uses are focussed on Canterbury Road west of Mount Dandenong Road and the Mount Dandenong Tourist Road, near the site area.

On that basis, people moving through the wider study area represent a range of interests from residential, industrial and commercial users through to tourists and day leisure seekers accessing the north-western end of the Dandenong Ranges National Park. There are several major access roads which traverse the study area:

- Canterbury Road runs past the northern boundary of the quarry site and becomes Swansea Road as it heads north towards Lilydale.
- Mount Dandenong Road connects Ringwood with Montrose.
- Mountain Highway to the south of Canterbury Road links Wantirna in the west (beyond the study area) to The Basin.
- Boronia Road in the south of the study area links Wantirna with The Basin.
- The Maroondah Highway passes through the north-western corner of the study area.
- The Mount Dandenong Tourist Road winds through the Dandenong Ranges National Park east of the site from Montrose in the north to Olinda, Sassasfras and The Basin in the south. This road is a scenic route through the forest and gives access to these small towns as well as to rural residences, tourism destinations and lookout points as well as agricultural areas beyond the study area to the east.

5.2 Climate

The study area location at the foothills of the Dandenong Ranges means that Montrose is wetter than nearby Melbourne, with an annual rainfall of 838mm. Average annual temperature is around 13.9 °C. The climate and soil conditions generally result in relatively high vegetation growth rates.

5.3 Landform (Topography & Hydrology)

Situated within the 'Foothills' Landscape Character Type (Leonard & Hammond, 1984), the area to the north, west and south-west of the site are gently undulating, with the slopes of the Dandenong Ranges National Park rising steeply to the south-east. The steeper slopes rise to an elevation of 630m in the east and south-east towards Mount Dandenong and Mt Corhanwarrabul.

The site area is located within an area which is largely a flat valley, within the wider undulating foothills and is bounded on its south side by the Bungalook Creek. Lower hills surround the site to the immediate south and east and beyond Mt Dandenong Road to the north. The terrain of the quarry site falls from east to west, with the quarry pit having undergone decades of operation the landform has been altered significantly from adjacent topography.

Other hydrological features beyond Bungalook Creek towards the south include but are not limited to:

- Dandenong Creek
- Colchester Road Lake
- Canterbury Road Lake
- Hughes Creek
- Other local drainage lines, dams and unnamed water channels.

Refer to Figure 12 for the study areas topographic and Hydrological condition.

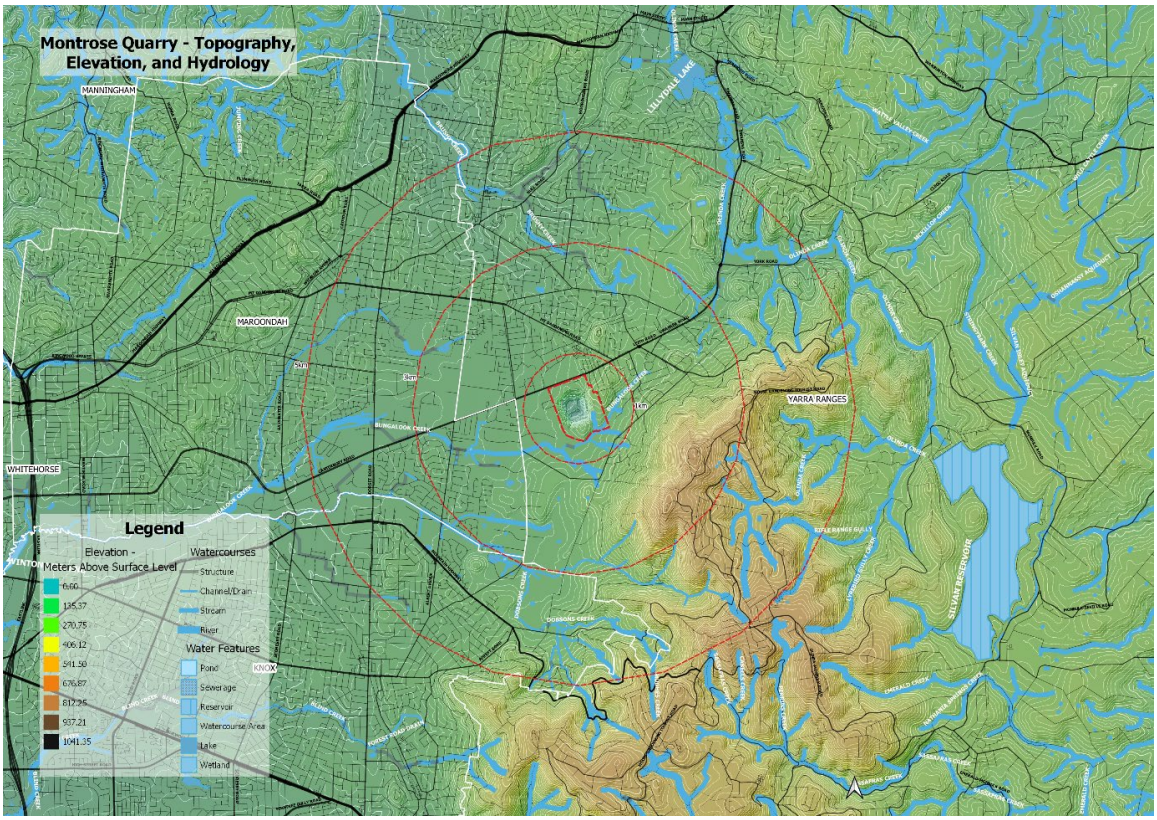


Figure 23: Topography, Elevation and Hydrology

5.4 Vegetation

The broader study area is subject to a mosaic of Ecological Vegetation Classes (EVC) types that reflect changes in topography, elevation, soil type, aspect and rainfall.

The EVC's remain mostly intact in the east of the study area on the steeper slopes and within the Dandenong Ranges National Park. The forested slopes of the Dandenong Ranges National Park represent a constant backdrop within the greater study area and contribute to the landscape character, visual amenity and identity of the place.

Montrose and Mt Evelyn foothills in the east contain suburban residential areas which are well integrated into an environmental setting. Some remnants of dry forest remain in the landscape and private gardens are spacious with a mix of native and exotic vegetation, screening views from within and contributing to the visual amenity of the foothills.

EVC's in the western part of the study area are present but more fragmented by development patterns. The industrial areas have less vegetation canopy coverage.

The Site area sits at the boundary between four EVC types, including:

- EVC 22: Grassy Dry Forest that covers most of the quarry site, along with areas to the north and east of the site.
- EVC 127: Valley Heathy Forest on the western part of the site and beyond to the south-west of the site.
- EVC 17: Riparian Scrub / EVC 126 Swampy Riparian Woodland Complex within creek lines to the south and west of the quarry site.
- EVC 29 Damp Forest to areas adjoining creek lines and low-lying areas to the west and north of the quarry site.

Existing information suggests that the existing site includes 4.3 ha of remnant (indigenous) vegetation and some 3.6 ha of non-native vegetation. This land has been previously used for agriculture and there is remnant pasture, fruit trees and remnant garden plantings evident within the non-native vegetation areas.

Refer to Figure 24 for EVC mapping and Figure 25 for tree density mapping.

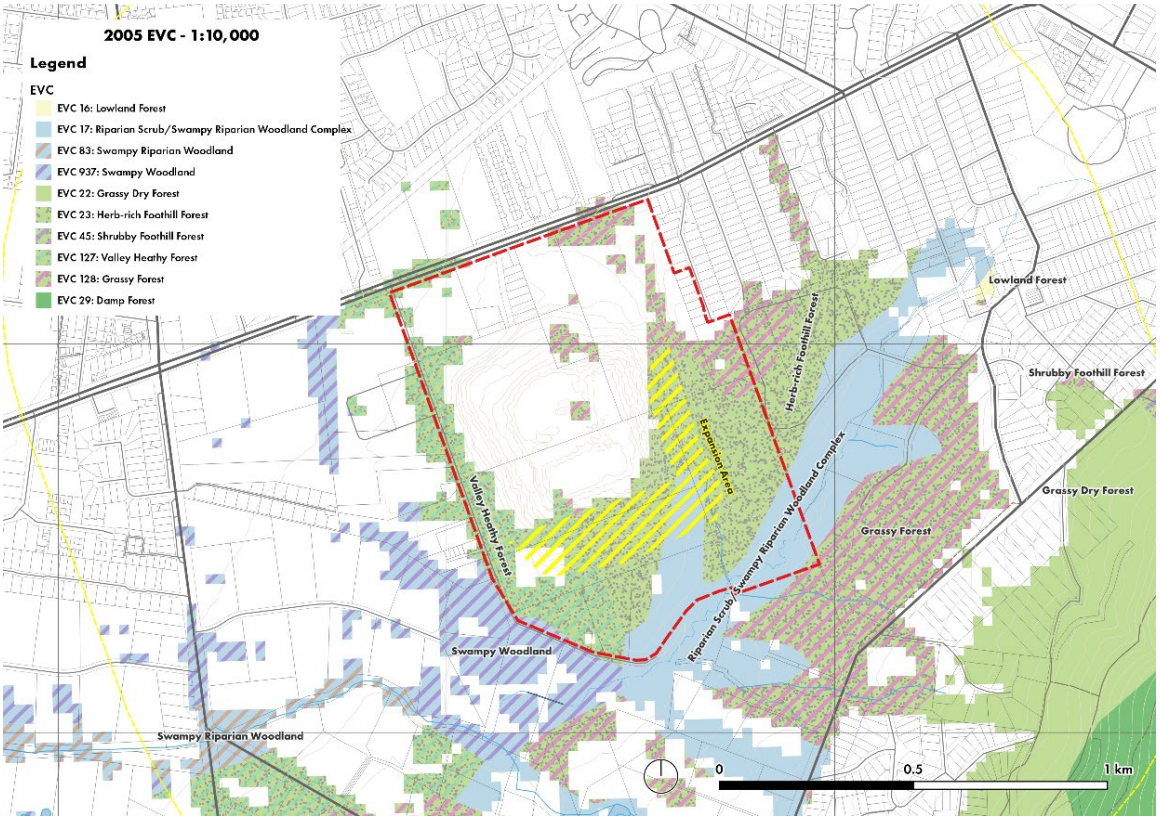


Figure 24: 2005 Ecological Vegetation Class distribution

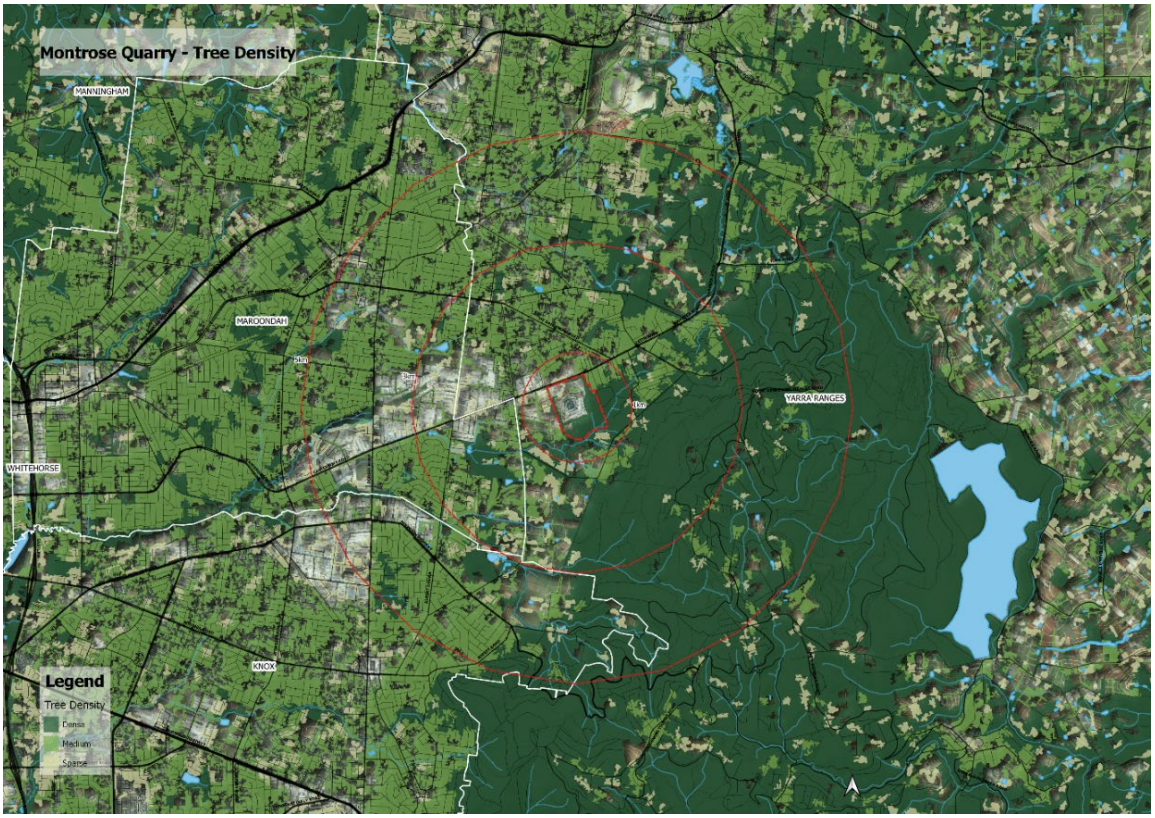


Figure 25: Tree Density

5.5 Landscape Character and Scenic Quality

Landscape character and scenic quality are assessed at two levels - **status** and **classification.**

The **status** of the area is defined in terms of whether the landscape is recorded or listed landscape of National, State, Regional or Local importance on the basis of its formal natural, cultural heritage or scenic value.

The **classification** of representative landscape character types and related scenic qualities is derived through the definition of common distinguishing visual characteristics – landform, vegetation, water-form and cultural land use pattern. Under this system of classification, each landscape type establishes its own benchmarks for scenic quality.

Landscape Status

The landscape status of the Dandenong Ranges National Park has National Trust classification (Victoria) and is considered to be of **State status**.

Two parts of the Site area are covered by SLOs (refer to section 4.1.4) and is therefore classified as having **Local status**. The SLO designation extends beyond the quarry site boundaries within the residential and rural residential setting towards the east and south, which on that basis also has **local status.** This landscape of local status visually complements the landscape qualities established by the Dandenong Ranges landscape.

Landscape Classification

The landscape Character Type of the area, as a benchmark is defined within the **Foothills Landscape Character Type** (Leonard & Hammond, 1984). This landscape is associated to the Dandenong Ranges National Park, which is considered to be of **High scenic quality** due to landform and vegetation characteristics.

The Site area, however, is defined as an altered landscape and has been substantially modified from the naturally established Foothills landscape character type. It is necessary to view this landscape within its own right and against its own scenic qualities of an altered landscape. The site characteristics and developed industrial area within this landscape reflect a classification that distinguishes a **Low scenic quality**, due to the altered vegetation, landform and the industrial and commercial land uses being visually dominant.

It is also noted that the scenic quality within the surrounds include altered Agricultural Landscapes, Rural Conservation and Residential areas of **Moderate scenic quality** due to landform characteristics, development pattern and roadside remnant vegetation. (These are not directly impacted by the proposed development, as highlighted within Section 6.1).

In addition to the benchmark Landscape Character Type, the Shire of Yarra Ranges has a Vision 2020 by Design document which acts as a Built Environment Framework, providing a smaller scale landscape character classification of the study area (Planisphere with Planning Collaborative Pty Ltd, 2008). This framework distinguishes between Rural, Business and Commercial, Green Wedge Settlements and residential Landscape Types. The applicable areas within the study area are listed below in Table 5.

Table 5: Yarra Ranges Built Environment Framework

Built Environment Framework Classification	Description	key attribute
Rural Landscape – Dandenong Ranges (Business & Commercial Area Type)	The Dandenong Ranges are the most prominent hills close to Melbourne, with dense forested slopes and fern gullies that function as a tourism and recreation destination and provide an iconic visual backdrop to most long-distance easterly views from Melbourne's eastern suburbs. The key attributes noted include:	• Dense forested landscape character. • Distinctive landform that is clearly different from the Melbourne basin • Infrastructure and built form generally hidden amongst vegetation.
Industrial Areas and Highway Strips (Business & Commercial Area Type)	Industrial areas include Bayswater, Bayswater North and along Canterbury Road and along Dorset Road. The Industrial Areas and Highway Strips typically take the form of groups of factory / warehouse or shed-style buildings often with storage or works yards and often spread in linear fashion along highways. The key attributes include:	• A range of commercial and industrial services and uses in one location. • Large scale building with diverse forms and colours. Visually prominent signage • Limited or no on-site landscape

5.5.1 Landscape Value

Landscape value addresses the relative value that is attached to the landscape by the community, bearing in mind that a landscape may be valued by different stakeholders for a variety of different reasons (Landscape Institute and Institute of Environmental Management and Assessment, 2013). It draws from both Landscape Character and Scenic Quality, but also considers the status, the condition of the landscape and cultural associations and values placed on the landscape.

- The Dandenong Ranges National Park is an important leisure destination and a conservation area of State status. The value of the landscape for tourism and recreation is considered high, as scenic quality represents a drawcard for tourism. The Ranges landscape also provides a visual backdrop to nearby land use areas. The scenic quality of the mountain landscape and the views to the west over the city from designated scenic viewpoints are important features that reinforce the high value of the landscape.
- The Yarra Ranges Planning Scheme recognises landscape value, through a series of SLOs. Landscape value near the Site area are attributed to locations south and east of the quarry site and to the woodland area surrounding the existing boundary. The SLO system recognises the specific qualities as well as the visual relationship between each of the SLO landscapes, including the quarry site, and the connection to the Dandenong Ranges.

5.5.2 Landscape Condition

Landscape condition is a measure of the physical status of the site and factors which may influence landscape changes over time. The Landscape appears as a part of the adjoining industrial precinct and main road landscape. The condition of the site area includes the existing Montrose Quarry, including:

- An altered landform of an active extraction pit, haul roads and stone processing area.
- Industrial scaled concrete and asphalt plants and site administration facilities.
- Perimeter landscape buffer planting, which is a combination of remnant indigenous planting and mixed native tree and shrub planting. The landscape buffer is in average condition.
- Intact indigenous woodland at the southern and eastern edges of the site. This landscape is a combination of remnant indigenous vegetation and some exotic planting as well as weed intrusion. This vegetation varies from good to average condition, depending on the site location and the degree of disturbance that has resulted from historic land uses, current and previous site uses and management practices.
- The Canterbury Road landscape which forms a northern boundary to the site is a mixture of indigenous and native species. Street planting blends with the quarry site buffer planting to form a vegetated edge to the site. Street planting is generally in an average condition that is the result of the effects of paving and poor growing conditions.

5.6 Pattern of Viewing

The pattern of viewing within the study area and the visual relationship between different development settings has been specifically recognised within the Local Planning Scheme through the application of the SLOs.

- The southern and south-eastern edges of the quarry site and adjoining low density residential and reserve areas to the east are considered significant 'forest dominated' landscapes (SLO1) that form an uninterrupted visual connection between Melbourne's outer eastern suburbs and the Dandenong Ranges landscape.
- General residential and low-density residential areas east of the quarry site (Foothills and Rural Townships SLO22) are classified on the basis of a visually dominant landscape and related environmental values.
- Green Wedge areas to the south of the quarry site (SLO6) is classified on the basis of its rural landscape and bushland mosaic characteristics that allow middle- and long-distance views from the valley to the Dandenong Ranges.

Each of these landscape types, as a result of landform, irregular pattern of development, vegetation height and density, are largely 'immersive landscapes' that have the capacity to contain on-site views and to visually absorb small scale changes. In these settings, road corridors and elevated locations provide the major opportunities for longer distance views that connect local landscape settings with the Dandenong Ranges landscape backdrop.

The key landscape focal points include but are not limited to:

- The Dandenong Ranges, viewed from the west, south-west and south. The ranges create a visual backdrop and define an edge to metropolitan development in Melbourne's east.
- The Foothills landscape, including low density rural-residential development and rural related development. The landscape has been cleared in part due to development but retains patches of native vegetation, windrow plantations and other cultural landscape features. The area retains a dominant treed character and an irregular subdivision pattern that visually complements the Dandenong Ranges landscape system.
- Industrial land use areas, specifically along road corridors. These road-based industrial and commercial land uses within the western and south-western part of the study area generally have large-scale, visually inconsistent and dominant built forms with large areas of hard surface and limited vegetation or established tree canopy. Large native street trees provide an important, but not dominant visual element.
- The existing quarry is considered to have a low level of visibility within the study area.

5.6.1 Visual Absorption Capability

Visual Absorption Capability (VAC) is a measure of the area's ability to accommodate changes while maintaining existing landscape character and without a significant reduction in landscape and visual amenity. Other than landform, three major factors are likely to influence the visual absorption capability of the receiving environment:

- Vegetation patterns, height and location that have the capacity to visually conceal development at the view source.
- Built form, and its location, height, complexity and capacity to conceal development at the view source.
- Visual complexity of the field of view (i.e the irregularity of the landscape background) and the relative size of the proposed infrastructure.

Overall, the following is relevant for this assessment:

- The steep topography and densely vegetated mountain slopes represent areas of high VAC.
- Where the topography flattens out, and vegetation has been cleared for residential or agriculture, VAC is lowered.
- The western part of the study area is urban in nature and highly vegetated. VAC is high throughout this urban zone.
- Where built form and vegetation is absent, such as along road corridors, VAC is low.

The mitigating effects of VAC are highly significant in this study area and will be considered during the Impact Assessment.

6 New Conditions - Assessment

This section deals with potential effects on visual resources from changes in the composition and quality of views, and the overall effect on landscape character and visual amenity. The assessment of landscape character and visual impacts addresses the significance of likely changes in existing baseline conditions resulting from the development proposal.

The assessment of impacts describes the nature and magnitude of changes, sensitivities and the significance of impact, as described within Section 2.2.

Visual Impacts – Definition

Visual impacts relate to changes in the available views of the landscape and the effects of those changes on people. Visual impact is therefore concerned with:

- The direct impacts of the proposed development on views of the landscape through intrusion or obstruction.
- The likely reaction of viewers who may be affected.
- The overall impact on visual amenity, which can range from degradation through to enhancement.

Landscape Impacts - Definition

Landscape impacts are changes in the fabric, character, and quality of the landscape as a result of development and can include:

- Direct impacts on specific landscape elements or values such as scenic quality.
- More subtle effects on the overall pattern of elements that give rise to landscape character and regional and local distinctiveness.
- Impacts upon acknowledged special interests or values such as designated landscapes, conservation sites or community valued assets.
- Cumulative or indirect effects that extend impacts beyond the site boundary.

Refer to Section 6.1 landscape character impact assessment for the and Section 6.2 for the visual Impact assessment.

6.1 Landscape Impact Assessment

The baseline values of the landscape have been described and summarised in Section 5. The following Character Types assessed within Table 5 are anticipated to be directly impacted by the proposed site development.

The impact assessment focusses on the effects of the final expanded footprint and assumes no interim mitigation works, as described within Section 3 this assessment is based on the completion of all extraction stages.

Table 6: Landscape Impact Assessment – New Conditions

Description of likely impacts	Landscape Sensitivity	Nature of change and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations	Nature of change and magnitude of change (With mitigation)	Significance Rating (with mitigation)
The site area is located within the Landscape Character Type classified as the **Foothills** and an **Altered Landscape** which has been classified as having a low landscape scenic quality value. However, the surrounding landscape would be vulnerable to the type of change being assessed. The landscape sensitivity has been deemed Low. **Impact Assessment Stage 1-8** • ·The proposed extension of the Montrose Quarry will enlarge the existing pit by approximately 14 Ha. This expansion will take place across 9.53 Ha of remnant woodland vegetation and associated landform and 4.5 Ha of already cleared land. This represents an approximate 24% increase in operational size. • The extension of the pit will primarily occur in the south and east of the site. The landfrom will change as a result of stage 2 quarrying within the ridgeline landscape. • The central parts of the site (including the quarry pit) will be significantly altered. • The haul road will alter the landform within the west. • The nature of the quarry operations and the operational intensity will not change. • The site boundary and vehicle access points will not change. • The proposed quarry extension will not affect adjoining land ownership or land uses. • Existing vegetation will be removed as a result of future quarry development in the eastern part of the site.	**Low**	**Moderate** The proposed development would be noticeably out of scale with the landscape and clearly at variance with key landscape attributes identified within the baseline conditions. The changes will leave an adverse impact onto the landscape.	**Long term** partially reversable The landform can't be reversed but revegetation can visually mitigate the impact over time	**Moderate**	• The effects of the land use change will be mitigated by the long-term rehabilitation of the site. • Pre-development planting (as early as possible). • Use of indigenous species where possible will match the colours and appearance of the surrounding landscape. • Integrated landform rehabilitation to create more natural site landforms.	**Low** Will have an apparent but not obvious or dominant effect on an area of recognised landscape character or its key attributes. The new impact would increase the effect of the existing quarry and its existing attributes, however, the potential revegetation can visually mitigate the impact over time.	**Low**

NOTE: The landscape assessment considers scenic quality within the site area as an environmental resource, independent of views.

6.2 Visual Impact Assessment

6.2.1 Visibility Analysis

The Zone of Visual Influence (ZVI) modelling for the existing study area is shown in Figure 26. The ZVI modelling exercise provided the necessary level of detail for confirming the likely 'worst case' visual receptors and conducting the site inspection. The ZVI shows the areas that can be seen within a direct 'line of sight' from the development. The purpose of the modelling is to:

- Identify all possible theoretical viewing areas.
- Indicate possible representative or 'worst case scenarios' viewing areas that can be verified during a site inspection.

Actual levels of visibility will be less than the modelled results due to:

- Existing vegetation and built form within the study area.
- Localised topographic elements that may not be included in the terrain model.
- View alignment and viewing distance.

6.2.2 ZVI modelling results

The extent of theoretical visual exposure remains almost identical to the existing conditions, with new areas of theoretical visual exposure limited to narrow additional areas in the east and immediate southwest of the site, and further within the distance in the southwest. The key areas of highest theoretical visual exposure show:

- An increase to the immediate southeast of the site within the rural residential areas of Montrose located on the lower slopes of the Dandenong Ranges National Park.
- An increase to the west of the site across the flatter residential areas of Kilsyth and industrial areas of Bayswater.

Not shown on these ZVI's are those areas that will be affected by the removal of the landform toward the south of the site area. This existing landform includes vegetation which is visible to some receptors. Within the foreground, this hill is more visually prominent, and in places represents a skyline silhouette. The removal of the hill could therefore result in a change in the skyline, and potentially exposure nonvisible areas beyond. It has been noted that this will not necessarily mean exposure to the new quarry pit.

6.2.3 Viewpoint Selection

Fourteen representative viewpoints have been selected to provide a basis for the assessment of baseline values and future new conditions related to the proposal (Refer to Figure 27 for viewpoint locations).

The viewpoints have been selected as a representation of view lines predominantly based on the ZVI modelling, view direction, visual receptors, and proximity to the development site throughout the study area (foreground, middle ground, background and distant views). Refer to 2.8 for selection methodology.

The representative viewpoints have been tested and verified on site, and in terms of actual visibility (i.e. taking into consideration of existing vegetation and built form).

Receptor Sensitivity

Residential receptors, including residents of rural residential and suburban areas. Residential receptors in this study area are expected to have an interest in the scenic quality of the environment and the character of the landscape and are highly likely to perceive changes to views of the natural landscape and visual amenity. Therefore, these visual receptors have a **high visual sensitivity**.

Tourism and recreation receptors, mainly accessing the tourism amenities Dandenong Ranges National Park via the Mount Dandenong Tourist Road, but also users of local recreation and conservation areas within the residential areas. The nature of tourism and recreation within the region is linked to scenic quality and landscape character and receptors are expected to have an acute interest in the scenic quality of the environment and the character of the landscape. These visual receptors would have a **high visual sensitivity**.

Schools, hospitals and other settings which have community value typically have less of a focus on the landscape and visual amenity. These visual receptors would have a **moderate visual sensitivity**.

Road users, including commuters travelling for everyday homelife activities, as well as for business and commercial uses are typically less sensitive to the visual amenity due their speed of movement and distractions of urban visual clutter within built-up areas. Highways, major regional link roads and tourist roads have a **moderate visual sensitivity** due to the higher frequency of users. While local roads and other industrial / commercial areas have a **low visual sensitivity**.

6.2.4 Viewpoint Assessment

An assessment of the representative viewpoint locations has been provided below. The assessment defines the likely effects of change resulting from the anticipated impact based on the nature and magnitude of change identified within each viewpoint, based on the definitions provided in Section 2.3 against the project description, as defined in Section 3.

- Wireframe visualisations have been created based on the representative viewpoint selection to test the likely 'worst case' visual effects of the proposal. They also provide a basis for describing baseline values (Refer to Section 2.10 for Wireframe visualisation methodology.

Refer to Appendix 3 for Existing Conditions Viewpoints and Appendix 4 for Wireframe Visualisations

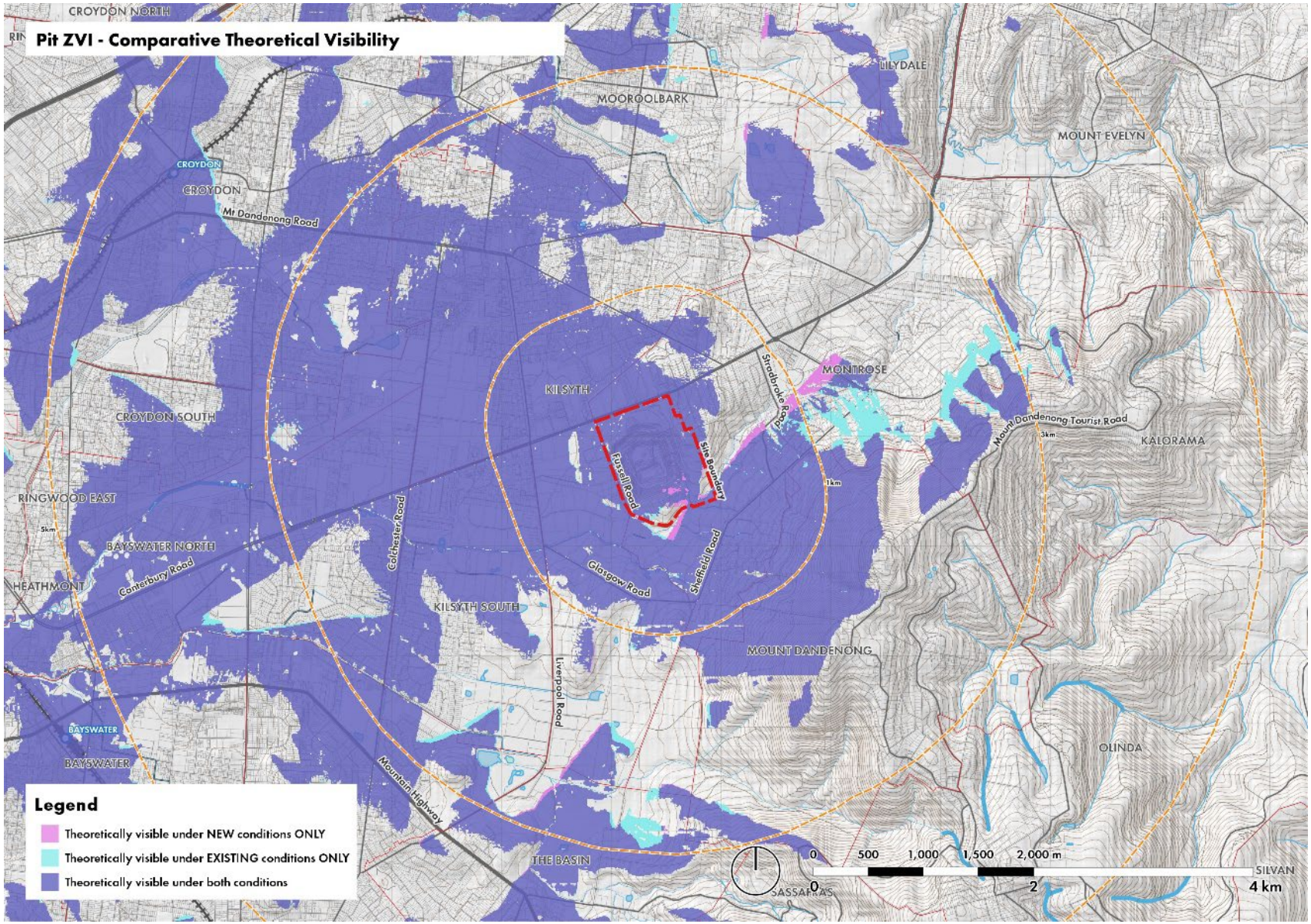


Figure 26: ZVI.: New Conditions (No Vegetation and Structures)

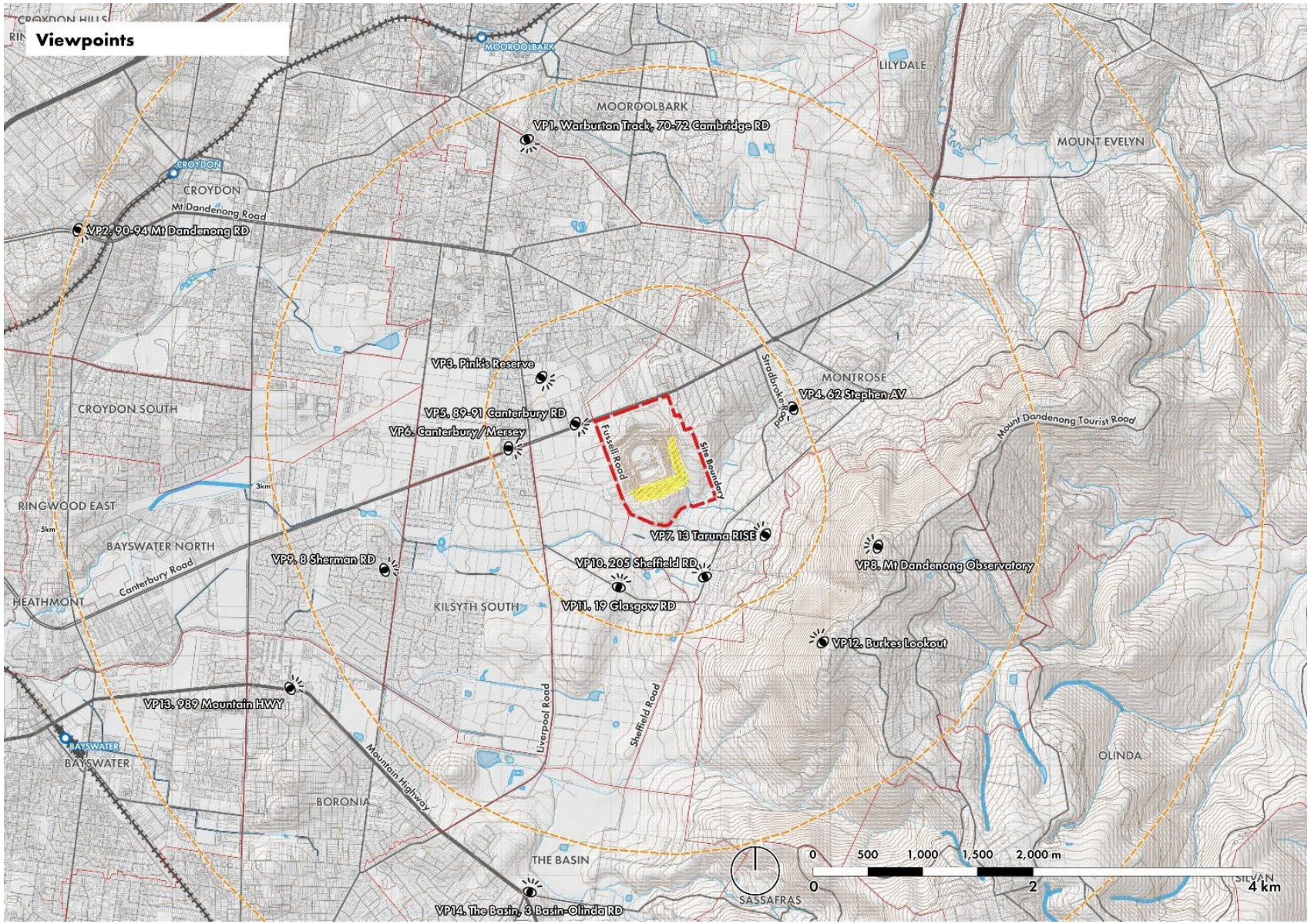


Figure 27: Viewpoint Locations

Viewpoint 1 - Warburton Track Cambridge Road

Image 11: Viewpoint 1 Warburton Track 70 – 72 Cambridge Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 7: Viewpoint 1 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 1 Warburton Track 70-72 Cambridge Rd 2650m from pit Residential setting Walking track north of the site	**Existing view** ▪ Elevated location with a possible view to a small area of existing on-site vegetation. ▪ Views to the extraction & processing areas are screened by foreground residential vegetation and structures. **Likely impact of change** ▪ An area of vegetation currently viewed will be affected by the Stage 2 extraction, but the ground level in the viewed location will be lowered resulting in no views of stone extraction. ▪ Existing on-site vegetation (green dashed line) will maintain visual separation between the quarry and adjoining land uses.	**High**	**No Change**	**Long term Partly Reversible**	**Negligible Neutra**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting between the pit and the processing / plant area

Viewpoint 2 - Mt Dandenong Rd

Image 12: Viewpoint 2 – 90 – 94 Mt Dandenong Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 8: Viewpoint 2 Visual Impact Assessment

Viewpoint reference	Representative view point Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 2 Mt Dandenong Rd 5240m from pit **KEY VIEW** Major road transport & tourism route north-west of the site	**Existing View** ▪ Elevated location with a major road alignment that directs views toward the existing quarry site. ▪ View to existing extraction area is clearly evident as a light colour contrast that currently extends the width of the available view. ▪ The viewing distance reduces the level of detail to a colour contrast only and there is no perception of quarry activities. ▪ The existing quarry pit is already visually evident. ▪ The landscape below the line of the quarry is characterised by a mosaic of tree canopies & industrial structures which provide a pattern of light-coloured roof and building forms which result in a complex visual pattern that partly absorbs the colour contrast provided by the existing quarry. **Likely impact of change** ▪ The Stage 2 quarry extension will remove existing vegetation and lower ground levels at the rear of the pit, but on-site vegetation will maintain the visual separation between the quarry & adjoining residential properties, resulting in no obvious visual change. ▪ The viewing distance, the visual complexity of the industrial foreground and atmospheric conditions generally reduce the visual impact of specific changes in the landscape of the quarry setting. The industrial setting tends to be viewed as a layer that sits between the Dandenong Ranges landform and the heavily vegetated residential areas of Croydon South. ▪ As the existing quarry pit is clearly evident, the level of visual change represented by the stage 2 works will be low and similar in nature to the existing visual impact.	**Moderate**	**Low Minor adverse**	**Long term Partly Reversible**	**Low**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting between the pit and the processing / plant area ▪ Additional tree planting in Fussell Road reserve

Viewpoint 3 - Pink's Reserve

Image 13: Viewpoint 3 – Pinks Reserve (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 9: Viewpoint 3 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 3 Pink's Reserve 860m from pit Local sports ground north-west of the site	**Existing View** ▪ The viewing location is on a slightly lower elevation than the quarry site. ▪ Views to the existing quarry pit & ground level development are blocked by existing vegetation & offsite industrial buildings. ▪ Views of the top of the asphalt and concrete plant structures are available but form part of a landscape that includes sports buildings, industrial buildings (white) and the quarry plant. ▪ Views of the top sections of the asphalt & concrete plant structures create a visual break in the line of the ridgeline tree canopy. The backdrop to the quarry (foreground) ridgeline is the Dandenong Ranges National Park. **Likely impact of change** ▪ The Stage 2 pit changes will be visually screened by existing foreground structures and vegetation, resulting in no change from this viewpoint.	**High**	**No Change**	**Long term**	**Neutral Negligible**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting between the pit and the processing / plant area ▪ Additional tree planting in Fussell Road reserve

Viewpoint 4 - Stephen Avenue

Image 14: Viewpoint 4 – 62 Stephen Ave (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 10: Viewpoint 4 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 4 Stephen Avenue 1060m from pit Residential setting east of the site	**Existing View** ▪ The viewing location is above the existing quarry level. ▪ The existing quarry pit and processing facilities are visually screened by street, garden vegetation and landform. ▪ Existing site landform & vegetation will change in the area of the Stage 2 expansion, but an existing on-site vegetation will remain between the viewpoint and the new extraction area. **Likely impact of change** ▪ There is likely to be no change to the nature of the view.	**High**	**No Change**	**Long term Reversible**	**Negligible Neutra**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit.

Viewpoint 5 - Canterbury Rd

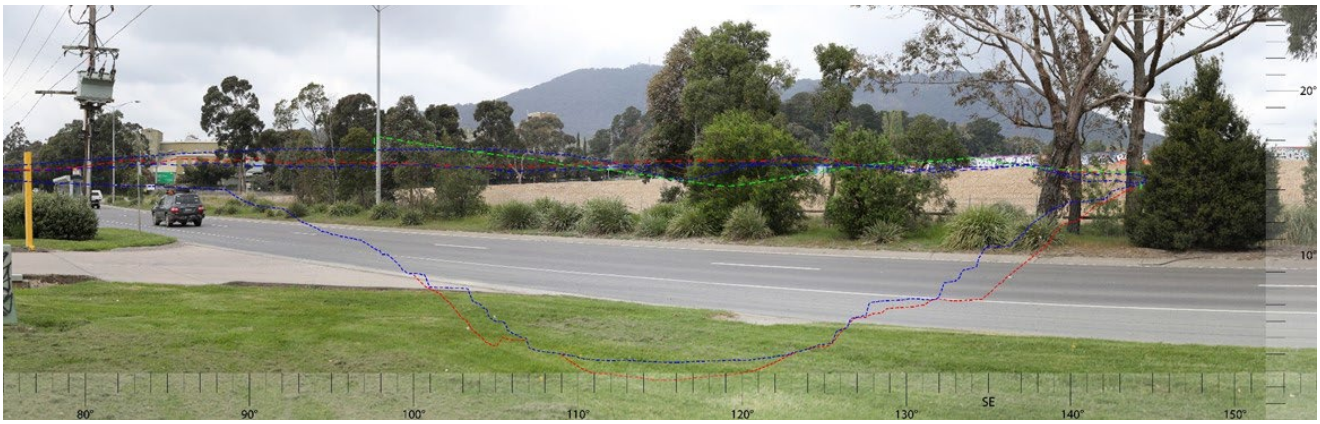


Image 15: Viewpoint 5 – 89 – 91 Canterbury Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 11: Viewpoint 5 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 5 Canterbury Rd 380m from pit Major transport route on the site boundary immediately north-west of the site	**Existing View** ▪ The viewing location is on the same level as the northern edge of the existing quarry site. ▪ The top of the concrete plant building and part of an adjoining conveyor is just visible over tree canopies but does not form a skyline silhouette and is not visually dominant. ▪ The most prominent view of on-site structures is from the corner of Canterbury Road and Fussell Road. Planted bunds and site edge plantations screen the quarry facility from other viewpoints. ▪ Existing tree planting within the Fussell Road reserve and the western quarry site buffer plantation provides a visual screen to the quarry activities from the west. ▪ The Dandenong Ranges formation is a dominant visual presence & skyline backdrop. **Likely impact of change** ▪ There will be no visible change as a result of Stage 2 works. Landform and vegetation changes will be fully screened by Fussell Road and western buffer planting	**Moderate**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting between the pit and the processing / plant area ▪ Additional tree planting in Fussell Road reserve

Viewpoint 6 - Canterbury Road & Mersey Road

Image 16: Viewpoint 6 – Canterbury Road & Mersey Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 12: Viewpoint 6 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 6 Canterbury Rd & Mersey Rd 940m from pit Major transport route-west of the site	**Existing View** ▪ The viewing location is on the same level as the northern edge of the existing quarry site. ▪ The road-based view is dominated by commercial development on the south side of the road. ▪ The top of the concrete plant building is just visible over tree canopies but does not form a skyline silhouette and is not visually dominant. ▪ Existing tree planting within the Fussell Road reserve and the western quarry site buffer plantation provides a visual screen to the quarry activities from the west. ▪ The Dandenong Ranges formation is a dominant visual presence & skyline backdrop. **Likely impact of change** ▪ There will be no visible change as a result of Stage 2 works. Landform and vegetation changes will be fully screened by Fussell Road and western buffer planting	**Moderate**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting in Fussell Road reserve

Viewpoint 7 - Taruna Rise

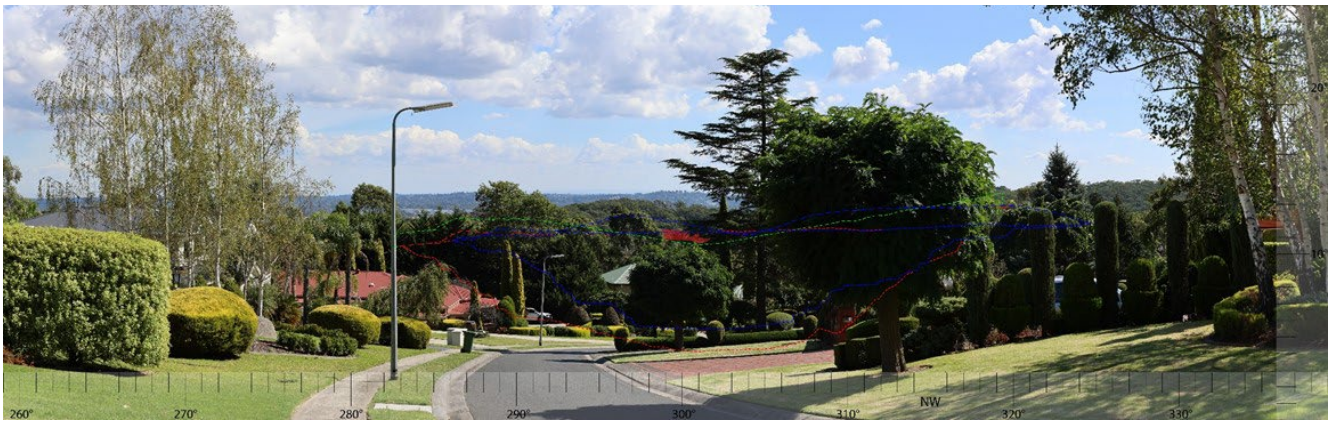


Image 17: Viewpoint 7 – 13 Taruna Rise (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 13: Viewpoint 7 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 7 Taruna Rise 840m from pit Residential setting south-east of the site	**Existing View** ▪ The viewing location is at a level above the quarry site. ▪ The existing quarry pit and processing facilities are visually screened by street and garden vegetation. **Likely impact of change** ▪ There will be no visible change as a result of Stage 2 works. Landform and vegetation changes will be fully screened by existing on-site and off-site vegetation	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit.

Viewpoint 8 - Mount Dandenong Observatory

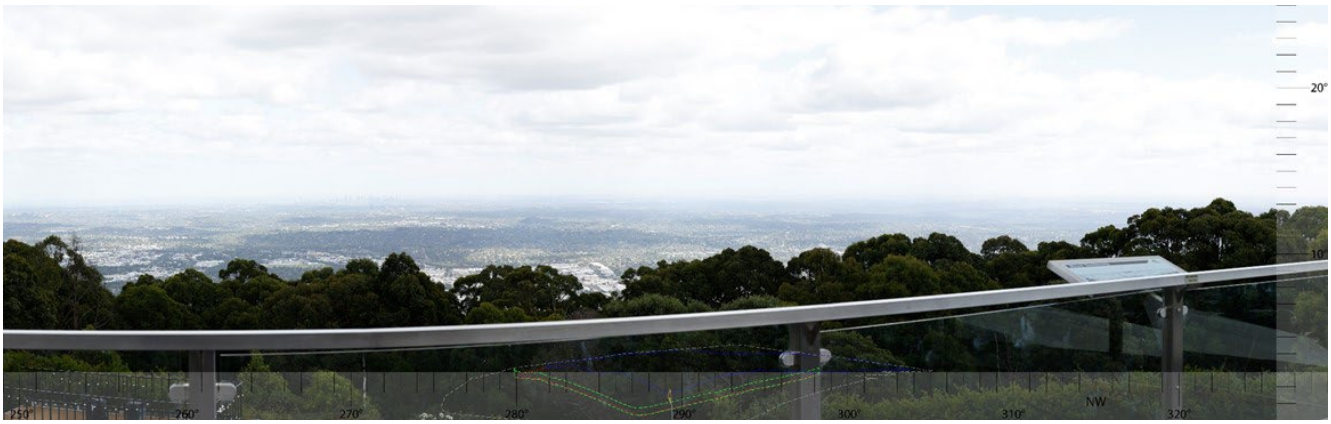


Image 18: Viewpoint 8 – Mount Dandenong Observatory (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 14: Viewpoint 8 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 8 Mt Dandenong Observatory 1820m from pit Tourism site (scenic lookout) south-east of the site	**Existing View** ▪ The viewing location is at a level well above the quarry site. ▪ The viewpoint is set back from the edge of the landform which leads to land uses close to the base of the Dandenong Ranges landform being screened by the landscape of the National Park. ▪ The existing quarry site is screened by the National Park landscape. **Likely impact of change** ▪ There will be no visible change as a result of Stage 2 works. Landform and vegetation changes will be fully screened by existing on-site and off-site vegetation and foreground landform	**High**	**No change**	**Long term Partly Reversible**	**Neutral Negligible**	▪ General design mitigation measures

Viewpoint 9 - Sherman Rd

Image 19: Viewpoint 9 – 8 Sherman Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 15: Viewpoint 9 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 9 Sherman Rd 2310m from pit Residential setting west of the site	**Existing View** ▪ The viewing location is at a level slightly below the level of the quarry site. ▪ A small layer of the existing quarry is visible as a colour change within a treed landscape. The seen area does not form a skyline silhouette and is barely discernible. ▪ Existing tree planting within Fussell Road and the western Quarry buffer provide a visual screen to the majority of the quarry site. **Likely impact of change** ▪ There will be a minimal visible change based on the vegetation removal and lowered landform on the south-eastern edge of the quarry. ▪ Remaining vegetation on the eastern and south-eastern boundary of the quarry will maintain a visual separation between the quarry pit and adjoining residential areas.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	▪ General design mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting in Fussell Road reserve

Viewpoint 10 - Sheffield Road

Image 20: Viewpoint 10 – Sheffield Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 16: Viewpoint 10 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 10 Sheffield Rd 810m from pit Rural residential setting south of the site	**Existing View** ▪ The viewing location is at a level slightly above the level of the quarry site. ▪ The existing quarry site is screened by existing on-site and off-site vegetation. **Likely impact of change** ▪ There will be no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation	**Moderate**	**Neutral Negligible**	**Long term Partly reversible**	**Low**	▪ General design mitigation measures

Viewpoint 11 - Glasgow Road

Image 21: Viewpoint 11 - Glasgow Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 17: Viewpoint 11 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 11 Glasgow Rd 780m from pit Rural residential setting south-west of the site	**Existing View** ▪ The viewing location is at a level slightly above the level of the quarry site. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation	**Moderate**	**Neutral Negligible**	**Long term Partly reversible**	**Low**	General design mitigation measures

Viewpoint 12 - Burkes Lookout

Image 22: Viewpoint 12 – Burkes Lookout (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 18: Viewpoint 12 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 12 Burkes Lookout 1890m from pit **KEY VIEW** Tourism site (scenic lookout) south-east of the site	**Existing View** ▪ The viewing location is at a level well above the quarry site and in a prominent cliff edge location. ▪ This location is designed as a scenic lookout for tourists and park users. Access is via vehicle and the Kyeema Track. ▪ The viewpoint is designed to provide a day/night panoramic view of the eastern suburbs of Melbourne, including the city skyline. ▪ The viewing distance allows a clear view of the existing quarry pit, operational area & internal truck movement. The quarry sits at the bottom/centre of the panoramic view and at the lower edge of the wooded Ranges landscape. ▪ The quarry feature is visually connected to a complex landscape that includes housing development, major roads and large industrial developments in the Kilsyth & Bayswater areas. ▪ The visual complexity of the wider field of view is a feature of the view itself. On that basis, individual land uses are more easily visually absorbed and become less important that the overall pattern of land uses. **Likely impact of change** ▪ Stage 2 quarry development will have a clearly discernible, but not visually dominant effect on the available view. ▪ As the nature of the activity is already well established, only the magnitude of the impact will change. This will form part of an overall view which will continually change as a result of further development. The magnitude of the change will be partly mitigated by existing vegetation on the southern boundary of the quarry site.	**High**	**Low Minor adverse**	**Long term Partly reversible**	**Moderate**	General mitigation measures

Viewpoint 13 - Mountain Highway

Image 23: Viewpoint 13 – 989 Mountain Hwy (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 19: Viewpoint 13 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 13 Mountain Hwy 3550m from pit Major transport route south-west of the site	**Existing View** ▪ The viewing location is at a similar level to the existing quarry. ▪ The existing quarry is largely screened by existing on-site and offsite vegetation and structures. ▪ A small layer of the extraction area is visible as a colour contrast, but not visually dominant. ▪ Foreground structures associated with the road system dominate the view and distract attention from the distant quarry element. **Likely impact of change** ▪ The stage 2 works will have no effect on the view as the lower surface levels related to the new extraction area will be below existing ground levels. ▪ Existing site vegetation will maintain a visual separation between the quarry and adjoining residential areas.	**Moderate**	**Neutral Negligible**	**Long term Partly reversible**	**Low**	▪ General mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting in Fussell Road reserve

Viewpoint 14 - Basin Olinda Road

Image 24: Viewpoint 14 – 3 Basin Olinda Road (80°panorama)

*Refer to **Appendix 3** for Existing conditions Viewpoints and **Appendix 4** for full scale wireframe visualisations*

Table 20: Viewpoint 14 Visual Impact Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Mitigation measure / Recommendations
Viewpoint 14 Basin-Olinda Rd 3680m from pit Regional road & residential / rural interface setting south-west of the site	**Existing View** ▪ The viewing location is at a level slightly above the level of the quarry site. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ The stage 2 works will have no effect on the view as the lower surface levels related to the new extraction area will be below existing ground levels. ▪ Existing site vegetation will maintain a visual separation between the quarry and adjoining residential areas.	**Low**	**Neutral Negligible**	**Long term Partly reversible**	**Low**	▪ General mitigation measures ▪ Maintaining woodland buffers to the maximum extent possible. ▪ Progressive rehabilitation of the upper levels of the extraction pit. ▪ Additional tree planting in Fussell Road reserve

6.2.5 Cumulative Impacts

The Visual Assessment results indicate that across the study area, the overall nature of effects will largely remain consistent with existing conditions of the operational quarry.

Four viewpoints will experience a change in the shape of the quarry extraction area, but those changes will occur within the existing seen area and on that basis, are not considered to represent a cumulative impact.

One viewpoint (viewpoint 12 Burkes Lookout) will have a clear magnitude of change onto the existing conditions. However, this impact is likely to be seen as an isolated change and is not considered a cumulative impact onto wider receptors.

6.3 New Conditions – Key Findings

Landscape Impact Assessment

The proposed development will result in an expansion of the extent of the current pit by approximately 25%, including 9.53 Ha of remnant vegetation and 4.5 Ha of already cleared land. Reducing the existing landform levels along the eastern and southern edges of the quarry pit, which will require vegetation removal in the new extraction area.

It is anticipated that the landscape impacts will be similar in nature to the existing quarry impacts but cover a greater area. The landscape impacts will have an apparent but not obvious or dominant effect on an area of recognised landscape character and its key attributes. The new impact would increase the effect of the existing quarry and its existing attributes; however, the potential revegetation can visually mitigate the impact over time.

Landscape impacts are considered to have a relatively Low level of significance on the basis of the existing conditions and the potential for progressive mitigation over time.

Visual Impact Assessment

Seven representative viewpoints (3 – 8, 10 – 11 & 14) have no view of the existing quarry or the proposed stage 2 development.

Two representative viewpoint locations provide a clear view of the existing quarry pit:

- Viewpoint 2 provides a distant road-based view of the pit, but the development is only seen as a colour change in a landscape that contains a mosaic of industrial and commercial land uses with similar light or contrasting colours.
- Viewpoint 12 (Burkes Lookout) provides the most prominent view of the quarry. The viewing distance allows for a detailed view of quarry features, plant buildings and related truck movements. The scenic lookout is based on a wide panoramic view that includes large scale industrial, retail and residential land uses. The diversity of land uses across the suburban area is the subject of the view and on that basis, the quarry is perceived as one component of a broader pattern of urban development, rather than as a visually discordant element. In that context, the quarry and its features and visible extent are less important in terms of view quality than its level of visibility suggest.

Three representative viewpoint locations provide slight views of the existing quarry pit:

- Viewpoint 1 provides a view of a thin layer of the quarry within the background of the view, but the development is seen as a small colour change within a dominant treed landscape.
- Viewpoint 9 provides a view of a thin layer of the quarry within the background of the view, but the development is seen as a small colour change within a dominant treed landscape.
- Viewpoint 13 provides a view of a thin layer of the quarry, but the development is seen as a small colour change within a dominant treed landscape. Foreground structures associated with the road system dominate the view and distract attention from the distant quarry element.

Two representative viewpoint locations provide views of the tops of existing quarry structures (concrete and asphalt plant buildings and related conveyor structure):

- Viewpoint 5 provides a slight view of the top of the concrete production building and adjoining conveyor structure. The most prominent view of on-site structures is from the south-western corner of Canterbury Road and Fussell Road. Planted bunds and site edge plantations screen the quarry facility from other viewpoints.
- Viewpoint 6 provides a slight view of the top of the concrete production building and adjoining conveyor structure. Although the view of the structures aligns with the edge of the road, the general road-based view is dominated by commercial structures which create a complex and visually dominant landscape.

It is anticipated that the visual impacts will be largely similar in nature to the existing operational quarry but will lengthen the duration of impact. A summary of the visual assessment impacts found:

- Two representative viewpoint locations (5 – 6) have a view of the existing quarry or parts of the processing plant associated to the existing Montrose Quarry. However, the proposed stage 2 development has been determined to have a negligible or neutral visual impact onto these receptors and on that basis the visual impact of stage 2 works is considered a Low level of significance.
- Three representative viewpoint locations (Warburton Track Cambridge Road, Sherman Road and Mountain Highway) have existing partial views of the quarry pit. These views will experience a change as a result of stage 2 works, but the change will be minimal and consistent with existing effects. On that basis the visual impact of stage 2 works is considered a Low level of significance.
- Viewpoint 2 (Mt Dandenong Road) will experience clear views of the quarry pit, but the viewing distance (5km+) and the complexity of the existing visual field means that the changes are likely to be substantially visually absorbed, and on that basis, have a Low level of significance.
- Viewpoint 12 (Burkes Lookout) will experience clear views of the Stage 2 pit changes and operations. At a distance of 1.8km the changes will be clearly evident with only minimal screening potential. The panoramic view from this location is based on views of suburban development, including large scale industrial land uses. The visual complexity and changing nature of the view is itself the point of interest. It also acts to absorb visual changes. On that basis, the visual impact of stage 2 change is considered to be Moderate level of significance only and partly reversible with site rehabilitation over time.

The greatest extent of potential viewing is available from the steeper and elevated western edge of the Dandenong Ranges formation, particularly at Burkes Lookout with vegetation clearing allowing open views. Views from this elevated area include a panoramic westerly and north westerly view over Melbourne's eastern suburbs as far as the city skyline, typically includes a complex visual mosaic of distant land uses and landscape features, rather than a single viewing destination. The proposed nature of the change from this vantage point is already well established and forms part of an overall view which will progressively change as a result of further development and with site rehabilitation over time.

.

7 Residential Visual Amenity Assessment

Residential Visual Amenity is the overall quality, experience and nature of views and outlook available to occupants of residential properties, including views from within their place of residence and private gardens.

This assessment represents only the visual component of residential amenity.

7.1.1 Residential Visual Amenity Location Selection

The residential visual amenity locations have been selected based on the following criteria:

- Locations have been nominated for testing based on the previously assessed private property locations selected for a visual amenity assessment (LVIA Stage 1 conducted approx. 2007). No community consultation was conducted during this selection process; however, previous consultation focused the investigation of visual impact from private properties focused on residences in Sheffield Road, Glasgow Road, Gordon Avenue, Bracken Avenue, and Taruna Rise.
- Residential private property locations were confirmed through the ZVI modelling process.

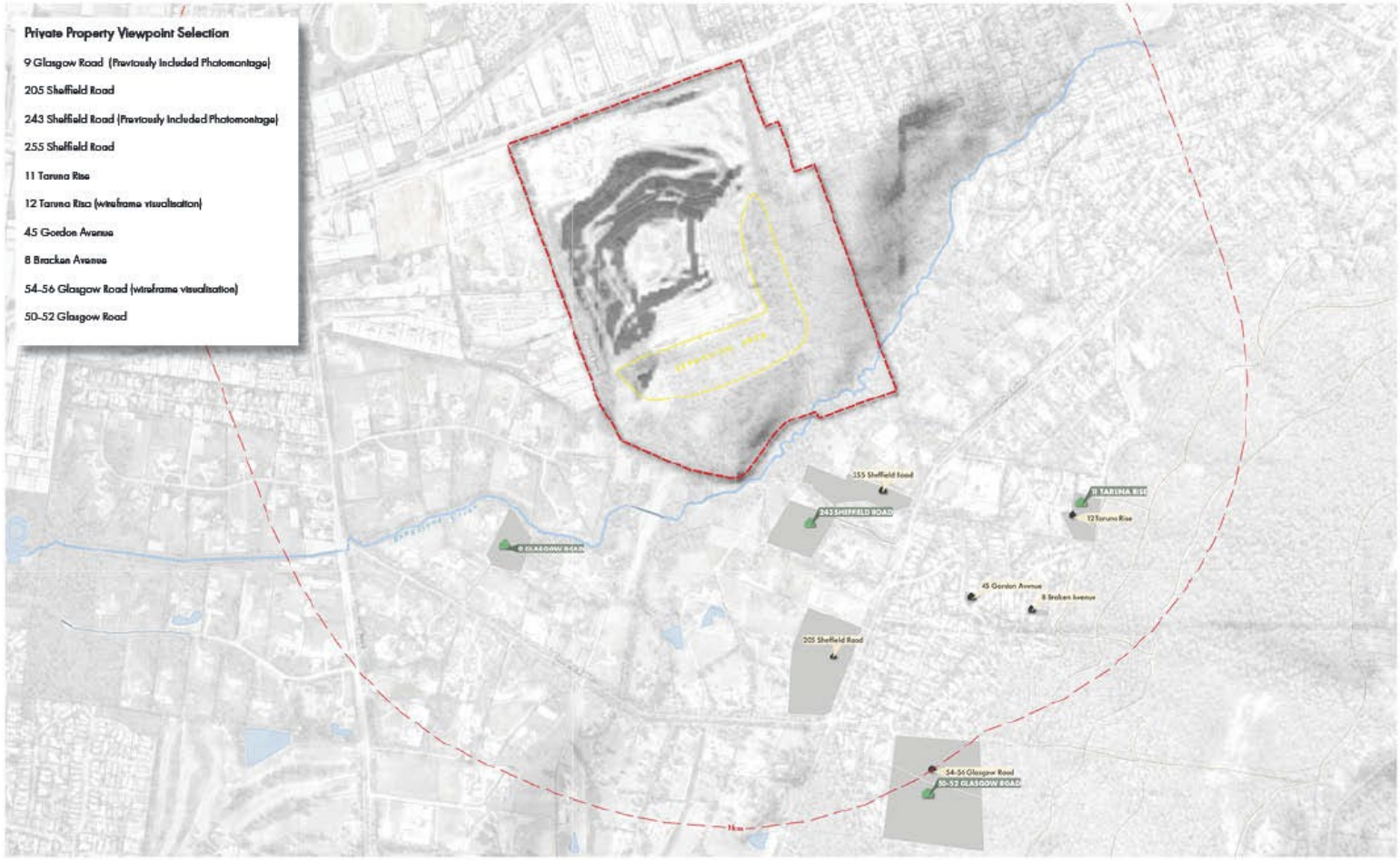
7.1.2 Residential Visual Amenity Assessment

An assessment of the Residential Private Property locations has been provided below.

The assessment defines the likely effects of change resulting from the anticipated impact based on the nature and magnitude of change identified from each location, based on the definitions provided in section 2.3 and Section 2.10.

The residential private property locations identified within this technical assessment are represented by existing condition photography from the site inspection (refer to Appendix 5 for selected Residential Locations). The representative viewpoints show the typical resident's visual amenity; however, it has been noted that the residential dwellings may have greater vantage points within backyards, or elevated viewing locations inside the dwelling which may allow greater viewing potential.

- Four additional wireframe visualisations have been produced to confirm the nature and magnitude of change from selected residential private property locations (Refer to Section 2.9 for Wireframe visualisation methodology).



Drawing Title	Project Name	Drawing No.	Revision	Date	Drawn	Checked	Project Principal
Montrose Quarry - Additional Private Property Viewpoint Selection	Montrose Quarry LVIA	322-0548-00-L-03-DR01	01	21.10.2024	JR	JC	AW

Figure 28: Residential Locations

Residential Location 1: 50 Glasgow Road

Image 25: Residential Location 1 (Wireframe)

*Refer to **Appendix 5** for Existing visual amenity and full-scale wireframe visualisations*

Table 21: Residential Location 1 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
50 Glasgow Road This resident is located within SLO1 which includes objectives relating to retaining a forest dominated landscape and maintaining the appearance of uninterrupted forest ranges when viewed from Melbourne's outer east and surrounds. It has been noted that the viewpoint captured is located at the entrance to the residential property and there is likely more views within the backyard of this property. The view would include a similar viewing angle and the same screening elements from the landform and vegetation in the foreground of view.	**Existing View (key attributes)** ▪ The viewing location is at a level slightly below the level of the quarry site. ▪ The view predominantly includes the private residential dwelling and private garden. ▪ Glimpses towards the background include distant vegetation and a discernible tree line within the horizon. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 2: 205 Sheffield Road

Image 26: Residential Location 2 (Wireframe)

*Refer to **Appendix 5** for Existing visual amenity and full-scale wireframe visualisations*

Table 22: Residential Location 2 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
205 Sheffield Road This resident is located within SLO6 which includes objectives relating to allowing middle- and long-distance views from the valley and surrounding ranges and maintaining the appearance of an uninterrupted forested backdrop to views.	**Existing View (key attributes)** ▪ The viewing location is at a level slightly below the level of the quarry site. ▪ The view predominantly includes agricultural land and paddocks. ▪ The background included dense vegetation within a rolling conservation area and a tree line horizon. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 3: 243 Sheffield Road

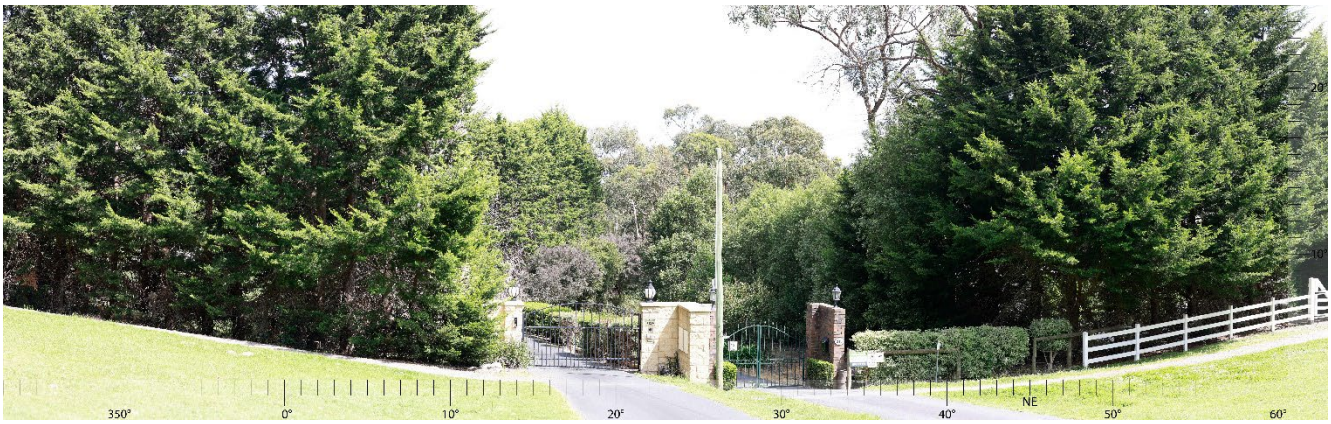


Image 27: Residential Location 3

*Refer to **Appendix 5** for Existing visual amenity conditions*

Table 23: Residential Location 3 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
243 Sheffield Road This resident is located within SLO6 which includes objectives relating to allowing middle- and long-distance views from the valley and surrounding ranges and maintaining the appearance of an uninterrupted forested backdrop to views. It has been noted that the viewpoint captured is located at the entrance to the residential property and there is likely more views within the backyard of this property. Views would include a similar viewing angle and the same screening elements from the landform and vegetation as seen within the surrounding visual amenity.	**Existing View (key attributes)** ▪ The viewing location is above the existing quarry level. ▪ The view includes the residents private entrance way and dense private garden. ▪ The existing quarry pit and processing facilities are visually screened by the resident's private garden, and middle ground vegetation between the resident and the Site area. **Likely impact of change** ▪ There will be no change to views based on the stage 2 works. Works will be fully screened by vegetation within the foreground and middle ground.	**High**	**No change**	**Long term Partly Reversible**	**Negligible Neutra**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 4: 255 Sheffield Road

Image 28: Residential Location 4

*Refer to **Appendix 5** for Existing visual amenity conditions*

Table 24: Residential Location 4 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
255 Sheffield Road This resident is located within SLO6 which includes objectives relating to allowing middle- and long-distance views from the valley and surrounding ranges and maintaining the appearance of an uninterrupted forested backdrop to views. It has been noted that the viewpoint captured is located at the entrance to the residential property and there is likely more views within the backyard of this property. Views would include a similar viewing angle and the same screening elements from the landform and vegetation as seen within the surrounding visual amenity.	**Existing View (key attributes)** ▪ The viewing location is above the existing quarry level. ▪ The view includes the residents private entrance way and dense private garden. ▪ There are several small glimpses through the private garden towards the background which includes vegetation forming a tree lined horizon. ▪ The existing quarry pit and processing facilities are visually screened by the resident's private garden, and middle ground vegetation between the resident and the Site area. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 5: 11 Taruna Rise

Image 29: Residential Location 5 (Wireframe)

*Refer to **Appendix 5** for Existing visual amenity and full-scale wireframe visualisations*

Table 25: Residential Location 5 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
11 Taruna Rise This resident is located within the foothills of the Dandenong Ranges within SLO22 which includes objectives relating to recognising the visual sensitivity of these residential areas and maintaining vegetation as a dominant element of the landscape. It has been noted that the viewpoint captured is located at the entrance to the residential property and there are more elevated views from the residential dwelling.	**Existing View (key attributes)** ▪ The viewing location is at a level above the level of the quarry site. ▪ The view predominantly includes the private residential dwelling and private garden. ▪ Glimpses towards the background include distant vegetation and a discernible tree line within the horizon. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 6: 12 Taruna Rise

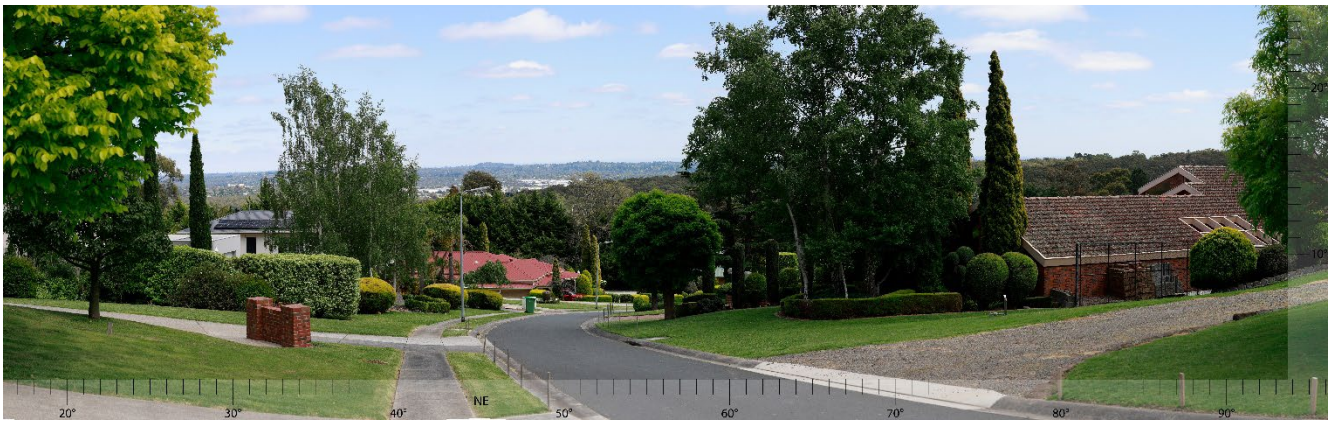


Image 30: Residential Location 6

*Refer to **Appendix 5** for Existing visual amenity conditions*

Table 26: Residential Location 6 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold s
12 Taruna Rise This resident is located within the foothills of the Dandenong Ranges within SLO22 which includes objectives relating to recognising the visual sensitivity of these residential areas and maintaining vegetation as a dominant element of the landscape. It has been noted that the viewpoint captured is located at the entrance to the residential property and there are more elevated views from the residential dwelling.	**Existing View (key attributes)** ▪ The viewing location is at a level above the level of the quarry site. ▪ The view predominantly includes the private residential dwelling and private garden. ▪ Glimpses towards the background include distant vegetation and a discernible tree line within the horizon. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 7: 45 Gordon Avenue

Image 31: Residential Location 7

*Refer to **Appendix 5** for Existing visual amenity conditions*

Table 27: Residential Location 7 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
45 Gordon Avenue This resident is located within the foothills of the Dandenong Ranges within SLO22 which includes objectives relating to recognising the visual sensitivity of these residential areas and maintaining vegetation as a dominant element of the landscape.	**Existing View (key attributes)** ▪ The viewing location is at a level above the level of the quarry site. ▪ The view predominantly includes the private residential dwelling and private garden. ▪ Glimpses towards the background include distant vegetation and a discernible tree line within the horizon. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 8: 8 Bracken Avenue

Image 32: Residential Location 8

*Refer to **Appendix 5** for Existing visual amenity conditions*

Table 28: Residential Location 8 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
Viewpoint 8 Bracken Avenue This resident is located within the foothills of the Dandenong Ranges within SLO22 which includes objectives relating to recognising the visual sensitivity of these residential areas and maintaining vegetation as a dominant element of the landscape. It has been noted that the viewpoint captured is located at the entrance to the residential property and there are more elevated views from the residential dwelling.	**Existing View (key attributes)** ▪ The viewing location is at a level above the level of the quarry site. ▪ The view predominantly includes the private residential dwelling and private garden. ▪ Glimpses towards the background include distant vegetation and a discernible tree line within the horizon. ▪ The existing quarry site is screened by existing landform as well as on-site and off-site vegetation. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 9: 50-52 Glasgow Road

Image 33: Residential Location 9 (Wireframe)

*Refer to **Appendix 5** for Existing visual amenity and full-scale wireframe visualisations*

Table 29: Residential Location 9 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
Viewpoint ~ 50-52 Glasgow Road This resident is located within SLO1 which includes objectives relating to retaining a forest dominated landscape and maintaining the appearance of uninterrupted forest ranges when viewed from Melbourne's outer east and surrounds.	**Existing View (key attributes)** ▪ The viewing location is above the existing quarry level. ▪ The view includes a residential dwelling, and a tree lined entry road with a private garden. ▪ There is a small glimpse through the tree lined entrance way towards the background which includes vegetation forming a tree lined horizon. ▪ The existing quarry pit and processing facilities are visually screened by middle ground vegetation between the resident and the Site area. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

Residential Location 10: 54-56 Glasgow Road

Image 34: Residential Location 10

*Refer to **Appendix 5** for Existing visual amenity conditions*

Table 30: Residential Location 10 – Visual Amenity Assessment

Viewpoint reference	Representative viewpoint Description of likely impacts	Receptor Sensitivity	Nature and magnitude of change	Duration	Significance rating	Residential Visual Amenity Threshold
Viewpoint ~ 54 – 56 Glasgow Road This resident is located within SLO1 which includes objectives relating to retaining a forest dominated landscape and maintaining the appearance of uninterrupted forest ranges when viewed from Melbourne's outer east and surrounds.	**Existing View (key attributes)** ▪ The viewing location is above the existing quarry level. ▪ The view includes a residential dwelling, and a tree lined entry road with a private garden. ▪ There is a small glimpse through the tree lined entrance way towards the background which includes vegetation forming a tree lined horizon. ▪ The existing quarry pit and processing facilities are visually screened by middle ground vegetation between the resident and the Site area. **Likely impact of change** ▪ There will be limited to no change to views based on the stage 2 works. Works will be fully screened by on-site and off-site vegetation. ▪ It has been noted that there would be landform alterations and vegetation removal within the boundary of the site area. This may impact the background tree canopy and alter some parts of the tree lined horizon from this view. It would be limited to a small portion of the tree canopy cover which contributes to the visual amenity in the background view and is considered a negligible magnitude of change, given the wider context of the surrounding view.	**High**	**Neutral Negligible**	**Long term Partly Reversible**	**Low**	Based on the existing visual amenity against the anticipated magnitude and nature of change, the residential visual amenity threshold would not likely be exceeded.

8 Mitigation Measures

The objective of mitigation is to avoid, reduce, remedy or offset any significant adverse effects on the landscape or visual environment arising from the proposed development. Mitigation measures may involve on-site or offsite works or relate to the timing or staging of proposed quarry development works or the timing of progressive quarry rehabilitation works.

8.1 Landscape buffers and site rehabilitation

Existing on-site and offsite vegetation (street trees, shelter belt tree plantations and private gardens) function as the primary visual impact mitigation measure at this time and have the capacity to provide this function into the future.

- Retain as much of the existing EVC vegetation already existing on site, including remnant woodland vegetation and quarry buffer plantations. Ensure that all new or infill planting is based on local EVC species.
- Supplement existing vegetation with new EVC planting, remove weeds and manage vegetation to optimise growth and climate change adaptation.
- Retain and further develop the existing planting buffer along the Fussell Road western boundary and minimise the removal of vegetation during the construction of the Western Haul Road. Supplement the buffer with additional random spaced tree planting within the Fussell Road reservation where possible.
- Develop tree planting where possible along the northern edge of the pit to visually isolate the processing area and concrete / asphalt plant areas and to offset effects from southern viewpoints.
- Progressively reinstate / rehabilitate quarry faces as these become available, to soften the visual contrast and improve the visual offering. The short-term rehabilitation of the upper benches on the northern and eastern faces in particular have potential to mitigate visual impacts likely to be experienced by sensitive receptors in close proximity to the site.

8.2 Other measures

- Ensure that infrastructure utilises non-reflective materials with low colour contrast colours.
- Minimise light spill and radiance from existing operations.
- Where possible increase the level of street tree planting in Canterbury Road within 1km of the quarry site boundary.

8.3 End use planning

- Develop a long-term End Use Master Plan for the quarry pit. This master plan will provide post closure rehabilitation and site use option(s). All end use site planning options will retain, and potentially enhance, visual screening and site vegetation systems that visually integrate the site with the surrounding landscape.

9 Evaluation

Landscape impacts –

It is anticipated that the landscape impacts will be similar in nature to the existing quarry impacts but cover a greater area. The landscape impacts will have an apparent but not obvious or dominant effect on an area of recognised landscape character and its key attributes. The new impact would increase the effect of the existing quarry and its existing attributes; however, the potential revegetation can visually mitigate the impact over time.

Landscape impacts are considered to have a relatively Low level of significance on the basis of the existing conditions of the Montrose Quarry and the potential for progressive mitigation over time.

Visual impacts

It is anticipated that the visual impacts will be largely similar in nature to the existing operational quarry when there is visibility towards the existing Montrose Quarry.

There have been seven representative viewpoints within the study area which have no view of the existing quarry or the proposed stage 2 development. A summary of the visual impacts within the study area include:

- Two representative viewpoint locations (Canterbury Road) have a view of the existing quarry or parts of the processing plant associated to the existing Montrose Quarry. However, the proposed stage 2 development has been determined to have a negligible or neutral visual impact onto these receptors and on that basis the visual impact of stage 2 works is considered a Low level of significance.
- Three representative viewpoint locations (Warburton Track Cambridge Road, Sherman Road and Mountain Highway) have existing partial views of the quarry pit. These views will experience a change as a result of stage 2 works, but the change will be minimal and consistent with existing effects. On that basis the visual impact of stage 2 works is considered a Low level of significance.
- Viewpoint 2 (Mt Dandenong Road) will experience clear views of the quarry pit, but the viewing distance (5km+) and the complexity of the existing visual field means that the changes are likely to be substantially visually absorbed, and on that basis, have a Low level of significance.
- Viewpoint 12 (Burkes Lookout) will experience clear views of the Stage 2 pit changes and operations. At a distance of 1.8km the changes will be clearly evident with only minimal screening potential. The panoramic view from this location is based on views of suburban development, including large scale industrial land uses. The visual complexity and changing nature of the view is itself the point of interest. It also acts to absorb visual changes. On that basis, the visual impact of stage 2 change is considered to be Moderate level of significance only and partly reversible with site rehabilitation over time.

Residential Visual Amenity Assessment

The potential residential visual amenity impacts have predominantly been identified towards the southern portion of the study area, within the foothills of Mount Dandenong due to the designated values associated to visual amenity within this area. The residential locations are a representative selection of properties with valued visual amenity.

The assessment found that the visual amenity would typically not be impacted by the proposed development, and it is not anticipated that there would be new visibility towards the extraction pit from the selected residential locations. However, it is anticipated that the landform changes and removal of vegetation within the site area towards the south of the site area would become perceptible from limited residential views. The removal of vegetation may alter the visual horizon line and lower the height of the vegetated backdrop from a limited number of residential locations, which has been assessed as a negligible magnitude of change, given the existing conditions and wider context of views.

The visual amenity assessment determined the significance of impact rating would be considered low – negligible and the residential visual amenity threshold would not likely be exceeded.

Summary

Based on the results of the landscape and visual impact assessment, the proposed development is predominantly going to have a minimal effect on the landscape and surrounding visual amenity. This is because the nature and magnitude of change is anticipated to be similar to the existing conditions of the current operational quarry.

It has been noted that with sufficient mitigation measures currently in place at the existing quarry, the identified impacts would progressively be rehabilitated and reduced over time.

References

Environmental Resources Management Australia, 2006. *Montorse Quarry - Proposed Extension Landscape and Visual Assessment,* s.l.: s.n.

GHD Pty Ltd, 2022. *Boral Montrose Staging Plan and Rehabilitation Concept,* s.l.: s.n.

Landscape Institute and Institute of Environmental Management and Assessment, 2013. *Guidelines for Landscape and Visual Impact Assessment Third Edition,* London and New York: Routledge Taylor & Francis group.

Landscape Institute UK, 2011. *Photography and Photomontage in Landscape and Visual Impact Assessment,* s.l.: s.n.

Landscape Institute UK, 2019. *Visual Representation of Development Proposals,* s.l.: s.n.

Landscape Institute, 2019. *Residential Visual Amenity Assessment (RVAA)- Technical Guidance Note,* London: s.n.

Leonard, M. & Hammond, R., 1984. *Landscape Character Types of Victoria with frames of reference for scenic quality assessment..* s.l.:s.n.

Parks Victoria, 2006, ammended 2017. *Dandenong Ranges National Park Management Plan,* s.l.: s.n.

Planisphere with Planning Collaborative Pty Ltd, 2008. *Vision 2020 By Design: A Built Environment Framewrk fro Yarra Ranges,* s.l.: s.n.

The Highland Council Scotland, 2013. *Visualisation Standards for Wind Energy Developments,* s.l.: s.n.

Appendices

Refer to separate A3 report Appendix containing:

Appendix 1 Study Area

- 1.1 Study area
- 1.2 Site development plan (existing and proposed)
- 1.3 Quarry staging plan

Appendix 2 Zone of Visual Influence (ZVI) modelling

- 2.1 Cumulative ZVI plan (looking outward from the existing quarry)
- 2.2 ZVI changes resulting from the new development
- 2.3 Representative view-points plan

Appendix 3 Existing conditions photography from key visual receptor locations

- 3.1 80° panorama (visual context)
- 3.2 Key viewpoint ZVI (inward looking from individual viewpoints)
- 3.3 Single frame image of the existing quarry site (visual effect)

Appendix 4 Existing conditions + new conditions wireframesfrom key visual receptor locations

- 4.1 80° panorama with existing & proposed condition (visual context)
- 4.2 Single frame image of the quarry site with existing & proposed condition (visual effect)

Appendix 5 Residential Locations existing conditions + new conditions wireframes from key locations

- 5.1 80° panorama with existing condition (visual context)
- 5.2 80° Wireframe Visualisation of the existing & proposed condition (visual effect).

Appendix 1 - Study Area & Site Development Plan

Appendix 1 Study Area

1.1 Study area

1.2 Site development plan (existing and proposed)

1.3 Quarry staging plan

Appendix 2 - Zone of Visual Influence

Appendix 2 Zone of Visual Influence (ZVI) modelling

2.1 Cumulative ZVI plan (looking outward from the existing quarry)

2.2 ZVI changes resulting from the new development

2.3 Representative view-points plan

Appendix 3 - Existing Condition Photography

Appendix 3 Existing conditions photography from key visual receptor locations

3.1 80° panorama (visual context)

3.2 Key viewpoint ZVI (inward looking from individual viewpoints)

3.3 Single frame image of the existing quarry site (visual effect)

Appendix 4 - New Condition Wireframes

Appendix 4 Existing conditions + new conditions wireframe modelling from key visual receptor locations

4.1 80° panorama with existing & proposed condition (visual context)

4.2 Single frame image of the quarry site with existing & proposed condition (visual effect)

Appendix 5 - Residential Visual Amenity

Appendix 5 Residential Locations existing conditions + new conditions wireframes from key locations

5.1 80° panorama with existing condition (visual context)

5.2 80° Wireframe Visualisation of the existing & proposed condition (visual effect).