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Appendix M – Visual Impact Assessment

RAZORBACK QUARRY

Visual Impact Assessment

Prepared for:

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Running Stream, NSW
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February 2023

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1. INTRODUCTION

This Visual Impact Assessment (VIA) has been prepared by Integrated Environmental Management Australia (IEMA) for the proposed Razorback Quarry located in Running Stream, New South Wales (NSW). The proposed quarry will be developed and operated by Plantation Pine Products Pty Ltd (PPP), a wholly owned subsidiary of Borg Manufacturing Pty Ltd (Borg).

In November 2020, Borg submitted a scoping report to the Department of Planning and Environment (DPE) requesting Secretary's Environmental Assessment Requirements (SEARs) for the project. DPE issued SEAR 1523 and required an Environmental Impact Statement (EIS) be prepared which included the prerequisite of a visual impact assessment to be undertaken.

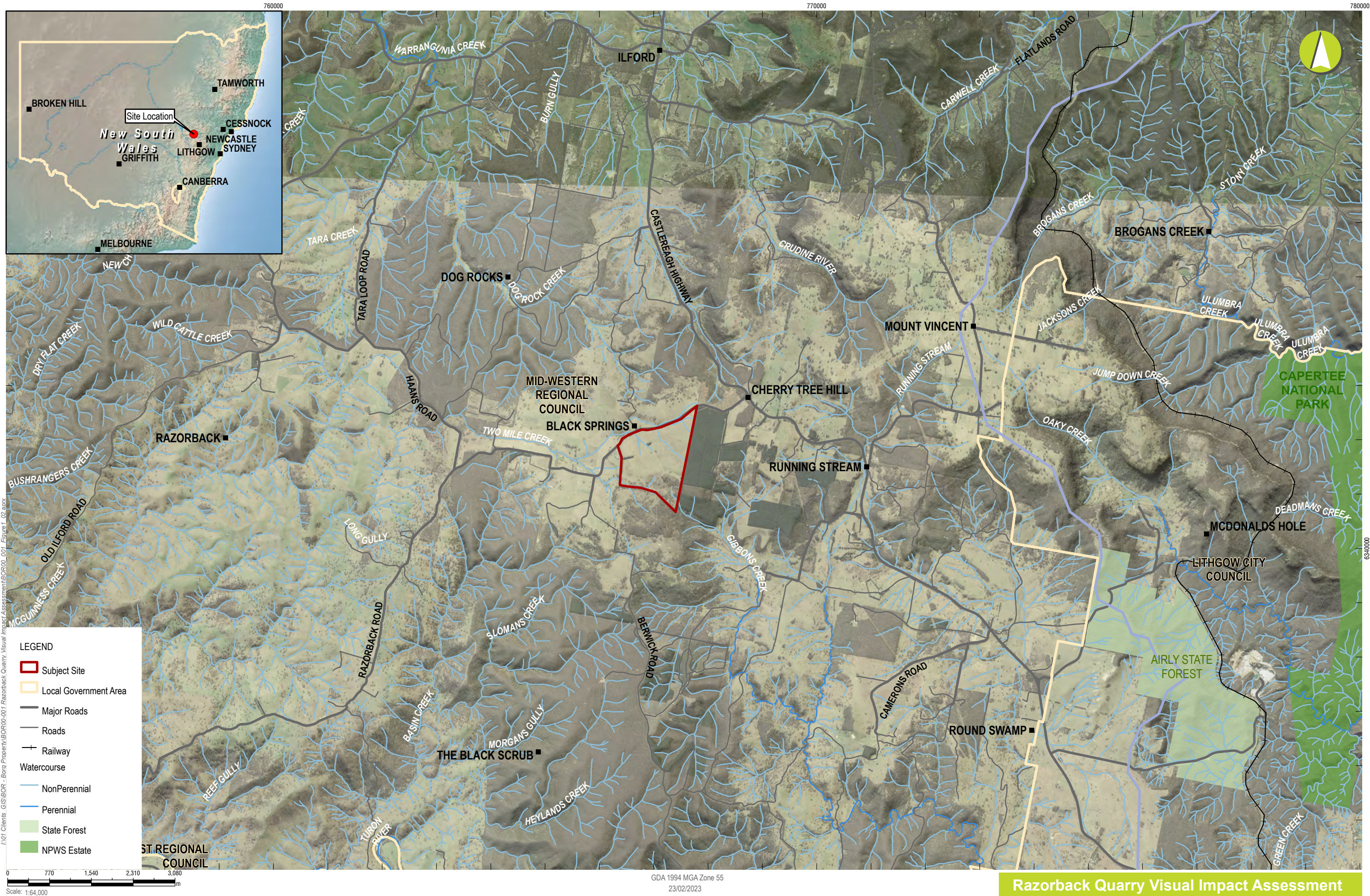
To address the SEARs requirements, this assessment has considered the potential visual impacts that the proposed quarry may have on private landowners in the vicinity of the development, as well as key vantage points in the public domain, including any potential new landforms.

1.1. Project Background

1.1.1. Project Site

Razorback Quarry is a proposed sand and gravel quarry on the "Turnofels" property at 39 Razorback Road, Running Stream, approximately 8 kilometre (km) south of Ilford within the Mid-Western Regional Council Local Government Area (LGA). The site is located approximately 1 km west of the Castlereagh Highway, approximately 65 km south of Mudgee, 64 km north-west of Lithgow and 200 km north-west of Sydney. **Figure 1** shows the locality of the proposed development.

To maintain consistency of supply for its manufacturing process, PPP purchased the 'Turnofels' property in 2018 with over 100 hectares (ha) of radiata pine plantation. Prior to plantation activities the site was mainly used for cattle grazing and farm activities. The total property area is approximately 327 ha, with the total proposed development area being approximately 24.7 ha. A commercially viable sand resource has been identified on the property that is intended to be operated alongside the radiata pine plantation.



1.2. Proposed Development

The proposed quarry will extract up to 200,000 tonnes per annum (tpa) of sand and gravel over a 20-year period. The maximum daily extraction rate will be 1,500 tonnes but will most likely extract less than 500 tonnes per day on average.

The project site will consist of:

- 18.8 ha of quarry extraction area
- 1.9 ha of out of quarry bunds
- 2.5 ha for access roads
- 0.9 ha for office, workshop and hardstand areas,
- 0.6 ha for dams

Raw materials will be transported directly to the consumer or screened on site where markets require. The in-situ conglomerate and sandstone are soft enough that no blasting is required to access the proposed product materials. Topsoil and overburden will be stripped and stockpiled in an out-of-pit emplacement bund along the western side to minimise noise. These stockpiles will be 2-3 m in height and seeded for stability and rehabilitation.

Other key components of the project will include:

- Construction activities will occur from 7:00 am to 6:00 pm Monday to Friday, 8:00 am to 1:00 pm on Saturday, and no work on Sundays or public holidays
- Operations and haulage will occur from 7:00 am to 6:00 pm Monday to Friday, 8:00 am to 1:00 pm on Saturday, and no work on Sundays or public holidays
- Construction of an internal haul road, sediment control dams, site office, weighbridge, shaker grid, and workshop
- Construction of bunds to minimise visual and noise impacts
- The construction of site drainage to separate clean and dirty water
- Approximately 120 trucks per week
- Extraction will be undertaken by excavator, with product transport by highway trucks
- Progressive rehabilitation back to pasture and pine plantation.

Extraction will occur in the following three stages:

Stage 1 – Extraction operations commence in the eastern portion. Topsoil and overburden are stripped and placed in separate stockpiles along the western edge to create a bund wall. The construction of the bund will reduce visual, noise and dust impacts as the quarry progresses. Topsoil will range from 20 cm on the ridge to 50 cm on the flanks. Extraction will concentrate on the northern flank and get down to 1055 m RL as soon as possible to reduce haulage up the north flank and to establish operations behind the ridge.

Stage 2 – Extraction will continue west and south, and the floor will lower to 1065 RL. Underlying sandstone will be exposed as soon as practicable to ensure conglomerate and sandstone are used for varying products. Active faces be battered 2H:1V with 40 m benches. Internal haulage will occur from the floor to the upper benches either in the centre or southern portions of the site, to minimise noise to residents to the northwest and the north.

Stage 3 & 4 – Extraction continues to the west, the floor lowers to 1055 RL and signification portion of site is exposed. Extraction will occur on the topmost bench to the western extraction boundary at a 2H:1V batter and will be backfilled with overburden in the final landform stage.

Figure 2 shows the civil design for the extraction stages and includes a Stage 4, which is considered the maximum impact of the operations.

1.2.1. Structures and Infrastructure

All infrastructure for the site will be located south-east of the proposed haul road and not visible to any of the nearby receptors. The following infrastructure will be used on site:

- A demountable building will be installed for use as the office and crib room for operators
- A 20 m x 30 m steel framed, and Colourbond clad shed will be installed for storage and maintenance purposes
- Toilet facilities will be via on onsite septic system installed consistent with Section 68 of the Local Government Act 1993
- Lighting plants may be used on occasion when loading trucks during low light conditions, however most activities will be scheduled for daylight hours only
- 10,000 L self-bunded diesel storage tank
- 20,000 L water tank for potable supplies
- Two out of pit dams, in conjunction with in-pit sumps will provide water management capability
- 20,00 L dedicated tank for emergency bushfire supply
- Outgoing trucks will be weighed via a site weighbridge

1.2.2. Final Landform and Final Land Use

The final landform is intended to be a shallow depression along the existing ridge. Vegetation will consist of pasture grasses which will assist in soil stability after which it will then be planted with pine consistent with the pine plantation.

The area around the quarry footprint is an existing pine plantation which was planted in 2021. These trees are required to be under plantation in the area for 25 years to meet carbon commitments. The proposed management activities involve two 14-year rotations of 100% pulp if the factory requires wood. Otherwise, a first thinning will occur at 12 years and a second thinning will occur at 20 years with clear-felling occurring at 25 years.

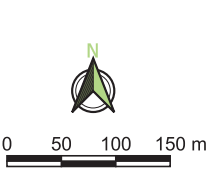



Plate 1: Site road with trees at the estimated height in 25 years' time.



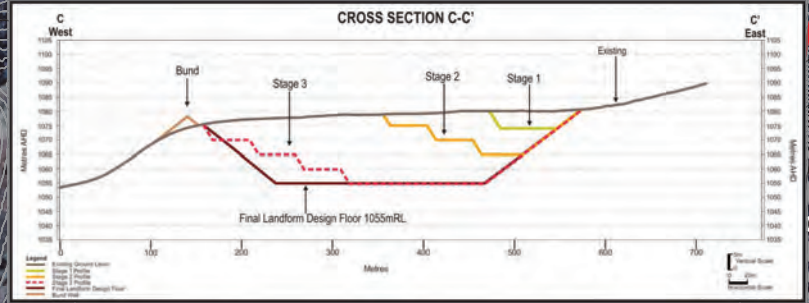
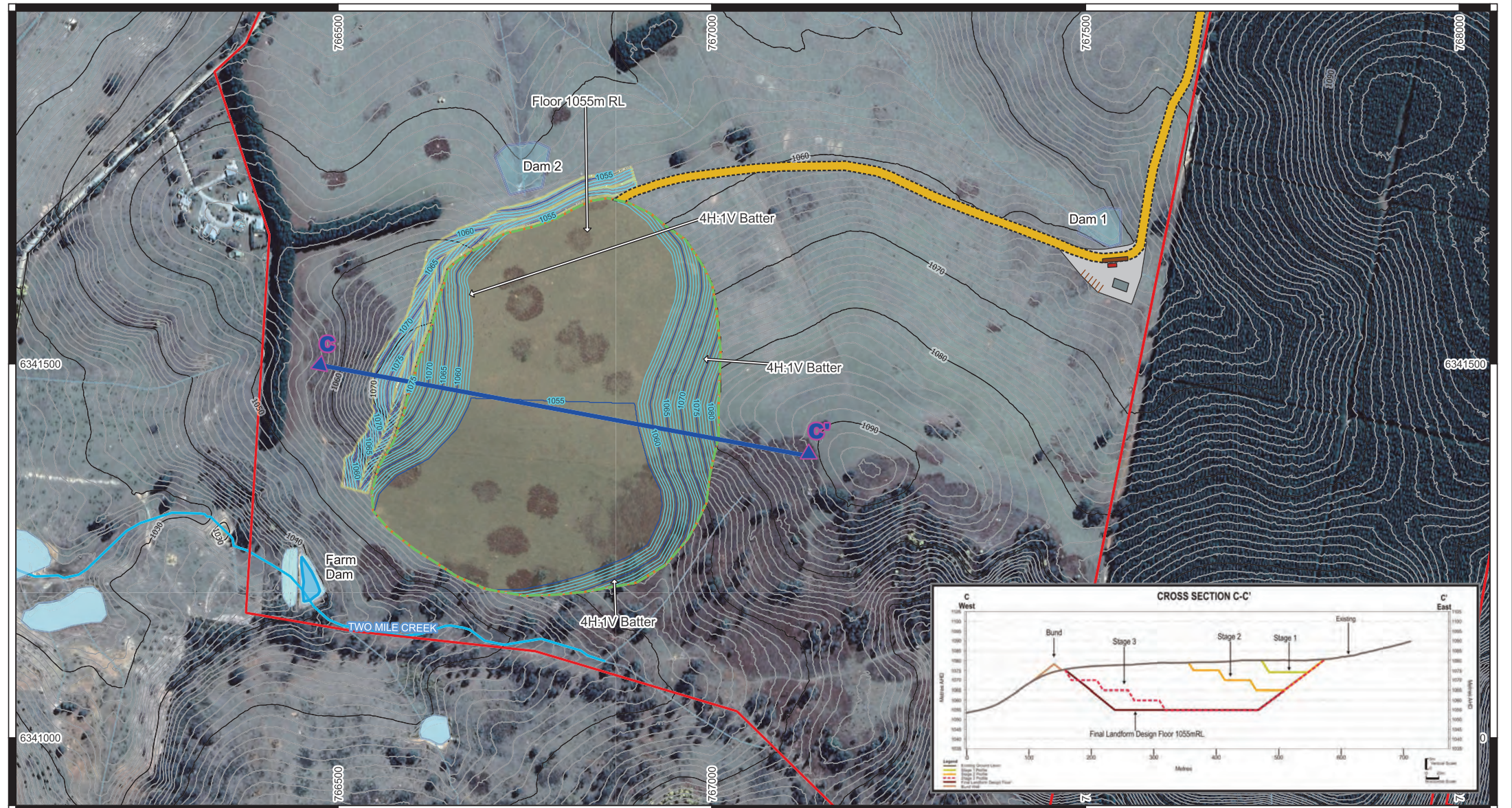
Plate 2: Aerial view of tree line along Razorback Road in 25 years.

Plan of:	Geological Review & Staged Quarry Assessment for Razorback Quarry, Running Stream - Final Landform	Location:	39 Razorback Road, Running Stream, NSW	Source:	Google Earth 25/10/2021, NSW Clip & Ship Accessed October 2022 Zone MGA 55 & 12D Modelling	Plan By:	TO/JD
Figure:	TWELVE	Council:	Mid-Western Regional Council	Survey:	NSW Government Spatial Services, October 2012 Survey, Accessed Through Elvis & Clip & Ship October 2022	Project Manager:	GVT
Version/Date:	V1 11/01/2023	Tenure:	Not Applicable	Projection:	GDA2020/MGA Zone 55 EPSG:7855		
Our Ref:	9273_SU_RBQ_EIS_GEO_STG_Q012_V0_F12	Client:	Space Urban Pty Ltd	Contour Interval:	1 Metre		





This figure may be based on third party data which has not been verified by vgt and may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and vgt does not warrant its accuracy.



Legend

Site Features

- sS Contour
- cS Contour
- Property Boundary
- Road Corridor

Quarry Features

- Cross Section
- Final Landform Design Floor

Materials

- bl m&C&T Roos and l o&M&E
- g eihkTridhe
- g or (Eop x ked 21, s0S)
- HauVRoad 2DnaW
- HardBand / Carpar
- Bund

Water Management Features

- f, i&inh xite MaS
- PropoEd xed&ent MaS
- Cree(lF ain Mrainahe 5ine

Final Contours

- sS Contour 2DnaW
- cS Contour 2DnaW

2. EXISTING ENVIRONMENT

2.1. Existing and Surrounding Land Use

2.1.1. Existing Land Use

The 327 ha of property on which the quarry will be located is used for the following:

- 68% (222 ha) is planted as pine plantation which are at various stages of progression. This includes recently planted tube stock to mature plantations through to areas that have been recently harvested and not yet re-planted.
- 19% (61 ha) is wooded area or remnant vegetation made up of native and non-native species and includes the dwelling and yard area.
- 13% (44 ha) is access tracks and grassland areas through and surrounding the plantation. This includes a former pasture area around the proposed quarry and the plantation firebreaks.

2.1.2. Surrounding Land Use

Surrounding lands are primarily larger agricultural holdings undertaking mixed grazing, along with scattering of pine plantations and other agricultural uses. North of the quarry is a newly planted pine plantation. Lands beyond the subject land are predominately cleared and appear to be used for grazing with some slopes remaining vegetated. A dwelling is located just over 1 km to the north, in the neighbouring Dog Rock Creek catchment.

To the east, pine plantation extends over 1km to the dwelling on the subject land. The Castlereagh Highway is over 2km to the north-east. Three dwellings not associated with the subject land are located approximately 2 km to the north-east.

Located within 60 m of the quarry pit edge is Two Mile Creek. Pine plantation is to the south-east and extends into native vegetation within the Gibbons Creek catchment. Here the land is steeper with a large portion consisting of native timber. There are four dwellings south, with the nearest only 1200 m from the quarry.

There are three dwellings to the west of the subject land. The nearest is 250 m from the quarry pit edge and is a cluster of buildings previously used as an accommodation facility.

2.2. Topography and Drainage

Elevation of the land in the project area ranges from 1057 to 1062 m Australian Height Datum (AHD) along the access road. Quarrying will occur between 1083 and 1055 m AHD. Out of pit bunding and emplacement will extend to 1053 m AHD. Proposed dams are at 1049 m AHD and 1058 m AHD. The office workshop area will be at approximately 1062 m AHD.

Water drains to the south into the Two Mile Creek headwaters, or to the north into an unnamed tributary of Two Mile Creek. Two Mile Creek then drains to the south-west and west before entering the Crudine River. The Crudine River flows into the Turon River, which then extends into the Macquarie River near Hill End, approximately 40 km west of the subject land.

Outside the project disturbance area, water drains south-east through Gibbons Creek, which drains into Running Stream, then Round Swamp Creek before reaching the Turon River.



Plate 3: Two Mile Creek looking toward Subject Land.

2.3. Roads and Access

Three roads will provide access to the quarry. Castlereagh Highway is a sealed three-lane arterial road which connects Lithgow and Mudgee. There is a formalised intersection with a protected right turn onto Razorback Road. A deceleration lane is provided for vehicles turning left into Razorback Road. Turning from Razorback Road onto Castlereagh Highway is a two-lane southbound section of highway. Given this intersection is recently constructed by Transport for New South Wales and logging has occurred for a long time in the area, the intersection should be adequate for the anticipated traffic from proposed development with no further works required.

Razorback Road is a local gravel road. It is likely this road will need to be sealed at the intersection where it meets the private haul road, approximately 1 km from the Castlereagh Highway, to ensure dust and noise are minimised.

The private haul road will currently use the upgrades from the existing gravel plantations roads before diverting to a 1,000 m long section of gravel haulage road specific for the quarry. To prevent materials from tracking onto the public road, a shaker grid will be installed which connects to a minimum of 30 m of sealed section prior to meeting with Razorback Road.



Plate 4: Proposed haul road intersection with Razorback Road looking north



Plate 5: Along proposed haul road entrance to site lodgings looking east. Trees on left have been recently harvested. Trees on right were planted in 2021.

2.4. Vegetation

Majority of the subject land (over 80%) has been historically cleared of native vegetation and is used as pine plantation. The older trees which were harvested in 2022 were planted in 2000 and at the time of harvesting stood more than 18 m tall. Current pines in the area were planted in 2021 and are approximately 2 – 2.5 m tall (See **Plate 6**). This indicates a projected growth rate of the pines at approximately 0.8m per year.

It is predicted by the end of Stage 4 of the quarry, the pines surrounding quarry will provide a screen of trees that are at least 16 m in height reducing dust, noise, and visual impacts from the quarry. **Plates 1 and 2** in **Section 1.2.2** show what the site will look like when the trees reach their predicted growth.



Plate 6: Trees planted in 2021 showing height after 2 years' growth.

The plant community type (PCT) has classified much of the site as non-native. A small section of land immediately to the south-east of the quarry consists of:

- Apple Box – Yellow Box dry grassy woodland of the South-eastern Highlands Bioregion; and
- Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands – Southeastern Highlands Bioregion.

Vegetation communities south of the development on Two Mile Creek consist of:

- Apple Box – Yellow Box dry grassy woodland of the South-eastern Highlands Bioregion; and
- Yellow Box – Blakelys Red Gum grassy woodland on the tablelands – South-eastern Highlands Bioregion.

The quarry and access roads will not require the removal of any trees. Upgrades to Razorback Road have been designed to avoid removal of trees where possible. The quarry development has also been designed to avoid tree clearing and development is unlikely to impact any native grasslands.



Plate 7: Vegetation on site looking towards Viewpoint 1 (Cottages of Moonraker)



Plate 8: Vegetation alongside Razorback Road looking south

2.5. Heritage

Aboriginal Heritage

There are unlikely any Aboriginal heritage items remaining on site due to the amount of disturbance created by clearing, grubbing of stumps, planting of pines and the erection of fencing.

The headwaters of Two Mile Creek are in the vicinity. With the ephemeral nature of the headwaters, it is unlikely there were ever any camps established. There are no caves, scared trees or items of Aboriginal heritage recorded on the subject land.

European Heritage

There is no European heritage is within the subject land.

2.6. Creeks and Waterbodies

The land is within the Turon River Gold Field area. Common names in the area include Black Springs and Spring Hill suggesting that there are springs in the area, though none have been identified on the subject land, however, there are several catchments in the area.

Two Mile Creek is located 60 m from the quarry pit edge. Water from the site flows into Two Mile Creek which then enters the Crudine River. This water eventually passes through the Turon River before entering the Macquarie River.

3. METHODOLOGY

This section details the process used to evaluate the potential visual impacts for the quarry on its surroundings. The following is an outline of the VIA methodology used:

1. **Scope and Objectives:** Define the scope and objectives of the VIA study, including the project site and surrounding area, the types of potential visual impacts, and the stakeholders to be considered.
2. **Baseline Data Collection:** Collect baseline data on the existing visual conditions of the project site and its surroundings, including views from public viewpoints, land use patterns, and visual quality characteristics of the landscape and locate potential receptors.
3. **Desktop Initial Visual Impact Analysis:** An initial viewshed was performed using the identified receptors to evaluate areas of potential visibility. Evaluate the potential visual impacts of the proposed development within the project site and its surroundings, considering the scale, massing, design, and materials of the development. From this initial desktop analysis, the areas of highest potential visibility were identified.
4. **Site Inspection:** The Site inspection included inspection of the proposed quarry design to assess current vegetation, amenity, character, creek lines and existing infrastructure. An inspection of the identified receptors with high potential visibility was undertaken and photos taken to include in the reporting.
5. **Visual Impact Analysis:** Analyse the visual impacts using qualitative and quantitative methods such as an additional viewshed analysis on chosen receptor locations, maps, and photographs taken during the site inspection.
6. **Mitigation Strategies:** Identify and evaluate potential mitigation strategies to reduce the visual impacts of the proposed development project, such as changes to the design, landscaping, and screening.
7. **Evaluation of Alternatives (if necessary):** Evaluate alternatives to the proposed development project, including different locations, scales, and designs, to identify potential alternatives that may have fewer visual impacts.
8. **Stakeholder Engagement:** Stakeholder engagement will be conducted by the client.

The above VIA methodology provides a structured approach to assessing the potential visual impacts of the proposed development on its surroundings.

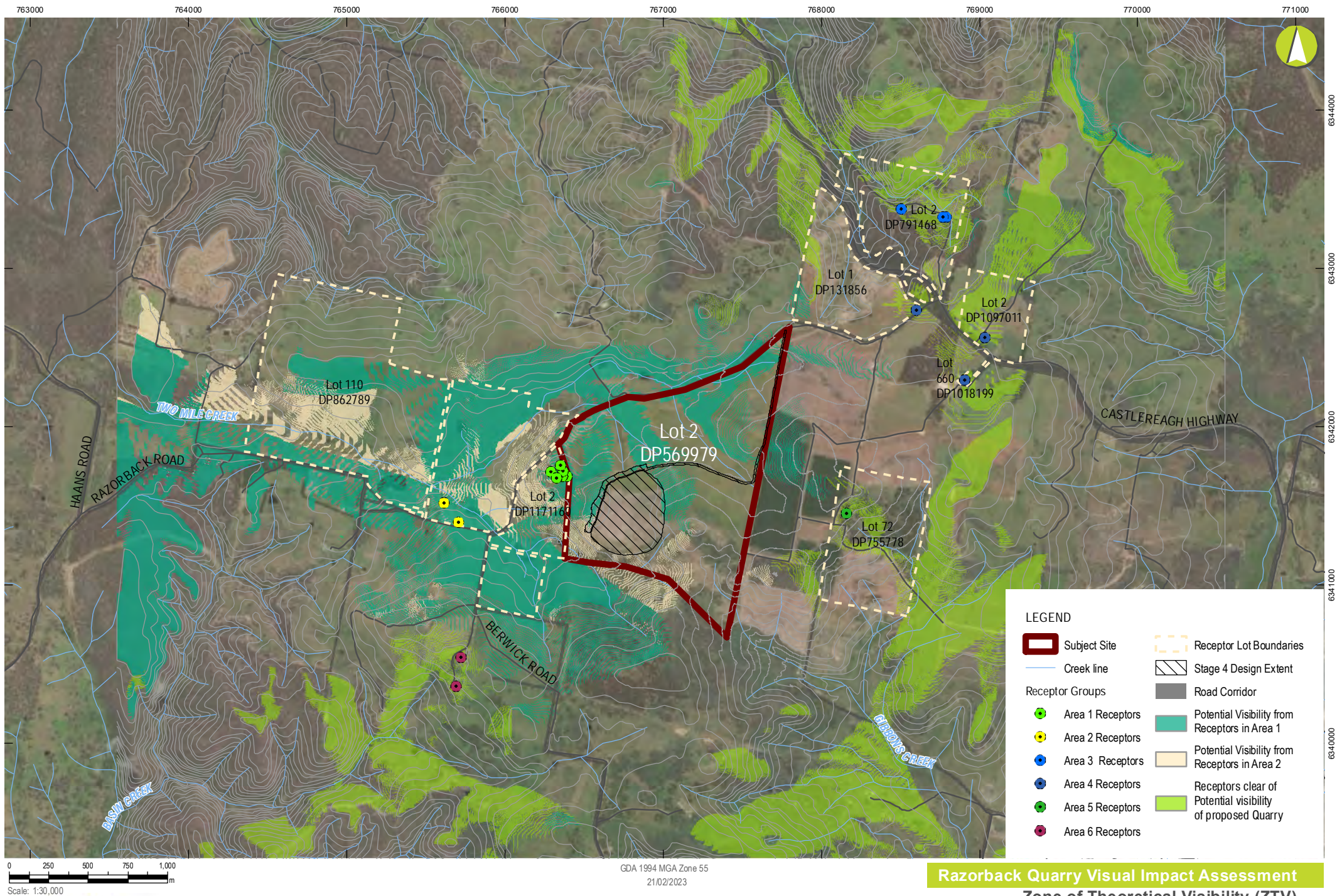
3.1. Zone of Theoretical Visibility

Analysis of the site was performed utilising GIS analysis tools and a proposed Civil 3D design model to create the theoretical visual catchment of the proposed quarry. This process also identified potential receptors.

A Zone of potential Theoretical Visibility (ZTV) was prepared as part of this VIA for each of the receptor areas nearest to the project or in areas with the most potential impact. The location of potential visibility was determined and combined to form the view catchment. From this analysis, it was determined the nearest receptor areas that had the potential to be impacted by the proposed quarry and as such determined the areas to investigate during the site inspection.

It is important to note that the model is based on bare earth conditions and as such does not include any screening that existing or future bunding or vegetation screening might provide. This is appropriate at this stage of the analysis to take a conservative position ahead of validation through the site inspection.

Figure 3 shows receptor areas and potential ZTV catchments.



Razorback Quarry Visual Impact Assessment
Zone of Theoretical Visibility (ZTV)
Viewshed Analysis
FIGURE 3

3.2. Receptors

Visual receptors are people or groups that may be affected by the development. Potential receptors are identified based on key parameters and can include:

- Proximity receptors – Usually within a 4 km radius of the subject land and the most impacted visual receptors
- Travellers passing through or alongside the subject land
- Workers on or near the subject land
- General public accessing adjoining public lands for recreational or visual purposes
- Permanent residents living near the subject land

The receptors for this VIA were identified through the desktop study which involved aerial photography, GIS data and ZTV mapping. Based on the assessment, six potential receptors areas were identified near the subject land.

Two (2) of the six receptor areas were identified as in the potential ZTV. This included private residences (project related residences were excluded). A third point (VP3) was selected for the VIA as it was on a public road that was elevated and had regional views back across the site. This is the route the residents from area 6 would take when leaving their properties and heading back to the Castlereagh Highway.

Figures 4 to 6 show the ZTV for the three nearest receptors listed as VP1, VP2 and VP3.

3.3. Receptor Sensitivity Rating

For each of the receptors a VIA is required to establish a Receptor Sensitivity Rating. Receptor sensitivity includes factors such as:

- Receptors interest in the visual environment based on its everyday visual environment and the duration
- Receptors viewing opportunity
- Number of views and distance/angle of view and the extent of screening/filtering of the view

Table 1 details the Receptor Sensitivity Rating criteria used for this VIA.

Table 1: Receptor Sensitivity Rating

Receptor Sensitivity	Description
High	<ul style="list-style-type: none"> • View is of high importance to the receivers. • High number of receivers. • View to landscape that is rare or unique and vulnerable to change. • View is of heritage sites, scenic routes, lookouts, or regionally important locations. • Majority of project is exposed to receivers.
Moderate	<ul style="list-style-type: none"> • Some elements of the project can be seen by receivers. • Medium number of receivers (rural communities or townships) • View is not scenic but offers quality views for travellers along roads. • View is representative of local character or sense of place but are not rare or unique. • Viewers have moderate interest in their surrounds.
Low	<ul style="list-style-type: none"> • There is a small number of receivers in the area. • Visual character is of low scenic quality or importance. • Viewers have low interest in the landscape or scenic qualities (e.g., commuters, workers). • Minimal elements of the project can be viewed.
Negligible	<ul style="list-style-type: none"> • There are minimal or no receivers in the area.

Receptor Sensitivity	Description
	<ul style="list-style-type: none"> No elements of the project can be viewed.

3.4. Magnitude of Change

The magnitude of change is the degree of change to the landscape. It takes into consideration the scale, intensity, extent, and duration of the impact. This includes the loss or addition of any landscape features to the existing landscape.

Table 2 details the ratings of the magnitude of change using High, Moderate, Low or Negligible. Definitions are illustrative only and there is no defined boundary between levels of impacts.

Table 2: Magnitude of Change Rating

Magnitude of Change	Description
High	Dominant Change <ul style="list-style-type: none"> Major change in view at close distances, affecting substantial part of the view continuously visible for a long duration or obstructing a substantial part or important elements of the view Overwhelming loss or additional features in the view such as the nature of view or character of landscape fundamentally changed Views to key landscape features affected Visual amenity of local residents or road users substantially diminished Substantial change to the landscape due to loss of and or change to elements, features or characteristics of the landscape creating an overall worsening of landscape quality
Moderate	Considerable Change <ul style="list-style-type: none"> Clearly perceptible changes in views at intermediate distances resulting in either distinct new element in a significant part of the view or a more widely ranging, less concentrated change across a wider area Significant loss or addition of features in the view, such that nature of view or character of landscape is altered Noticeable contrast of any new features in the view such that the nature of the view or landscape character is changed Noticeable contrast of any new features or changes compared to existing landscape Views to key landscapes partially obstructed but views remain intact
Low	Noticeable Change <ul style="list-style-type: none"> Minor memorable change to the landscape or views Temporary or reversible impact Landscape dominant element and built form/ development well integrated within it Little permanent change or no fundamental change to local landscape character
Negligible	Barely perceptible change <ul style="list-style-type: none"> No memorable or rarely perceptible change to landscape character or key views

3.5. Visual Impact Significance on Landscape

The Visual Impact Significance is rated using the criteria listed above and calculated using the 5 x 5 matrix shown in **Table 3**. This is based on the information collected during the site inspection, the assessment of the ZTV and the photomontages produced as part of the VIA. Professional judgement and experience have been used to assess the level of significance. The process of the assessment and the use of the rating tables reflect typical outcomes for visual impacts.

- Impact on receptors that are particularly sensitive to change in views and visual amenity are more likely to be significant; and

Impacts that constitute a substantial change to the visual environment are likely to be more significant than the impacts that do not cause substantial change.

Table 3: Visual Impact Significance Rating Matrix

	Magnitude				
Sensitivity		High	Moderate	Low	Negligible
	High	High	High-Moderate	Moderate	Negligible
	Moderate	High-Moderate	Moderate	Moderate-Low	Negligible
	Low	Moderate	Moderate-Low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

4. VISUAL IMPACT ASSESSMENT

4.1. Photomontage Images

Photographic imagery was taken of the site on 12 January 2023 to assist with the assessment of visual impacts. Three photomontages were prepared to assist with the process.

Three receptors (VP1, VP2 and VP3) were used as the base case for the photomontages. They were selected based on their sensitivity and proximity to the site.

A photomontage is a visual representation of a proposed development overlaid onto an existing photograph of the site or location. In the context of a visual impact assessment, a photomontage can be used to help stakeholders and decision-makers visualize how a proposed development will look in its real-world setting, and to assess its potential visual impacts. For this VIA they have been created using GIS (ESRI), CAD (Civil 3D and 3Ds Max) and GIMP (Post-processing).

A digital model of the quarry at the Stage 4 disturbance footprint has been used for the photomontages as this represents the maximum impact of disturbance and is considered a worst case. Stage 4 is not expected to occur until 14 years after commencement of the quarry.

Two (2) photomontages were from the residences closest to the subject land. Another was from a public road which adjoined to an access road used by two more private residences (who are not able to see the site from their properties).

Table 4 provides a description of the three viewpoints used in the photomontage. The location of VP1, VP2 and VP3 are shown on **Figures 4-6**.

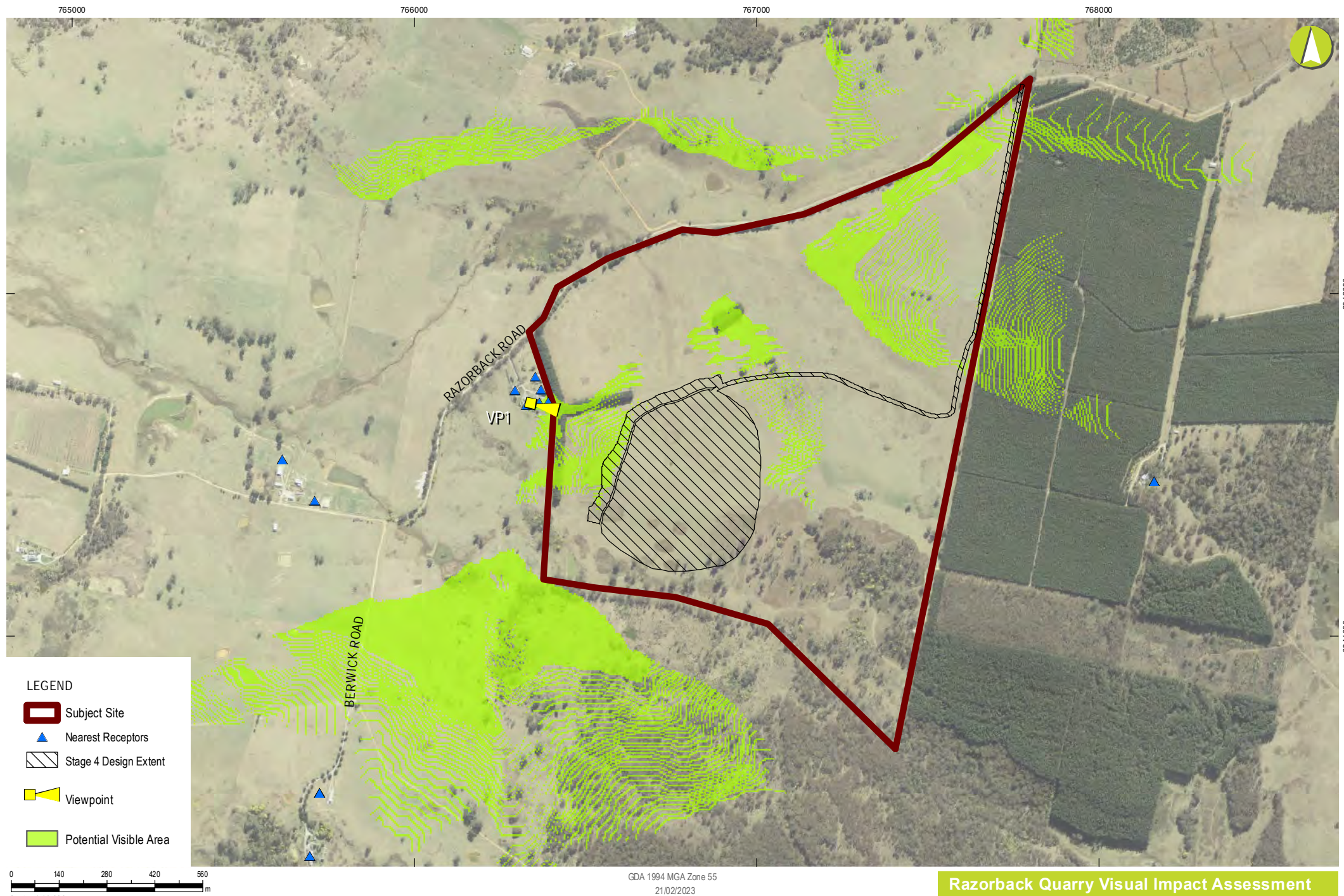
Table 4: Receiver Description

Viewpoint Number	Location	Distance to edge of Extraction Area	Direction
VP1	Cottages of Moonraker	316m	West
VP2	Razorback Road	804m	West
VP3	Berwick Road	865m	South-west

4.1.1. Viewpoint 1 (Cottages of Moonraker)

The following photomontages show the view looking east back across the project site from the back veranda on the main house.

	
<p>Plate 8: Viewpoint 1 (Cottages of Moonraker) from the back veranda as of January 2023.</p>	<p>Plate 9: Viewpoint 1 (Cottages of Moonraker) when development is in Stage 4 of operations.</p>



Razorback Quarry Visual Impact Assessment

Zone of Theoretical Visibility from Viewpoint 1

FIGURE 4

Receptor – VP1	Summary of Visual Impact Assessment
Receptor Location	Cottages of Moonraker (rear veranda of main house)
Visual Baseline Description	<ul style="list-style-type: none">The site beyond the receptors fence towards the proposed quarry is under pine plantation. Juvenile pine trees were planted at the end of 2020 and are now at a height of approximately 2-2.5 metersView of the proposed quarry is obscured by an existing row of mature pine trees and existing buildings and landscaping on the property
Receptor Sensitivity	Low
Magnitude of Impact	Low
Impact Significance	Low
Mitigation Measures	<ul style="list-style-type: none">Establishment of a visual bund. Beyond the bund no part of the working quarry will be visibleThe existing height of the trees in the existing pine plantation (established 2020) between the site and the receptor are approximately 2-2.5m tall. They are expected to reach a height of 16-18m growing at a rate of 80cm/year. In a relatively short period of time, it is expected that no part of the development will be visible from VP1 due to the establishment of the plantation

4.1.2. Viewpoint 2 (Razorback Road)

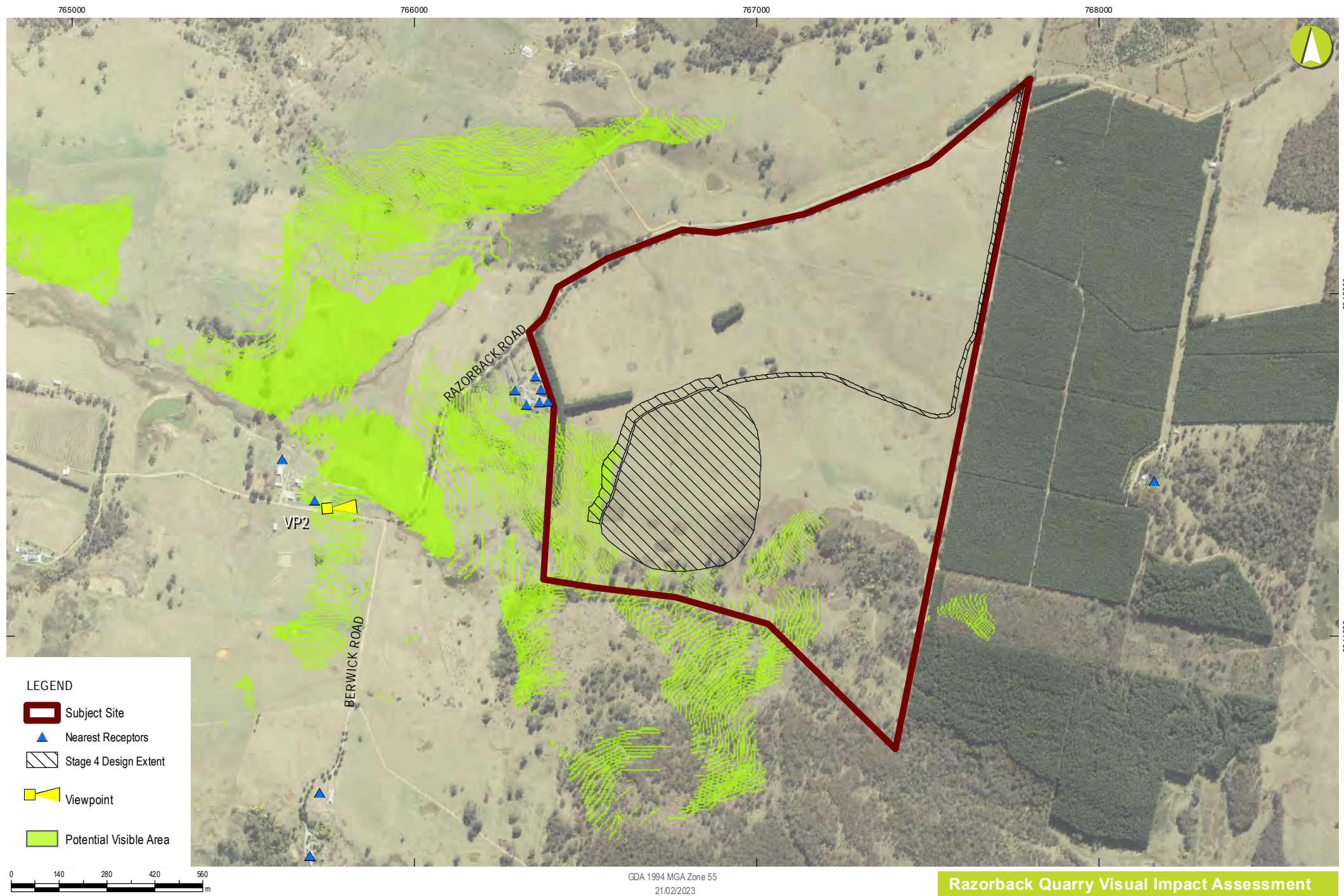
The following photomontages show the view looking north -east back across the project site adjacent to the properties at VP2.



Plate 10: Viewpoint 2 (Razorback Road) as of January 2023.



Plate 11: Viewpoint 2 (Razorback Road) when development is in Stage 4 of operations.



Receptor – VP2	Summary of Visual Impact Assessment
Receptor Location	Razorback Road
Visual Baseline Description	<ul style="list-style-type: none"> • Site is over 800m from VP2 and is in the background of the regional view shed • The area around VP2 is predominantly cleared lands • An existing row of mature pine trees partially blocks the view of the proposed quarry • Two Mile Creek is in the mid-view near and to the right of VP2
Receptor Sensitivity	Low
Magnitude of Impact	Low
Impact Significance	Low
Mitigation Measures	<ul style="list-style-type: none"> • The distance from VP2 to the site means the proposed quarry will not be dominant in the landscape • Establishment of a visual bund • The current height of the trees on the pine plantation (established 2020) between the quarry site and the receptor VP2 are approximately 2-2.5m tall. They are expected to reach a height of 16-18m growing at a rate of 80cm/year. In a relatively short period of time, it is expected that no part of the development will be visible • An approximate tree height for mature pines has been projected onto the photomontage using the existing row of mature trees as a reference. When fully grown the trees will block the view of the quarry

4.1.3. Viewpoint 3 (Berwick Road)

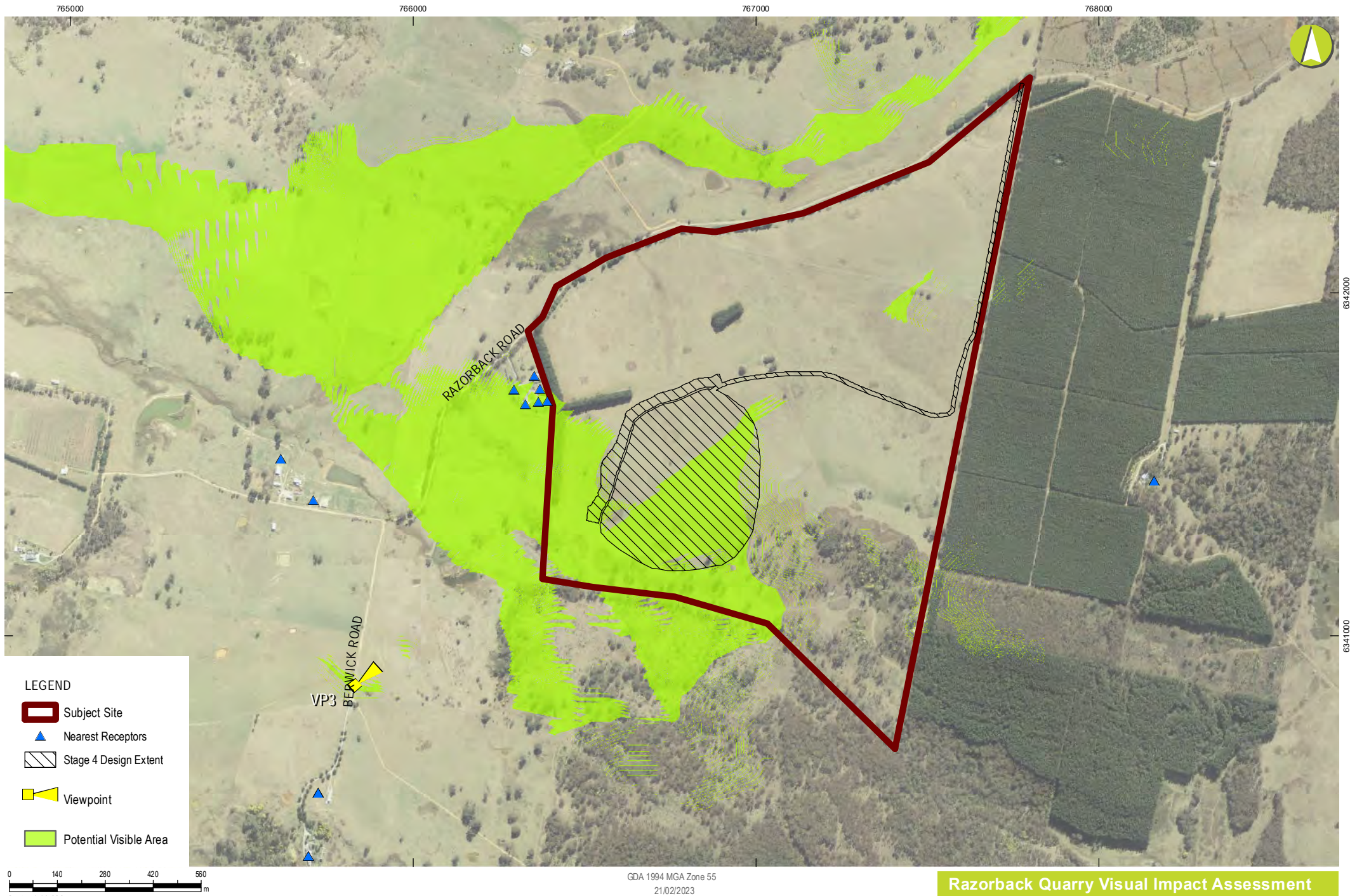
The following photomontages show the view looking north-east back across the project site adjacent to the properties at VP3. There is no receptor at this location rather it is part of the view the residents travelling along the roadway may observe. Note the road at this point is travelling in a northerly direction so to see this view the driver would need to be looking northeast from the roadway.



Plate 12: Viewpoint 3 (Berwick Road) as of January 2023.



Plate 13: Viewpoint 3 (Berwick Road) when development is in Stage 4 of operations.



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Receptor – VP3	Summary of Visual Impact Assessment
Receptor Location	Berwick Road
Visual Baseline Description	<ul style="list-style-type: none"> • Site is over 850m from VP3 and is in the background of the regional view shed • The area around VP3 is predominantly cleared lands and agricultural views • An existing row of mature pines and existing native vegetation partially block the view of the proposed quarry • The view is from a roadway adjacent to the houses in Area 6 but is not a view from a specific residence
Receptor Sensitivity	Low
Magnitude of Impact	Low
Impact Significance	Low
Mitigation Measures	<ul style="list-style-type: none"> • The distance from VP3 to the site means the proposed quarry will not be dominant in the landscape • Establishment of a visual bund will provide some mitigation • Existing native vegetation (not to be cleared) obscures part of the quarry from the view • The final landform of the quarry remains below the horizon and will be progressively rehabilitated where available • The current height of the trees on the pine plantation (established 2020) between the quarry site and the receptor VP3 are approximately 2-2.5m tall. They are expected to reach a height of 16-18m growing at a rate of 80cm/year. In a relatively short period of time, it is expected that no part of the development will be visible

5. CONCLUSIONS

This VIA was developed for the proposed Razorback Quarry and will form part of an EIS. It was undertaken to assess the extent and magnitude of impacts on the landscape and visual environment from the construction and operational activities at the quarry.

The zone of theoretical visibility identified only two (2) receptors where the site might be visible. Existing vegetation (pines and native vegetation were not included in the initial desktop assessment to identify worse case). A third site was selected to be included in the VIA from Berwick Road at a higher elevation. This road services two (2) additional houses which do not have a view across the quarry (refer **Figure 6**). There will also be minimal impact on other local roads as no major clearing at the site is required.

Using computer modelling, photographs, and additional information collected during a site visit, three (3) photomontages were produced to demonstrate how much of the quarry would be visible at Stage 4 of the quarry development. Stage 4 was selected because it was the greatest area of disturbance during the life of the quarry.

Mitigation measures have been proposed to help reduce the visual impacts. These include:

- The quarry has been designed and positioned on the site to ensure it will not be dominant in the landscape. In some cases, existing planted pines and native vegetation obscure the site from the view (including from Razorback Road).
- A visual bund will be constructed along the western side of the quarry.
- The final landform of the quarry remains below the horizon and will be progressively rehabilitated where available.
- The internal roads and site infrastructure (weigh bridges and offices) are located away from the view of receptors.
- The proposed site is located inside an existing pine plantation that will eventually obscure any views. The current height of the trees in the pine plantation (established 2020) are approximately 2-2.5m tall. They are expected to reach a height of 16-18m when fully grown, growing at a rate of 80cm/year.

At all three (3) nominated sites the significance of the visual impact was assessed using criteria relating to receptor sensitivity and the magnitude of change. A rating of LOW was determined at all three (3) locations.

6. REFERENCES

Space Urban (2022). *Environmental Impact Statement: Proposed Razorback Quarry (Draft)*.

Transport for NSW (2020). *Guideline for Landscape Character and Visual Impact Assessment*

APPENDIX A

Visual Impact Assessment

Photomontages

Viewpoint 1 (Cottages of Moonraker)



Viewpoint 1 as of January 2023.



Viewpoint 1 during Stage 4 of operations.

Viewpoint 2 (Razorback Road)



Viewpoint 2 as of January 2023.



Viewpoint 2 during Stage 4 of operations.

Viewpoint 3 (Berwick Road)



Viewpoint 3 as of January 2023.



Viewpoint 3 during Stage 4 of operations.